NATIONAL INNOVATION POLICY OF THE CZECH REPUBLIC FOR 2005–2010

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I INTRODUCTION

I.1 The need to have a national innovation policy

The ever-growing and sharpening competitive pressures are becoming the side effects of globalisation. Therefore questions arise naturally to what extent and how the individual enterprises, regions and countries will be able to withstand these pressures and remain competitive. Under the conditions of a globalized economy the so called "low-cost economy" strategies using as a source of competitive advantage mostly low costs (low wages, low exchange rate, etc.) are turning up to be absolutely untenable for the future of the Czech Republic. Namely the increasing competition of large countries with a vast supply of cheap labour (China, India, etc.) does not make possible to build further development and perspectives of the Czech economy on these present comparative advantages. Therefore the front rank must be increasingly taken by innovative abilities of enterprises, growing quality of human resources, and research and technologies being regarded the key to the growth of the European competitiveness as a source of advantages.

But as far as these sources of competitiveness are concerned, at present the Czech Republic finds itself below the European average. It particularly falls behind in areas like the intensity of innovation activities at the company level, the technology transfer, use of the cooperation potential, corporate expenditures on research, development and innovation, the patent activity, cooperation between research and industry, use of venture capital, but also in many aspects concerning the development and use of human resources (see Annexes).

- The above facts undoubtedly reflect the absence of any long-acting systematic and coordinated policy of the Czech state aimed at creation of a widely pro-innovation environment. For in the advanced economies this policy represents one of practical roles of a modern state that it should play in the public interest. Innovation policies are being established and implemented at national and regional levels covering relatively a broad range of public initiatives directed towards supporting the innovation activities and stimulating the creation of pro-innovation environment. By their focus these policies are establishing more and more natural links to research, industrial, social and other policies. But at the same time any innovation policy must comply with specific conditions of each country or region. Until now, the Czech Republic has not produced its own innovation policy; the only relevant document since 1992 was the National Innovation Strategy (adopted in Government Resolution No. 270 of 24 March 2004). Nevertheless it can't be overlooked that particularly in recent years a number of measures have been coming up to support both innovation and innovators, mostly on the part of the Ministry of Industry and Trade (MIT) and the agency CzechInvest. Such single measures, however, cannot take the place of a compact and coordinated innovation policy being vital from the view of a subsequent development. Demands for such policy are being dramatically heard also after the accession of the Czech Republic into EU, where innovation is regarded as a priority under the conditions of the ever-growing competitive pressures of the global economy, with the innovation policy being more and more implemented as the true all-European task.

Innovation is predominantly a company business. The state may assist the innovation processes by creating framework conditions for conducting business and eliminating all sorts of barriers of institutional and/or legal character. Direct interventions or measures taken by the state are admissible only in cases when the free market environment is not able to solve the problems spontaneously.

I.2 Conceptual bases of a national innovation policy

By its existence an **innovation** is crucially linked with the business sphere; **it is primarily a business phenomenon.** Within the competitive market environment the enterprises are trying through innovation to discover and make the best of new business opportunities to secure further development of their business activities, as well as successful existence in the future. In the globalized economy, innovation is the only feasible way to survive and achieve business success.

Under the pressure to remain competitive the enterprises are the driving force behind this innovation, with simultaneous action of many influencing factors, which are or may be to a certain extent supported or regulated by the state. So what in fact the state or state authorities respectively can do in favour of innovation? No doubt that it should not lay any obstacles to the innovation activity that would make it difficult and slow. But first of all, the accommodating approach of the state and its authorities is to show itself in quite a number of pro-innovative measures and actions that will encourage and support the creation of a favourable innovative environment as an organic part of the business environment. A special attention must be given to the small and medium-sized enterprises (SMEs). That way the submitted National Innovation Policy of the Czech Republic for 2005-2010 (hereinafter referred to as "NIP") is a set of objectives, tasks, tools and measures for supporting innovation activities.

I.2.1 Definition of an innovation

According to definition contained in the European Commission document COM (2003) 112: *"Innovation is the renewal and enlargement of the range of products and services and the associated markets; the establishment of new methods of production, supply and distribution; the introduction of changes in management, work organisation, and the working conditions and skills of the workforce."*

The Oslo manual (OECD, 1997) concentrates especially on technological innovation of products (and services) and processes (technological product and process - TPP - innovation). *"TPP innovation comprises implemented technologically new products and processes and significant technological improvements in products and processes. A TPP innovation has been implemented if it has been introduced on the market (product innovation) or used within a production process (process innovation). TPP innovation involves a series of scientific, technological, organisational, financial and commercial activities".* The Oslo manual makes difference between TPP and other innovation (new or improved management, etc.). Therefore it eliminates from TPP innovation any organisational innovation (concerning organisational structures, management methods, corporate strategies) and other changes in products and processes (of aesthetic character, fashion changes, etc.).

As can be seen from the above definitions, there are different types of innovation and different ways how to innovate. Besides the innovation of technical nature (based mostly on research) there is also non-technological innovation as for example innovation in the area of organisation and management (new forms of work organisation, quality management, process management, etc.), market innovation, innovation of business model or presentation innovation (a complex term for innovation in design and marketing). The latter innovation types are monitored by EU and newly included into the evaluating materials (European Innovation Scoreboard). The principal source of innovation (and technological in particular) is the research and development, but the own creativity of entrepreneurs and skilled employees undoubtedly contributes as well, especially to those non-technological ones.

To the extent being reasonably obtainable **NIP respects the need for technological and non-technological innovation in the Czech economy, but in the same manner as innovation policies of the advanced countries it is mostly aimed at innovation of technical nature, where the measures of the state fostering the innovation activity of enterprises are feasible.**

I.2.2 Generations of innovation policy in advanced countries

The innovation policy has come through several stages in the advanced countries; we may speak about generations of innovation policy.

- "First generation" innovation policy drew the attention to implementation of research and development results in innovation and how to encourage this process; this being a linear concept of innovation, with single, rather non-coordinated measures in support. Often the innovation policy was only a superstructure or direct part of the research and development policy.
- "Second generation" innovation policy highlights the system concept of a complex innovation support. While the research and development results remain to be understood as a prime source of innovation, at the same time it recognises the growing influence of other areas on innovation and the necessity to take support measures in all these areas. In this concept the innovation policy takes the character of a "horizontal (cross-sectional) activity" and becomes an independent part of the overall policy that is to be coordinated with other (already traditional, standard) policies (research, educational, industrial, etc.).
- "Third generation" innovation policy means not only deepening of mutual interaction and coordination of individual policies in terms of innovation support, but particularly that innovation is approached as a central cross-sectional issue within all policies (research, educational, economic, tax, financial, industrial, regional, etc.), where each policy dedicates a key place within its goals and measures to the ways how to influence innovation activities and foster innovation and creation of a pro-innovative environment aimed at maintaining and increasing the competitiveness (the innovation policy as a nodal point of all policies). This way the innovation policy will be implemented through other policies and by all governmental agencies. The European Commission underlines the need of this "third generation" innovation policy, however at present most EU countries are still struggling with

insufficient interdepartmental coordination in areas of innovation support and growth of innovation activities.

With regards to possibilities, experiences and condition of the state apparatus of the Czech Republic, NIP now takes the form of the "second generation" innovation policy; great attention will have to be dedicated to the improvement of coordination that belongs among the weak points of the Czech public administration. The function of the "third generation" innovation policy will be fulfilled in the Czech Republic by the Economic Growth Strategy being developed in a parallel process, linked to NIP.

II ADVANTAGES AND DRAWBACKS OF INNOVATION PROCESSES IN CR

The Chapter "Advantages and drawbacks of innovation processes" summarizes the results from various analyses and documents (Analysis of the existing state of research and development in the Czech Republic and a comparison with the situation abroad - 2004, Barriers to Competitiveness, European Innovation Scoreboard, CIS 3 survey, etc.); the most important graphs and tables being attached as Annexes to NIP.

A system for evaluation called the European Innovation Scoreboard – EIS was worked out with a view to measure the innovation position of the European Union towards the rest of the world, position of its respective Member States towards the EU average, and finally, to measure all possible trends. The composition of indicators that have a demonstrable relation to the characteristics of the innovation system of a particular country has gone through an evolution. For 2002 EIS the rating scale consists of 17 indicators chosen on the basis of detailed studies in the area of:

- human resources
- knowledge creation
- transmission and application of knowledge
- innovation financing, innovation outputs and markets.

The mutual comparison of Member States and the time behaviour of individual indicators speak very clearly about development towards building a knowledge economy. In the last edition of EIS the position of the Czech Republic is characterised by the so called Summary Innovation Index (SII) (see Graph 1 of NIP Annexes). According to this index the Czech Republic with its figure 0.27 lags far behind the EU-15 average (0.40), speak nothing of the leader Japan (0.77), and USA (0.70). The Czech Republic was outdone by Slovenia, Estonia and surprisingly also by one of the non-members – Bulgaria. Worse than that is only the result in Graph 2 of NIP Annexes showing both figures of summary innovation indexes and their relative increments. With only a few countries the Czech Republic occupies the left bottom quadrant. The countries in this quadrant have both SII and its relative increments lower than the EU-25 average values.

The comparison of individual indicators shows explicitly the weakest points of the Czech innovative environment (the order is given by comparison results, independent of their absolute relevance):

- The worst ever situation is when comparing the number of all patent applications filed; the Czech Republic occupies the worst position in high-tech patents applications filed at the United States Patent and Trademark Office (USPTO) (2 – 4 points out of 100); with the situation being only a little better in European patents.
- EIS 2004 data show that another significant weak point lies in a small support provided to spin off companies in their early stages of development (4 points out of 100).
- Less critical, but still serious situation is in education – in the number of university Science&Engineering students, as well as in tertiary education and life-ling learning the Czech Republic lags behind not only the EU-15 average, but also the EU-25 average (value of relative indicators is 50 – 60 out of 100).
- Relatively unfavourable are indicators of research and development (R&D) funding: R&D expenditures from public budgets (70 points), and particularly private R&D expenditures (59 points).
- EIS shows poorer-than-average results also in the area of high-tech venture capital investments (55 points out of 100).
- Indicators "New to firm products" (43 points) and "Value added from high-tech product manufacturing" (56 points) express the overall innovative abilities of the national economy.

As for the non-technological innovation, the indicators of "advanced management techniques", "new or substantially changed organisational structures" and "significant changes of aesthetic appearance or design in at least one product" were measured for the first time; the fourth indicator was their summary. The EIS authors believe that the widening gap between USA and EU countries is caused by this lagging behind in non-technological innovation and are going to pay due attention to it. The Czech Republic is placed 11th to 18th of 25 EU Member States in these indicators. It is, however, necessary to take into account certain reservations of the EIS authors about the reliability of some data contained in this chapter. One of the reasons is the disharmony between these data and evaluation according to SII (where the Czech Republic, however, also took one of the last places – see above).

Many steps in the right direction were taken in the Czech Republic in the last 15 years – the public sector support for R&D significantly increased, some programmes and initiatives successfully managed to put together research activities of R&D organisations and business sphere, a number of scientific and technological parks were built, as well as other institutions assisting in the technology transfer. The system of industrial property protection was fully harmonised with the Community system. The range of investment incentives was expanded with the support provided to strategic services and technology centres. Among the important pro-innovation activities there are R&D cooperative programmes, e.g. KONSORCIA (later TANDEM), announced by the Ministry of Industry and Trade and B Research Centres, the programme activity announced by the Ministry of Education, Youth and Sport (MEYS). In these cases only partnerships composed of representatives of industry and academic institutions could apply for the support. This significantly encouraged their cooperation, directed the research activity towards issues with practical usability and provided a good chance for effective use of the support thanks to the private financial co-participation. Operational programmes represent

a new important impulse fulfilling the idea of mutual convergence between the EU countries with the support of structural funds. At present, various support options to technology start-up (innovative) enterprises are being offered within the framework of the already running and developed programmes (e.g. PROSPERITY, INNOVATION, CLUSTERS, Single Programming Document for Objective 2 – SPD 2 and Single Programming Document for Objective 3 of NUTS II Capital City of Prague – SPD 3).

Yet the situation in CR is the subject to many discussions and doubts. The country's competitive ability depends, to a certain extent, on temporary advantages (e.g. low-wage labour force). There are quite a number of causes of this unsatisfactory state of affairs. One of the most serious causes of the backwardness is a wrong concept of the role played by research in society, neglecting its innovative potential. A model, based on the exclusiveness of science and separating the R&D outcomes from practice, has been promoted for years; the result being the low percentage of practically utilizable R&D outcomes. Despite the existence of many institutions, activities and initiatives supporting the technology transfer, e.g. scientific and technological parks, their role is not positive enough. There are barriers, mostly legislative, material, financial and mental preventing the establishment of firms implementing the achieved R&D results in public research organisations. The system of the Czech Republic lacks an agency (technology, innovative) that would systematically promote the applied research and facilitate the transfer of research results into practice. Another barrier hard to cope with is a traditional aversion of Czech people to take risks and little social acknowledgement and prestige for those who achieve success through own courage and hard work. Also the state administration is to blame for this situation – starting with unclear competences and ending with absence of any innovation concept. The innovation support at regional level is behind schedule and incubates slowly and chaotically. The state R&D funding is fragmented with no respect to priorities (which are not set yet); little money and preference funding of research having no links to practical results. We cannot shut our eyes to the fact that the way of privatizing in CR and control over corporations has also taken its share – the enterprises of Czech owners mostly do not understand innovation as a factor ensuring their long-term prosperity. The enterprises are not motivated to invest into in-house research and other innovation activities and do not create a sufficient demand for innovative solutions. Similar behaviour (although for other reasons) can be observed for most of the foreign-owned enterprises as well.

As mentioned above, certain pro-innovation measures were implemented over the recent years; at present, several other measures are under preparation. Last year, however, the situation changed and concrete steps were taken to increase the state R&D support and strengthen the research to become a powerful tool of economic prosperity. Among others, tax relieves were put through and introduced for those entrepreneurs, who invest into in-house research; this should be a motivation to boost the innovation activities in enterprises. The long-lacking Economic Growth Strategy is under preparation, which should become the basic economic conceptual document of the Czech Republic.

The presented NIP is based upon principles being generally recognised within EU, that innovation is first of all the matter of enterprises and that state by its support measures can seriously influence neither the economic competition, nor international trade. The measures

taken by the state can remedy some market failures, when the market does not produce signals that are sufficient to drive enterprises to behave optimally. Strict EU rules allow the state to intervene in cases when the response of enterprises to market signals is insufficient or completely absent because for enterprises the corresponding activities are connected with too high risks. Research, development, and innovation are considered to be such area.

III. LINKS (RELATIONSHIP) OF THE NATIONAL INNOVATION POLICY TO APPLICABLE DOCUMENTS

III.1 Links to EU documents

Considering the EU membership of the Czech Republic, the preparation and elaboration of NIP respected corresponding links to applicable documents of EU authorities. Primarily, the Presidency conclusions of the Brussels European Council (22 and 23 March 2005), which represent a long-term political framework.

Here the European Council discussed *inter alia* the mid-term review of the Lisbon Strategy. It claimed that alongside undeniable progress there are also shortcomings and obvious delays. Its main conclusion therefore is the requirement to revive the Lisbon Strategy and refocus priorities on growth and employment. Knowledge and innovation as engines of sustainable growth are the cornerstones of the Lisbon Strategy relaunch. The emphasis is placed on developing research and all forms of innovation insofar as they make it possible to turn knowledge into an added value, increase the competitive ability of enterprises and create more and better jobs. In doing so, a genuine partnership of public and private sector and its active work towards the knowledge-based society will be encouraged.

In the field of research and development the European Council Presidency adopted particularly following conclusions:

- The objective of 3 % of GDP for R&D investment is maintained with an adequate split 2: 1 between private and public investment. This objective will be obtained *inter alia* by tax incentives for private investment, a better leverage effect of public investment and by a modernised management of universities and research institutions. Also the European Investment Bank will have to get involved in the R&D projects funding in a corresponding manner.
- The 7th Framework Programme for Research and Development is to lend fresh impetus to a European research area for the benefit of all Member States. By enhancing the European cooperation, the Framework Programme for Research and Development will mobilise private investment in areas crucial to competitiveness and help to fill the technology gap. The attraction which Europe holds for researches should be further enhanced; the creation of a European Research Council is considered to support the top quality basic research and works on the European Space programme will expand.

In the field of innovation and innovation policy the European Council Presidency concluded as follows:

- Member States should develop their innovation policies in the light of their specific conditions and characteristics.
- Innovation policies should be aimed *inter alia* at establishing support mechanisms for foundation and development of innovative SMEs, including high-tech start-ups, promoting joint research between enterprises and universities and developing partnerships for innovation, directing public contracts to new products and services, improving access to venture capital and establishing innovation centres at regional and local levels.
- The new Community Competitiveness and Innovation Programme should create a new mechanism for financing innovative SMEs with a high growth potential, streamline and strengthen the technical support network for innovation in enterprises and support the development of European networks and regional centres for innovation.
- Technological initiatives based on public-private partnerships and organisation of technological and environmental platforms will be promoted with the aim to strengthen the competitive advantages of the European industry. The European Council took into account also the Commission's intention to submit a proposal on the establishment of a European Technology Institute.
- Great support should be expected by research and innovation in the field of information and communication technologies (creation of information society), as well as eco-innovation and environmental technology (quality of life enhancement).

Within this context it is necessary to keep in view also the new focus of the state aid. The European Council calls on its Member States to follow the course of an active economic competition policy and continue working towards a reduction in the general level of the state aid, while making allowance for any market failures. It stresses that state aid must be preferentially directed in favour of such objectives like development of research and innovation activities and optimisation of human capital. These matters are reflected also in the updated and amended Stability and Growth Pact.

The above mentioned conclusions of the European Council confirming and developing the preferential role played by knowledge and innovation in the future development of European economies are the result of many conceptual materials from 2004 and beginning of this year dedicated to the fulfilment and perspective of the Lisbon Strategy, which were also taken into account in the process of preparation and elaboration of NIP of the Czech Republic. These documents are as follows:

- Kok, W.: Facing the Challenge. Brussels, November 2004
- Innovate for a Competitive Europe: A new Action plan for innovation. Brussels 2004
- Report of a High-level Expert Panel chaired by Professor Ramon Marimon "Evaluation of the effectiveness of the New Instruments of Framework VI Questionnaire; June 2004
- European Competitiveness Report, SEC (2004) 1397, November 2004

- Working together for growth and jobs. A new start for the Lisbon Strategy. Brussels COM (2005)24.

At preparation and elaboration of NIP also the results were used of regular surveys undertaken within the Community Innovation Survey (CIS-3) and of indicator evaluation of the Czech Republic's position in the field of innovation in Europe made by the European Innovation Scoreboard that is published annually by the European Commission.

Significant novelties in the field of human resources are contained in the European Commission's document Commission Recommendation on the European Charter for Researchers and on a Code of Conduct for the Recruitment of Researchers (COM (2005) 576, Brussels 11.3.2005).

Also other documents of the European Commission were of use:

- "Integrated Guidelines for Growth and Jobs (2005–2008)", (COM(2005) 141, Brussels 12.4.2005),
- Draft European Parliament and Council Decision on 7th Framework Programme for Research, Technological Development and Demonstration Activities (2007–2013); COM (2005) 119 of 6 April 2005,
- Draft European Parliament and Council Decision on Competitiveness and Innovation Framework Programme (2007–2013); COM (2005) 121 of 6 April 2005.

Also conclusions of this year's Competitiveness Council of Ministers (7 March, 18 April and 10 May) were taken into account.

III.2 Links to national documents

By its Resolution No. 270 of 24 March 2004 the Government adopted the cornerstone document for the field of innovation – the National Innovation Strategy. The national innovation policy is (or rather should be) a part of the whole system of conceptual documents under the roof of the (prepared) Economic Growth Strategy. This strategy lies on five pillars; one of them is the chapter Research, Development and Innovation (others are Institutional Environment, Sources of Funding, Infrastructure, and Human Resources). By its character, innovation is closely connected with following two activities:

- research and development, the results of which are realised in the form of the so called technological innovation; and
- business activity, preferentially activity in the field of manufacturing, as well as services, where innovation is realised.

These principal characteristics imply also the links to documents from those two above mentioned areas. For the area of R&D the National Research and Development Policy (NR&DP) was adopted by Resolution of the Government No. 5 of 7 January 2004 containing certain elements lying on the boundary line with NIP, particularly in Chapter II.4. As follows from below, the differences between NR&DP and NIP (and prepared EGS) are relatively large and will be necessary to harmonise them. The Ministry of Education, Youth and Sport (MEYS), in conjunction with the Research and Development Council (hereinafter referred to as "RDC"),

worked out also the document Approach of the Czech Republic to EU material "Investing in research: an action plan for Europe". The Ministry of Industry and Trade (MIT) and the agency CzechInvest under its control published several documents dealing with innovation or close topics. These are in particular the Concept of innovation for industry and enterprise for 2005-2008 and Strategy of CzechInvest for 2004–2008. An important contribution directing R&D into the field of innovation is provided by some programmes of R&D support requiring close cooperation between the academic and user spheres, e.g. the National Research Programme (I and II), Research Centres, announced and controlled by MEYS, and programmes Consortia and Tandem of MIT.

The innovation process in CR was influenced to a considerable extent by the accession of the Czech Republic to the European Union and resulting support from the EU Structural Funds and the Cohesion Fund. A key role was played by the 2004 National Development Plan that specified the areas of support from Structural Funds and respective operational programmes (OPs). Innovation is supported within Objective 1 by key OP Industry and Enterprise (programmes INNOVATION, PROSPERITY, CLUSTERS) and OP Human Resources Development. Also parts of the Joint Regional Programme of the Ministry for Regional Development (MRD) titled Regional support to enterprise, Regional development of infrastructure and Development of human resources in regions are of certain relevance. For the territory of Prague, which is not qualified for support under Objective 1, there are relevant documents for 2004-2006: Single Programming Document for Objective 2 and Objective 3 of NUTS II Capital City of Prague. The preparation of the structural funds shape for the next planning period (2007 – 2013) will be assisted by the study produced by the Ministry for Regional Development in 2005 titled Barriers to Competitiveness. The National Development Plan for 2007 – 2013 should be submitted by the end of 2005. Beside this, there are many other documents at national level responding to the underlying papers from various levels of the European Union, the Competitiveness Council in particular. Also there are a number of initiatives on the part of NGOs and professional associations (SPD, AIP CR and others) in the Czech Republic dealing with these issues.

IV. VISION OF THE NATIONAL INNOVATION POLICY

NIP establishes conditions for attaining such state of affairs, in which enterprises and other organisations in the Czech Republic actively innovate their products, technologies and services, as well as methods of organisation and management and ensure a steady growth of labour productivity and competitiveness on international markets, while maintaining high levels of employment.

To this end the state:

- establishes favourable framework legal and institutional conditions;
- eliminates barriers to innovation activities, in a flexible manner;
- takes active part in creation of new EU tools of the research, development and innovation support and new EU legal regulations providing for the research, development and

innovation support and incorporates these regulations into the Czech legislation in a quick and adequate manner; and

- promotes selected activities of innovation processes by both direct and indirect tools in compliance with the EU legal regulations, with the assistance of the public funds of CR and EU budget funds.

This vision will be implemented through four strategic objectives:

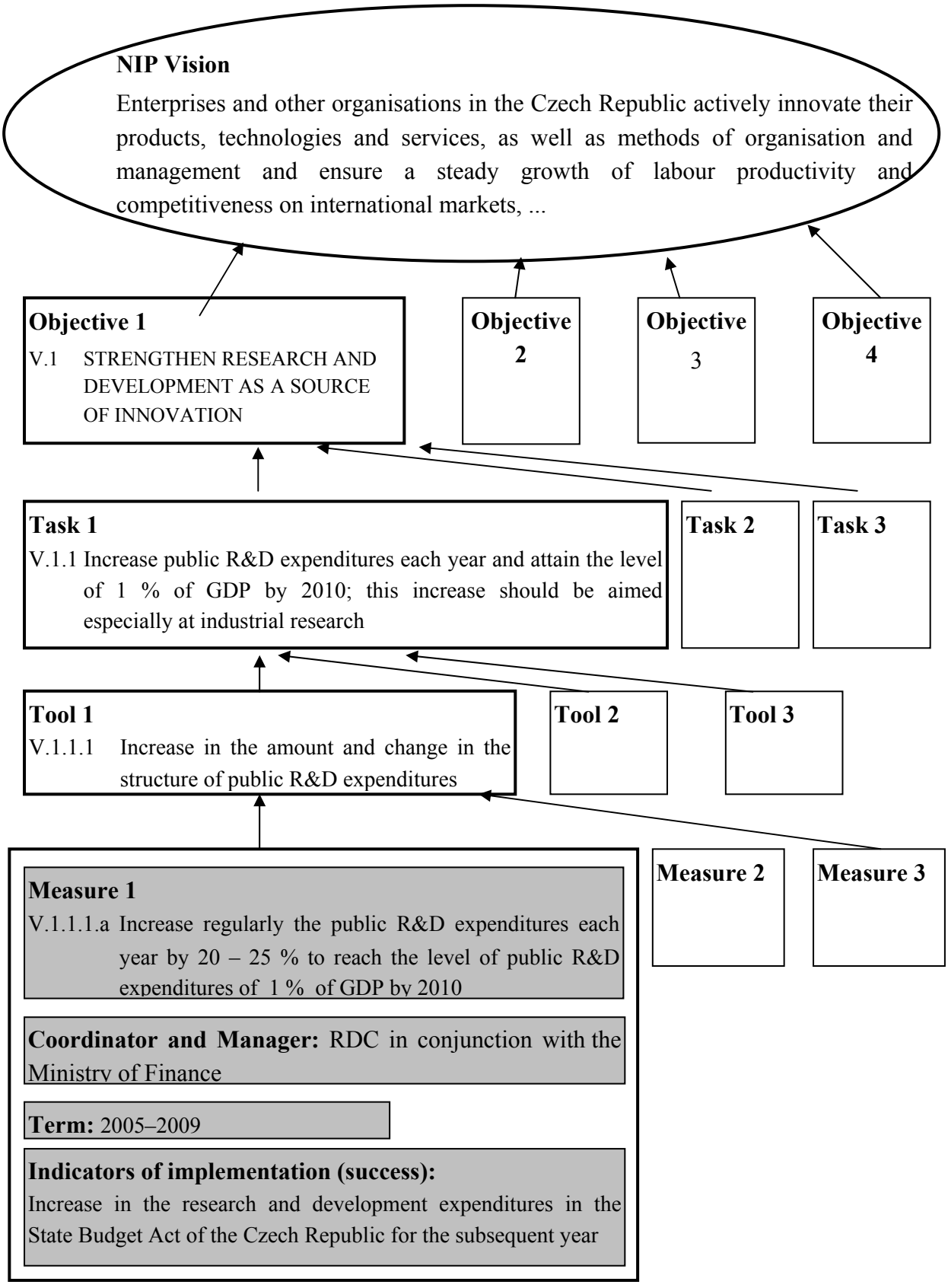
1. Strengthen research and development as a source of innovation
2. Establish well-functioning public private partnerships
3. Guarantee human resources for innovation
4. Make the performance of the state administration in research, development and innovation more effective

Each **objective** has **tasks** defined necessary for its achievement**, tools** for executing the respective tasks and for each tool there are **measures** necessary for its implementation, **Coordinators and Managers**, **term** of implementation, **indicators of implementation (success)** and **method of evaluation.** The NIP structure is illustrated on the Figure 1 below. This mutual vertical and horizontal cohesion of NIP is one of its main features, an advantage ensuring its synergical action.

Measures which were implemented during the NIP preparation phase are retained with regard to the context (similarly as e.g. in the EU documents) and marked as ***measures already implemented***.

The fulfilment of all objectives, tasks, tools and measures of NIP will be evaluated in 2007 and NIP updated accordingly. Each year, NIP will be evaluated within the Analysis of the existing state of research and development in the Czech Republic and a comparison with the situation abroad being presented to the Czech Government. Unless expressly mentioned otherwise below, the method of evaluation will be based upon these two documents.

Scheme 1 – NIP structure with examples



V. OBJECTIVES, TASKS, TOOLS AND MEASURES OF THE NATIONAL INNOVATION POLICY

V.1 STRENGTHEN RESEARCH AND DEVELOPMENT AS A SOURCE OF INNOVATION

At present, the Czech research and development is not able to produce enough new knowledge that would be usable as a source of innovation. This is primarily caused by present structure of the support putting only a small emphasis on the innovation-oriented research and development. In this context there is a serious problem of still insufficient support of industrial research and development producing utilisable results. After complete privatisation of all industrial research institutions, which was subsequently connected with a considerable reduction in their research capacities, the state has concentrated relatively one-sidedly on general support of basic research in the Academy of Sciences of CR and on universities and on departmental research (except for industrial). No factual R&D priorities were set and R&D funds were not consistently distributed according to achieved results. In evaluation of results the bibliographical data prevailed, while granted patents, sold licences and other forms of cooperation with the realisation sphere were not considered. Other specific problems result from the historical development, the post-revolution years in particular. A significant role in the backwardness at innovation is played by the situation of the Czech industry, mainly the lacking demand for innovation (only now the "Czech" firms are slowly getting out of troubles after restructuring and have other priorities in mind than research or innovation; firms with a foreign owner in crashing majority benefit from temporary advantages of CR and realise here their own technologies). Maybe even more serious issue is the unsatisfactory supply on the part of the research base and absence of any common interest of the academic and business sphere. This state of affairs is "kept alive" by an insufficient financial support of innovative firms (especially in their seed stages) and a long-term negligence of indirect R&D support tools.

Strong rigidity dominated over the structure of research organisations and institutions; it was nearly impossible to establish a new research company supported from public funds, which would be an adequately quick and flexible response to new research disciplines and directions and needs of the economy and society. Another shortage of research organisations consist in only a little use of chances given by the intellectual property protection. Other weak points exist in coordination of funds from various sources or poor communication with public when presenting successful innovation based upon R&D results. In general, and in confrontation with the development in advanced economies in particular, where emphasis is being put more and more on innovation-oriented research and development, the Czech research and development has evolved into a relatively sterile environment having unfavourable consequences in the form of low innovation activities in economy.

V.1.1 Increase public R&D expenditures each year and attain the level of 1 % of GDP by 2010; this increase should be aimed especially at industrial research

This task, if tackled successfully, will manifest itself significantly in the growth of innovation activities. But its provision falls partly into NR&DP. In NIP it is mentioned as a cross-sectional issue of both policies.

V.1.1.1 Increase in the amount and change in the structure of public R&D expenditures

Czech Republic spends less money on R&D than the EU average (in 2003 1.3 % of GDP in CR, EU-15 average was 1.9 % of GDP). Despite the increase in the amount of public R&D support, its share in GDP has practically stagnated in recent years around 0.50 – 0.55 % of GDP (see Graph 3 in Annexes) and so the target (1% of GDP) confirmed also by the European Council after the mid-term review of the Lisbon Strategy in March 2005 remains too far for the Czech Republic. The problem, however, lies not only in the amount of public support, but also in its structure. The public R&D support is allocated mostly on activities, from which no practical results can be expected (institutional support, grant tenders for basic research, specific university research). It is a great mistake that certain part of thus supported research having a potential of market application is not presented in proper manner – instead of a patent protection and follow-up preparation and sale of licence the results are only published. This way the research entities deprive themselves of the possibility to obtain financial means and the society does not recover money spent on research and development.

The form prevailing is the institutional support (in 2005 58 % of the overall state support) obtained by an institution after evaluation of the research plan for the period of 5 – 7 years (see Graph 4 in Annexes). The purpose of the proposed changes is to get near to the state of affairs being normal in most of the advanced countries, where the institutional support amounts approximately to 40 % of the total public support. It the future, roughly 90 % of the increase in the public R&D expenditures should be in the form of a targeted support. For enhancing the effect of research and development in favour of innovation, the increase in the public R&D expenditures will be preferentially directed towards industrial research and development and other innovation-oriented R&D areas, within the scope of targeted financing of programmes having evaluable objectives.

Measure 1:

V.1.1.1.a	Increase regularly the public R&D expenditures each year by 20 – 25 % to reach the level of public R&D expenditures of 1 % of HDP by 2010.

Coordinator and Manager: RDC in conjunction with Ministry of Finance

Term: 2005–2009

Indicators of implementation (success):

Increase in the research and development expenditures in the State Budget Act of the Czech Republic for the subsequent year

Measure 2:

V.1.1.1.b	Update the National Research and Development Policy of CR for 2004 – 2008 so that it sets basic principles of the public R&D support, the shift in proportions of the institutional and targeted R&D support and the orientation to a growing share of industrial research and development.

Coordinator and Manager: MEYS in conjunction with RDC

Term: by 28.2.2006

Indicators of implementation (success):

Change in proportions of the targeted and institutional R&D support in favour of the targeted support (from the current 40:60 to the expected 60:40) by 2010; the growing share of industrial research and development in the public R&D support.

Measure 3:

V.1.1.1.c	Change approaches to creation of new programmes for public R&D support; programmes will preferentially ensure the promotion of disciplines and directions of research having a great technologic, ecologic and economic potential.

Coordinator and Manager: RDC in conjunction with the support providers

Term: 2007–2010 (programme opening)

Indicators of implementation (success):

Increase in the share of programmes aimed at innovation-oriented research and development with great technological and economic potential in the public R&D support.

Method of evaluation:

The evaluation of research and development and its results will be carried out according to the Government Resolution No. 644 of 23 June 2004 on evaluation of research and development and its results (i.e. also summary evaluation of results of programmes finished in the past period).

V.1.1.2 Set factual R&D priorities (long-term main directions of research)

One of the characteristic features of the R&D support in CR was the virtually unlimited freedom when choosing research themes within basic or applied research. First efforts to tailor the industrial research and development in the form of the department-oriented programmes was abandoned in apprehension of breaching the Community frame of EU and support was being extended mostly to applicants with best projects regardless of the department. Certain exceptions are the National Research Programmes (NRP I and NRP II), for which thematic and cross-sectional areas of support were predicted by the Technology Foresight method. The measure of success was the condition of research and its application in the given discipline in CR and its potential, as well as the discipline's future with regard to global situation.

The setting of factual R&D priorities was initialised by Act No. 130/2002 Coll. imposing on Research and Development Council and its technical commissions to determine the so called long-term main directions of research and their proportions (hereinafter referred to as

"LMDsR"). The purpose of LMDsR is to define disciplines to which the public support will be preferentially directed with the aim to make it the world top. The number of LMDsR should not exceed seven and are chosen with respect to their future innovation potential. LMDsR will be added or modified, as the case may be, in the light of the knowledge development and economic and social needs. Within the scope of LMDsR the support will be ensured also to any high-quality basic research that the Czech Republic, just like other countries, needs for maintaining its competitiveness in the long term. The Government adopted LMDsR by its Resolution No. 661 of 1 June 2005.

Measure 4:

V.1.1.2.a	a) Set factual R&D priorities (by form of long-term main directions of research) b) Update factual R&D priorities (ad a) at preparation of the new National Research and Development Policy of CR for 2009–2013.

Coordinator and Manager: RDC

Term: Ad a) June 2005, ad b) 2007

Indicators of implementation (success):

Number of long-term main directions of research (max 7) and their focus on creating future innovation potential and competitiveness

Measure 5:

V.1.1.2.b	Give preference to approved long-term main directions of research at preparation of the new R&D programmes and activities.

Coordinator and Manager: MEYS, MIT, other providers and RDC

Term: 2006–2010

Indicators of implementation (success):

Growing share of public expenditures spent on R&D corresponding to priorities within the long-term main directions of research.

V.1.1.3 Allocation of public R&D expenditures according to achieved results

The present approach to allocation of public R&D needs to be changed dramatically to respond to the society's needs. By its Resolution No. 644 of 23 June 2004 the Government adopted principles leading to such change in the R&D evaluation, with a follow-up adoption of the Methodology for evaluation of research and development and its results. These new R&D evaluation tools designed by the Research and Development Council consistently ask for top results both in basic and applied research. This criterion will remain decisive for extension of R&D funds, with preferences given according to the benefit of the evaluated solution for the whole economy and society. Preferred will be research programmes or projects based on joint participation of both investigator and future implementor that in foreign experiences bring the

highest effects. The reason is better coordination of activities between the research and application sphere and stricter examination of the project made by the entity who invests its own funds into the solution. Among the useful tools for enforcing the above suggested trend there is the provision of Act No. 130/2002 Coll. under which the support provider must conclude a contract with the beneficiary on utilisation of projects results. These contracts and their benefits will be examined and the officially reported results (R&D IS) will be compared with data reported by the Industrial Property Office. In light of a minimum number of R&D results utilisable at innovation (commercially utilisable results), the importance (weight) of following types of results will be stressed at evaluation – patents and sold licences, other results protected as an intellectual property, introduced technologies, and also those results which cannot be protected as an intellectual property.

Measure 6: ***Measure being implemented since 2005***

V.1.1.3.a	Evaluate results of research and development on regular basis; strengthen the weight of commercially utilisable results at evaluation, particularly with programming projects and research plans, and allocate R&D funds on the basis of this evaluation

Coordinator and Manager: RDC

Term: 2005–2010

Indicators of implementation (success):

Increase in the share of finished projects and research plans with top results; decrease in the share of projects without any results and/or with below-average results.

Method of evaluation:

Evaluation of research and development and its results according to the Government Resolution No. 644 of 23 June 2004 published at the beginning of each year, draft state budget R&D expenditures for the next year.

Measure 7:

V.1.1.3.b	Announce research programmes the solution of which will be joined by both the research organisation or university and future implementor and financed from public and private sources.

Coordinator and Manager: MEYS, MIT and other providers, RDC

Term: 2006–2010

Indicators of implementation (success):

Increase in the number of programmes, and in particular in the number of top-quality projects based on the joint participation of a research organisation or university and future implementor; public R&D support directed especially to areas achieving top results usable as a source of innovation; radical reduction of any below-average research and development bringing no top results.

Method of evaluation

Evaluation of research and development and its results according to the Government Resolution No. 644 of 23 June 2004

V.1.2 Ensure intellectual property protection of R&D results

V.1.2.1 Efficient support for intellectual property protection from public R&D expenditures

Very low number of patents is one of the reasons why the Czech Republic takes such an unfavourable position on the European Innovation Scoreboard. Even if the number of patents is nothing in which alone salvation is to be found, it is a significant indicator of the expert public's approach to research and utilisation of R&D knowledge. There are several causes of this state of affairs, the most important being as follows:

1. absence of high-quality research results suitable for patent protection,
2. low awareness of both research workers and whole institutions with their management of the intellectual property protection purpose; this is reflected in the small importance of these (and other similar) indicators in the evaluation of research workers and whole institutions and when pedagogic and scientific degrees are being awarded,
3. lacking knowledge in research institutions and enterprises about the patent protection and small capacity of technical departments particularly with small and medium-sized enterprises,
4. lacking experts for searching and valuating the commercial potential of R&D results and valuating new technologies,
5. insufficient management knowledge and abilities of leading representatives of the academic institutions disabling effective management of the intellectual property (e.g. decision about allocation or non-allocation of funds to apply for and maintain the patents, licence contract negotiations, etc.),
6. financial demands of the patent procedure and in particular high costs of maintaining the granted patents especially at foreign patent offices,
7. absence of the so called Community Patent, which could and should make the intellectual property protection procedures in EU more productive.

To eliminate this unbearable state of affairs, there is a proposal of a one-time short-term privilege given to those who want to protect their so far not published research result by a patent application. The aim is to arouse interest of the general expert public in the knowledge protection. A similar tool has been used for a number of years by Hungary, with the responsible authority being the Ministry of Finance. Announcement of a programme is suggested that will provide the selected applicants, after a proper patent search for newness and state of the art, the support at ensuring protection of the so far not protected R&D results.

Some providers still make only a little use of the existing provision of Act No. 130/2002 Coll. and its implementing regulations that makes possible to include the costs of intellectual property protection into eligible costs.

Measure 8:

V.1.2.1.a	Support the intellectual property protection through a special short-term programme based on co-financing (contribution from the state budget) for applicants from the academic sphere and SMEs, that is conditional upon utilisation of R&D results in industry and other sectors with high effects.

Coordinator and Manager: MIT

Term: 2007–2008 (period of the programme solution)

Indicators of implementation (success):

Number of patent applications and granted patents and other protected R&D results and their economic benefit.

Method of evaluation:

Evaluation of research and development and its results according to the Government Resolution No. 644 of 23 June 2004 (within the scope of the compulsory evaluation of finished programmes´ results)

Measure 9:

V.1.2.1.b	Monitor consistently:
	– the contracts on utilisation of R&D project results, – the inclusion of costs of the intellectual property protection into eligible project costs

Coordinator and Manager: providers, RDC

Term: 2006 – 2010

Indicators of implementation (success):

Increase in the share of costs of the intellectual property protection in the project eligible costs; increase in the share of protected R&D results.

Method of evaluation:

Within the scope of the compulsory evaluation of finished programmes´ results submitted to the Research and Development Council and then to the Government

V.1.2.2 Use of the intellectual property protection laws and regulations

Beside problems mentioned in the previous paragraph, there are also other obstacles to wider protection of intellectual property in both academic and private sphere. It is necessary to project the rules of R&D results protection into applicable implementing regulations and methodologies in a transparent and quick manner. Czech legal regulations need to be harmonised, flexibly, quickly and transparently, through prepared changes of the Community law in this field. By combining suitable university and postgradual courses, the foundations will be laid for better knowledge of the R&D intellectual property protection legal rules.

Measure 10:

V.1.2.2.a	a) continue in a flexible, quick and transparent harmonisation of the Czech legal rules with the Community law, b) project the changes into the methodology and rules of public R&D tenders

Coordinator and Manager: ad a) Industrial Property Office in conjunction with RDC, ad b) providers

Term: 2006–2010

Indicators of implementation (success):

Rate of changes and their integrity (projection to the lowest level), understandability and explicitness

Measure 11:

V.1.2.2.b	Recommend to universities to strengthen their acquisition of knowledge about intellectual property protection and its economic use, including search for and valuation of a commercial potential of R&D results, in the Science & Engineering study programmes (the Magister´s and Doctor's studies). Activities leading to better knowledge in this field of R&D workers at universities, in public research institutions (PRIs) and other entities concerned with research and development will be promoted.

Note: Measures will be partly implemented within the implementation of the EU Structural Funds (programmes PROSPERITY, Human Resources Development Operational Programme, Measure 3.2 and SPD 3).

Coordinator and Manager: MEYS

Term: 2006

Indicators of implementation (success):

Number of Science&Engineering study programmes graduates (in the Magister´s and Doctor's studies) having knowledge about intellectual property protection and its economic use.

Evaluation and reporting:

Evaluated by MEYS and submitted to the Government by RDC within the annual Analysis of the existing state of research and development in CR and a comparison with the situation abroad.

V.1.3 Make a coordinated use of the national and European funds for research, development and innovation

The coordinated use of national and European resources concerns partly the 6th Framework Programme for Research, Technological Development and Demonstration Activities and other framework programmes of European Community for 2007–2013 being under preparation:

- 7th EU Framework Programme for Research, Technological Development and Demonstration Activities being prepared on the basis of the European Commission's document COM (2005) 119 of 6 April 2005,
- EU Competitiveness and Innovation Framework Programme prepared on the basis of the European Commission's document COM (2005) 121 of 6 April 2005.

The second option is represented by the EU Structural Funds and the Cohesion fund. In this area it will be necessary to improve the preparation for drawing up these resources at national level.

V.1.3.1 Use of changes in the EU rules for allocation of the Structural Funds and the Cohesion Fund's resources

At present, the Czech Republic derives only insufficient benefits from the synergical action of coordinated use of the research, development and innovation support both from public funds and EU resources. In many cases the drawing of EU funds has been delayed by reason of late methodical and organisational preparation for using these resources. The changes in the EU rules for R&D contributions and contributions under the Structural Funds and the Cohesion Fund for 2007–2013 need to be projected without delay into the Czech legislation, along with essential improvement of conditions for support extended to small and medium sized enterprises in particular. To the maximum extent feasible, it is necessary to take advantage from the combination of national and European resources for financing research, development and innovation.

Measure 12:

V.1.3.1.a	Coordinate the preparation of the updated National Development Plan at the level of the state administration authorities with regard to the National Innovation Policy.

Coordinator and Manager: Vice-premier for economic affairs (RDC) and MRD

Term: 2005

Indicators of implementation (success):

Scope of changes making possible the coordinated use of research, development and innovation support from public funds and EU resources

Measure 13:

V.1.3.1.b	Take prompt advantage of the prepared change in the EU rules for allocations made under the Structural Funds and the Cohesion Fund and of the prepared change in the EU rules for extending R&D contributions for development of new mutually linked programmes of research, development and innovation.

Coordinator and Manager: providers, RDC in conjunction with the Ministry for Regional Development

Term: 2007–2010

Indicators of implementation (success):

Volume of funds dedicated to support of new mutually linked programmes of research, development and innovation; and their share in overall resources.

V.1.3.2 Changes in EU rules for providing R&D support

The EU bodies still feel the insufficient dynamics in moving towards the main goal identified and declared by the Lisbon Strategy – to become the most competitive economy in the world. This is shown e.g. in the above cited Kok´s report of November 2004 and the European Council conclusions of March 2005. In searching for possible ways to remedy, discussed have been *inter alia* also the so far untouchable limits of 50 % for intensity of the industrial research support and 25 % for development. If Europe accepts the change in these rules, this will mean a considerable progress and a chance to initiate the R&D cost growth in enterprises. It is, however, necessary to bear in mind that the decreasing success rate of applicants, low level of support (around 30 % on average) and often also the growing administrative demands has led many private enterprises to a conclusion that there is no point in seeking for the state R&D support. Of important influence could be the prepared simplification of rules for extending support to small and medium sized enterprises (the issue Better regulation – Simplification of legislation coordinated at the EU Council level in CR by the Ministry of Foreign Affairs).

Measure 14:

V.1.3.2.a	Monitor the prepared simplification of rules for extension of support to SMEs and apply changes being adopted by EU to programmes of SMEs support in the area of research, development and innovation in particular.

Coordinator and Manager: Ministry of Foreign Affairs (simplification of rules) and Ministry of Industry and Trade (application)

Term: 2006 and further on (no time schedule set within EU)

Indicators of implementation (success):

Programme announcement according to the measure, volume of funds dedicated to support of R&D programmes.

Measure 15:

V.1.3.2.b	Evaluate the effectiveness of announcing new rounds of R&D programmes in connection with the prepared changes in the EU rules for R&D support and prepare new programmes already using these new rules.

Coordinator and Manager: MIT and other providers, RDC

Term: 2006

Indicator of implementation (success):

Programme announcement according to the measure, volume of funds dedicated to support of R&D programmes.

V.1.3.3 Factual coordination of utilisation of sources within CR

The current heavily decentralised and disperse system of research, development and innovation support in CR offers to potential interested persons a relatively broad spectrum of possibilities how to obtain financial means. Its drawback consists in possible thematic overlapping of certain activities occurring despite the RDC´s efforts and the relatively new duty to have the R&D programmes approved by the Government. Similar possibility exists also at utilisation of the EU Structural Funds. The mutual relationship in utilisation of individual sources extended by different providers must be guaranteed, including allocation of the EU Structural Funds. Other major problem concerning coordination of activities of individual departments is the problematic monitoring of the aggregate amount and effectiveness of allocated funds at individual beneficiaries. The aim of the state administration is *inter alia* to prevent any blind and uncoordinated allocation of funds resulting in their poor utilisation. To this end it is necessary to make an analysis mapping the amount of public support, capacity of beneficiaries and their achieved results.

Measure 16:

V.1.3.3.a	Improve relations of individual support activities in the field of research, development and innovation through their consistent coordination at the level of the Government and Research and Development (and Innovation) Council respectively.

Note: Implementation of this measure is conditional upon steps mentioned in the Task V.4.3.

Coordinator and Manager: RDC

Term: 2006–2010

Indicators of implementation (success):

Increase in the share of R&D (and innovation) support to factually related objectives.

V.1.3.4 Establishment of the Technology Agency of CR

The fact that methodology of the support extension to applied and industrial research considerably differs at individual providers (departments – administrators of budget chapter) makes a serious obstacle. It is necessary to use the model well-proven in abroad with one single agency/institution being in charge of support to these types of research and transfer of R&D results, as the case may be (Finland, Ireland, Sweden, etc.). The proposal is to establish an agency (technology, innovation), which would also make use of experiences of CzechInvest being authorised recently to perform certain activities appertaining to this agency in question. It can be expected that just like in the above mentioned countries the agency will concentrate in one place the targeted funding of the applied (namely industrial) research and development, together with promotion of activities lying at the border line between R&D and innovation. In doing so, it should evaluate and take advantage of foreign experiences concerning the technology and innovation support. Its competences and activities will be defined by law. An important

aspect of the agency's establishment could be the elimination of redundant administrative demands and certain shortages in selection of suitable projects.

Measure 17:

V.1.3.4	Evaluate the experiences of CzechInvest and foreign agencies being active in the field of applied research, development and innovation support (e.g. TEKES, VINNOVA) and establish with these experiences in mind a standard technology agency of CR for the area of industrial research and development that according to the Competence Act falls under the competences of the Ministry of Industry and Trade (MIT).

Coordinator and Manager: MIT and RDC

Term: 2006 (2008)

Indicators of implementation (success):

2006 – submission to the Government of evaluated experiences of CzechInvest and foreign agencies active in the field of applied research, development and innovation (e.g. TEKES, VINNOVA), 2007 – adoption of a law providing for the activity of the Technology Agency of CR, 2008 – opening the activity of the Technology Agency of CR.

V.1.3.5 Programmes promoting innovation in regions

The importance of a regional dimension of the innovation policy in EU Member States has increased after adoption of the Lisbon Strategy. The aim is to respect specific qualities, shortages and interests of regions. This means that each region must find its own way how to foster innovation activities. In the Czech Republic the creation of regional (district) innovation strategies and policies is mostly in its early stages or in some districts has not even started.

Currently, the world sees the creation of clusters aimed at increasing the innovation activity in a given territory as one of the key tools of the regional innovation policy. The idea of clusters consists in creation of a network of mutual cooperative relations within the scope of a given region between enterprises – suppliers and customers (SMEs in particular), research organisations and universities, as well as also other regional partners (territorial self-governing bodies, regional support agencies, institutions and facilities for acquiring qualification, etc.) in one or several areas or fields of activity. The clusters are to contribute towards accelerating the modern technology transfers, implementation of research knowledge, dissemination of innovation and information, and fulfilment of new requirements and needs of customers. In general, this network should bring expected synergical actions and growth of competitiveness of a respective region or discipline.

All these relations and links can be further regulated and enhanced by creating an organisational and management superstructure over the whole cluster – it is called a cluster initiative. Recently a special attention has been therefore dedicated to cluster initiatives as a suitable and efficient mechanism to support "local" cooperation between firms, academic institutions, agencies, territorial self-governing bodies and bearers of political responsibility not only in the EU Member States (namely Spain, Italy, and others), but also in other advanced

economies. To this end various regional programmes of support and projects subsidised from public funds are established. The cluster initiatives require teams of professionally qualified people, cluster managers, etc. to form their organisational, knowledge and methodical background (they may be e.g. economic chambers, regional agencies, associations, etc.).

In the Czech Republic, the clusters and their support are still only budding. Positive is the fact that the programme "CLUSTERS" became part of the Industry and Enterprise Operational Programme 2004–2006. Also the Human Resources Development Operational Programme may take part in education of experts. Major limits are the lacking regional strategic development plans and regional industrial and innovation policies, to which CLUSTERS and/or other innovation support programmes in regions would be linked. Some conditions in the programme CLUSTERS are not too realistic (the participation of minimally fifteen cooperating entities is a rather unrealisable condition in the local situation in CR). The programme CLUSTERS must ensure also wider participation of agencies promoting dissemination of information on research and innovation activities and establishment of partner relations in respective regions (by means of help desks, etc.). The efficient use of clusters also asks for an effective system of monitoring and evaluation of results achieved on the basis of their establishment and development.

Measures 18 - 20:

V.1.3.5.a	Adapt conditions of the CLUSTERS programme announced within the scope of the Industry and Enterprise Operational Programme with the aim to facilitate access for entities interested in participation for 2006 and for 2007– 2013 in particular.
V.1.3.5.b	Establish an efficient monitoring and evaluating system for checking and measuring the effects and results achieved through clusters as a tool of the regional innovation policy.
V.1.3.5.c	Select and prepare experts and managers (having knowledge in the area of innovation activities, social /communication/ abilities, including coaching and team work, and development of IT networks) for performance of cluster initiatives as an organisational and management superstructure over the whole clusters.

Coordinator and Manager: MIT (in conjunction with MRD and districts)

Term: 2005–2006

Indicators of implementation (success):

Growing number of established clusters and innovating firms at a regional level; growing participation of regions in taking decisions about innovation processes and allocation of funds

Method of evaluation:

Evaluated by MIT in conjunction with districts and MRD

V.1.4 Facilitate the establishment of R&D organisations and organisations implementing their results

V.1.4.1 Simplification of the procedure at establishment of new R&D organisations and their support

The institutional rigidity of the performed research and development still survives in the Czech Republic thus limiting the future necessary growth of a competitive environment in this field. There are no conditions created to make the process of establishment or dissolution of an organisation or larger organisational changes in connection with knowledge development in the science itself or changing needs of the economy and society more flexible. These and other shortages must be eliminated by the act on public research institutions adopted by the Government and being discussed at present in the Chamber of Deputies. One of the key aspects of the act is that it makes possible the establishment of organisations implementing the R&D results. The simplification of conditions for establishment of new enterprises in general (i.e. no matter to what extent they innovate) is the aim of other initiatives mentioned in the Economic Growth Strategy.

If a new R&D organisation is established, it has virtually no chance to succeed as concerns the evaluation and extension of public funds regardless of e.g. the quality of people in the newly created investigator team and expected benefit of a new discipline or direction for the future development of science and/or economy and society in general. The legal regulation of the public support is built especially upon the institution's history.

And so the simplification of the procedure at establishment of new R&D organisations and their support becomes a tool for providing more flexibility in this field, also with a view to the innovation growth; the space should unfold primarily for organisations and organisational changes in principal and priority directions of research.

Measure 21: ***Partly implemented measure***

V.1.4.1.a	Transform the state contributory organisations to public research institutions by virtue of the act on PRIs, which will be able to establish new enterprises for implementation of R&D results under conditions established by law

Coordinator and Manager: RDC

Term: preparation for transformation since 2005; the transformation itself from 1 January 2007

Indicators of implementation (success):

Changes in the existing structure of research organisations; establishment of organisations implementing the R&D results

Measure 22:

V.1.4.1.b	Amend the implementing regulations to Act No. 130/2002 Coll. so that obtaining of the public support in case of a new organisation would not be primarily dependent

upon the research record of the applicant as a legal entity, but only upon the current quality of its investigator team (including past results of the team members).

Coordinator and Manager: MEYS in conjunction with RDC

Term: 2006

Indicators of implementation (success):

Number of new organisations in priority research directions obtaining public support

V.1.5 Provide indirect support to innovation-oriented R&D

V.1.5.1 Tax relieves stimulating R&D in business sector

Tax incentives are used by the state as the most efficient indirect tool for innovation funding. They serve to stimulate activities of all innovation process participants:

1. business sphere for investments into research and development as a source of innovation
2. innovating SMEs
3. foreign investors so far not having carried out any research activities in the Czech Republic
4. venture investors
5. at establishment of innovation infrastructure (scientific and technological parks, technology centres, business incubators, etc.).

The advanced economies have already tried and are now applying a wide scope of these tax incentives and relieves (ca 25 different types of stimulation), which are regarded as a standard form of the research, development and innovation support. In light of its general application they do not adversely affect the competitive environment. Recently, a great deal of attention has been paid within EU to tax stimulation of increased corporate investments into research and development in compliance with the Lisbon Strategy fulfilment. It is expected that these tax incentives will encourage accordingly the private capital investments into the in-house corporate R&D being according to surveys (CIS, etc.) the decisive source of innovation. Thus they will help meet the Lisbon Strategy's aim – increase in the share of private R&D expenditures to 2 % of GDP. In advanced economies (namely in USA and United Kingdom) a growing attention is dedicated to tax measures aimed at stimulating the venture capital.

A new tax deductible has been introduced in CR from 1 January 2005 making possible to project some selected actual R&D costs into the tax base for the second time (and therefore it is equivalent to 24 % subsidy to total cost, but lacking many of the subsidy's disadvantages). This way the private R&D investors have been finally provided with some of the conditions being similar to those in the advanced European countries. As far as the prepared simplification of the tax system and reduction in the corporate income tax rates are concerned, there is no doubt that they have a positive general impact on an enterprise. Nevertheless, they still do not create that necessary stimulation for sophisticated innovated products using the R&D results (see experiences with the investment incentives development in CR). On the other hand, the targeted application of tax incentives for research, development and innovation leads to an accelerated interest in investing to these areas thus encouraging the continuous and healthy growth and

development of enterprises. Therefore, the keeping of the introduced tax relief is assumed for the in-house R&D of enterprises. Another possibility of improvement, particularly with regard to developing the necessary partnerships of public and private sectors, can be seen in the extension of this tax relief to R&D purchased by enterprises from public higher education institutions and PRIs (with regard to experiences with the already introduced tax relieves for in-house R&D).

Measure 23:

V.1.5.1.a	With the simplified tax system and general reduction in the corporate income tax rates the already introduced tax relief for in-house R&D of enterprises (new tax deductible in the amount of 100 % of R&D costs**)** will be retained.

Coordinator and Manager: RDC, Ministry of Finance

Term: 2005 and subsequent years

Indicators of implementation (success):

Increase in private investments to in-house R&D, which is the main source of innovation in enterprises; step-by-step growth of private money being invested to R&D up to the level of required 2 % of GDP (see the Lisbon Strategy and Barcelona criteria)

Measure 24:

V.1.5.1.b	Extend the tax relief introduced for R&D since 1 January 2005 (see Measure V.1.5.1.a) to R&D purchased by enterprises from public higher education institutions and public research institutions.

Coordinator and Manager: RDC, Ministry of Finance

Term: since 2007

Indicators of implementation (success):

Increase in the volume of R&D purchased by enterprises from higher education institutions and public research institutions.

V.1.6 Establish effective communication with public about successful innovation resulting from R&D

V.1.6.1 Support of communication activities with public in the area of innovation within PR

Mutual and systematic communication with public makes possible to accept the importance of innovation on a society-wide scale, allows the public to understand innovation within the context of the life quality enhancement and deprives the public of pointless concerns, if any, about undesirable consequences of implemented innovations. Successful innovation resulting from R&D must be made accessible to the general public, as well as the best investigator teams and individuals and best results in the area of innovative entrepreneurship. In general, it is necessary to increase the prestige of research, development and innovation in the society and

encourage a wide exchange of opinions on actual events in innovative entrepreneurship. This is significantly supported by promotion of communication activities within PR.

Association of Innovative Entrepreneurship of CR (AIE CR), Technology Centre of the Academy of Sciences of CR (TC AS CR), the regional development agencies (RDAs) and other regional bodies with their numerous activities are helping to create a positive image of the innovative entrepreneurship in the Czech society. Each year AIE organises the Innovation of the Year Awards (in 2004 they were announced for the 10th time), publishes the magazine Innovation Entrepreneurship and the Transfer of Technologies (since 1993) in conjunction with its members, and organises various thematic workshops and conferences on innovation issues, the most significant being the annual Week of Research, Development and Innovations.

Measure 25:

V.1.6.1.a	Continue in promoting the Innovation of the Year Awards as a concept expressing the growing importance of innovation.

Coordinator and Manager: MEYS until introduction of a new model of the state administration in research, development and innovation according to Measure 41; then the central administration body with a competence for applied research, development and innovation.

Term: continuously

Indicators of implementation (success):

Growing number of proposals for the Innovation of the Year Award and growing importance and quality of proposed and awarded innovations; range of medial publicity of innovation (number of potentially addressed people, responses, ratings, etc.).

Measure 26:

V.1.6.1.b	Provide public support in admissible extent to selected projects concerning communication activities with public in the area of innovation process within PR.

Coordinator and Manager: MEYS

Term: 2006

Indicators of implementation (success):

Increase in public awareness of the above activities; range of medial publicity of innovation (number of potentially addressed people, responses, ratings, etc.).

V.2 ESTABLISH WELL-FUNCTIONING PUBLIC PRIVATE PARTNERSHIPS

The effective cooperation between public and private sectors as an important condition of the innovation process exists only exceptionally in the Czech Republic; the contrary situation is the case, often connected with mutual accusations. Then the cooperation, if any, is limited only to joint meetings and exchange of certain information. With only minor exceptions (e.g.

programmes KONSORCIUM and TANDEM, or B Research Centres) there is an absence of any intensive cooperation on joint projects. An insufficient attention has been dedicated so far also to establishment of conditions for horizontal mobility of research workers, university pedagogues, students and people from the business sphere between the sector of research and higher education on one side and the business sector on the other. At that, this movement of workers between various institutions and worksites within the scope of the innovation process is gaining further importance from the view of the necessary growth of innovation activities in the Czech economy. In the Czech Republic, however, this type of mobility is very scarce; the support and attention on the part of the state (see NR&DP) has been directed mostly to the mobility of research workers, university pedagogues and students on the international scale (in particular stays of Czech scientists abroad and foreign scientists in CR). In such situation the scientific and entrepreneurial cultures cannot work otherwise in the future than rather independent of each other.

Also the establishment of new private technology enterprises utilising new knowledge learnt in public higher education institutions and in PRIs (e.g. spin-offs, start-ups) that creates and enables a quick approach to innovation, is still an exception in CR. As far as small firms within the scope of scientific and technological parks are concerned, often these firms either do not innovate at all or use another sources of knowledge. There already exist certain legislative clauses for establishment of a spin-off company (applicable act on higher education institutions / (§ 20 (3) of Act No. 111/1998 Coll. enables the higher education institution to put the R&D results into limited liability companies, joint-stock companies, public benefit corporations and other legal entities/, act on PRIs is discussed in the House of Deputies). Yet the great problem is still the financial support for establishment and incorporation of this type of firms, and new private technology firms in general.

There are many signals from the business sphere, state administration, as well as R&D worksites giving evidence on the growing sense of necessity to achieve substantial improvement. There is a relatively high consensus of opinion on the establishment and effective work of the so called technology platforms[1] that already prove themselves in many EU countries.

And so the basic conditions of an environment being favourable for innovative entrepreneurship are then the same like the overall accommodating conditions for business created by the state. The goals concerning the improvement of the overall business environment in CR are given in the Economic Growth Strategy and are subject to many other politics, measures, proposals, etc. This applies *inter alia* also to the venture capital issues that are much wider than in the area of innovations. Therefore NIP solves only conditions specific to the innovation process, including in particular conditions for firms being established for implementation of R&D results.

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[1] *Accroding to Trendchart 2004 (www.cordis.lu) a Technology Platform (TP) is a mechanism to bring together all interested stakeholders to develop a long-term vision to address a specific challenge, create a coherent, dynamic strategy to achieve that vision and steer the implementation of an action plan to deliver agreed programmes of activities and optimise the benefits for all parties.*

V.2.1 Base the effective cooperation of public and private sectors on joint programmes and projects

V.2.1.1 Programme(s) promoting mobility between the academic and private spheres

Recently, the attention in the Czech Republic (see also NR&DP) has been dedicated first of all to the mobility of research workers, university pedagogues and students on the supranational scope and its support by the state (in particular stays of Czech scientists abroad and foreign scientists in CR). The "brain drain" and "brain gain" issues have been discussed. In light of the necessary growth of innovation activities in the Czech economy also the movement of workers between various institutions and worksites within the country is growing in importance. The mobility of research workers, university pedagogues and students, and people from the entrepreneurial sphere between the research and higher education sector and business sector helps to remove barriers between these two participants of the innovation process (changes in thinking), improve their contacts, as well as to develop closer contacts of research and education. It also helps to better fulfilment of the dual role of the private sector: as a user of research results and new technologies and submitter of market needs and demands for solving research problems. In our country, however, this type of horizontal mobility is very limited. The scientific and entrepreneurial cultures work mainly parallel to each other.

So the establishment of a programme promoting these processes of mobility may contribute especially to practical mutual cognition, partnership and research cooperation of both spheres, accelerated transfer of knowledge and information between the academic and user spheres and better mutual understanding of approaches and needs of the innovation process participants. Neither the increase in the absorptive ability of SMEs to introduce new technologies and R&D results can be ignored. In particular SMEs that generally do not have their own R&D worksite (team) identify the absence of skilled workers to be the biggest obstacle to innovation. Even the EU Structural Funds can be used as a suitable framework and source of finance for such programme.

Measure 27: ***Partly implemented measure***

V.2.1.1.a	Prepare and announce programme(s) promoting mobility of workers between the academic and entrepreneurial spheres. Its aim is to develop the cooperation of public and private sectors entities directed to transfer of knowledge learnt from research on one side and market needs and demands on the other, mutual cognizance and research cooperation with bringing the research into the commercial utilisation stage. A special attention will be paid to the mobility of workers of academic and private spheres at the level of regions. Funding is a combination of public and private resources; the overall annual amount of resources being in order of hundred millions of CZK. Also the possibility to use the EU Structural Funds is assumed. A specific part of the programme is the support to horizontal mobility of young research workers and students in the Doctor's study programmes, who become employees of small and medium sized enterprises (SMEs). A young worker

implements a research project in conjunction with a certain firm, while his/her partner enterprise covers part of his/her wage costs.

Coordinator and Manager: MEYS

Term: 2007 (start of the programme solution)

Indicators of implementation (success):

Programme adoption; fulfilment of set programme objectives and its success criteria approved by the Government

Method of evaluation:

Standard and within the scope of the compulsory evaluation of programme results submitted to the Research and Development Council and then to the Government

V.2.1.2 Programme promoting establishment of well-functioning technology platforms

Technology platforms are the vehicle which can make the partnership between the research community, industry and policy creators more effective and accelerate the mobilisation of the research and innovation efforts towards joint objectives. The role of technology platforms in EU is to a considerable extent connected with meeting the current Lisbon objectives (development of the European Research Area – ERA, increasing R&D investments, etc.). Usual participants of technology platforms are public and private research organisations and industrial enterprises (including SMEs), but interested stakeholders are also financial institutions (banks, venture capital funds, insurance companies, etc.), public administration bodies and citizens´ associations. Therefore the technology platforms result from a certain consensus of interested stakeholders. Their main features include the fact that they are established only for selected disciplines and new competitive technologies. Their purpose cannot be only the mutual meetings of the academic and entrepreneurial spheres representatives, but first of all the creation of joint projects, for which a corresponding background is provided. The state should fund the start of these joint projects; yet their implementation will be based upon the business principles. To roof these activities by a programme, however, appears to be an effective way. The tool takes up with the Government Resolution No. 513 (Measure 3) of 26 May 2004 that has not started to be fulfilled yet.

Measure 28:

V.2.1.2.a Announce a programme supporting the establishment of technology platforms for selected disciplines.

Set criteria for selection of technology platforms as e.g. economic, technological, environmental and social challenges, potential of social and economic benefits, technology or discipline maturity, effective utilisation of sources, etc.

The programme is aimed at accelerating technology innovation in selected disciplines and removing barriers to advancement and dissemination of new technologies on the basis of effective public private partnerships. The programme is multi-annual and

includes implementation of joint projects of new technology development submitted by joint entities from public and private sectors.

Usual participants of technology platforms are public and private research organisations and industrial enterprises (including SMEs), but interested stakeholders are also financial institutions (banks, venture capital funds, insurance companies, etc.), public administration bodies and citizens´ associations.

Funding is a combination of public and private resources; the overall annual amount of resources being in order of hundred millions of CZK. If made possible by new EU rules, also the option to use the EU Structural Funds resources is assumed.

Participation in the programme is conditional upon filing a joint project on the part of institutions from public and private sectors and its solution leading to commercialisation of achieved results (therefore on business principles).

Coordinator and Manager: MEYS in conjunction with RDC and MIT

Term: by 2008 (start of the programme solution)

Indicators of implementation (success):

Establishment of technology platforms for selected disciplines, fulfilment of set programme objectives and its success criteria approved by the Government, *inter alia* the growing number of projects developed on the basis of technology platforms; practically and functionally cooperating public and private sectors.

Method of evaluation:

Standard and within the scope of the compulsory evaluation of programme results submitted to the Research and Development Council and then to the Government

V.2.1.3 Fund providing financing to joint public-private projects

In some countries there are funds based on joint utilisation of public and private resources in favour of research, development and innovation A relatively fresh example is the Hungarian "Fund for supporting research, development and innovation" established by a special law. Money flow into the fund from three sources:

1. obligatory transfer payments from enterprises;
2. donations from individuals and legal entities; and
3. state contribution in the amount of the previous two items total.

The obligatory transfer amount is based upon the taxable base level, with continual growth up to 0.4 % of the taxable base in the course of the next 3 years; SMEs are advantaged, their target transfer amount is only a half-sized. From the view of indirect tools it is especially noteworthy that the transferred amount is reduced by an amount spent by the entrepreneur on research and development for his/her own use. The fund is used to support the programming activities, of which an obligatory part is being implemented outside the capital city. An important fund's activity is the legal protection of results and their utilisation, with money obtained from implementation of results serving to further support of joint projects.

Measure 29:

V.2.1.3.a	Analyse, after evaluating the impacts of Measure V.1.5.1.a, the advantages and disadvantages of establishment of a fund for supporting research, development and innovation (following the Hungarian example), in which tax relieves for R&D are an alternative option to the tax transfers into the Fund.

Coordinator and Manager: RDC in conjunction with the Ministry of Finance of CR

Term: 2006

Indicators of implementation (success):

2006 – submission to the Government of analysis and additional recommended steps

V.2.2 Increase the competitiveness of small and medium-sized enterprises (SMEs) by supporting the introduction and utilisation of information and communication technologies (ICTs)

V.2.2.1 Support to introduction and utilisation of information technologies in small and medium-sized enterprises

In the Czech Republic, the utilisation of information and communication technologies (ICTs) both in business sphere and public administration lags behind the potential of these fastly developing technologies. Though the current ICT-related expenditures in CR exceed significantly the EU-15 average, this is in fact only the catching-up of lagging from the last two decades of 20th century. The findings of the Czech Bureau of Statistics´s survey on utilisation of ICT in public administration and business sector in 2003, which was undertaken in 2004, concluded a relatively high PCs´ availability, as well as a relatively high number of PCs with Internet access. Yet PCs and Internet access are used first of all for routine administrative works and sending of electronic mail (e-mail). Somewhat worse is the situation in ICT security maintenance, particularly in small and medium-sized enterprises and small municipalities, in electronic ordering of goods and services via Internet, purchase and sale of goods via Internet (e-commerce), and network access to banking and financial services. Neither the use of Internet for settling selected matters with the public administration authorities can be deemed satisfactory.

To a certain degree the situation in EU is similar. The materials following the spring European Council meeting (22 and 23 March 2005) in Brussels conclude that the EU Member States, when compared with USA, Japan and other advance countries, have failed to utilise fully the ICT potential. The European Commission in its Integrated Guidelines for growth and jobs (2005–2008) (COM (2005) 141 of 12 March 2005) calls upon the Member States to support the ICT uptake in a broad range of manufacturing and trading processes and services and facilitate related changes in the organisation of work in the economy and public services.

Undoubtedly, ICTs will form the information backbone of the knowledge-based economy. ICTs take a considerable share – nearly one half – in the labour productivity increments. New possibilities will be offered by the broadband network connection technologies. The offer of public services via Internet not only makes possible the direct enhancement of the public

service's efficiency and limitation of bureaucracy, but also contributes to a substantial comfort and improvement of the services provided for enterprises.

Large companies, and to a certain extent also the public administration, are doing relatively well in introduction and utilisation of ICTs. Large companies and larger public administration authorities have independent departments charged with ITC control and utilisation. The process of informatisation of the public administration is accompanied by both major and minor difficulties, but basically it is progressing satisfactorily. Much worse is the situation in small and medium-sized enterprises (SMEs). Yet the support of ICT introduction is included in a number of programmes (Prosperity, SPD 2, SPD 3), any more efficient coordination is lacking, as well as a programme specially aimed at introduction and utilisation of ICTs in SMEs.

There is a proposal to prepare and announce a programme supporting the introduction and utilisation of ICTs in SMEs and development of related online services and applications in SMEs. Encouraged will be also the workers of SMEs, who want to increase their qualification in the field of ICTs and their utilisation. The programme will be co-financed from the EU Structural Funds resources. A new EU initiative **i2010: European Information Society** will be used as well.

Measure 30:

V.2.2.1.a	Announce a programme for introduction and utilisation of information and communication technologies (ICTs) in small and medium-sized enterprises (SMEs). The aim is to create conditions for competitiveness growth in SMEs through utilisation of ICTs for manufacturing activities, services and trade. The programme will be co-financed from public and corporate sources, with utilisation of the EU funds.
V.2.2.1.b	Announce a programme for training of SMEs workers in introduction and utilisation of information and communication technologies. The programme will be co-financed from public and corporate sources, with utilisation of the EU funds.

Coordinator and Manager: Ad a – Ministry of Industry and Trade (MIT) and Ministry of Informatics (MI), ad b – Ministry of Education, Youth and Sport (MEYS) and Ministry of Informatics (MI)

Term: Ad a – 2007, ad b – 2007

Indicators of implementation (success):

Ad a – Numbers of SMEs using ICTs for commercial purposes 2006; increase in the share of SMEs involved in e-commerce, e-banking and financial services; annual reporting to the Government on the programme implementation

Ad b – Shares of workers taking part in ICT training; annual reporting to the Government on the programme implementation

V.2.3 Provide conditions for new firms established for utilisation of R&D results

V.2.3.1 Support to formation of new technology firms established for utilisation of R&D results

The situation in industry has retained its transformation characteristics and is marked by a relatively small emphasis put on innovation. This is supported by a really massive orientation of foreign investors on utilisation of investment incentives and temporary comparative advantages. And so the technology firms established for implementation of R&D results, beside some few progressive foreign investors and "Czech" firms, should become the main force behind building a knowledge-based economy.

These firms are formed and supported because of an accelerated and flexible launching of new manufacturing technologies, new products and services into the market. In the vast majority they are small and often beginners; in the long-term perspective, however, they represent very significant element of the innovation system (e.g. they are becoming much sought-for-partners of concerns at application of the *Open Innovation System*). These firms are struggling particularly with lack of money available for performing pre-start activities, and for the set-up and overall start-up stages. There is a need for available consulting services and training and educational programmes. A serious problem is also the absence of a suitable material background. In advanced countries, these firms are usually being situated into prepared suitable spaces at close neighbourhood of a parent institution, generally university, where they can find their professional, material and technical background (e.g. special instrument technologies, etc.). In such case they are mostly the so called spin-offs formed by a split from another legal entity (university, PRI) with the aim to commercialise the R&D results and they use to be founded by pedagogues, researchers and students of that university or research institution. This is not too common in the Czech Republic, mainly because of lack of money and incomplete legislation. Another reason is the low monitoring of research and development and utilisation of its results supported from public funds in light of being on equal terms with firms established for utilisation of R&D results (consistent separation in books of other activities of the state contributory organisations and PRIs or any complementary activity of higher education institutions from the main activity, claiming the ownership to R&D results by the beneficiary, etc.). Development of this segment requires the growth of financial support also for the area of applied (industrial) research. In case of spin-off companies, the values in the Czech academic world must change a lot (it will be necessary to break down the existing little willingness to encourage the formation of spin-off companies, a little willingness to take risks, enviousness, etc.). The support to formation of spin-off companies requires development of a special programme encouraging to an admissible extent the research and development activities immediately preceding the formation of these firms. Moreover, this programme would enable to higher education institutions and PRIs to create necessary material and financial conditions for these spin-offs.

Measure 31:

V.2.3.1.a	Monitor the research and development supported from public funds and utilisation of its results in light of equal terms with firms established for utilisation of R&D results.

V.2.3.1.b Announce a special programme supporting establishment of "spin-off"companies formed by a split from another legal entity (university, PRI) and aimed at future commercialisation of R&D results. It will encourage to an admissible extent the research and development activities immediately preceding the formation of these spin-offs.

The programme is multi-annual and includes adoption and implementation of projects leading to formation of spin-off companies having regard to high-tech and factual R&D priorities. Preference will be given to projects submitted by young researchers and students (in Doctor's study programmes).

V.2.3.1.c In relation to the research programme ad **V.2.2.1.b** the programme for support to newly formed innovation firms and firms with high growth potential (start-ups, spin-offs) will be developed. Beside public resources of the Czech Republic, money of private venture capital investors will be used and subsequently also the resources of the European Investment Fund and the EU funds respectively. The programme will be aimed at establishment of corresponding material and financial conditions for start-up and spin-off firms that have know-how, want to commercialise the R&D results, but have no basic capital.

Coordinator and Manager: Ad a – RDC, ad b - MEYS, ad c - MIT

Term: Ad a – 2006 and on, ad b) and c) - 2007

Indicators of implementation (success):

Speeding up practical implementation of new knowledge attained in public higher education institutions and PRIs, fulfilment of set programme objectives and its success criteria approved by the Government, *inter alia* the growing number of spin-off companies aimed at high-tech and related to factual R&D priorities (LMDsR).

V.2.3.2 Support of knowledge and technology transfers

Providing support to establishment and operation of centres for transfer of knowledge and technologies, technology incubators, and scientific and technological parks on higher education institutions and in PRIs is one of the important measures assisting in practical implementation of R&D results. At present, this activity is already promoted very efficiently through the EU Structural Funds, namely in the programme PROSPERITY (Industry and Enterprise Operational Programme) and in the Single Programming Document (SPD) 2, Measure 21 and SPD 3, Measure 4.2. With respect to their importance and potential benefit it is necessary to ensure their continuity also in the next planning period, i.e. after 2007.

Measure 32:

V.2.3.2.a Maintain and enlarge, as the case may be, the structural programmes for 2007–2013 promoting the establishment and operation of technology transfer centres, technology incubators, and scientific and technological parks on higher education institutions and in PRIs (namely the programme PROSPERITY), the aim of which is to facilitate the

commercialisation of new knowledge and technologies and supplement them with the possibility to provide support throughout the whole period of the programme.

Coordinator and Manager: Ministry for Regional Development, cooperation with MIT

Term: 2007–2013

Indicators of implementation (success):

Fulfilment of set programme objectives and its success criteria approved by the Government, *inter alia* the growing number of really innovative high-tech firms

V.3 PROVIDE HUMAN RESOURCES FOR INNOVATION

The Czech Republic significantly lags behind the EU-15 countries in the number of Science&Engineering study programmes graduates in the 20-29 years age class (in 2002 CR 5.7 %, EU-15 11 %, with e.g. France, Finland and Denmark significantly higher). Partly it is influenced also by the lower share of inhabitants of this age class with university education of any specialization. In consequence of restructuring of the above study programmes the share of graduates has been significantly growing in recent years.

On the part of enterprises frequent reservations are heard to the readiness of university graduates to solve practical problems; the inadequate level of their language and managerial abilities is criticised[2]. The Science&Engineering graduates lack knowledge on protection of copyright and industrial rights and their entrepreneurial thinking is neither supported, nor developed. Also the courage and desire to use the knowledge learnt at university and in follow-up research for establishment of their own enterprise is missing.

The scope of the existing internship, residency or other graduate training for students of all types of study programmes is insufficient. It is caused by lack of money and certain difficulties connected with the health and social insurance. Within the context of changes in tax legislation there will be a possibility for companies to deduct the costs connected with internship/residency or other graduate training from their taxable base.

The necessity of further education emerges with research and development workers, primarily in respect to the intellectual property protection and the area of entrepreneurship. Managers are inadequately prepared to perform their functions in relation to innovation (including implementation of non-technological innovation in their companies).

It turns out that for ensuring the necessary quantity and quality of human resources for innovation it will be vital to remove barriers to domestic interdepartmental and international mobility of skilled workers.

Positive marking can be given to certain initiatives of large industrial companies that attempt to improve the level of university graduates, establish contacts with universities and establish joint centres (worksites) for training of students both during their studies and after graduation. The poor state of affairs can be improved by accelerated increasing the knowledge of

[2] National Institute of Technical and Vocational Education, 2004. Needs of Employers and Readiness of Graduates to Enter the Labour Market.

graduates about information and communication technologies (ICTs) and by progressive improvement of their language abilities. Active role is played also by the Industrial Property Office by organising a wide range of educational and technical events enhancing the awareness of the necessity to provide legal protection to R&D results.

Note: Other educational demands, on elementary and secondary schools in particular, are solved within the pillar Human Resources of the Economic Growth Strategy.

V.3.1 Provide human resources for innovation processes in required structure and at all levels

V.3.1.1 Change in indicators and criteria of support extended to public higher education institutions in education and research

The unsatisfactory structure of university graduates (unsatisfied demand of employers for Science&Technical graduates) requires that the increase in resources intended for higher education institutions (HEIs) is directed in the next years mainly towards development programmes based on the demand trends of the labour market. In the future, the support for HEIs must depend more on parameters of outputs (quantity and quality of graduates, their employability – that means the meeting of labour market demands in a given region) instead of inputs (number of admitted students, etc.). The changes being put through in the structure of higher education graduates and responding to the needs of the business sphere and other users will be accompanied by changes in the criteria for allocation of funds to specific university research to take into account the cooperation with business sector and attained results when increasing the funds. The development programmes of the Ministry of Education, Youth and Sport (MEYS) must have concrete objectives set, as well as indicators for their objective measurement.

Measures 33–35:

V.3.1.1.a	Direct the increase in funds intended for HEIs in the next years first of all to development programmes based upon the Long-term intention of the Ministry of Education, Youth and Sport and its update according to NIP.
V.3.1.1.b	Change gradually the indicators and criteria of the normative support of HEIs in education to become more dependent upon parameters of outputs rather than inputs.
V.3.1.1.c	Relate the increase in resources for specific research in HEIs to the change and extension of criteria that will take into account the collaboration with the business sector, achieved results and how the resources are used.

Coordinator and Manager: MEYS (pursuant to Act No. 111/1998 Coll.)

Term: 2006 and on

Indicators of implementation (success):

Proportion of resources for normative and programme support (ad a), weight of inputs and outputs (ad b), weight of the collaboration with the business sector and achieved results (ad c).

Way of evaluation:

Carried out by MEYS within the scope of evaluation concerning the support to HEIs and NIP, with the report submitted also at the Research and Development Council session

V.3.1.2 Motivation for graduating from Science&Engineering study programmes in higher education institutions

As already mentioned, the Czech Republic has significantly less graduates from Science&Engineering study programmes in HEIs than other EU Member States, though this state of affairs has been getting better in recent years. This fact is caused not only by low interest in the studies, but also by high number of students leaving before finishing their studies. Under unchanged conditions the motivation of the students´ interest in Science&Engineering study programmes would lead to no end. The main problem is the inconvenient material and technical background for education and research; lacking laboratories, minor contacts with practice, etc. If the quality of graduates is not to fall down (but go up) these conditions must be improved to make the studies more attractive and bring the graduates better employment in their fields.

The motivation to further activity in the above finished study fields is then connected very closely with the financial conditions when starting the employment and future perspectives, as well as the overall attractiveness and prestige of these jobs.

Measure 36:

V.3.1.2.a	Open development programmes aimed at increasing the number of Science&Engineering study programme graduates, which will provide for the improvement of material and technical conditions for learning and research in these fields (building of laboratories, contacts with practice, etc.).

Coordinator and Manager: MEYS

Term: 2006 (start of programmes) and on

Indicators of implementation (success):

Growth in the number of Science&Engineering study programme graduates; establishment of conditions for necessary improvement in the quality of their learning

Way of evaluation:

Carried out by MEYS within the scope of evaluation concerning the support to HEIs and NIP, with the report submitted also to the Research and Development Council

V.3.1.3 Training programmes aimed at research and development workers and managers

Key segment of human resources for developing and speeding up innovation processes are the research and development workers and the managerial staff. As far as the support for further training of research and development workers is concerned, it should be directed towards such training programmes oriented at acquisition of necessary knowledge on technology transfer, copyright and industrial rights protection, cultivation of entrepreneurial thinking (including

acquisition of knowledge useful for conducting business in law, finance, taxes or accounting, etc.) and on project management with a special regard to EU. In case of the managerial staff mainly such training will be supported that is aimed at acquirement of the pro-innovative corporate management methods (by means of the three-stage model of managerial competence development – entrepreneurial thinking, management skills and change management). Managerial competences will be developed with regard to successful management of innovation processes. Some higher education institutions, namely technical, have introduced courses specialised in principles of innovative entrepreneurship, in conjunction with AIE CR. The continual training of managerial staff should show itself positively also in the growth of non-technological innovation in enterprises. An increased attention needs to be paid to the currently underestimated corporate knowledge management. In this connection the support to establishment of centres of knowledge management is suggested, along with teaching about knowledge management in higher education institutions and PRIs. For ensuring the above activities the support from structural funds is available – ESF (this principle will start working this year).

Measures 37-39:

V.3.1.3.a	Provide financial and consulting support to projects of research and development workers´ training aimed at searching for and valuating the commercial potential of R&D results and new technologies, technology transfers, copyright and industrial rights protection, basis of entrepreneurship and management skills. For these purposes it is already possible to use the Human Resources Development Operational Programme (support from the EU Structural Funds); useful framework may be provided also by other suitably formulated programmes being currently under preparation.
V.3.1.3.b	Provide financial and consulting support to projects of managerial staff's training (namely from SMEs) aimed at innovative entrepreneurship and innovation process management, modern management methods, cultivation of entrepreneurial thinking and management skills.
V.3.1.3.c	Provide financial and consulting support to projects aimed at establishment of centres of knowledge management and teaching about knowledge management in HEIs and PRIs (suitable framework may be for example the Human Resources Development Operational Programme).

Coordinator and Manager: Ministry of Education in conjunction with the Ministry for Regional Development, for Measure 37 also in conjunction with the Industrial Property Office

Term: 2006 and subsequent years; the measure is partly being implemented at present

Indicators of implementation (success):

Growth in the number of graduates from training programmes for research and development workers and for managers; number of centres established for knowledge management in HEIs and PRIs and their utilisation by enterprises (namely SMEs)

Way of evaluation:

Carried out by MEYS within the scope of evaluation concerning the support to HEIs and NIP, with the report submitted also to the Research and Development Council

V.3.1.4 Elimination of barriers to domestic interdepartmental and international mobility of human resources for innovation processes

As confirmed by foreign experiences, the pace and effectiveness of innovation processes can be speeded up substantially by encouraging the mutual mobility of skilled workers between the public R&D sector (HEIs, AS CR, departmental research worksites, etc.) and the business sphere. Many countries, and the Czech Republic among them, will have to strive also after acquisition of competent workers from abroad. Both these forms of mobility are still dashing against the barriers of mostly administrative character.

With the aim to eliminate these barriers the European Commission published in March 2005 Recommendation on the European Charter for Researchers and on a Code of Conduct for the Recruitment of Researchers (C (2005) 576 of 11.3.2005). In this recommendation the Commission calls upon the Member States to publish and promote similar documents which would speak also about specifics of each respective Member State. The Charter and the Code are to contribute to solution of the equal opportunities issues for various minority groups, including people with reduced working ability.

Measure 40

V.3.1.4	Prepare and proclaim the Czech Charter for Researchers and Code of Conduct for the Recruitment of Researchers in CR, in relation to the document of the European Commission.

Coordinator and Manager: Ministry of Labour and Social Affairs (MLSA) and Ministry of Education, Youth and Sport (MEYS), in conjunction with RDC

Term: 2006

Indicators of implementation (success):

Growth in the number of workers, passing from the public R&D sector into the business sphere and vice versa; growth in the number of workers from abroad coming to Czech R&D worksites and innovation processes.

Way of evaluation:

Submission of evaluating reports of MLSA, MEYS and RDC to RDC in a two years´ interval; introduction of corrective measures, if necessary, following discussions of these evaluating reports in RDC.

V.4 MAKE THE STATE ADMINISTRATION´S PERFORMANCE IN RESEARCH, DEVELOPMENT AND INNOVATION MORE EFFECTIVE

Effective support of research, development and innovation requires an efficient, coordinated and flexible state administration. If we agree that innovation is a continual process, and not a single event, we must look in the same way also on NIP and its implementation; this means to ensure also a continual performance of the state administration in this field with a feedback. The cross-sectional character of innovation issues asks in the Czech Republic for overcoming the persisting departmental and to a certain extent competitive thinking of respective bodies of the state administration. The production of conceptual documents (strategies and policies) is still underestimated. Documents are worked out in a considerably different way, have different forms and different levels of detail. There are shortages in coordination of individual policies. The policies e.g. the National Research and Development Policy of CR for 2004 – 2008 generally lack principles for application of the individual policy tools and so their implementations are often accompanied by discussions and disputes. Factual impacts and effects of the policies are not evaluated; the evaluation is formal and consists in an administrative check of the Government's resolution fulfilment. Therefore, the provision of a complex approach towards innovation and creation and implementation of the innovation policy is not possible without certain changes in the state administration structure and establishment of a higher level of the interministerial cooperation and coordination. The innovation policy can be successfully implemented only in close relation with other policies (research, economic, fiscal, educational, social, etc.).

Positive fact is the growing sense, across the political spectrum, of necessity to modernise the system of public R&D support. This sense is strengthened by results of evaluations of the R&D and innovation policies of the EU Member States. Results of benchmarking policies of the Member States by means of an open coordination method bring impulses for improvement of the system in CR.

V.4.1 Reduce the number of existing 22 budgetary chapters (departments), from which the research and development is supported

V.4.1.1 Simplify the system of R&D support by amendment of the Competence Act (No. 2/1969 Coll.) and other acts

As mentioned above, the system of research and development (and innovation) support in CR is burdened by several specific features making it rather ineffective; these are particularly as follows:

1. wide spectrum of 22 state administration authorities (providers) having own resources available for the R&D support; this produces very difficult factual and administrative coordination,

2. excessive number of independent budgetary chapters of interdepartmental character dedicated to basic (AS CR[3] and GA CR[4]) or predominantly basic research (MEYS), with a minimal factual coordination and on the other hand the absence of a budgetary chapter of interdepartmental character intended for applied research, development and innovation (see V.1.3.4),
3. uncertain competences in the area of research and development in the so called Competence Act[5], which dated back to 1969 and was many times amended; competences are explicitly expressed with 4 ministries (Ministry of Education, Youth and Sport, Ministry of Industry and Trade, Ministry of Agriculture and Ministry of Foreign Affairs), but in an absolutely different way and with using a different terminology,
4. focus of many departmental research institutions that instead of "doing" research serve for administrative provision of the state administration performance,
5. reasonless definition of tasks between MEYS (central body for R&D) and RDC, where preparation of the R&D policy is entrusted to MEYS, while steps preceding and following it are the tasks of RDC; the result being the factual incohesion and absence of concrete objectives, tasks, tools and measures in the NR&DP.

Even if these issues were discussed many times, no remedy was attained. At the same time it is obvious that the currently applied decentralised system of state administration has serious drawbacks and that it would be reasonable to choose one of the working models of state administration in research and development in advanced countries. This would enable to remove the existing fragmentation and certain non-coordination of the state support for research, development and innovation. Since these issues relate to the structure of the entire state administration, we recommend solving them only after elections. Until then it is necessary to analyse advantages and disadvantages of various models of the state administration in research and development (with relation to innovation) and their suitability for the Czech Republic.

Measure 41:

V.4.1.1.a	Bring the model of state administration in research and development in CR closer to models used in abroad; concentrate the R&D resources into a substantially smaller number of budgetary chapters. Other departments will retain competences for R&D that is intended exclusively only for the needs of state administration and for security research.

Coordinator and Manager: Government (RDC)

Term: 2006–2008

Indicators of implementation (success):

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[3] Act No. 283/1992 Coll., on the Academy of Sciences of the Czech Republic, as amended by Act No. 220/2000 Coll.

[4] Act No. 130/2002 Coll., on the support of research and development from public funds, as amended

[5] Act No. 2/1969 Coll., establishing ministries and other central state administration bodies of the Czech Republic, as subsequently amended.

Creation of a new well-functioning model of state administration for research, development and innovation in following steps: 2nd half of 2006 – analysis of advantages and disadvantages of this model of state administration and suggested steps, 2007 – amendment to the competence act and other acts and projecting into the draft state budget for 2008, 1.1.2008 – application.

V.4.2 Determine the state administration's responsibility in the area of innovation

V.4.2.1 Amend the Competence Act (No. 2/1969 Coll.) with the aim to appoint the central administrative body for innovation

The still lacking jurisdictional responsibility for innovation is one the causes why the Czech Republic is seriously backward in building a knowledge-based society. When compared with the thematically close (and related) area of research and development it is obvious that any clear assignment of responsibilities, professional apparatus of a department being competent for innovation and reasonable financial resources would led to a considerable progress. It is not by chance that in most countries the responsibility for innovation is usually delegated to the department responsible for economy (or industry, competitiveness, technology, as the case may be). Under the present system of the state administration in CR it would be most reasonable to charge with the innovation agenda the Ministry of Industry and Trade. If it is to perform its function properly, it must be given a corresponding personal and financial space; this means 10 more workers including their wage cost.

Measure 42:

V.4.2.1.a	Delegate to one of the departments the responsibility for innovation (including its personal and financial provision) by amendment to the Competence Act No. 2/1969 Coll.; the necessary relationship with research and development as a main source of innovation will be provided. The amendment to the Competence Act is implemented within the context and in compliance with steps made under Measure V.4.1.1.a.

Coordinator and Manager: Government (RDC)

Term: 2006–2008

Indicators of implementation (success):

According to Measure V.4.1.1.a.

V.4.3 Ensure that a feedback exists between the measures of the state and needs of enterprises and other participants of the innovation process

V.4.3.1 Extension of tasks for the Research and Development Council (RDC) by the area of innovation

A well-tried tool for providing a feedback between the state administration and other participants of the community dialogue (this case in the area of innovation) is a body representing the principal stakeholders in this issue. In most European and other advanced

countries this role is fulfilled by a body responsible for research, development and innovation (or science and technology, as the case may be). Usually, it is the Government's advisory body – a council composed of the state administration representatives, academic sphere, industry and other interest groups. It is chaired as a rule by a high representative of the executive power, in exceptional cases even by the Premier (Finland).

If an analogical model is adopted also for the Czech Republic, it will be necessary to extend the RDC´s accreditation by the area of innovation and modify its tasks and composition accordingly. This means to level up the number of its members – RDC in its new shape will stimulate effective communication and provide a certain space for reaching consensus among the various stakeholders in the innovation process – state administration bodies, higher education institutions, research sphere, enterprises (including SMEs), financial institutions and representatives of the civic society. The same applies to the RDC Secretariat that will be strengthened both personally and financially (by 7 workers, including their wage cost, of them 2 for the new information system for innovation – see Part V.4.3.2). If the NIP is to be implemented within the proposed deadlines, it is not possible to wait until the RDC´s tasks are changed by law (i.e. by 2008), because for more than half of the measures RDC acts as their Coordinator and Manager (measures that at present no other body can implement). Therefore the proposal is to entrust in the first stage RDC with coordination of innovation areas by virtue of the Government's resolution and in the second stage amend the Act No. 130/2002 Coll.

Measure 43:

V.4.3.1.a	Extend the RDC´s tasks by the area of innovation (including its personal and financial provision). This needs to be carried out by the Government's resolution for the period prior to the amendment to Act No. 130/2002 Coll.

Coordinator and Manager: Government (RDC), Office of the Government of CR

Term: 2005

Indicators of implementation (success):

Successful implementation of NIP within set deadlines – fulfilment of the NIP´s objectives, tasks, tools and measures will be evaluated in 2007.

Measure 44:

V.4.3.1.b	Extend the RDC´s tasks by the area of innovation by virtue of the amendment to Act No. 130/2002 Coll.

Coordinator and Manager: Government (RDC)

Term: 2006 - 2008

Indicators of implementation (success):

Establishment of a new well-functioning model of state administration for the area of innovation according to Measure V.4.1.1.a.; existing well-functioning feedback for the area of innovation

V.4.3.2 Establishment of an information system for innovation

While in the area of research and development there is the R&D Information System that gathers and provides information on R&D tenders, projects and research plans and on results of R&D supported from public funds (regardless of what department is responsible), as well as necessary information and links to EU, there is no such system for the innovation area. This fact significantly contributes to low coordination of the state administration's steps in the area of innovation; especially to the absence of any feedback (R&D IS is open to public). This tool can be characterised as being similar to R&D IS or its supplement with using the European Innovation Scoreboard /EIS/. This extension of the information system will ask for 2 new workers and annual costs of CZK 3 million, including wage cost for mentioned workers.

Measure 45:

V.4.3.2.	Establish an independent IS for innovation similar to R&D IS using its know-how. IS for innovation will respect structures and indicators being used in the European Innovation Scoreboard (EIS). The Information system for innovation will be managed by RDC; the Office of the Government will act as its operator.

Coordinator and Manager: RDC, Office of the Government of CR

Term: 2008

Indicators of implementation (success):

Establishment of an information system for the area of innovation (in relation to Measure V.4.3.2.a).

Measure 46:

V.4.3.3	Introduce into the Czech Republic the methodology of statistical surveys on innovation in relation to the European Commission's Regulation No. 1450 of 13 August 2004.

Coordinator and Manager: Czech Bureau of Statistics

Term: 2006

Indicators of implementation (success):

Introduction of statistical surveys; publishing of periodical reports.

V.4.4 Ensure continual and coherent process for preparation of strategies and policies and its links to implementation programmes

V.4.4.1 Mutual harmonising and coordination of individual state and regional policies and programmes in compliance with the strategy of economic growth

The presented NIP is one of concrete ways how to strive for setting right the previous uncoordinated approach to the development of economy. In particular, the Economic Growth Strategy is a document that should influence in the near future the major sectors of the Czech

economy and constitute a mechanism leading to prosperity in the long term. In compliance with and in relation to the development of this basic document and to NIP the NR&DP should be updated. The same applies to 22 departmental R&D policies.

It will be necessary to ensure the compliance also with a number of other activities concerning innovation, namely those related to the Lisbon agenda, National Development Plan, etc. In evaluating the draft R&D programmes their compliance with conceptual documents, namely NIP, will be compulsorily examined.

Measure 47:

V.4.4.1.a	a) Mutually harmonise the National Research and Development Policy and the National Innovation Policy b) mutually harmonise the National Innovation Policy and departmental policies and concepts of research, development and innovation

Coordinator and Manager: ad a) RDC and MEYS, ad b) RDC and providers

Term: by 28 February 2006 (submission of NR&DP to the Government), by 30 June 2006 (update of departmental R&D policies)

Indicators of implementation (success):

Timely and corresponding update of respective policies; their mutual cohesion.

Measure 48:

V.4.4.1.b	Examine compulsorily in evaluating the draft R&D programmes their compliance with conceptual documents, namely the National R&D Policy and the National Innovation Policy – the Methodology for evaluation of R&D and its results will be amended.

Coordinator and Manager: MEYS in conjunction with RDC

Term: 2005

Indicators of implementation (success):

Amendment to the Methodology for evaluation of R&D and its results; strengthening of factual links between research, development and innovation.

VI. EXECUTIVE SUMMARY

For many years now the entire developed world has been accepting that the only guarantee of any long-term prosperity of countries and their groupments is the economy based on knowledge. This is feasible only through implementing a whole series of well-thought-out measures from the field of education, support of research and development, technology transfer and investment support. These measures are based upon a complex of relevant state policies – economic, innovation, educational, research and development and others. An important role is played also by the overall economic and competitive environment, condition of the state administration and infrastructure, level of education and other parameters that all at once create a favourable entrepreneurial environment and pro-innovation climate.

Despite many positive steps the situation in innovation is very serious in the Czech Republic. The competitive ability of our country depends to a considerable extent on temporary advantages (low labour cost, etc.). In evaluation of our innovation abilities according to 17 parameters made by the European Commission (European Innovation Scoreboard) the Czech Republic lags far behind the EU average. Largest shortages are felt in the patent activity, support of innovative (technology) firms, education (low number of university graduates, low percentage of Science&Engineering graduates) and (financial) support of research, development and innovation.

For reaching any significant improvement towards building a knowledge-based society, measures must be adopted concerning the state administration, higher education institutions, R&D support, transfer of R&D results, financing and management of corporations, which form the subject of this policy. The role of a coordinator should be played by an accredited body – RDC with tasks extended by the area of innovation, which is the manager and co-manager of more than half of proposed measures.

The vision (idea) of NIP is such state of affairs, in which enterprises and other organisations in the Czech Republic actively innovate their products, technologies and services, as well as methods of organisation and management and ensure a steady growth of labour productivity and competitiveness on international markets, while maintaining high levels of employment.

To this end the state:

- establishes favourable framework legal and institutional conditions;
- eliminates barriers to innovation activities, in a flexible manner;
- takes active part in creation of new EU tools of the research, development and innovation support and new EU legal regulations providing for the research, development and innovation support, and incorporates these regulations into the Czech legislation in a quick and adequate manner; and
- promotes selected activities of innovation processes by both direct and indirect tools in compliance with the EU legal regulations, with the assistance of the public funds of CR and EU budget funds.

This vision will be realised through four strategic objectives:

1. Strengthen research and development as a source of innovation
2. Establish well-functioning public private partnerships
3. Provide human resources for innovation
4. Make the performance of the state administration in research, development and innovation more effective

Forty eight concrete measures are proposed for achievement of the NIP objectives, including responsibilities, deadlines and indicators of the implementation success.

VII. LIST OF ABBREVIATIONS

A – E

AIE CR	Association of Innovative Entrepreneurship of CR
AS CR	Academy of Sciences of CR
CI CR	Confederation of Industry of CR
CIS–3	Community Innovation Survey; 3.
EC	European Community
EIS	European Innovation Scoreboard
ERA	European Research Area

G – L

GA CR	Grant Agency of CR
HEIs	Higher Education Institutions
ICT	Information and communication technology
LMDsR	Long-term main directions of research

M – N

MEYS	Ministry of Education, Youth and Sport
MIT	Ministry of Industry and Trade
MRD	Ministry for Regional Development
NIP	National Innovation Policy of CR for 2005–2010
NR&DP	National Research and Development Policy of CR
NRP	National Research Programme
NUTS	Nomenclature of Territorial Statistical Units

O – V

OP	Operational Programme; part of the National Development Plan
OP HRD	Human Resources Development Operational Programme
PRIs	Public research institutions
R&D	Research and development
RDC	Research and Development Council
R&D IS	Research and Development Information System
SII	Summary Innovation Index
SMEs	Small and medium-sized enterprises
SPD	Single Programming Document; part of programmes financed from EU structural funds