REPUBLIC OF CROATIA
MINISTRY OF SCIENCE, EDUCATION AND SPORTS

SCIENCE & TECHNOLOGY POLICY OF THE REPUBLIC OF CROATIA 2006 – 2010

SCIENCE & TECHNOLOGY POLICY OF THE REPUBLIC OF CROATIA 2006 – 2010

Republic of Croatia

Ministry of Science, Education and Sports

SCIENCE & TECHNOLOGY POLICY OF THE REPUBLIC OF CROATIA 2006 – 2010

Publisher:
Ministry of Science, Education and Sports RC

For the Publisher:
Prof. Dragan Primorac, M.D., Ph.D., Minister

Executive Editors:
Prof. Dražen Vikić Topić, Ph.D., State Secretary
Radovan Fuchs, Ph.D., Deputy Minister

Editors:
Ivan Milanović Litre, B.A. theol., Advisor to the Minister
Ivana Puljiz, prof., Advisor, Minister's Office

Translator:
Dragan Šoljan, MSEE

Language Editor:
Hrvoje Pavletić, B.A. pol., Associate, Minister's Office

Layout:
Studio 2M

Printing:
Tiskara "Svebor"

Circulation:
2500

Zagreb, October 2006

CIP - Katalogizacija u publikaciji
Nacionalna i sveučilišna knjižnica - Zagreb

UDK 001.892(497.5)"200"

ZNANSTVENA i tehnologijska politika Republike Hrvatske : 2006.-2010. / <glavni urednici Dražen Vikić Topić, Radovan Fuchs>. - Zagreb : Ministarstvo znanosti, obrazovanja i športa Republike Hrvatske, 2006.

Nasl. str. prištampanog teksta: Science & technology policy of the Republic of Croatia : 2006 - 2010. - Oba su teksta tiskana u međusobno obratnim smjerovima.

ISBN 953-6569-26-4

I. Hrvatska -- Znanstvena politika -- 2006.-2010. II. Hrvatska -- Tehnologijska politika -- 2006.-2010.

301002089

Trg hrvatskih velikana 6, 10000 Zagreb, Croatia
Phone: +385 (0) 1 4569 000
Fax: +385 (0) 1 4569 099
Email: ured@mzos.hr
URL: http://www.mzos.hr

ISBN 953-6569-26-4

In order to provide clear and complete information to the public, the original document, approved on May 5, 2006 by the Government of the Republic of Croatia, has been updated for the purpose of this publication.

SCIENCE & TECHNOLOGY POLICY OF THE REPUBLIC OF CROATIA 2006 – 2010

Zagreb, October 2006

Introduction

Distinguished Friends!

It is my pleasure to present the document "Science and Technology Policy of the Republic of Croatia 2006 – 2010" which was adopted by the Government of the Republic of Croatia on May 5, 2006. This strategic document presents a vision of the development of the Science and Technology sector in the Republic of Croatia, upon which the speedy development and qualitative changes enabling the transformation of Croatia into a society of knowledge are based.

The main goals of the Science and Technology policy are increased investment into science, research and development based on the principle of excellence, their greater impact, realignment of the science sector, fostering of scientific partnerships and the support system for outstanding young researchers, support and strong connection of science and industry, establishment of a motivating framework for their joint development, support of all measures leading to development of technology and innovations, with a more intensive participation of Croatian scientists in the European Union Framework Programmes. It is especially significant that the Science and Technology Policy of the Government of the Republic of Croatia received support from the World Bank through a loan in the amount of €31 million, which is currently under implementation, with participation of the Republic of Croatia with an additional €5.7 million.

The Government of the Republic of Croatia and the Prime Minister in person have recognized the need for transforming and developing the education and science sector, and have provided support to changes in both sectors. The introduction of the Croatian national educational standard in primary schools, prolongation of compulsory education from primary to high schools, preparation for the state matura exam in high schools, introduction of the Bologna process in higher education, introduction of external evaluation techniques in education and strengthening of universities and research and development institutes is the basis of the new education and science system – a system with ambitions to create by 2010 the most competitive scientific and educated society in this part of Europe. By perpetuating existing and establishing new cooperation between education, science and industry, our goal is to achieve the status of "a small country of great knowledge" for Croatia.

The National Foundation for Science, Higher Education and Technological Development, founded in 2001, plays an important role in transforming the science and technology system, by promoting the sectors, ensuring industrial growth and stimulating employment. Since then, the Foundation has launched numerous programmes aimed at reaching these goals, like programmes for strengthening international cooperation, educating scientists, "brain gain" and reforming higher education.

The strategic choice for the Republic of Croatia, as a candidate country for membership in the European Union, is increasing investment in science and technology, with the goal, as stated in the ***Lisbon Strategy****, to reach 3% of GDP by 2010, with two-thirds of funds coming from the private sector. In order to increase investment in science, especially private sector participation, it is necessary to foster connections between science, industry and society, and implement the required changes in the legal system, through tax policies and activities of scientific institutions.*

The strategic and developmental document you find before you, states goals and instruments of the Science and Technology Policy of the Government of the Republic of Croatia in the following mid-term period. The first finalized chapter in European Union accession negotiations in June 2006 was Chapter 25, ***Science and Research*** *and it bears witness to the sound basis of the stated goals, while confirming the status of Croatia as an equal participant in the European Research Area. Successful participation in the European technology programme EUREKA and the Sixth Framework Programme, where Croatia is one of the most successful transition countries in terms of ratio of invested versus approved funding for projects, confirms the excellence and competitiveness of Croatian scientists on the European level. Additionally, the great response generated by the Project for Repatriation of Croatian Scientists, with help from Croatian scientific institutes and universities, leads us to believe that numerous initiatives of this Ministry and other institutions have a positive response and support in the scientific community.*

Successful implementation of the Science and Technology Policy, as well as changes in the education system, shall have full effect only if supported by efforts of the society as a whole to truly become a "society based on learning". Therefore, an important role in the development of Croatian society shall be played by citizens prepared for permanent education, which as a factor of self-improvement and social advancement should become a way of life.

I would like to express special thanks to the large number of Croatian scientists from the homeland and abroad, scientific and other institutions, as well as industry, all who helped in creating this strategy, which is by no means a final and completed document, but above all a framework for system development, open to change, growth and improvement.

The impacts already achieved within the science and technology systems, as well as the Policy for their development until 2010, give us the basis to boldly venture into jointly building Croatia as a society based on knowledge and application of knowledge.

Prof. Dragan Primorac, M.D., Ph.D.

Minister of Science, Education and Sports

CONTENTS

I. PREFACE

Taking into consideration the processes of stabilization and accession of the Republic of Croatia to the European Union, as well as general trends of globalization processes in the world, whereby the competitiveness of national economies becomes a major factor of societal progress, the Government of the Republic of Croatia[1] is confident and determined in its intention to build Croatia into a science and technology-oriented country.

Admission into full membership of the EU community of states is Croatia's national interest. The underlying EU document for national strategies of member countries is the ***Lisbon Strategy***[2]. This Strategy conveys two major goals – stronger and more stable economic growth, which further implies opening of a larger number of high-quality jobs. The ***Action Plan*** (EC SEC 2005, 192 working document)[3] covers ten major goals, wherein, under the common title "Knowledge for Growth", the following are listed:

- Increase and improvement of investments into knowledge, research and development
- Stimulation of innovation, expanding the use of information and communication technologies, and sustainable use of resources
- Knowledge-based society must strive towards realization of a healthy economy

Within the policy of increasing investments into research and development, the ***Lisbon Strategy*** anticipates increase of funds for research and development in individual member countries, as well as achieving the goal of 3% GDP allocation at EU level. It further anticipates improvement of off-budget and public investment ratio to 2:1.

These goals are incorporated into and are the basis of the Croatian national programme for research and development, denoting a country which entirely belongs to the European cultural and economic sphere, and sees its place exclusively in the community of European states.

The Seventh Framework Programme for Research and Development[4], as an EU instrument in the R&D sector, has the purpose of providing new impetus to the research and innovation area, ensuring the essential participation of Europe in the world transfer of knowledge, as well as supporting research and development in areas of special

1 http://www.vlada.hr/

2 http://ec.europa.eu/growthandjobs/pdf/lisbon_en.pdf

3 http://ec.europa.eu/growthandjobs/pdf/SEC2005_192_en.pdf

4 http://cordis.europa.eu/fp7/, www.mzos.hr > Međunarodna suradnja > Suradnja s Europskom unijom > FP6 >Pripreme za FP7.

interest for European competitiveness. Supportive measures will be implemented through cooperation on projects and coordination of national research programmes, as well as through strong encouragement of mobility of scientists and ideas.

In the area of innovational and industrial policy, members are expected to develop their individual innovation policy in line with their national characteristics and advantages, to introduce support mechanisms for small and medium enterprise, to support joint research between the industry and R&D sector, to create conditions for founding and growth of high-technology companies, as well as to encourage development of partnerships for innovations on the regional and local level.

1. Overview of the Science & Technology Sector in Croatia

During the past 10 years, Croatia has managed to establish and sustain a stable macroeconomic environment and economic growth at an average of 4% annually. Although relatively high, this percentage is, due to a longer period of decline and stagnation, insufficient for any considerable progress in development, and it is necessary to increase it. In the year 2004, the gross domestic product ***per capita*** was measured as standard purchasing power, and it amounted to 45.6% of the average EU GDP. The level of innovativeness is ten times lower than in EU countries, and technological lag and unsatisfactory work productivity are discernible.

According to the latest data, there are 3,232 Masters of Science, 5,780 Doctors of Science and 1,982 other researchers[5] in the Republic of Croatia. Industry and private companies employ 2,703 M.Sc.'s and 976 D.Sc.'s.

The R&D and higher education sector consists of:

- 26 public institutes, 13 private scientific institutions, 6 technology and research and development centers, 11 research centers in industry, and one military research center
- 7 universities, 16 public colleges and polytechnics, and 16 private colleges and polytechnics which are accredited

Besides the Ministry of Science, Education and Sports, the National Science Council and the National Council for Higher Education monitor the development and quality of the entire sector, as the highest professional and advisory bodies appointed by the Croatian Parliament. The Parliament also appoints the Ethics Committee for Science and Higher Education.

Within the system, there are several independent specialized institutions: National Foundation for Science, Higher Education and Technological Development, the Agency for Science and Higher Education, Business Innovation Center of Croatia -

5 Data from the Register of Scientists, for employees of scientific organizations, EZRA database, September 2006.

BICRO Ltd., Croatian Institute of Technology Ltd. – HIT. Apart from the listed institutions there are 5 state agencies competent in the area of statistics, intellectual property, hydrometeorology, metrology and accreditation. The Croatian Academy of Sciences and Arts – HAZU and "Miroslav Krleža" Lexicographical Institute enjoy the status of scientific institutions of special interest in the Republic of Croatia. Besides HAZU, there are two specialized academies: Academy of Medical Sciences of Croatia and the Croatian Engineering Academy.

The National Council for Information Society monitors the development of an information society. Developing an innovative informational and communications infrastructure is in the domain of the Croatian Academic and Research Network – CARNet and the University Computing Centre – SRCE.

In Croatia, there are about 100 published papers per one registered patent, whereby it is apparent that the private sector is more inclined to registering patents, while the public sector is more successful in publishing scientific and expert papers. However, based on the number of internationally referenced papers, Croatia is low on the scale of developed and medium developed countries, which implies a necessity to improve the quality of this sector as well.

Investments into science, research and technological development, which amounted to 1.25% of GDP in 2004 (Eurostat, 2006)[6], are inadequate both in their scope and structure, and therefore do not enable progressive movements, but rather only maintain the existing, relatively inefficient status.

The vision of the national R&D programme is to develop a high quality S&T and higher education sector that would support economic, social and humane progress and, through its contribution, would serve as a backbone for the development of a knowledge-based society.

The excellence of the R&D sector should be proven through innovativeness, originality, effectiveness, increase in the number and quality of patents, publication of top-level scientific papers, and, above all, through rationality, adaptability and the ability to transfer knowledge into the economy, as well as through cooperation with higher education institutions, research institutes and the industry. The ***Action Plan*** which will be developed on the basis of this policy, will strive towards the quality and efficiency of the research sector, while encouraging the expansion of education, research and enterprise, as well as reinforcing the mobility of knowledge, ideas and people.

2. The Challenge of Building a Knowledge-Based Society

All around the world economic activity is shifting towards innovation and knowledge-driven industries. Knowledge and information have replaced energy and capital as the primary wealth-creating assets. More and more, the only competitive advantage any business, enterprise or indeed a society can enjoy is its own process of innovation

6 http://epp.eurostat.ec.europa.eu/

and the ability to derive value from knowledge and information. In this context, science makes vital contributions to knowledge-driven economies by generating new ideas and technology solutions. Equally important to the knowledge-based economy is the ability to turn scientific discoveries into successful commercial products.

Like any society, Croatia can benefit tremendously from having a strong science and technology sector, therefore it is the Government's primary strategy to invest in science and technology development, to ensure that it is built on excellence and to maximize its contribution to long-term economic development.

The document in hand sets the National Science and Technology Policy for the period 2006 – 2010 and identifies key priority areas and actions to be carried out by the Ministry of Science, Education and Sports and other public and private partners. Croatia has already committed to shaping a knowledge-led future and to common European goals of developing the capacities and tools to become more competitive.

The basis of this document is the national strategy for development of science and technology, "Croatia in the 21st Century – Science"[7].

3. Key Proposals Addressed in the S&T Policy

Our ***overall aim*** is to stimulate scientific excellence and enable the transfer of knowledge and results of scientific discoveries to industry and business in order to increase competitiveness and generate sustainable growth and productivity.

To achieve this, we have set ***key objectives,*** which are addressed in detail in the two sections of the National Science and Technology Policy. Briefly, these objectives are:

- *Increase funding for excellent science and technology projects* – in order to meet the "3% of GDP for research investment" as laid out in the Lisbon Strategy set by the European Commission with goals to promote economic growth and job creation
- *Restructure publicly-funded research institutes and R&D centers* – in order to re-orient their research towards national priority areas and industry needs
- *Encourage research partnerships and strengthen support schemes for quality young researchers* - in order to facilitate mobility, interdisciplinary and cross-sector cooperation, and build a more flexible research and education system
- *Invest in science research infrastructure and knowledge transfer institutions* – in order to build research capacity and provide access to business solutions
- *Introduce measures to promote commercialization of academic research* – in order to encourage universities and research institutions to work more closely and effectively with business

7 http://www.nn.hr/sluzbeni-list/sluzbeni/index.asp

- *Introduce measures to promote technological development and innovation* – in order to attract people and capital into innovative business ventures
- *Administer stimulating and business-friendly legislation* – including appropriate intellectual property laws and tax incentives for investment into priority area R&D, in order to build a system that encourages innovation

The defined key objectives share many common challenges to building a strong science and innovation culture in Croatia. Subsequent emphasis should be placed on systematic implementation of set objectives as laid out in this document. The Policy will be used to ensure that the defined targets and priorities for science and technology development are met with the ultimate aim of higher productivity and economic growth.

II. SCIENCE AND HIGHER EDUCATION

1. Main Objectives

Main goals of the science programme of the Croatian Government are as follows:

1. Increasing investments into research and development, and their efficiency
2. Restructuring Croatia's science system
3. Strengthening cooperation between science, government and industry in the creation of new knowledge and goods
4. Increasing participation of Croatian scientists and other bodies in EU Framework Programmes

1. Increasing investments into R&D and their efficiency

- preparation of a national action plan based on 3% allocation at GDP level
- refinement of the structure of existing funds' use
- annual increase of funds for R&D at the rate of at least 25%
- ensure conditions for constant funds inflow to the National Foundation for Science, Higher Education and Technological Development (NFS)[8] and focus NFS investments into most prominent research
- new expert systems for evaluation of projects and programmes, based on the model of European countries, which would enable greater transparency of scientific research to the public
- increase of investment into capital and medium equipment, renewal of the research infrastructure
- establishment of legal framework as well as financial / tax regulations that would encourage investment into science, research and human resources
- establishing financial and tax regulations that would stimulate public & private partnerships

8 http://www.nzz.hr/

2. Restructuring Croatia's science system

- programmes for raising awareness on the significance and influence of science and research to society development (through educational system, media and special activities)
- interlinking of the research infrastructure with the purpose of more efficient use of potential (centers of excellence)
- clustering of existing scientific projects into integrated (collaborative) scientific programmes (collaborative centers of excellence) with the aim of creating internationally recognized and competitive centers of excellence, which are able to join the European network of scientists and businesses
- scientific profiling and integrating of universities, mainly ones outside of Zagreb, according to the needs of balanced regional development of Croatia
- reform of doctoral studies into efficient 3rd cycle research studies, which in a given period (3-5 years) promote the student to a science doctorate (Ph.D.), or arts doctorate, as the highest level of education, tailored to the needs of the labor market, employers and the public sector
- redefining the mission, role and manner of institutes' management, and reform of institutes with the aim of stronger orientation towards national research priorities
- refining the system of transfer and application of scientific results
- education of youth in the spirit of creativity, curiosity and desire to attain new knowledge, in particular graduate, post-graduate and the most talented high school students

3. Strengthening cooperation between science, government and industry in the creation of new knowledge and goods

- creating financial instruments to encourage collaboration between researchers and R&D institutions with the public sector and business
- creating a legal frame that would enable flexibility and appeal of the science labor market, enable tighter cooperation of higher education institutions, institutes, industry and public administration bodies, as well as employment of foreign scientists in the system and of Croatian scientists from abroad, respectively facilitate transfer of knowledge from top-level foreign S&T institutions
- systematic stimulation to gradually increase R&D personnel share in industry and public administration bodies
- positive legal and financial measures with the purpose of increasing the number of junior researchers and highly specialized experts in the enterprise sector

4. Increasing participation of Croatian scientists and other bodies in EU Framework Programmes

- developing measures of co-financing and stimulating bonuses for cooperation in EU programmes (points for promotion, assigning of extra resources – early stage researchers and equipment, stimulative co-financing of project preparation and bonuses for accomplishments)
- active support for establishing and operating of national technology platforms and their integration into European technological platforms
- establishing an agency for European programmes and significantly increasing the number and competence of professional staff for helping clients
- development of strong departments for international cooperation within universities and institutes
- intensive programmes of knowledge transfer and training for a broad user base
- upgrade of the existing database of Croatian scientific potential

2. Implementation Instruments and Budget Allocation

The MSES, as creator of this policy, will utilize its funding instruments to achieve the following goals:

- *Research grants*. Since 2006 new scientific research projects have been started, as well as programmes for clustering scientific research and conducting it according to areas of interest for the Republic of Croatia. The main criteria for the evaluation of projects and programmes, encompassing participation of foreign and domestic evaluators, is excellence. The process of evaluation is completely computerized, which enables greater transparency of the evaluation process itself, as well as the results of the projects and programmes.
- *IT grants.* Financing projects related to resolving practical problems in different areas of scientific research, by use of information technology. For these projects there is a special competition, organized by the Ministry of Science, Education and Sports.
- *Equipment grants.* This form of support is aimed at procurement of small, medium and large-scale (capital) scientific-research equipment, through a special tender for equipment. Scientists leading scientific projects and programmes can apply, with the prerequisite support of their native scientific institution, guaranteeing that such equipment is essential not only for implementing an individual scientific research project/programme, but for the core activity of the native institution. This support is aimed at reinforcing the research infrastructure in Croatia.
- *Fellowships for early stage researches and international mobility grants.* These are programmes that help young competitive researchers to carry out their work at home or abroad. These are support measures which aim to reduce brain-drain,

increase mobility and adopt new scientific techniques and methods, by participating in international conferences or study tours at eminent international institutions.

- *Aid for publishing activity, conferences and associations.* This form of support helps develop domestic scientific and specialized publishing, aids the promotion of science, and the creation of networks of professionals. Special committees from the academic community evaluate applications, and based on ranking and available resources participate in their financing. Another goal is to raise awareness of the importance of science in modern society[9].

In addition, the MSES is the initiator of a legal framework change. At present the MSES is leading a public debate on the proposed amendments to the Act on Scientific Activity and Higher Education[10]. Proposals are underway for the engagement of the Ministry of Finance[11] in encouraging investments in R&D.

The MSES also plans to establish a fund to carry out a public awareness campaign in order to support changes of S&T image and general attitude towards S&T in public, as well as funding to support efficient use of S&T in the decision making process.

The Issue of Raising Awareness and Confidence in S&T in Public

Raising public awareness, together with education, will be one of the crucial elements for successful implementation of the new strategy. Today, the role and capabilities of S&T in the creation of new values and economic prosperity is still not sufficiently recognized and appreciated in public. Thus, there is a strong need to raise awareness of benefits from S&T development, and change the image of the scientific profession in public. It is necessary to demystify its role and make the profession more attractive to young people. The role of science in everyday life should be portrayed in a more public-friendly manner. Citizens must be acquainted with expenses and investments of taxpayers' money into S&T and with the final results. The principle of public openness will be applied: the S&T system, which is financed by public resources, should be open to the public. A distinction between public resources, and those acquired on the market should be clear. Results of RTD financed by public resources must be accessible to the public in the form of open publications or databases.

The goal of raising awareness will be reached in cooperation with other relevant Ministries (economy, culture, environment, family) and media through an elaborate plan of gradually introducing a series of events with the purpose of raising awareness (on a regular basis in education programmes), and by increasing the number of various informative programmes (e.g., popular science TV programmes, S&T museum shows, open days at institutes, workshops, financial and other relevant information about domestic S&T published in daily newspapers and/or weekly business magazines).

By reaching this goal, we expect an increase of interest in scientific professions and S&T issues in general, and a change in the general attitude about investing in S&T.

9 Information on programmes for financing, supporting and providing stipends of the MSES are available on the web site: http://www.mzos.hr

10 http://www.nn.hr/clanci/sluzbeno/2003/1742.htm

11 http://www.mfin.hr/

The complete effect, naturally, will be reached only in combination with other measures mentioned in the Strategy, whose purpose is creating better conditions for S&T activities. The detailed action plan is to be developed at the MSES, and in order to implement the plan effectively, the MSES will form and appoint a working group of experts to carry out the programme in close cooperation with media, NGOs and educational institutions, in order to implement the programme.

Measures for Better Use of S&T in Decision Making

The Government has recognized the importance of using S&T in decision making and will encourage the Ministries to develop their specific activities and plans for better use of S&T in the decision making process. In this regard, the MSES will identify and support efforts of the S&T community to participate in policy-oriented research, both on national level for domestic purposes (in cooperation with all relevant Ministries) and international level, e.g. ***European 6th Framework Programmes***[12] and ***7th Framework Programmes***[13], endorsed to support the formulation and implementation of Community policies; in particular the ***Common Agricultural Policy (CAP)***, the ***Common Fisheries Policies (CFP)***, environment, energy, transport, health, development aid, consumer protection, etc. Participation in EU policy-oriented research will also help Croatia in the process of harmonization of national legislation in respective areas.

In order to employ all domestic potential and ensure better cooperation between the S&T sector and Government decision-making bodies, a number of expert teams, comprising experts from institutes and universities, will be formed. The teams will act as advisory bodies, to support the decision making process in all relevant ministries. Furthermore, public institutes should take on a key role of accredited institutions for public tasks like toxicology evaluation, risk assessment, standardization and measurements, animal disease diagnostics, food quality, safety control, etc.

National Science Council

In 2006, the National Science Council (NSC)[14] will begin evaluation of all scientific organizations (public institutes, universities, etc.) in the Scientific Register. Evaluation forms, procedures and a database of reviewers have been completed. This will help restructure Croatian science and develop centers of excellence.

National Foundation for Science, Higher Education and Technological Development

The National Foundation for Science, Higher Education and Technological Development (NFS), with its current funds of €15 million and a yearly income of €1.4 million will support excellence in research. Currently, the NFS is funding or has funded the following programmes:

12 http://cordis.europa.eu/fp6, www.mzos.hr > Međunarodna suradnja > Suradnja s Europskom unijom > FP6.

13 See under note 4.

14 http://www.nvz.hr/

- *Support for Croatian scientists in joining European Science Foundation Programmes.* The main goals of this programme are to include Croatia in the European research arena, to enhance the level of competitiveness of Croatia's research area, to harmonize Croatia's research competency with European standards, to enhance international cooperation, coordination and association of highly qualified scientists, to build highly competitive research teams, to strengthen the relationship between Croatia and the international science community and transfer of knowledge and technology at a European level.
- *Training of doctoral students.* The NFS started a few programmes to support the organization of doctoral studies on the national level, in order to support quality, assure mobility of the doctoral students and provide best teachers and experts.
- "*Partnership in Basic Research".* One of the main goals of the "Partnership in Basic Research" programme is to increase non-governmental investment in basic research with investments based on public-private partnerships.
- The *NFS* wants to emphasize that the goal of basic research is not just to produce a scientific result, but also to educate people with a maximum level of scientific competency that will not only serve for conducting scientific research, but also in further developing the economy of the Republic of Croatia. This applies specially to development of those branches of the economy that are high-tech based.
- *SCIENCE award.* The goal of the award is to promote science and research activities among graduate students – researchers.
- *Reform of the educational system in Croatia.* The Republic of Croatia joined the Bologna process in May 2001. By signing the Bologna Declaration, the Republic of Croatia has committed itself to modifying its higher education system in order to harmonize it with the European system. This programme supports transformation of doctoral studies in Croatia as essential for further development of higher education and science and for overall development of the country.
- *Programme "Brain Gain".* The "Brain-Gain" programme aims to repatriate Croatian scientists living abroad, permanently or temporarily. Countries everywhere, rich and poor, which are trying to raise or even just to maintain their standard of living, are experiencing shortages of highly qualified people.

Following the First Congress of Croatian Scientists From the Homeland and Abroad, organized in Zagreb and Vukovar on November 15-19 2004, by the Ministry of Science Education and Sports[15], a programme called *Unity Through Knowledge* was conceived, with the scope of reversing "brain drain" and ultimately leading to the opening of new jobs.

Given the strength of the Croatian scientific diaspora, exemplary execution of the programme could create significant impact and resound internationally. The programme, supported by a World Bank[16] loan in the amount of €3.7 million, has the following goals:

15 More on the Congress on the MSES web pages: www.mzos.hr/pkhz/ and publication First Congress of Croatian Scientists, Ministry of Science, Education and Sports, Zagreb, 2006.

16 http://www.worldbank.hr/

- motivating expatriate Croatians for conducting scientific research in Croatia
- creating programmes for short-term placements of expatriate scientists within Croatian research institutions and industry
- creating programmes for long-term appointments of expatriate scholars in Croatian scientific institutions
- providing incentive for the return of qualified and trained expatriates, and their engagement in entrepreneurial activities

One of the initial goals, creating a Network of the Croatian scientific diaspora, is already underway, following the establishment of the Croatian Scientists Portal[17]. The portal is home to several initiatives:

- a database of Croatian scientific bibliography
- a *Who's Who* in Croatian Science
- on-line access to Croatian scientific publications
- the Open Access/Archives initiative

The portal has instruments to bring science closer to the public with forums, short news and expert opinions.

3. Recognizing and Developing Priority Areas

For Croatia, the priorities that enable globalization of knowledge, scientific propulsion, economic efficiency based on the values of a humane society and those that directly support a rapid progress of basic sectors of the economy, are the most promising. In those areas priorities such as *biotechnologies, new synthetic materials, nanotechnologies* and others will be recognized. Within these priorities Croatia should identify, encourage and develop highly specialized niches, through which it would become recognizable in the global knowledge society and be of importance in the world market.

Full support should also be given to other areas for which the industry expressed interest and readiness to invest through its R&D projects. The technological area is not taken into account here, but the expression of economic interest to invest in particular areas, such as industrial design or data visualization.

Certain areas should also be included within the priority areas, namely those which are not directly linked to economic competitiveness, but are important in the circumstances of rapid changes in the international environment, globalization, and the perspective of Croatia's EU accession.

17 http://www.znanstvenici.hr/

The following research themes are relevant:

- fundamental knowledge about man and society, necessary for Croatia's national development
- development of understanding of humanity, national identity and distinction
- preservation of natural wealth and cultural heritage, including linguistics research
- research with the purpose of increasing the effectiveness of the state apparatus and of developing a modern democratic society
- understanding and grasping social processes and risks that the new technologies bring, global economic growth, changes in the demographic structure and increased complexity of governing modern societies
- research with the purpose of developing national security and positioning Croatia in the international arena
- knowledge-driven fundamental research

These essential changes, through which the Croatian Government intends to propel the S&T development in Croatia, require maximum cooperation, not only between the R&D sector and the Croatian Government, but also of all economic subjects and bodies of local government and self-government. Without the proposed changes, the Republic of Croatia will not be able to join the world distribution of knowledge and goods on an equal footing.

The Government of Croatia has recognized the benefits of introducing technology foresight as a mechanism for strategic decision making. For this reason, the MSES shall include a large number of participants in the process of technology foresight, namely government institutions, scientific communities, industrial enterprises and civil society, thus helping the country to focus on the prompt identification of emerging generic technologies that are still in a pre-competitive stage. The process will focus initially on a period of 5 years, and will broaden the scope to a 30-year period thereafter.

In order to learn from the practice of neighboring countries, and compare similar research, the MSES has recently established a working group that cooperates closely with similar groups in Slovenia, the Czech Republic, Hungary and Austria. Initial effort has already been undertaken in exchanging experiences in technology foresight practices with USA, Israel, Japan, Germany, the Netherlands, UK, Ireland, India and Malta.

Of particular importance in this regard is the establishing and enhancing of continuous forward thinking which should be closer to decision-making bodies and development communities than to establishing separate Technology Foresight Institutions. Our goal is to integrate such anticipatory thinking into planning and processing at the industrial, governmental, regional and local community levels. Moreover, it should be adequately considered when preparing research and policy action programmes of individual ministries and agencies.

Activities associated with technology foresight should cover analyses of anticipated technological mega trends and related market opportunities on one hand and the organization of workshops and panels on the other.

III. TECHNOLOGY AND INNOVATION

1. Overall Aim

The ***overall aim*** of the Government is to encourage science and industry cooperation, increase productivity and competitiveness of the Croatian industry and enable innovation and technology solutions to flow into all sectors of the economy.

The Croatian Government recognizes that the efficacy and success of our innovation system will be highly determined by the quality of policy making, strategic competencies, and unanimity amongst various interest groups. Up until now, the Government has been the main investor in science and R&D, with the private sector contributing only around one third. One of the main objectives of the Government is to create conditions for increased investments of the private sector with the goal of reaching a 1:1 ratio of public vs. private sector investment by 2010. This can be achieved by a pro-active approach and strong delivery mechanisms for targeted policy measures.

The strengthening of the national innovation system can be achieved through:

1. Competent human resources and continuous professional development
2. Strong scientific and research base at the universities and research institutions
3. Availability of appropriate technology and business infrastructure to support creation of knowledge-based enterprises
4. Targeted support programmes which provide early-stage financing to knowledge-based companies
5. A strong intellectual property regime to provide incentives for invention
6. Stimulative tax policy to spur investment into R&D
7. A positive business environment with low regulatory barriers for entrepreneurs and investors, which equals lower costs and a faster road to markets
8. Promotion of public confidence in science and technology as well as innovation awareness

This section of the Science & Technology Policy sets key strategic objectives and identifies policy measures and relevant policy actors that will need to work together towards creating a renewed, competitive and thriving technology sector and social

segment capable of generating new jobs, producing high output and bringing economic certainty to this and future generations. At the end of this chapter is a list of implementation instruments and main programme areas already in place. These programmes and initiatives will serve as starting points for implementation of Policy Measures described in Table 1 of the *Policy Matrix*[18].

2. Objectives for Promoting Business Innovation and Technology Development

In order to achieve the above aim, the Government has identified six priority objectives:

Objective 1: Promote creation and growth of knowledge-based enterprises

Objective 2: Create technology infrastructure to support knowledge-based SMEs and technology-based start-ups

Objective 3: Stimulate demand for R&D from business

Objective 4: Manage intellectual property

Objective 5: Diversify funding sources for R&D, attract private sector investments and create risk capital industry

Objective 6: Promote public confidence in science and innovation awareness

3. How Objectives are Met

In 2001, the Government launched the *Croatian Programme for Innovative Technological Development (HITRA)*[19], targeting for the first time science and industry cooperation with the goal of boosting public-private partnerships. HITRA is targeted at initiating the national innovation system through permanent development of three strategic and long term goals:

1. Fostering science and industry cooperation
2. Revitalization of industrial R&D
3. Encouraging commercialization of research results

18 See pages 26-27.

19 http://www.mzos.hr > Znanost > Tehnologijski razvitak> HITRA, http://tprojekti.mzos.hr/

HITRA provides a framework for direct cooperation between industry and entrepreneurs with higher education institutions and research institutes, and is implemented through two complimentary sub-programmes: TEST and RAZUM.

- *Technology-related research and development projects (TEST)*[20] - which provides support to development of new technologies, in terms of products, processes or services, up to their commercialization stage
- *Development of knowledge-based enterprises (RAZUM)*[21] - which provides early-stage financing knowledge and technology based start-ups

Between the years 2001 – 2005, close to €30 million has been invested in HITRA technology projects with the outcome of several projects being close to market exploitation. Both programmes are currently in the process of refinement, and implementation has been entrusted to professional technology management corporations, Business Innovation Center of Croatia, BICRO Ltd.[22], and the Croatian Institute for Technology, HIT Ltd.[23], to ensure quality and transparency in the decision-making process[24].

HIT Ltd. was founded in March 2006, as an expression of the need to transform and amplify activities of the existing Institute for Technology Policy and Development. The mission of HIT is to create pre-conditions for accelerated application of new knowledge and technologies, by providing services, expertise and projects.

HIT operates in the field of financial support to technology based and innovative entrepreneurs and coordinates cooperation with European-funded projects. HIT provides consulting services in the area of technology transfer and knowledge, and coordinates institutions in similar areas of work, with the aim of enforcing technological development on a national level. Furthermore, HIT provides expert advice in establishing ***start up*** and ***spin out*** companies, whereby the main criteria are innovation, development of new technologies and market logic and profitability of the new companies. HIT's tasks include building a ***Business Intelligence*** system and technology forecasting.

Since June 2000, Croatia has participated in the European RTD programme ***EUREKA***[25] as a full member. Today, there are 27 running technology projects with a total value of €43.7 million, of which Croatian partners contribute €12.2 million. The MSES co-finances EUREKA projects with up to 50% of Croatian participation, or at most €150,000 per project, and the rest comes from the partner's side. On an annual basis, the MSES invests €350,000 in EUREKA projects. Although a small investment, it proved to be very efficient due to the fact that EUREKA has strong partners, international recognition, high standard of international evaluation of projects, and flexible administration. First results after 5 years of participation show that return on investment in EUREKA projects is 4:1 with a good ratio of industry-academia participation.

The Government will remain a key investor in the science infrastructure, fundamental research, and education, which influence the strength of the innovation system, but shall also create conditions for collaboration between academia and business, facilitate

20 http:// www.mzos.hr > Znanost > Tehnologijski razvitak > HITRA > TEST.

21 http:// www.mzos.hr > Znanost > Tehnologijski razvitak > HITRA > RAZUM.

22 http://www.bicro.hr/

23 http://www.hiteh.hr/

24 See Chapter Implementation Instruments, main programme areas, further ahead.

25 http://www.eureka.be/home.do, http://www.mzos.hr > Međunarodna suradnja > Suradnja s Europskom unijom > EUREKA.

exploitation of research by other sectors such as transport, energy and health care, and encourage the adoption of technology to improve industries. The Government shall actively encourage private sector investment into R&D by offering matching grant schemes[26]. The Government shall work on creating a favorable climate for private sector investment into R&D by proposing favorable tax legislation to the Parliament, and shall also work to simplify the administrative procedures and remove bureaucratic barriers which prevent rapid development of enterprises.

There is a long history of Intellectual Property protection in Croatia (since 1884), as well as significant existing legislation, making Croatia a regional leader. ***A National Strategy for Development of the Intellectual Property System***[27] in Croatia has been drafted by the State Intellectual Property Office (SIPO)[28] and accepted by the Government in 2005.

The short-term goal of this strategy is to provide IPR protection comparable to EU level, and the mid-term goal is to ensure application of IPR as a lever for economic growth, up to the standards of EU countries with the highest European Creativity Index (ECI).

An IP Unit has been set up within the Ministry of Science, Education and Sports, that oversees projects related to the raising of awareness on IPR issues, as well as activities related to setting up of 3 IP centers within academic and research institutions[29].

The Policy Matrix

The following *Table 1* provides an overview of prioritized policy measures aimed at encouraging science and industry cooperation and increasing productivity and competitiveness of the Croatian industry. The Table is separated into eight key policy elements which are necessary for stimulating research and technology development activities and cross-sector cooperation. In the Table, key policy elements are related to strategic objectives, critical challenges and target groups, followed by policy measures and groups responsible for implementation of measures. The policy measures are designed to be as comprehensive as possible, given the constraints in resources and the supply of technology management-related competencies.

26 See Chapter Implementation Instruments, main programme areas, further ahead.

27 http://www.dziv.hr/dziv-ew/webcontent/file_library/izvori_inf/legislativa/nac_zakon/nac_zakonodavstvo.htm

28 http://www.dziv.hr

29 See more details on the CARDS project, further ahead.

Table 1. **The Policy Matrix**

Key policy element	Strategic objective(s)	Critical challenge(s)
Political commitment	• Coherence in policy making • Translation of commitment into actions	• Lack of continuity
Legislative and regulatory framework	• Build stimulative framework for business investment and enable introduction of EU norms and standards	• Lack of experienced professionals/experts
Scientific base	• Adopt excellence and competitiveness as major merit criteria	• Existing system of values and governance principles
Capital	• Diversify funding sources (public, venture capital, corporate income tax)	• Unattractive surroundings for investment (high regulatory barriers for entry)
Market	• Create demand for technology-based products/ services • Introduce principle of cost-effectiveness	• Investing into R&D unrecognized as vital part of business process
Government support	• Research grants for R&D and technology projects • Ensure quality of government-sponsored research	• Vague strategic focus and lack of transparency
Public acceptance	• Raise awareness about the benefits of RTD for society	• Interest group opposition
Cooperation and partnerships	• Bridge the gap between science and industry	• Negative attitude towards cross-sector cooperation • Unconcerned and torpid target community

I Ministry of Economy, Labour and Entrepreneurship, http://www.mingo.hr/
II Ministry of Finance, http://www.mfin.hr/

Target group(s)	Proposed policy measure(s)	Group(s) responsible for implementation
• National Innovation System Council (NISC) • Government (MSES, MELE[I], MFIN[II])	• Confidence raising and awareness campaign • Programmes supporting R&D	• NISC • Business sector • Government
• Government • Croatian Accreditation Agency and cooperating institutions • State Intellectual Property Office (SIPO)	• Tax incentives for priority business sector investments • IPR regime and regulatory framework for technology transfer • Business-friendly (as opposed to over-regulated) environment	• Government (MSES, MELE, MFIN) • Various government agencies & SIPO • Parliament
• Universities • Research institutes	• Introduce peer review and a top-down governance system	• NISC • MSES
• Government • Intermediaries • Industry	• Supportive legislation for risk capital and corporate income tax • Matching grant schemes	• Government (MELE, MFIN) • Parliament
• Business sector • Government • Academia	• Clustering initiative • Privatization of government-owned companies	• Intermediaries and various government agencies • State and local governments • Business sector
• NISC • Government • Intermediaries	• Strengthen grant schemes and mechanisms for support • Assure transparent and merit-based selection	• Government (MSES, MELE) • Intermediaries (BICRO, HIT, NFS)
• Public	• Educative and promotional campaigns	• Government • Intermediaries • Academia • Media
• Academic research groups and entrepreneurs in academia • Clusters of technology-based companies	• Programmes targeted at mobility and forming partnerships • Introduce system of reward for cooperative and problem-oriented research	• Government (MSES, MELE, MFIN) • Intermediaries (BICRO, HIT, NFS) • Academia

4. Implementation Instruments, Main Programme Areas and Budget Allocation

The *Technology-Related Research and Development Programme - TEST*, administered by the Croatian Institute of Technology, is targeted at academia and research institutions, and provides financial support to the development of new technologies, as well as complex projects for technological development such as prototype, pilot solution, accredited laboratories and intellectual products. Projects related to industry application are encouraged, as well as those leading to new approaches in fundamental and applied research.

Besides *Technology Projects*, further sub-categories of this programme are *Complex Technology Projects (STIRP)*[30] that are focused on multidisciplinary, precommercial and cooperative research, and *JEZGRA Projects*[31], which are aimed at creating centers of excellence in research and technology, based on public-private partnerships. €2.8 million has been secured in the state budget for 2006, for implementation of this programme.

The new *RAZUM* is an *Innovation Commercialization Programme,* administered by BICRO, which aims to ensure a sustainable increase in the number of knowledge-based enterprises. It shall serve as a seed fund for development of knowledge-based private or largely private enterprises that are using traditional technology and/or are technology based companies which can be expected to have a significant favorable impact on economic development. The programme operates based on public support and other sources of financing (such as the Croatian Bank for Reconstruction and Development (HBOR), the Ministry of the Economy, Labor and Entrepreneurship (MELE), the Fund for Development and Employment (FDE), and a World Bank loan), contributing 70% of project costs in the form of conditional grants, and the remaining 30% is contributed from the private sector. The programme is expected to combine €86 million of financing, with €20 million coming from the private sector.

To enable the right technology infrastructure to support commercialization of research outputs and development and growth of knowledge-based enterprises, the Government has initiated, with support from the World Bank, the *Technology Infrastructure Development Programme (TehCro)*, administered by BICRO, which will grant support for creation of technology incubators, R&D centers and technology-business centers linked to research/academic institutions and R&D-based industry. The Government shall commit €6.5 million to the programme, and Croatian financial institutions, like HBOR – Croatian Bank for Reconstruction and Development[32] are expected to contribute around €2 million.

The *Research and Development Programme (IRCro)*, administered by BICRO, is intended to encourage and stimulate demand for services of public research institutions, as well as to encourage SMEs to invest in R&D activities. The Programme envisages utilization of extensive facilities available within the universities and research institutions in the country. Projects under the IRCro Programme involve cooperation between an industrial firm and research/academic institutions and are jointly funded by the IRCro

30 http:// www.mzos.hr > Znanost > Tehnologijski razvitak > HITRA > TEST > Složeni tehnologijski projekti (STIRP).

31 http:// www.mzos.hr > Znanost > Tehnologijski razvitak > HITRA > TEST > JEZGRE.

32 http://www.hbor.hr

programme and the industrial company involving a 50/50 matching grant scheme. Thus, the private sector participates 50% in funding of R&D activities. A total of €1.5 million has been secured in the state budget up until the end of 2009 for this programme.

The ***Business Competitiveness Upgrading Programme (KonCro)***, administered by BICRO, assists SME's to become more competitive by increasing productivity, improving product quality, upgrading business organization by introducing ISO standards, helping in the patenting procedure, product design and environmental protection. A total of €1.5 million will be made available from the state budget, for disbursement to firms as grants. Each individual grant to a service-consuming firm must be matched by an equal contribution from a private sector firm.

In order to develop venture capital industry in Croatia, the new ***Act on Investment Funds***[33] that incorporates venture capital has been passed in December of 2005. The other course of action is to start a ***Venture Capital Programme (VenCro)*** in 2007, which is set up as a Government programme operated by BICRO, to incentivise the potential fund managers to start venture capital funds in Croatia. Under the ***VenCro*** programme, the Government will match up to 30% of other investors' capital, up to €4.6 million, which will be secured from the State budget under the World Bank STP loan.

Much work is needed in raising public awareness on IPR issues and instilling the "entrepreneurial mentality". A CARDS 2003 programme, Intellectual Property Rights Infrastructure for the R&D Sector in Croatia, is in place with the specific tasks of training individuals in IP management, as well as setting up of three individual IP Centers that would provide full scale of services to research institutes/academia, with the goal of reaching self-sufficiency for the IP Centers.

To facilitate creation of partnerships between universities and business, particularly in the area of natural sciences, there is a TEMPUS[34] Joint European Project for ***Stimulating Croatia's Entrepreneurial Activities and Technology Transfer in Education - CREATE***[35] in place for support of creation of three Entrepreneurship and Technology Transfer Offices, one at each of the universities in Zagreb, Rijeka and Split. The project has commenced in 2006, and is expected to be completed within 36 months; a total of €500,000 has been secured for its implementation.

The Ministry of Economy, Labour and Entrepreneurship (MELE)[36] administers programmes that are complimentary to the aims and objectives of the Ministry of Science, Education and Sports relating to technology and innovation, especially stimulating development and growth of technology-based SMEs. The MELE programmes are aimed at encouraging individuals to establish their own companies, as well as development of innovation clusters (***Cluster Development Programme***) to boost competitiveness. MELE also encourages development of ***Entrepreneurship Centers and Regional Development Agencies*** by providing them with financial assistance. There are several operational programmes of financial assistance for ***Stimulating Productivity and Introducing New Technologies and Products***, and the ***Education in Entrepreneurship Programme***.

33 Zakon o investicijskim fondovima (NN 150/05), www.nn.hr

34 http:// www.mzos.hr > Međunarodna suradnja > Suradnja s Europskom unijom > TEMPUS

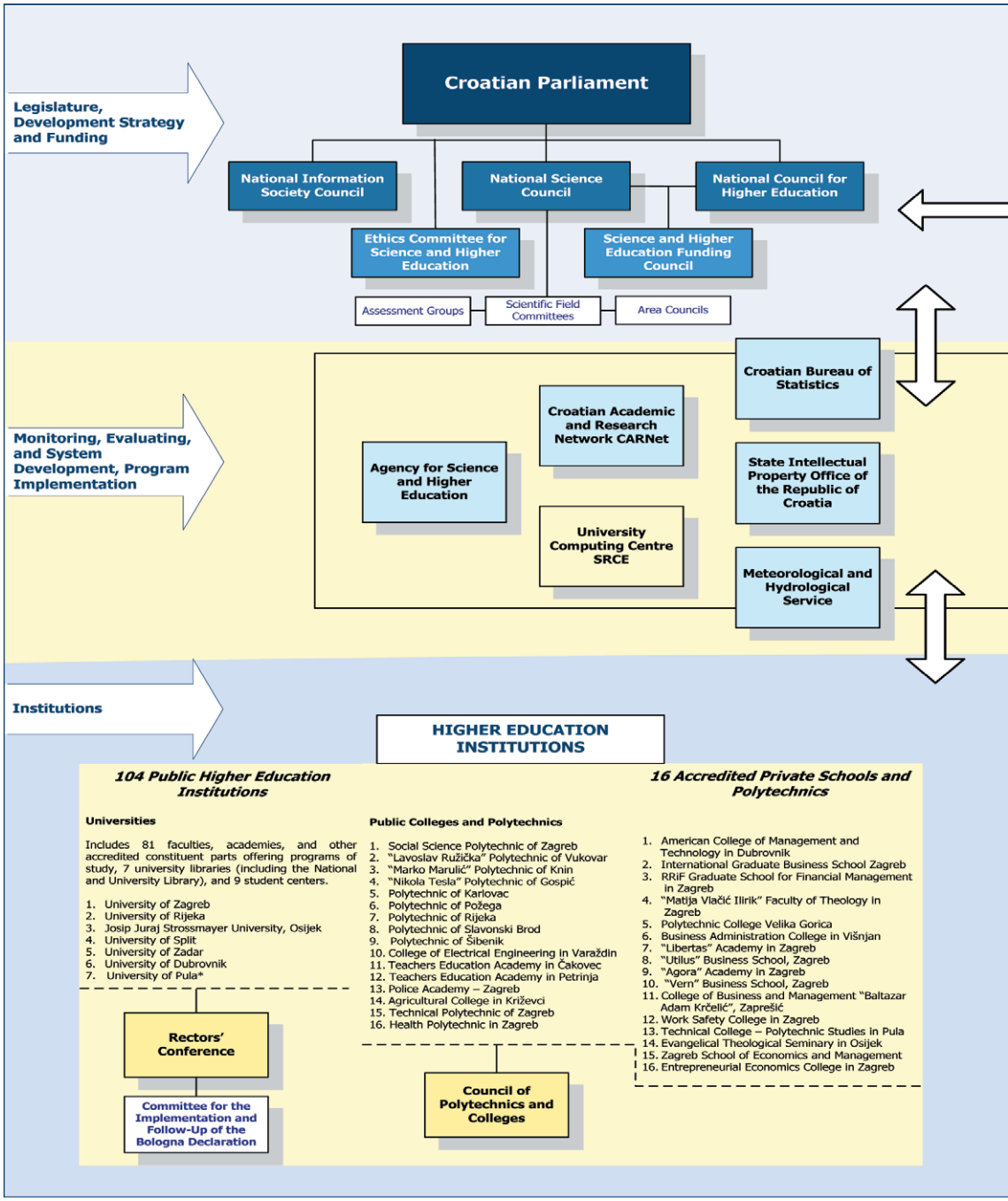
35 CREATE - Stimulating Croatia's Entrepreneurial Activities and Technology Transfer in Education, http://www.create-project.info/

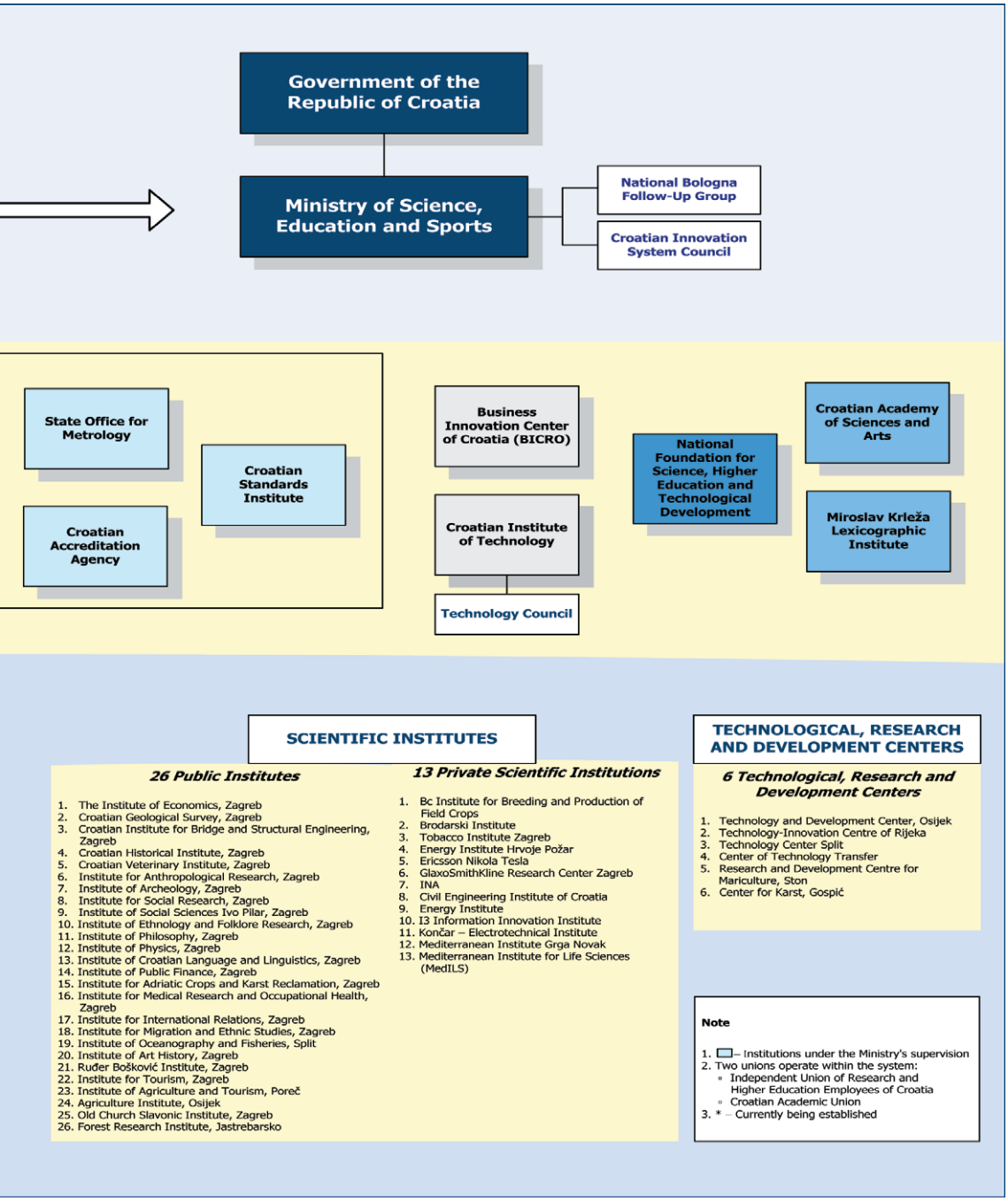
36 http://www.mingo.hr/

IV. CONCLUSION

The present S&T Policy of the Republic of Croatia is the key instrument for restructuring, development and modernization of science and technology in the Republic of Croatia. The Government of the Republic of Croatia will by the end of 2006 develop and adopt a specific and detailed Action Plan needed for successful implementation of the proposed Policy. Furthermore, the Government will establish a permanent governmental body, headed by the Prime Minister, which will continuously supervise and ensure the implementation of proposed measures at the national and local level and at the level of each research, educational and technological subject in the Republic of Croatia, respectively.

V. ORGANIZATIONAL SCHEME OF THE HIGHER EDUCATION, SCIENCE AND TECHNOLOGY AND INFORMATION SOCIETY SYSTEM IN THE REPUBLIC OF CROATIA




Government of the Republic of Croatia
Ministry of Science, Education and Sports
National Bologna Follow-Up Group
Croatian Innovation System Council
State Office for Metrology
Croatian Standards Institute
Croatian Accreditation Agency
Business Innovation Center of Croatia (BICRO)
Croatian Institute of Technology
Technology Council
National Foundation for Science, Higher Education and Technological Development
Croatian Academy of Sciences and Arts
Miroslav Krleža Lexicographic Institute
SCIENTIFIC INSTITUTES
26 Public Institutes
1. The Institute of Economics, Zagreb
2. Croatian Geological Survey, Zagreb
3. Croatian Institute for Bridge and Structural Engineering, Zagreb
4. Croatian Historical Institute, Zagreb
5. Croatian Veterinary Institute, Zagreb
6. Institute for Anthropological Research, Zagreb
7. Institute of Archeology, Zagreb
8. Institute for Social Research, Zagreb
9. Institute of Social Sciences Ivo Pilar, Zagreb
10. Institute of Ethnology and Folklore Research, Zagreb
11. Institute of Philosophy, Zagreb
12. Institute of Physics, Zagreb
13. Institute of Croatian Language and Linguistics, Zagreb
14. Institute of Public Finance, Zagreb
15. Institute for Adriatic Crops and Karst Reclamation, Zagreb
16. Institute for Medical Research and Occupational Health, Zagreb
17. Institute for International Relations, Zagreb
18. Institute for Migration and Ethnic Studies, Zagreb
19. Institute of Oceanography and Fisheries, Split
20. Institute of Art History, Zagreb
21. Ruđer Bošković Institute, Zagreb
22. Institute for Tourism, Zagreb
23. Institute of Agriculture and Tourism, Poreč
24. Agriculture Institute, Osijek
25. Old Church Slavonic Institute, Zagreb
26. Forest Research Institute, Jastrebarsko
13 Private Scientific Institutions
1. Bc Institute for Breeding and Production of Field Crops
2. Brodarski Institute
3. Tobacco Institute Zagreb
4. Energy Institute Hrvoje Požar
5. Ericsson Nikola Tesla
6. GlaxoSmithKline Research Center Zagreb
7. INA
8. Civil Engineering Institute of Croatia
9. Energy Institute
10. I3 Information Innovation Institute
11. Končar – Electrotechnical Institute
12. Mediterranean Institute Grga Novak
13. Mediterranean Institute for Life Sciences (MedILS)
TECHNOLOGICAL, RESEARCH AND DEVELOPMENT CENTERS
6 Technological, Research and Development Centers
1. Technology and Development Center, Osijek
2. Technology-Innovation Centre of Rijeka
3. Technology Center Split
4. Center of Technology Transfer
5. Research and Development Centre for Mariculture, Ston
6. Center for Karst, Gospić
Note
1. – Institutions under the Ministry's supervision
2. Two unions operate within the system:
▪ Independent Union of Research and Higher Education Employees of Croatia
▫ Croatian Academic Union
3. * – Currently being established

VI. OVERVIEW OF INSTITUTIONS AND BODIES OF THE SYSTEM

STATE INSTITUTIONS AND BODIES

1.	Agency for Science and Higher Education	http://www.azvo.hr
2.	Meteorological and Hydrological Service	http://www.dhmz.htnet.hr
3.	State Intellectual Property Office	http://www.dziv.hr
4.	State Office for Metrology	http://www.dzm.hr
5.	Central Bureau of Statistics	http://www.dzs.hr
6.	Croatian Academic and Research Network - CARNet	http://www.carnet.hr
7.	Croatian Accreditation Agency	http://www.akreditacija.hr
8.	Croatian Institute of Technology - HIT, Ltd.	http://www.hiteh.hr
9.	Croatian Parliament - Committee for Education, Science and Culture	http://www.sabor.hr
10.	Croatian Standards Institute	http://www.hzn.hr
11.	Ministry of Science, Education and Sports	http://www.mzos.hr
12.	National Foundation for Science, Higher Education and Technological Development	http://www.nzz.hr
13.	National Council for Information Society	
14.	National Council for Higher Education	http://www.azvo.hr
15.	National Science Council	http://www.nvz.hr
16.	Business Innovation Center of Croatia - BICRO, Ltd.	http://www.bicro.hr

IMPORTANT SCIENTIFIC ORGANIZATIONS

1.	Croatian Academy of Sciences and Arts*	http://www.hazu.hr
2.	Academy of Medical Sciences of Croatia	http://www.amzh.hr
3.	Croatian Academy of Engineering	http://www.hatz.hr
4.	“Miroslav Krleža” Lexicographical Institute*	http://www.lzmk.hr

*Institutions of special interest for the Republic of Croatia

PUBLIC INSTITUTES

1.	Institute of Economics	http://www.eizg.hr
2.	Croatian Geological Survey	http://www.hgi-cgs.hr
3.	Croatian Institute for Bridge and Structural Engineering	http://www.himk.hr
4.	Croatian Historical Institute	http://www.isp.hr
5.	Croatian Veterinary Institute	http://www.veinst.hr
6.	Institute for Anthropological Research	http://www.pub.srce.hr/antro/hrv/naslov
7.	Institute of Archeology	http://public.carnet.hr/iarh/
8.	Institute for Social Research	http://www.idi.hr
9.	Institute of Social Sciences "Ivo Pilar"	http://www.pilar.hr
10.	Institute of Ethnology and Folklore Research	http://www.ief.hr
11.	Institute of Philosophy	http://www.ifzg.hr
12.	Institute of Physics	http://www.ifs.hr
13.	Institute of Croatian Language and Linguistics	http://www.ihjj.hr
14.	Institute of Public Finance	http://www.ijf.hr
15.	Institute for Adriatic Crops and Karst Reclamation	http://www.krs.hr
16.	Institute for Medical Research and Occupational Health	http://www.imi.hr
17.	Institute for International Relations	http://www.imo.hr
18.	Institute for Migration and Ethnic Studies	http://www.imin.hr
19.	Institute of Oceanography and Fisheries	http://www.izor.hr
20.	Institute of Art History	http://www.hart.hr
21.	Ruđer Bošković Institute	http://www.irb.hr
22.	Institute for Tourism	http://www.iztzg.hr
23.	Institute for Agriculture and Tourism	http://www.iptpo.hr
24.	Agricultural Institute Osijek	http://www.poljinos.hr
25.	Old Church Slavonic Institute	http://public.carnet.hr/staroslavenski-institut/
26.	Forest Research Institute	http://www.jaska.sumins.hr

PRIVATE SCIENTIFIC INSTITUTIONS

1.	Bc Institute for Breeding and Production of Field Crops*	http://www.bc-institut.hr/
2.	Brodarski Institute, Ltd.	http://www.hrbi.hr/
3.	Tobacco Institute Zagreb*	
4.	Energy Institute Hrvoje Požar	http://www.eihp.hr/
5.	Ericsson Nikola Tesla*	http://www.ericsson.com/
6.	GlaxoSmithKline Research Center Zagreb, Ltd.	http://www.pliva.com
7.	INA*	http://www.ina.hr
8.	Civil Engineering Institute of Croatia*	http://www.igh.hr/
9.	Energy Institute*	http://www.ie-zagreb.hr/
10.	I3 Information Innovation Institute	http://www.svetikriz.com
11.	Končar - Electrotechnical Institute*	http://www.koncar-institut.hr/
12.	Mediterranean Institute Grga Novak	http://www.mign.org
13.	Mediterranean Institute for Life Sciences	http://www.medils.hr

*Joint stock company

TECHNOLOGY AND RESEARCH AND DEVELOPMENT CENTERS

1.	Technology-Development Center Osijek, Ltd.	http://www.tera.hr
2.	Technology-Innovation Centre of Rijeka, Ltd.	http://www.ticri.hr
3.	Technology Center in Split, Ltd.	http://www.tcs.hr
4.	Center of Technology Transfer - Ctt, Ltd.	http://www.ctt.hr
5.	Research and Development Centre for Mariculture, Ston	http://www.unidu.hr/ric.php
6.	Center for Karst, Gospić	

UNIVERSITIES AND COLLEGES

Universities

1.	University of Dubrovnik	http://www.unidu.hr
2.	Josip Juraj Strossmayer University of Osijek	http://www.unios.hr
3.	University of Pula*	
4.	University of Rijeka	http://www.uniri.hr
5.	University of Split	http://www.unist.hr
6.	University of Zadar	http://www.unizd.hr
7.	University of Zagreb	http://www.unizg.hr

*Currently being established

Public Colleges and Polytechnics

1.	Social Science Polytechnic of Zagreb	http://dns.pravo.hr/veleuciliste/
2.	"Lavoslav Ružička" Polytechnic of Vukovar	http://www.vevu.hr
3.	"Marko Marulić" Polytechnic of Knin	http://www.veleknin.hr
4.	"Nikola Tesla" Polytechnic of Gospić	
5.	Polytechnic of Karlovac	http://www.vuka.hr/
6.	Polytechnic of Požega	http://www.vup.hr
7.	Polytechnic of Rijeka	http://www.veleri.hr
8.	Polytechnic of Slavonski Brod	
9.	Polytechnic of Šibenik	http://www.vstsi.hr
10.	College of Electrical Engineering in Varaždin	http://www.vels.hr
11.	Teachers Education Academy in Čakovec	http://www.vus-ck.hr
12.	Teachers Education Academy in Petrinja	http://www.vusp.hr
13.	Police Academy - Zagreb	http://pa.mup.hr
14.	Agricultural College in Križevci	http://www.vguk.hr
15.	Technical Polytechnic of Zagreb	http://www.tvz.hr
16.	Health Polytechnic in Zagreb	http://www.zvu.hr

Accredited Private Colleges and Polytechnics

1.	American College of Management and Technology in Dubrovnik	http://www.acmt.hr
2.	International Graduate Business School Zagreb	http://www.igbs.hr
3.	RRiF Graduate School for Financial Management in Zagreb	http://www.rrif.hr
4.	"Matija Vlačić Ilirik" Faculty of Theology in Zagreb	http://www.tfmvi.hr
5.	Polytechnic College Velika Gorica	http://www.vvg.hr
6.	Business Administration College in Višnjan	http://www.manero.hr
7.	"Libertas" Academy in Zagreb	http://www.vps-libertas.hr
8.	"Utilus" Business School, Zagreb	http://www.utilus-zg.com
9.	"Agora" Academy in Zagreb	http://www.vs-agora.hr
10.	"Vern" Business School, Zagreb	http://www.vern.hr
11.	College of Business and Management "Baltazar Adam Krčelić", Zaprešić	http://www.vspu.hr
12.	Work Safety College in Zagreb	http://www.vss.hr
13.	Technical College - Polytechnic Studies in Pula	http://www.politehnika-pula.hr
14.	Evangelical Theological Seminary in Osijek	http://www.evtos.hr
15.	Zagreb School of Economics and Management	http://www.zsem.hr
16.	Entrepreneurial Economics College in Zagreb	http://www.zsm.hr

Computing Centre

University Computing Centre - SRCE, University of Zagreb	http://www.srce.hr

WEB PAGES OF IMPORTANT PROGRAMS AND PROJECTS OF THE MINISTRY OF SCIENCE, EDUCATION AND SPORTS

1.	Scientific projects	http://zprojekti.mzos.hr
2.	HITRA - Technology projects	http://tprojekti.mzos.hr/
3.	Croatian Scientific Portal*	http://www.znanstvenici.hr
4.	Center for on-line databases*	http://www.online-baze.hr
5.	Cooperation with the European Union	http://www.mzos.hr

*Joint projects of the Ministry of Science, Education and Sports, CARNET and "Ruđer Bošković" Institute

Acknowledgments

The Ministry of Science, Education and Sports wishes to thank the following academics, university professors, scientists and researchers, as well as other contributors, whose critical remarks and suggestions have improved the quality of the Science and Technology Policy of the Republic of Croatia 2006 – 2010: Branislava Baranović, Ph.D.; prof. Pavo Barišić, Ph.D.; prof. Stjepan Car, Ph.D.; prof. Olga Carević, Ph.D.; prof. Antun Carić, Ph.D.; prof. Ante Graovac, Ph.D.; Branko Guberina, Ph.D.; prof. Jasmina Havranek, Ph.D.; prof. Milena Jadrijević-Mladar Takač, Ph.D.; prof. Ivan Jalšenjak, Ph.D.; prof. Miljenko Jurković, Ph.D.; prof. Mario Kovač, Ph.D.; prof. Gordana Kralik, Ph.D.; prof. Sanja Milković-Kraus, Ph.D.; prof. Pero Lučin, Ph.D.; prof. Damir Magaš, Ph.D.; Dalibor Marjanović, B.Sc.; prof. Mateo Milković, Ph.D.; prof. Matko Marušić, Ph.D.; Andrea Moguš-Milanković, Ph.D.; prof. Milan Moguš Ph.D.; Pero Munivrana, M.Sc.; prof. Sveto Musić, Ph.D.; Ivana Nagy, Ph.D.; prof. Vladimir Paar, Ph.D.; prof. Krešimir Pavelić, Ph.D.; prof. Marko Petrak, Ph.D.; Hrvoje Prpić, M.D.; Gordana Prutki Pečnik; Vini Rakić, M.Sc.; prof. Stjepan Risović, Ph.D.; prof. Daniel Rukavina, Ph.D.; Ivan Šakić, Ph.D.; Dragan Šoljan, MSEE; Sandra Švaljek, Ph.D.; Donatela Verbanac, Ph.D.; Smiljka Vikić-Topić, M.Sc.; prof. Slobodan Vukičević, Ph.D.; prof. Mladen Žinić, Ph.D.