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EUROPEAN ASSESSMENT OF GLOBAL PUBLICLY FUNDED AUTOMOTIVE RESEARCH

Publicly funded automotive research in Czech Republic

SEVENTH FRAMEWORK PROGRAMME

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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 Czech RTD funding system 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.
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
- 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. It is available from the EAGAR website WWW.EAGAR.EU as deliverable D.5.1 from September 2010.

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 initial months of the project, which ensures the common approach for analysis of 23 countries. The data collection occurred 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
- 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

The Czech Republic is situated in the middle of Europe and populated by 10.467 million people. The capital and largest Czech city is Prague. In 2004 the Czech Republic joined the European Union. The economy has grown immensely in the last years[1] with an average growth rate of over 6 % from 2006 to 2007. However, in 2008 it fell sharply to 2.7 %.
In 2008 the GDP totalled up to € 144 billion, with the automotive branch becoming one of the most important sectors in the Czech economy.

Figure 1: flag of the Czech Republic

The role and importance of road transport in the Czech Republic and significance of domestic automotive industry

The Czech automotive sector is one of the pivotal branches of the national economy. Car-related companies represent the most important group within the automotive industry. Total industrial output of the CZ (by sales of companies with over 20 employees) in 2008 was CZK 3200 million.

Automotive sector has a leading position in the Czech industry. It accounted for about 10 % of GDP and more than 19 % of total industrial production in 2008. Total employment in the sector is estimated at 127 thousand (in 2008), which represents 2.6 % of total employment in the national economy and 8.2 % of employment in the industry. Nevertheless in years 1992-2008 certain structural changes appeared both at vehicle manufacturers and component suppliers. The focus of the Czech automotive industry has recently slightly shifted from final producers towards suppliers of parts and accessories. The main factor behind this development is the increasing volume of exports going to foreign car producers. The total export of all items produced by automotive companies in 2008 added up to 76 % of the total output of these companies. Approximately 84 % of exports were directed to the European Union region. The automotive industry thus covered roughly 19 % of the total exports of the Czech Republic and about 18 % of the CZ exports to EU.
In 2008 the automotive turnover in the Czech Republic was € 23.54 billion. The most important (and only) Czech car and powertrains (engines, gearboxes) manufacturer is Skoda, which keeps its own R&D facility (approx. 1,500 workers). The car production capacity is approx. 600,000 cars per year. TPCA (Toyota Peugeot Citroën Automobile) is producing in the Czech Republic as well with a capacity of approximately 300,000 cars per year. Last year Hyundai completed a plant in the Czech Republic as well with a capacity of approx. 300,000 cars per year.[2] The other automotive manufacturers are bus companies (IVECO CZ and SOR) with capacities of 1,600 or 500 buses/year and truck manufacturers Ashok Leyland AVIA (2,000 light trucks/year) and TATRA (off-road trucks, 1,500/year).

[1] CIA factbook
[2] Czech Statistical office

National spending and funding for research and technological development

Per year the domestic RTD totals about € 2 billion, which is 1.4 % of the GDP. The GERD (Gross Domestic Expenditure on R&D) was 1.54 % in 2006 (data published by EUROSTAT in 2008). The automotive RTD had a share of 2.8 % of the automotive turnover with € 690 million.[3] These numbers involve both public and private funding, the public funding of general RTD was at the level of 0.62 % of GDP in 2007.

[3] Automotive yearbook

2.2 National Funding Organisations and Hierarchies for Automotive Research

The structure and governance of the national funding system

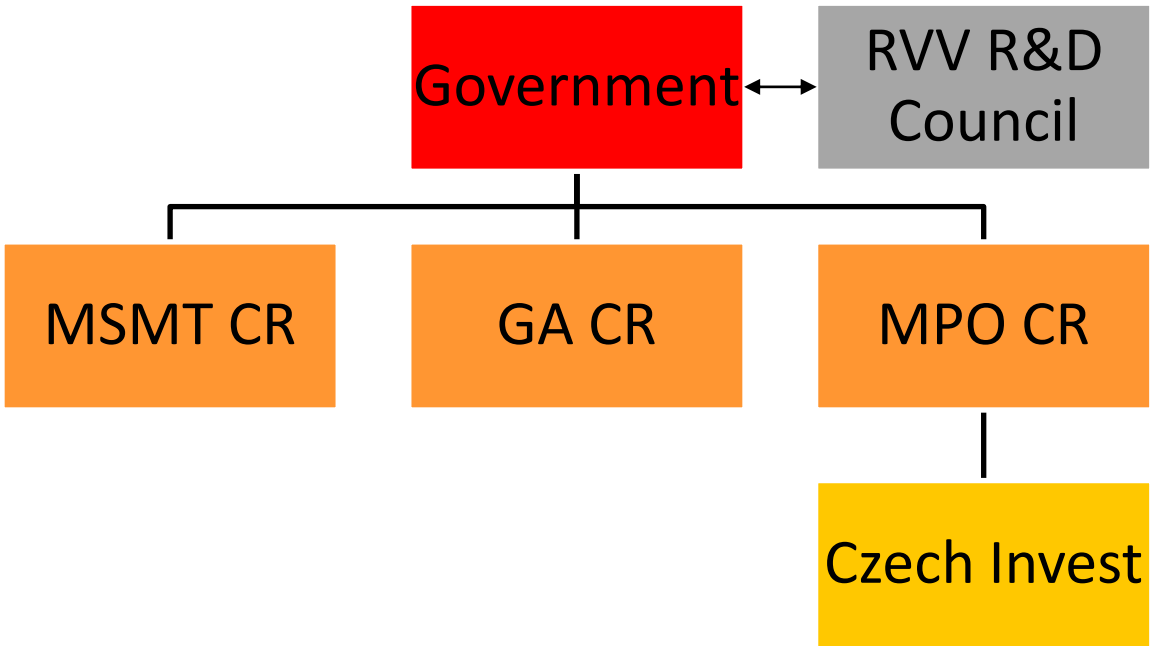

Figure 2: structure of the Czech funding system

Funding organisations and key players

Ministerstvo prumyslu a obchodu Ceske republiky (MPO CR) Ministry of Industry and Trade of the CR: The Ministry of Industry and Trade is the central body of the government administration involved in Industrial research, engineering, and technology development.

CzechInvest: Established in 1992 by the MPO CR, CzechInvest is the investment and business development agency of the CZ whose services and development programmes contribute to attracting foreign investment and to developing Czech companies. Its mission is to support investment activities not only through information service and consultancy but also by linkage with structural funds of the EU.

The Grant Agency of the Czech Republic (GACR) from 1992 The Czech Science Foundation: Support of fundamental scientific research in the Czech Republic. Promote progress over the whole range of scientific and technological development in the Czech Republic.
Grants are provided to all kinds of Czech state and private research and development institutions and to private persons who are Czech citizens and reside permanently in the Czech Republic. Foreign individuals and institutions can cooperate in the grant projects. The Technical Sciences Committee deals with automotive engineering projects but only marginally.

Ministerstvo skolstvi, mladeze a telovychovy Ceske Republiky (MSMT CR) Ministry of Education, Youth and Sports: The Ministry is the central body for several general R&D programmes and financing of R&D organizations at universities and inside the Czech Academy of Sciences. Apart from edu-

cation, the Ministry is a central administration body responsible for public research. It submits draft research laws and research policies to the Government, in cooperation with other relevant bodies, e.g. the Council for Research and Development or the Academy of Sciences. The Ministry cooperates with the Council for R&D on preparation of state R&D budget as well as creation and maintenance of R&D databases. The Ministry evaluates research plans and research activities results of universities and research institutions and approves funding of R&D for universities and R&D institutions. Inside these programmes several possibilities for automotive research have been used.
It is the national coordinator of the Eureka Programme.
Recently, MSMT coordinates European structural funds programmes (especially European Regional Development Fund) focused on enhancement of R&D and tertiary education.
The Research and Development Council is an expert and advisory body to the Government in the field of research and development.
Its responsibilities include elaboration of long-term principle directions in R&D for the Czech Republic, preparation of annual analyses, and assessment of the research and development situation in the country, proposal of the volume of overall expenditure on R&D in individual budget categories and its allocation.

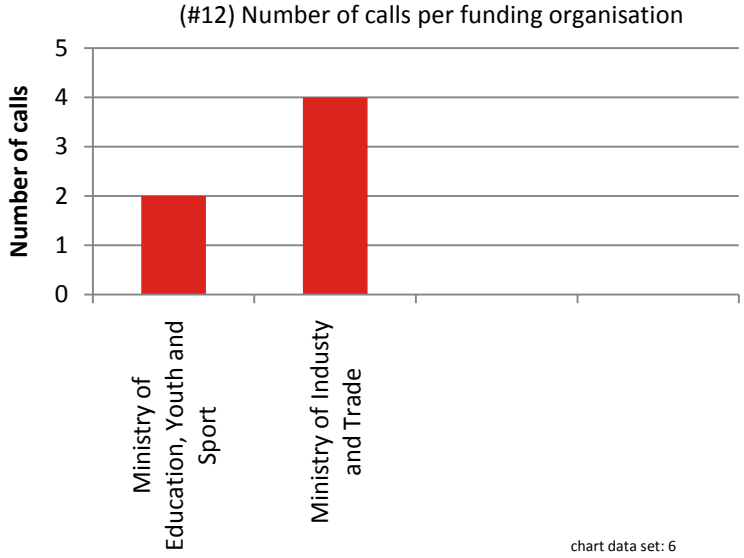

Figure 3: number of calls per funding organisation

During the year 2010, the Technological Agency of the Czech Republic is being established in coherence with the reform plan of the government (see below).

Remit for organisations & calls: overlaps or conflicts

All calls have a dedicated call window. Due to the small amount of issued calls an overlap could not be observed.

2.3 Automotive Visions and Strategic Research Agendas

Significant challenges for the national road transport sector.

One of the most remarkable challenges is the creation of new structures which will be essential for the future of the country's automotive industry. Besides this important challenge the Czech Republic issued numerous challenges targeting various problems, like the reduction of emissions, the research in the field of alternative fuels, as well as the improvement of road safety.
The National Innovation Policy for the years 2005-2010 was adopted by the Government on 7 July 2005. The Policy was elaborated under the responsibility of the Deputy Prime Minister for Economy, together with the Minister for Industry and Trade and the Minister for Education. Four strategic objectives of the National Innovation Policy have been identified:

- To strengthen research and development as the source of innovation
- To establish a working public-private-partnership
- To secure human resources for innovation
- To make the performance of state administration in research, development and innovation more effective.

For each objective, concrete tasks, tools, and measures towards their achievement are specified, including the specification of responsibilities, deadlines, success indicators, and evaluation methods.

A plan to reform the Czech research, development and innovation system was approved by the government on 26 March 2008. The Reform Plan is a strategic document summarising and explaining the need to take action to remove barriers in the Czech R&D system, which detain research and innovation activities. The reform plan sets out seven key objectives:

1. Simplify the R&D support system in such a way that research institutions are supported according to their research results and that research teams receive support on a project basis.
2. Reduce the number of budget lines which allocate public resources to R&D activities from the present level of 22, while at the same time simplifying the administrative procedures for R&D support.
3. Encourage and support excellence in R&D, and facilitate the application of R&D results in innovation. The infrastructure for excellent research should be established with the support of EU Structural Funds within the Operational Programme Research and Development for Innovation. In order to ensure an effective use of this infrastructure the Reform Plan proposes to change the evaluation system for R&D results. More emphasis will be put on excellent results in basic research and on applicable results in industrial research.
4. Strengthen the cooperation between the research sector and the users of R&D results by providing project-oriented support to research projects that are co financed by the private sector. The project-oriented support of industrial research will be provided by the new established Technology agency. Furthermore, it is proposed to extend the current indirect support of R&D (tax relieves) to R&D purchased by enterprises from public research institutions and universities.
5. Establish a more flexible organizational structure of public research organizations to promote better collaboration with the business sector and to create suitable conditions for the commercialization of research results.
6. Provide qualified human resources for R&D and innovation. This objective is primarily addressed within the framework of the Operational Programme Education for Competitiveness. It is also planned to simplify the conditions for hiring researchers from third countries.
7. Intensify the involvement of the Czech Republic in international research, development and innovation cooperation, especially within the European Research Area.

The Reform Plan will be followed by a set of legislative, financial and organisational actions to improve the management and coordination of research, development and innovation policy. Most

measures proposed by the Reform Plan are to be implemented by the end of 2010. The Technological Agency of the Czech Republic has been founded, aiming at the centralization of applied research programmes and a better coordination within the programmes. The first calls for a general R&D funding are planned for March 2010. The establishment of the national technological platforms (Hydrogen Technological Platform HYTEP 2008, General Mechanical Engineering 2009, and Automotive Engineering February 2010) has triggered the creation of the National Strategic Research Agendas (mostly being prepared during 2010). The results should be used in programmes and calls by the Technological Agency of the Czech Republic.

The preliminary priorities collected by the Automotive Industry Association are:

Corresponding challenge	Description	Year
Better Regulation	to endorse a new approach to policy-making based on proper impact assessment, consistency of policy objectives, technology-neutrality, cost-effectiveness, thorough consultations, lead-time needs and affordability	
International Harmonisation	to support international harmonisation of motor vehicle regulations, notably in the framework of the United Nations Economic Commission for Europe (UN/ECE)	
Simplification of Automotive Regulations	to propose the replacement of some EC directives with UN/ECE regulations, the repeal of one EC directive, introduction of self-testing by manufacturers and computer-based virtual testing, and the opening of a dialogue on further improvements to the regulatory framework	
Implementation	to give support to the existing EU type approval system and recommend its extension to non-M1 vehicles (other vehicles than passenger cars) from the earliest possible moment on a voluntary basis	
Pollutant Emissions from Heavy-Duty Vehicles (Euro VI)	to set out the long-term aim of adopting worldwide emission standards and stress the importance of the Clean Air for Europe Programme as the basis for the Commission proposal	
CO2 Emissions - Integrated Approach	to endorse an Integrated Approach to CO2 reductions that incorporates a range of policies covering vehicle technology, infrastructure measures, fuels, driver behaviour, etc.	
CO2 Emissions - Alternative Fuels	to stress the importance of alternative fuels as one of the main options for reducing road transport CO2 emissions and recommend the promotion of biofuels and increased R&D support into second generation biofuels as well as, for the longer-term, hydrogen	
Mobile Air Conditioning Systems (MACs)	to support cooperation between the institutions and stakeholders so as to avoid or minimise potential negative effects of regulatory isolation following the EU ban on certain MAC systems	
Noise	to stress the importance of safeguarding the single market when devising noise policies and put forward a holistic approach to tackling noise issues involving all relevant stakeholders and systems, including traffic management, driver behaviour, vehicle and tyre technology, road surfaces, etc.	
Road Safety - Integrated Approach	to promote an Integrated Approach involving vehicle technology, infrastructure and road user behaviour as the most effective means of improving road safety	
Pedestrian Protection	to endorse the revision of phase II of the existing legislation and ask the Commission to come forward with a proposal for an	

	adapted Phase II as soon as possible (given technical unfeasibility of current requirements)	
Research and Development	to underline the link between R&D and competitiveness and support improvements to the framework conditions for R&D and innovation	
Intellectual Property Rights	to give a clear signal of support to intellectual property rights and their worldwide promotion and enforcement	
Integrated Approach to Vehicle Design	effective systems for pre-development of vehicles and engines	

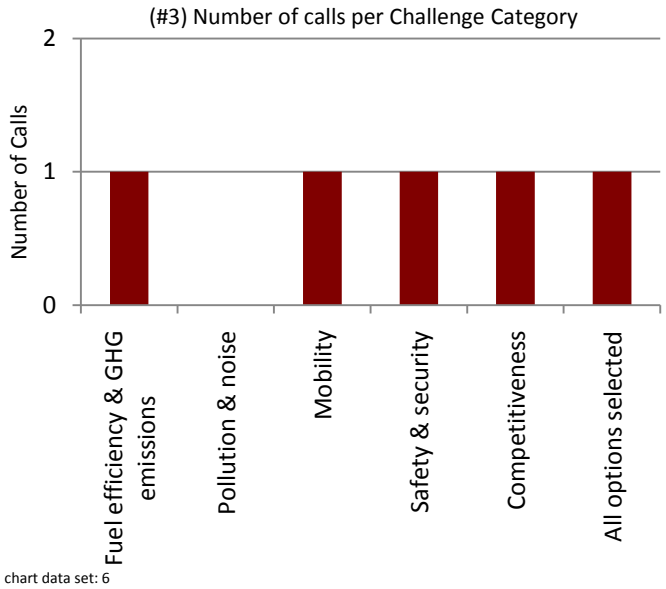

Figure 4: number of calls per challenge category

All Challenges are addressed, apart from the problem of “pollution and noise”.

2.4 Funding Programmes

The link between visions & targets and funding allocation

Public support for R&D in the Czech Republic is provided from the budgets of 21 contributors – like Ministries, central offices of state and public administration, the Academy of Sciences of the Czech Republic (AS CR), and the Czech Science Foundation (GA CR). The largest contributors are the Ministry of Education, Youth and Sport (MEYS), Academy of Sciences of the Czech Republic, the Ministry of Industry and Trade (MIT), the GA CR, the Ministry of Health (MH), and the Ministry of Agriculture (MA). The share of these six largest providers in the total public support of R&D in 2007 was more than 90 % of the R&D expenditure in the Czech Republic.[4] Since 2010, the large concentration to 6 providers is arranged due to the allotment of programmes to the Technological Agency of the Czech Republic.

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

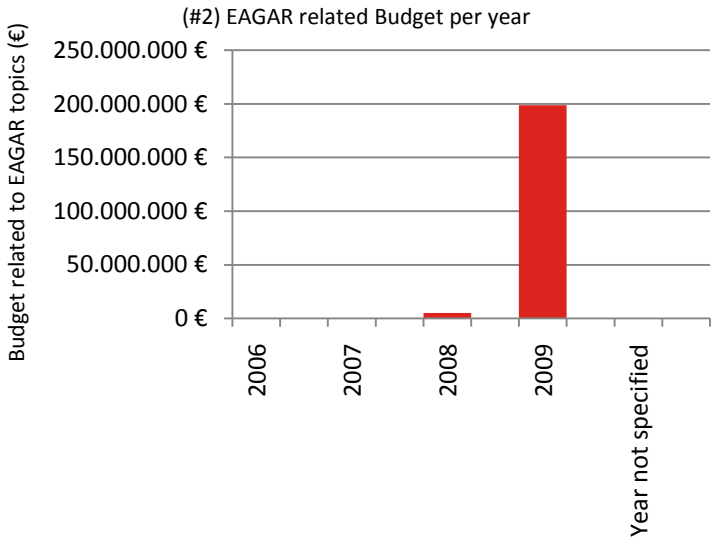

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Figure 5: EAGAR related budget per year

In 2009 the most money was available with almost € 200 million.
This huge amount is mainly addressed to establish a new structure for research projects and alter the existing structures to remain competitive on the global automotive market.

In 2008 only one call was relevant for automotive research, in 2009 there were two. In addition the calls of other general R&D programmes (all together 3 per year) are used time-to-time for automotive R&D projects.

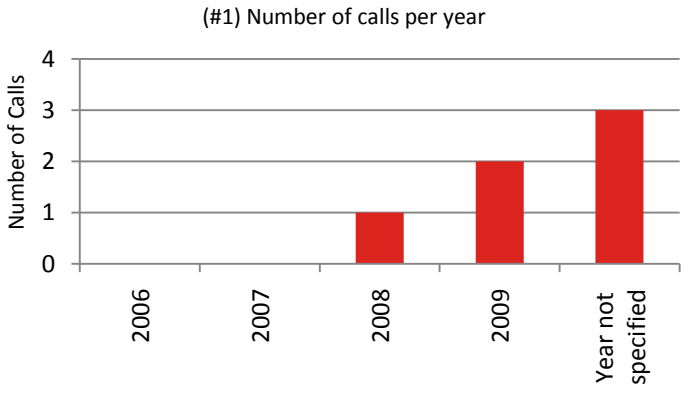

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Figure 6: number of calls per year

[4] http://www.vyzkum.cz/FrontClanek.aspx?idsekce=8304)

In general all organisation types can apply for a Czech call. Pre-competitive development is the favoured research stage. In the field of "Industrialisation and commercialisation" fewer calls are issued.

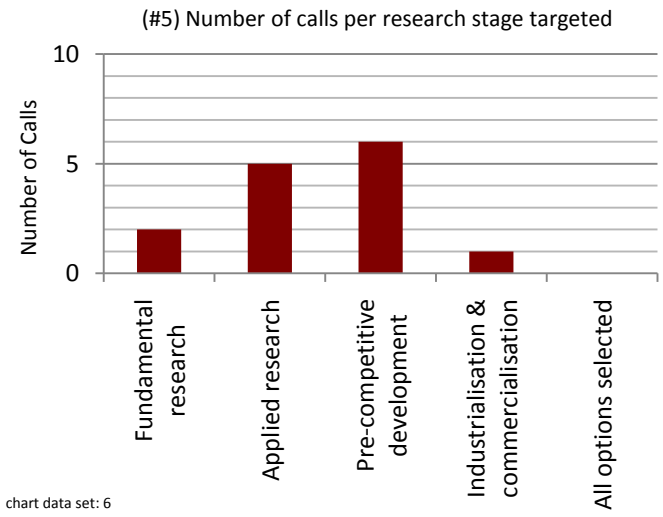

Figure 7: number of calls per research stage targeted

A collaborative partnership is targeted in most cases. Single and collaborative partnership is reported only in a few cases.

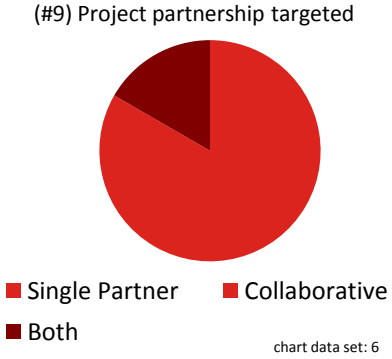

Figure 8: project partnership targeted

Overview of technology specific programmes for automotive RTD

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

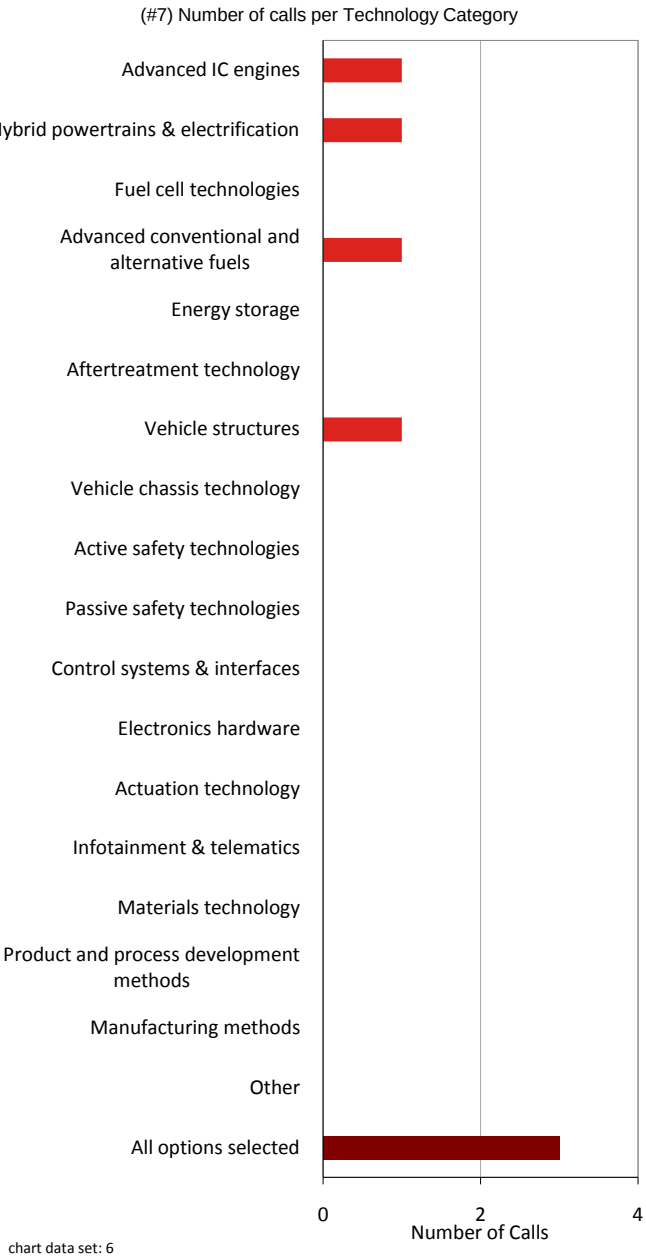

Figure 9: number of calls per technology category

Due to the small amount of different calls, the automotive industry often applies for the general initiatives of the government. In these programmes funds are available for various topics, depending only on the actuality and feasibility of the project proposal. However, in the Permanent Prosperity Programme the RTD of advanced and conventional fuels as well as vehicle structures was explicitly requested. The Czech Eureka projects in the analysed time frame dealt with advanced IC engines, alternative powertrain systems.

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

The flexibility to release new calls in response to changing situations

The flexibility of the Czech government when issuing calls is given in most cases. Therefore a quick response to changing situations can be given.

The application process

The application process for calls in the Czech Republic differs between the different departments, which release the calls. For example the Ministry of Industry is known for a quick and straightforward application process, whereas, there are other ministries, which take more time and do not offer such an uncomplicated process
New calls are released every 1 – 2 years. Therefore, a long time passes by until a new application can be filed.
It takes normally between 3 and 6 months until the proposal process is completed.
All applications are assessed by an independent review panel.
The actual start of the project is 1-3 months after the acceptance of the application. This is a very short time period in comparison to other countries. This quick project implementation is underlined by a very efficient system of transferring funds to applicants.

Funding process - exploitation

In most cases “exploitation plans” are required by the funding organization.

Funding process – feedback

The Czech programmes always offer a feedback system to their beneficiaries.

Transparency & openness

The existence of funding and programmes are always available openly. After the completion of the project a final report and other specified data have to be published to present the results.

Foreign collaboration

The programmes are in most cases open to foreign organisations.

3 Discussion and Conclusion

The automotive industry is essential for the Czech economy. About 20 % of the total industrial production in 2008 was contributed by the automotive sector, which totals to a share of 10 % of the GDP. In the last years the focus of the industry has shifted towards the supplier market than rather manufacture cars. The only Czech car manufacturer is Skoda with an annual volume of 600,000 cars. Moreover TPCA and Hyundai have a production plant in the Czech Republic, producing each 300,000 cars.

Due to its importance to the Czech economy the automotive industry is supported with large funding by the Czech government. The domestic RTD per year totals about € 2 billion, which is a share of 1.4 % of the GDP.

The funding structure in the Czech Republic is organised hierarchical and conducted by the different departments. A main agency of the government administering the various calls and projects is CzechInvest. During 2010 a new agency, the Technological Agency of the Czech Republic, is supposed to be established according to the issued National Strategic Research Agenda.

The most remarkable challenge of the Czech automotive industry in the next years is the reformation of the funding structure. To achieve this goal the government has launched a major reform package.

The budget for the funding is provided by 21 different ministries, offices, and etc. In the examined time frame 6 calls have been issued with a total of more than € 200 million. The largest amount was allotted in 2009 in correlation with the “reform strategy”. The most calls target pre-competitive development and applied research addressing all organisation types. The Czech calls try to create a new and strong bond between the Academia and the industry to improve the implementation of scientific results in automotive products.

Normally the application process in the Czech Republic is a straightforward and quick system. 3-6 months is the average time it takes to assess a proposal. The actual start of the project after a positive decision is reached much quicker with 1-3 months. This is a very quick implementation time. After the completion of the project a feedback system is offered to the beneficiaries.

Regarding openness and transparency the Czech programmes have the same standards than European calls. All information necessary for the applicant can be found online and after the completion of the project a final report has to be published openly.

4 References

- Czech government, Czech Statistical office, 2009
- Automotive Industry Association, Yearbook 2009, 2009
- Ministry of Education, Youth and Sport, National innovation policy 2005-2010, 2005

5 Annex

Overall programme name	*Programme call name*	*Call description*	*Funding organisation*	*Year*	*Reference*
Research Centres for Industrial Research	No	Establishment of trans-organisational research projects to connect several bodies for solution of some important industrial problems (mostly, branch-oriented).	The Ministry of Education, Youth and Sports	30.04.2005	http://www.msmt.cz/vyzkum/vyzkumna-centra-program-1m-2 (in Czech only)
EUREKA	No	General European cooperation programme	The Ministry of Education, Youth and Sports	30.09.2008	http://www.msmt-vyzkum.cz/cz/2008-pms/vyhlaseni-verejne-souteze-e-913.aspx (Czech only)
National Research Programme II	PERMANENT PROSPERITY 2006 – 2011	Sustainable prosperity and competitiveness Priorities aim to transportation: Alternative energy resources in transport. Higher quality and increased reliability of the transport infrastructure. Transport equipment and systems for the public and individual transport.	The Ministry of Industry and Trade		http://www.mpo.cz/zprava50977.html
TANDEM - 2004 – 2010	No	Sustainable prosperity and competitiveness Common important priorities related to new materials, products, technologies and services.	The Ministry of Industry and Trade		
IMPULS 2004 – 2010	No	Sustainable prosperity and competitiveness Common important priorities related to new materials, industrial products, production technologies, information, and control systems.	The Ministry of Industry and Trade		
TIP (Technologies, Informatics, Products) 2009 – 2014	No	Sustainable prosperity and competitiveness Priorities: New materials and products, New advanced technologies. New information and control systems.	The Ministry of Industry and Trade	27.02.2009	http://www.mpo.cz/dokument54848.html