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# Mini Country Report/Croatia

**under Specific Contract for the Integration of INNO Policy  
TrendChart with ERAWATCH (2011-2012)**

## **Mini Country Report**

Thematic Report 2011 under Specific Contract for the Integration of  
INNO Policy TrendChart with ERAWATCH (2011-2012)

December 2011

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# Preface

The European TrendChart on innovation is the longest running policy benchmarking tool at European level. Since its launch in 1999 it has produced annual reports on national innovation policy and governance, created a comprehensive database of national innovation policy measures and organised a series of policy benchmarking workshops. The databases of INNO Policy TrendChart and ERAWATCH have been merged and a joint inventory of research and innovation policy measures has been created by the European Commission with the aim of facilitating access to research and innovation policies information within Europe and beyond.

With a view to updating the innovation policy monitoring, the European Commission DG Enterprise and Industry commissioned a contract with the objective to provide an enhanced overview of innovation and research policy measures in Europe and to integrate the INNO Policy TrendChart with the complementary ERAWATCH platform. This contract is managed by the ERAWATCH Network asbl. (<http://www.erawatch-network.com>) coordinated by Technopolis Group (<http://www.technopolis-group.com>).

During each of the two years of this specific contract three reports will be produced to complement data collection and to update the research and innovation policy measures: a trend report on innovation policy in the EU, an overview report on innovation funding in the EU and an analytical thematic report (the selected theme for 2011 is demand-side innovation policies). To this end, the objective of the present mini country report is to furnish those three reports with country specific information.

# Executive Summary

Despite the expiration of the Science and Technology Policy 2006 – 2010, no new strategic documents have been developed to replace it. The major characteristics and measures related to innovation policy continue, but, in the context of economic crisis, the policy debate related to innovation has been scarce. The changes to innovation policy, which have been implemented, have not affected its overall orientation in a major way – they mostly complemented the existing measures and structures. No comprehensive evaluations have been performed. There have been no significant changes in the responsibilities of governmental bodies that define and implement innovation policy.

The main innovation policy challenges include access to capital, increasing business R&D expenditures as a means to enhance accessibility of knowledge, and facilitation of protection of intellectual property.

The main innovation policy opportunities include utilisation of pre-accession assistance and Community Programmes in order to build up competencies and prepare for the utilisation of structural funds. The reform of academic institutions and enhanced networking can create more opportunities for science-industry collaboration, technology transfer and innovation development.

In the period June 2009 – June 2011, the only major change has occurred due to the economic crisis, which led to significant budget reductions. There were no new policy priorities introduced. It is expected that continuation of the Science and Technology project, supported by the World Bank, will play a major role in bridging the current financial gaps and preparation of project pipeline for structural funds.

In the current policy mix both direct (grants) and indirect (e.g. tax incentives) innovation policy measures are in place. The main types of measures include financial support (e.g. grants for pre-commercial research and innovation commercialisation) and actions to improve the functioning of institutions which affect innovation processes and performance (e.g. intellectual property rights, financial markets, including venture capital, setting up firms, regulatory reforms etc.), with some resources devoted to funding of innovation infrastructure and intermediary institutions. Demand-side innovation policies have not been implemented.

Innovation governance in Croatia is insufficiently developed. Policy coordination needs to be improved as well.

In order to reform the science and higher education sector the MSES has proposed and released into the public debate on 12 October 2010 three important laws: the Law on Science, the Law on Universities and the Law on Higher Education. The laws should replace the current 2003 Science and Higher Education Bill, which is seen widely as needing improvement. The proposed laws entail significant changes in the functioning of the entire higher education and scientific system and have encountered opposition from a significant part of the academic community, student body and civil society organisations. They have not been adopted. Further policy debate is expected and reform of the sector will be left to the new government (which will be formed in December 2011).



## 1. Innovation policy trends

### 1.1 Trends and key challenges for innovation policy

Despite the expiration of the Science and Technology Policy 2006 – 2010, no new strategic documents have been developed to replace it. The major characteristics and measures related to innovation policy have been continued, but, in the context of economic crisis, the policy debate related to innovation has been scarce. The implemented changes to innovation policy have not affected its overall orientation in a major way – they mostly complemented the existing measures and structures.

One of the most important changes in innovation policy is its orientation towards IPA (Instrument for Pre-Accession assistance) and programmes related to regional development such as INTERREG, which have been used to complement existing policy measures. These include the Science and Innovation Investment Fund and BIOCentre. Despite slow implementation, this orientation provides opportunities for a better integration of RTOs/universities into the local development and closer science-industry cooperation. The main challenge is the insufficient number of good project proposals and low involvement of local economy.

There have been no publicly available evaluations of innovation policy. However, given that some policy measures have been co-financed by the World Bank (within the Science and Technology Project), an ex post analysis of effectiveness of selected policy measures has been completed in July 2011 but the results have not been published yet.

The main innovation policy challenges include access to capital, increasing business R&D expenditures as a means to enhance accessibility of knowledge, and facilitation of protection of intellectual property. These three challenges are interlinked. In order to develop innovative products, technologies and business models, a company does not only need capital, but also specific technology and marketing knowledge that will facilitate successful innovation development and commercialisation. Both capital and knowledge are currently scarce, and policymakers should increase their supply and reduce their cost. One of the key deficits of innovation performance is low (and decreasing) level of business expenditures on research and development, which results in the lack of innovations with a wider commercialisation and diffusion potential. The lack of new-to-the-market and radical innovations results in a low level of protection of intellectual property rights, which is crucial for internationalisation of innovative products and processes.

Figure 1 Main innovation policy challenges

Name of the measure	Description of challenge	Relevant indicators and trends
<b>1. Providing access to capital</b>	Due to the economic and financial crisis, the issue of innovation finance comes into focus. Without access to capital many promising innovation projects are likely to be postponed or cancelled. A business angel network needs to be developed. Loans are becoming more expensive and difficult to obtain. High requirements of venture capital funds and reluctance of companies to receive equity finance and give up control over enterprises preclude more widespread use of venture capital and private equity financing. Equally important is access to specific technology and marketing knowledge.	The availability of credit has been a problem since 2009. There are no official data on venture capital financing, but the available evidence suggests that VC funding is used only occasionally. The government has initiated Funds for Economic Co-operation – public-private investment funds that could also be used to finance innovative projects, but the limited experience indicates that they will focus on enterprises in mature industries, which experience liquidity problems.

Name of the measure	Description of challenge	Relevant indicators and trends
<b>2. Increasing business R&amp;D expenditures as a means to enhance accessibility of knowledge</b>	Most Croatian companies either do not undertake R&D at all or R&D occupies a marginal role in their business strategies. Innovation is more likely to be stimulated by competition, rather than by strategy. Although the level of business R&D expenditures is higher than in most new EU Member States, this performance is clearly insufficient.	Business R&D expenditures are not only low but decreasing. In 2009, the business sector investments in R&D have decreased in comparison to the previous year both in absolute terms (from € 186m to € 155m) and in relative terms (from 44.2% of GERD in 2008 to 40.4% of GERD in 2009), whereas its total investments in R&D amounted to 0.34% of GDP (0.40 % in 2008). Enterprises that invest in research and development have generally a low level of research and development intensity, and many innovators do not undertake R&D.
<b>3. Facilitating the protection of intellectual property</b>	The lack of new-to-the-market and radical innovations results in a low level of protection of intellectual property rights, which is crucial for internationalisation of innovative products and processes. Most innovators do not come up with products and technologies that can be successfully patented, commercialised and exported. Few companies prefer to use other means to protect their innovations.	This area is arguably among the most underdeveloped in Croatia, although some progress has been reported. First steps have been taken within the CARDS 2003 project for establishing the IPR infrastructure and strategy entitled Intellectual Property Infrastructure for the R&D Sector.

The main innovation policy opportunities include utilisation of pre-accession assistance and Community Programmes in order to build up competencies and prepare for the utilisation of Structural Funds. The reform of academic institutions and enhanced networking can create more opportunities for science-industry collaboration, technology transfer and innovation development. The exhaustion of the growth model based on private consumption and credit expansion may increase awareness and create opportunities for more innovation. As for the threats, the long-term nature of effects of innovation policy may make policymakers reluctant to increase available resources. Moreover, institutional inertia and the lack of incentives may make the gap between science and industry hard to bridge.

### 1.2 Innovation governance

Between June 2009 and June 2011 there have been no significant changes in the responsibilities of governmental bodies that define and implement innovation policy.

**Ministry of Science, Education and Sports (MSES)** is the central government body responsible for implementing, coordinating and monitoring the science, innovation and technology activities. It is in charge of allocation of the budgetary funds for R&D activities in public institutes and higher education institutions, as well as allocation of budgetary funds for technology programmes and related activities (including science-industry cooperation and commercialisation of research results). The issues of innovation and technology transfer are currently under the jurisdiction of the Directorate for Science, whose head also chairs the **National Innovation System Council**, an expert body (composed mainly of scholars) whose task is to monitor and facilitate implementation of the Action Plan 2007 – 2010. There have been suggestions that the National Innovation System Council involves researchers active in innovation policy analysis in order to strengthen its competencies.

**The Ministry of Economy, Labour and Entrepreneurship (MELE)** is the central government body in charge of implementing enterprise policy. The SME Directorate within the Ministry implements measures and activities for the development of entrepreneurship through promotion, training of entrepreneurs, technical assistance, local financing, institutional capacity building and commercialisation of innovations. It also encourages clustering and networking of entrepreneurs, implements measures for the development of SMEs and co-operatives,

improves entrepreneurial and managerial skills, undertakes the harmonisation of legal framework with EU regulations and implements measures for international cooperation and export and investment promotion. MELE is also responsible for energy issues (including renewables) but its role in facilitation of innovations in this sector is limited.

Although they partially cover similar grounds, the two ministries operate quite independently. There have been several initiatives to foster coordination between different governmental bodies in order to facilitate innovation policy. Along these lines, and in accordance with the aforementioned Action Plan 2007 - 2010, **the Strategic Council for Science and Technology** as a permanent high-level coordination body chaired by the Prime Minister was founded in April 2008. Its members are:

- Minister of Science, Education and Sports
- Minister of Economy, Labour and Entrepreneurship
- Minister of Finance
- Minister of Sea, Transport and Infrastructure
- Minister of Environmental Protection, Physical Planning and Construction
- President of the Technology Council
- President of the National Science Council

No publicly available information exists on the functioning of this Council.

The contribution of other ministries to innovation activities is rather modest. Only the Ministry of Agriculture, Forestry and Water Management provides grants for applied agricultural research. However, it is expected that the Ministry of Health and Welfare will take a greater role in the innovation development in the future, especially when it comes to biosciences and medicine in general.

The resources available to organisations in charge of innovation policy in most cases increase annually, but without any dramatic changes. This has changed recently, since budgetary cuts have also affected the resources available for some innovation policy measures. The cuts have been significant compared to the past slow growth, especially given the fact that implementation of some measures (i.e. science-industry research collaboration programme - IRCRO) has been postponed till further notice due to the lack of available funds. Science and Technology Project of the World Bank, which provided a loan used for co-financing of innovation policy measures has ended, MSES terminated the co-financing of activities of Croatian partners in FP7 programmes, while annual budgets of some policy measures have significantly decreased in 2011.

In 2006 the Croatian Government passed the Guidelines to the Programme for Supporting Innovative and Technology-based Entrepreneurship implemented by two specialised agencies. The first one is the **Business Innovation Centre of Croatia (BICRO)**, an innovation and investment company established in 1998 in order to provide financial and other support to innovation and technology based businesses in Croatia. The second agency is the **Croatian Institute of Technology (HIT)**, founded in 2006 in order to facilitate applied research, science-industry collaboration, technology foresight and business intelligence activities.

**The Business Innovation Centre of Croatia (BICRO)** is a professional innovation and investment company which was established by the Croatian Government (i.e. MSES) in 1998. Between 2001 and 2006 BICRO operated the RAZUM programme - a sub-programme of the Croatian Program for Innovative Technological Development (HITRA). With assistance through the TAL-2 project, BICRO developed into one of the main project implementing agencies of the Croatian technology programme, with the mission of facilitating technology transfer and commercialisation activities primarily in the sector of SMEs, contributing to the creation and development of private equity industry (especially venture capital), and promoting the establishment and development of science and technology parks, incubators and other related institutions.

BICRO's task is to strengthen the economic structures of Croatia through the development of support programmes and through the development and implementation of the own projects. In 2006, BICRO began carrying out the five support programmes - **Seed capital and innovation commercialisation programme (RAZUM)**, **Technology infrastructure development programme (TECHRO)**, **Venture capital programme (VENCRO)**, **Research and development programme (IRCRO)** and **Business competitiveness upgrading programme (KONCRO)**.

**The Croatian Institute of Technology (HIT)** was founded in March 2006 by the Croatian government (i.e. MSES). Its mission is to create the pre-conditions for accelerated application of new knowledge and technologies, by providing services, expertise and project funding. In December 2006, HIT restructured and took over the implementation of the TEST programme. TEST provides funding for pre-commercial research activities aimed at developing new technologies (products/processes/services) through the development of original solutions (prototypes/pilot solutions), as well as research linking fundamental sciences and their technological application to development of industry sectors. HIT is also in charge of developing the national technology foresight platform and business intelligence system, and will overtake from MSES consolidation of the administrative structure of the national focal points of EU Framework Research and Technology Development Programmes.

**HAMAG** (Croatian Small Business Agency) is the implementation agency affiliated with MELE. It provides support and implements measures from the 2004-2008 Development Programme for Small Enterprises, focusing on financial incentives schemes and business advisory services through a network of certified consultants.

**The State Intellectual Property Office** of the Republic of Croatia is the administration body with responsibilities in the field of protection of intellectual property rights. The Office carries out procedures for granting industrial property rights (patents, trademarks, industrial designs, geographical indications and designations of origin, topographies of semiconductor products) and performs accompanying professional and legislative activities.

There are also other public or private institutions that are in charge of SMEs and entrepreneurship development. The key ones are mentioned below. The **Croatian Chamber of Economy (CCE)** and the **Croatian Employers Association (CEA)** are two leading organisations representing employers. The former one is more traditional, with a compulsory membership and stronger linkages to the government, whereas the latter is voluntary, smaller and more flexible. Both of them have an important role in the entrepreneurial policy arena, but are arguably not sufficiently active in promoting innovation. CCE has excelled in information dissemination related to EU accession, whereas CEA has initiated the establishment of the National Cluster Centre. The **National Competitiveness Council** is an advisory body (comprising representatives of the government, business and academic sectors, as well as trade unions) with significant influence on the public policy development. The most influential document produced by the Council is its "55 Policy recommendations for Improving Croatia's Competitiveness" from 2004. On a biannual basis, the Council also produces a Competitiveness Report. **CEPOR** is a non-profit organisation established in 2001 and the first think-tank in Croatia that deals with SMEs and enterprise policy. Its most important activity is carrying out the Global Entrepreneurship Monitor (GEM) research, that enable international comparison of Croatian entrepreneurship and serves very important aims for setting priorities and designing national policies in the SME sector.

There is a trend towards closer cooperation of government bodies in the planning and implementation of science and technology policy. The need for better inter-ministerial coordination in science and technology development, especially between the Ministry of Science, Education and Sports and the Ministry of Economy, Labour and Entrepreneurship, as a crucial factor in overall strategic development, has become more obvious and resulted in the establishment of the Strategic Council for Science and Technology (SVEZNATE) and the National Innovation System Council of MSES (VNIS) in 2008. However, up to now the bodies have not appeared as active stakeholders in the science and innovation policy and strategic development.

The policy debate could be more developed and often restricted to academic and professional circles; this is in part due to the lack of data and evaluation studies and in part due to insufficient communication among policy-makers and key stakeholders - business and academic communities, regional and local authorities, professional associations and employees. Institutional inertia and the lack of incentives sometimes make the gap between science and industry hard to bridge. The reform of academic institutions and enhanced networking can create more opportunities for science-industry collaboration, technology transfer and innovation development. The current reform of regional development policy can be used as an opportunity to develop regional innovation strategies and leverage specific capabilities of different regions. Similar synergies can be sought with other relevant policies (including FDI, enterprise and education policies).

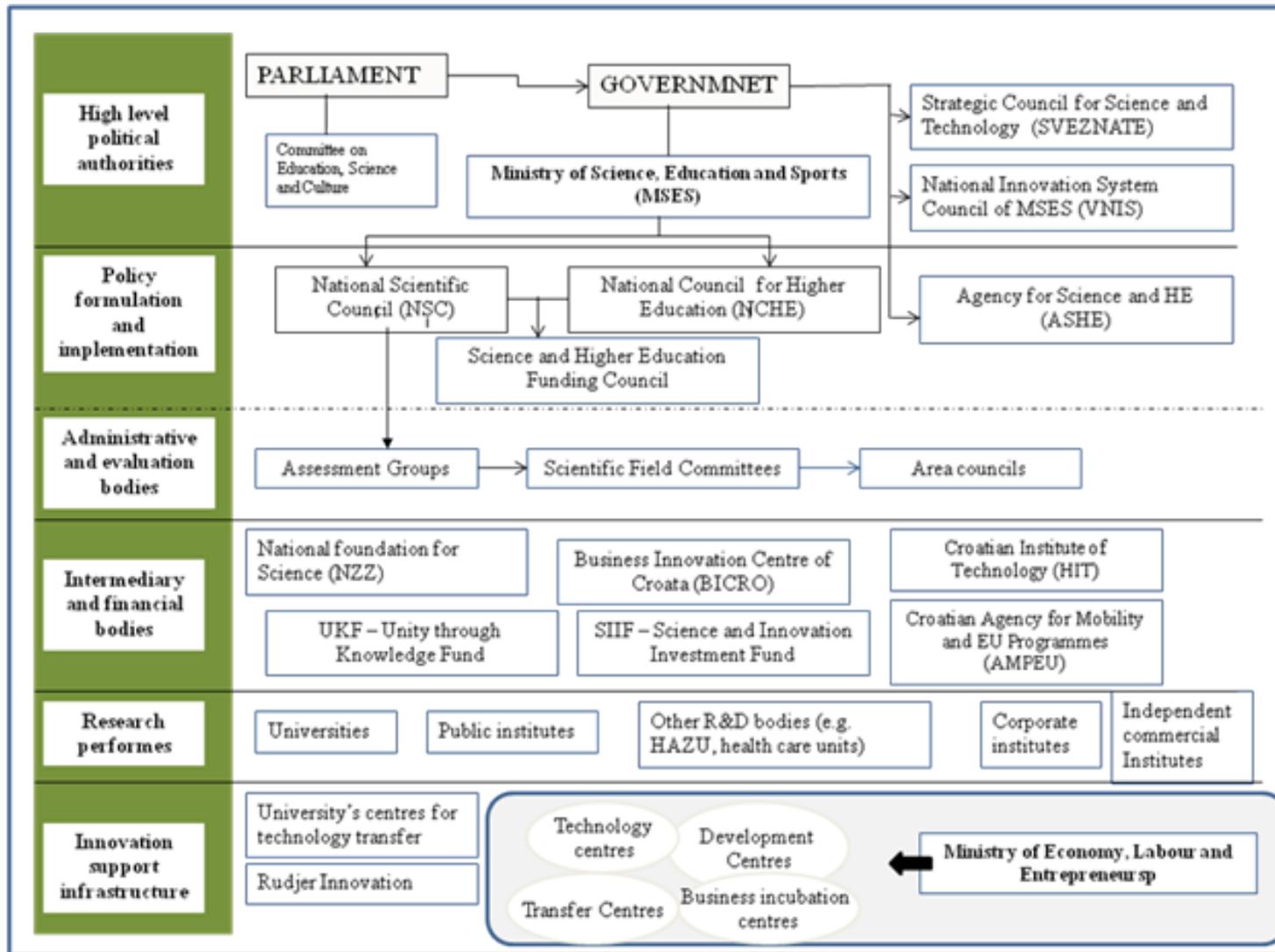
More attention should also be paid to coordination between different bodies responsible for innovation policy, better planning and evaluation processes, including the definition of specific linkages between policy priorities, policy measures and performance indicators.

With the exception of several isolated initiatives aimed at innovation encouragement and promotion (i.e. the development of the science and technology park STeP Ri within the University in Rijeka) Croatia's regional level has a relatively weak influence on innovation governance and development but the implementation of a newly adopted cluster policy and regional development strategies is expected to change that.

There is a lack of systematic and comprehensive evaluation of the policy measures administered by the MSES such as the programmes for young researchers, the procurement of equipment, scientific publishing, etc. that would have policy implications. There is also a lack of evaluation of the programmes aimed at commercial exploitation of knowledge, like technology projects (TEST) and knowledge-based companies (RAZUM). Although all projects are subjected to serious ex-ante and interim evaluation, the ex-post evaluation as well as evaluation of the programmes as a whole is not quite sufficient to have a significant impact on innovation policy.

Source: [ERAWATCH Research Inventory](#) [adapt link]

Figure 2 Overview of the Croatian innovation system governance structure



### 1.3 Recent changes in the innovation policy mix

After a very intensive phase of science policy development in the period 2006-2008 the strategic research policy in 2010 was fairly stagnant. One of the reasons is that Croatia is in the midst of the worst economic crisis in the last two decades, which has produced the cut backs for scientific research as well as for salaries in the whole public sector including researchers and teaching staff at universities. However, the so-called “crisis income tax” of 6% to the net income was abolished on 1 November 2010 in order to increase domestic consumption as a way of overcoming the crisis.

The financial crisis mostly threatened the PhD students with a status of young researchers whose scholarships have been temporarily abolished. Besides, the contracts for permanent position usually provided to them after completion of their PhD have not been issued in many cases exposing young doctors of science to the dysfunctional labour market and high unemployment rate.

The financial and economic crisis reduced the total R&D expenditure in 2009 to 0.83% of GDP (€383m) from 0.9% of GDP in 2008 (€421m). The public resources for R&D in 2009 (€196m) has also slightly decreased compared to 2008 (€208m) and amounted to 0.43% of GDP which is far from the Barcelona target of 1% of GDP of public resources for R&D. Business R&D expenditures are decreasing even more drastically. In 2009, the business sector investments in R&D have decreased in comparison to the previous year both in absolute terms (from € 186m to € 155m) and in relative terms (from 44.2% of GERD in 2008 to 40.4% of GERD in 2009), whereas its total investments in R&D amounted to 0.34% of GDP (0.40 % in 2008).

The MSES carried out the evaluation of projects financed within the Research project programme in May and June in order to check their progress and achieved results and reduce already scarce budget resources. The funding for about 10% of projects has been terminated while 52% of projects received reduced financing. The remaining 40% of projects are funded in the same amount because they achieved good results.

MSES has also temporarily suspended the financing of activities on FP and financial incentives for scientific excellence. The decision to terminate co-financing FP7 projects entered into force in March 2010 and was applied retrospectively from 1 June 2009. Until this decision has been made, the MSES used to co-finance the activities of Croatian partners in the FP7 programme. A Croatian partner in any positively evaluated FP7 project would receive financial resources from the MSES, as well as additional resources when the project was approved for co-financing within the FP7. Now, Croatian partners are still free to participate in FP7 projects, but have to finance their project activities themselves.

In order to reform the science and higher education sector the MSES has proposed and released into the public debate on 12 October 2010 three important laws: the Law on Science, the Law on Universities and the Law on Higher Education. The laws should replace the current 2003 Science and Higher Education Bill, which is seen widely as needing improvement. The proposed laws entail significant changes in the functioning of the entire higher education and scientific system and have encountered opposition from a significant part of the academic community, student body and civil society organisations. They have not been adopted. Further policy debate is expected and reform of the sector will be left to the new government (which will be formed in December 2011).

Although the scientific community is of the opinion that reform is necessary the proposed laws resulted in a loud opposition due to a range of unacceptable solutions, conceptual deficiencies and inconsistency.

The Business Innovation Centre Croatian - BICRO has launched in early May 2010 a new programme for innovative projects called Proof of Concept (PoC). A total of 85 applications have been received with the requested value of funds for over €2m. The private sector should invest another €2m.

Within the Science and Innovation Investment Fund (SIIF) a programme carried out in the framework of the IPA (Regional Competitiveness Programme), the five new projects have been approved on October 26, 2010 of the total value of €2.6m.

The greenfield investment in incubation centre for bioscience technologies (BIOCentre) within the IPA has been agreed with the EU at the beginning of November of 2010. The total value of the project is close to €18m.

There have been no changes regarding social and public sector innovation, as well as creativity/design and service innovation. The main focus remains at technology innovation development and increase of business sector involvement.

#### 1.4 Internationalisation of innovation policies

The participation of foreign scientists in research projects has been significantly simplified with the adoption of the Regulations on the establishment of conditions for granting temporary residence for foreigners (OG 42/08) in 2008. Until October 2010 29 applications for hosting of foreign researchers has been approved. The institutions with greatest mobility of researchers are: Ruđer Bošković Institute (7), Faculty of Science, University of Zagreb (7), Mediterranean Institute for Life Sciences – MedILS (3), Institute of Croatian Language and Linguistics (3), Institute of Ethnology and Folklore Research (3), Croatian Forest Research Institute (2) and Medical Faculty, University of Rijeka (1).

The new Action Plan for Mobility of Researchers 2011 – 2012 was introduced in December 2010, with two main goals: (1) removing the obstacles for mobility of researchers and (2) increasing the international and inter-sectoral mobility. Measures within these two goals include: (1) Employment of foreign researchers on science and science-educational working places; (2) Enhancement of working conditions for researchers; (3) Regulation of residence for the purpose of scientific research; (4) Further development of infrastructure for mobility of researchers; (5) Encouraging inter-sectoral mobility of researchers, and (6) Strengthening the researchers' competences.

The Action Plan for Overcoming Obstacles and Enhancing International Mobility in Education for the Period 2010 – 2012 has also been introduced and adopted in September 2010 and is expected to further facilitate the mobility of researchers, as well as the status of foreign researcher in Croatia.

The Croatian innovation policy measures are usually not opened for participants from other countries. However, some of the measures aimed at innovation development are delivered within the IPA programme (i.e. IPA Adriatic Cross Border Cooperation Programme) and other international initiatives (i.e. South East Europe Transnational Cooperation Programme) which, by their nature, imply cross border cooperation.

#### 1.5 Evidence on effectiveness of innovation policy

There are no publicly available evaluations or reviews of innovation policies.

With regards to the effectiveness of policy delivery, there could be differences at the levels of effectiveness and efficiency of ministries and their affiliated implementation agencies. Such differences may stem both from institutional design and the quality of management and staff of these institutions. However, to analyse them in detail, thorough monitoring and evaluation should be undertaken, which is currently not the case.

The team at the Ministry of Science, Education and Sports is competent but understaffed when it comes to innovation policy. Innovation and technology issues are under jurisdiction of the Directorate for Science; one can debate whether a separate department should exist (as it has been in the past), but the effectiveness of policy implementation would be facilitated if new experts could be recruited – especially given the range of tasks related to EU assistance and collaboration with European institutions.

In the case of BICRO, the implementation of policy measures (RAZUM, TEHCRO, KONCRO, IRCRO) develops good practices which could be spread further – e.g. into neighbouring countries. BICRO’s procedures are clear and well documented, the decision-making process is transparent and their staff is competent and knowledgeable in innovation policy implementation. However, given the increasing demand and the need to respond to the current crisis, the effectiveness of policy implementation would be improved if more human and financial resources could be engaged. Based on the available information, it can be argued that other institutions implementing science, technology and innovation policy measures (e.g. HIT, Unity through Knowledge Fund, National Foundation for Science, Higher Education and Technological Development) have also reached satisfactory degrees of effectiveness and efficiency in policy implementation. However, the level of coordination and the process of innovation policy delivery as a whole should be improved. Innovation policy effectiveness could also be facilitated by more stakeholder engagement, the use of external experts and systematic monitoring and evaluation.

Innovation policy is still missing large scale and networking projects which could pull together the private and the public stakeholders in joint development and strategic research activities such as joint technology initiatives, technology platforms, networks of knowledge, etc. Such joint activities could raise the interest of the private business sector for research and increase investments in public research.

#### Case 1 TEHCRO

The TEHCRO (Technology Infrastructure Development) programme can be evaluated as the most important and most successful programme when it comes to supporting the innovation and technology infrastructure in Croatia. The programme currently supports the development of six technology parks or centres, which represent the basic infrastructure for university-industry cooperation and for more intensive involvement of universities in research commercialisation and cooperation with the local economy.

TEHCRO provides financial support for starting, improving and developing the technology infrastructure which is able to provide adequate facilities, services, and business and technical support for transmission and / or adoption of technology, commercialization of scientific research results and the necessary resources in business development and conditions for growth and development of innovative technology companies.

In TEHCRO there are three different project categories:

- Technology Business Centres
- Technological Incubators
- Research and Development Centres

Beneficiaries are companies, which are mostly publicly owned, including public-private partnerships.

Funding is made in the form of loans, grants or equity investment. Allocated funding does not exceed 50% of the total project costs. The beneficiary needs to provide project financing from other sources amounting to at least 30%, and its own resources.

Funds can be used for co-financing of the operating expenses and costs incurred in carrying out pre-defined activities and business and development services for innovative companies.

The operating costs funded by the TEHCRO represent the difference between total revenues and expenditures for the performance of defined services plus a reasonable profit.

#### **The model of financing the operational costs for the technology-business centre**

First 3 years: up to 55% non-refundable

The fourth and fifth years: up to 25% non-refundable

#### **The model of financing the operational costs of incubators**

Up to 65% non-refundable

#### **The model of financing the operational costs of research and development centres**

Up to 35% non-refundable and up to 65% interest-free loan (with 2 year grace period and repayment period of 10 years)

For further information:

[http://www.bicro.hr/en/index.php?option=com\\_content&view=article&id=318&Itemid=356](http://www.bicro.hr/en/index.php?option=com_content&view=article&id=318&Itemid=356)

## 2. Innovation policy budgets – an overview

The 2009 TrendChart reports included a detailed analysis of available budgets based on the data contained in the policy measure templates for each country. The findings were summarised in the European Innovation Progress Report 2009 (available at: <http://www.proinno-europe.eu/trendchart/european-innovation-progress-report> ).

This section updates the 2009 analysis and further explores the issue of the budgets for implementing innovation policy. It is recognised that not all Government departments/agencies allocate individual budgets to specific measures. Moreover, actual expenditure year-on-year can vary considerably from had been initially declared in policy documents or programming documents. Equally, not all important policy measures are based on significant direct public funding (e.g. the enforcement of a regulatory measure may have an indirect cost for public or private sector stakeholders that is not easily quantifiable prior to adoption).

### 2.1 Trends in funding of innovation measures

Figure 3 Broad share of available budgets by main categories of research and innovation measures

Broad category of research and innovation policy measure	Approximate total annual budget for 2010 (in euro)	Commentary
<b>1. Governance &amp; horizontal research and innovation policies</b>	€17.880.586,76 (direct support)	Actual expenditure in 2010
<b>2. Research and Technologies</b>	€9.214.880,53	Actual expenditure in 2010
<b>3. Human Resources (education and skills)</b>	€46.495.244,05 (direct support)	Both actual and planned expenditures are included, please see Appendix A
<b>4. Promote and sustain the creation and growth of innovative enterprises</b>	€1.253.401,08 (direct support)	Actual expenditure in 2010
<b>5. Markets and innovation culture</b>	n/a	n/a

In the period June 2009 – June 2011, there were no new policy priorities introduced.

Some of the measures have reached their end date and completed the planned financing periods (e.g. Brain Gain - Homing programme, Fellowships for Doctoral Students, etc.) so that no new calls were published. On the other hand, in the period June 2009 – June 2011, there was only one new measure introduced – Proof of Concept (PoC) financed by Bicro. The programme co-finances the initial phase of innovative science-entrepreneurial projects in the amounts from 35.000 to 350.000 HRK (around €4.700 – 47.000). Besides the PoC, no new measures have been introduced.

Even continuous measures which have no end date planned have had decreased budgets in the observed period. This is most noticeable when it comes to the TECHRO programme (the budget was reduced from €1,6m in 2009 to €279.054 in 2010) and the RAZUM programme (budget for 2009 was more than €2m, while in 2010 it was reduced to €974.947).

Also, the submission of applications for some of the measures was postponed in 2009 and 2010 due to insufficient available funds (e.g. KONCRO).

In the period June 2009 – June 2011, the budgets for research and innovation measures have significantly decreased. In addition, some of the measures have reached the planned end date and no new calls have been published and, on the other hand, only one new measure has been introduced in the same period.

Public-private partnerships still have no significant effect on innovation funding in Croatia. However, this form of financing is gradually becoming the first choice infrastructure financing, and is expected to gain importance in innovation financing also.

When it comes to EU funding, as a candidate country Croatia has limited access to EU funding before 2013, when it is expected to become a full member of the European Union. Besides the pre-accession finds (IPA), innovation and research is financed mostly through FP7, COST and EUREKA programmes.

Even though the share of EU sources is increasing, applied projects mostly result from individual efforts, rather than from systematic approach in innovation development on institutional levels.

## 2.2 Departmental and implementing agency budgets for innovation policies

There are no publicly available data on innovation budgets of the main government departments and agencies. Most of them have overall annual budgets which, besides the activities aimed at innovation support, include the budgets for all activities conducted within the agency or a department. The further budget distribution is not available and is not a subject to any appraisals.

## 2.3 Future challenges for funding of innovation policy

During the few years before the economic crisis, budgets allocated to innovation policy tended to be increased gradually. However, the budgets have been decreased in 2009, 2010 and 2011 as a result of cuts in public spending. Without access to capital many promising innovation projects are likely to be postponed or cancelled. Business angel network needs to be developed. Loans have become more expensive and difficult to obtain. High requirements of VC funds and reluctance of companies to receive equity finance and give up control over enterprises preclude more widespread use of venture capital and private equity financing. The public-private investment Funds for Economic Co-operation may play a role, but it is relatively unlikely that they will focus on innovative projects. Equally important is access to specific technology and marketing knowledge.

Also, the long-term nature of effects of innovation policy may make policy-makers reluctant to increase available resources or introduce new policy measures. Innovation should be viewed as a means to secure long-term economic growth, rather than as a regular budgetary expenditure.

It is expected that continuation of the Science and Technology project, supported by the World Bank, will play a major role in bridging the current financial gaps and preparation of project pipeline for structural funds.

### 3. Thematic report: Demand-side innovation policies

For the purposes of this report, the following categorisation of demand-side innovation policy tools is adopted:

Figure 4 Categorisation of demand-side policies

<b>Demand side innovation policy tool</b>	<b>Short description</b>
<b>Public procurement</b>	
Public procurement of innovation	Public procurement of innovative goods and services relies on inducing innovation by specifying levels of performance or functionality that are not achievable with 'off-the-shelf' solutions and hence require an innovation to meet the demand. <sup>1</sup>
Pre-commercial public procurement	Pre-commercial procurement is an approach for procuring R&D services, which enables public procurers to share the risks and benefits of designing, prototyping and testing new products and services with the suppliers <sup>2</sup> .
<b>Regulation</b>	
Use of regulations	Use of regulation for innovation purposes is when governments collaborate broadly with industry and non-government organisations to formulate a new regulation that is formed to encourage a certain innovative behaviour. <sup>3</sup>
Standardisation	Standardisation is a voluntary cooperation among industry, consumers, public authorities and other interested parties for the development of technical specifications based on consensus. Standardisation can be an important enabler of innovation. <sup>4</sup>
<b>Supporting private demand</b>	
Tax incentives	Tax incentives can increase the demand for novelties and innovation by offering reductions on specific purchases.
Catalytic procurement	Catalytic procurement involves the combination of private demand measures with public procurement where the needs of private buyers are systemically ascertained. The government acts here as 'ice-breaker' in order to mobilise private demand. <sup>5</sup>
Awareness raising campaigns	Awareness raising actions supporting private demand have the role to bridge the information gap consumers of innovation have about the security and the quality of a novelty. <sup>6</sup>
<b>Systemic policies</b>	
Lead market initiatives	Lead market initiatives support the emergence of lead markets. A lead market is the market of a product or service in a given geographical area, where the diffusion process of an internationally successful innovation (technological or non-technological) first took off and is sustained and expanded through a wide range of different services <sup>7</sup> .
Support to open innovation and user-centered innovation	Open innovation can be described as using both internal and external sources to develop new products and services, while user-centred innovation refers to innovation driven by end- or intermediate users. <sup>8</sup>

<sup>1</sup> NESTA (2007) Demanding Innovation Lead Markets, public procurement and innovation by Luke Georghiou

<sup>2</sup> [http://ec.europa.eu/information\\_society/tl/research/priv\\_invest/pcp/index\\_en.htm](http://ec.europa.eu/information_society/tl/research/priv_invest/pcp/index_en.htm)

<sup>3</sup> FORA, OECD: New nature of innovation, 2009, <http://www.newnatureofinnovation.org/>

<sup>4</sup> Commission Communication: Towards an increased contribution from standardisation to innovation in Europe COM(2008) 133 final 11.3.2008

<sup>5</sup> Edler, Georghiou (2007) Public procurement and innovation – Resurrecting the demand side. Research Policy 36. 949-963

<sup>6</sup> Edler (2007) Demand-based Innovation Policy. Manchester Business School Working Paper, Number 529.

<sup>7</sup> COM 2005 "Industry Policy" [http://ec.europa.eu/enterprise/enterprise\\_policy/industry/index\\_en.htm](http://ec.europa.eu/enterprise/enterprise_policy/industry/index_en.htm) and Mid-term review of industrial policy

<sup>8</sup> Von Hippel (2005) Democratizing innovation. The MIT Press, Cambridge

### 3.1 Trends in the use of demand-side innovation policies

Demand-side innovation policies have not been implemented yet. The new Public Procurement Law comes into effect at the beginning of 2012 does not include any provisions related to procurement of innovative products and technologies. Regulations and standards are not used to stimulate innovation.

### 3.2 Recent demand-side innovation policy measures

In the period between June 2009 and June 2011, no new demand-side policies have been introduced.

## Appendix A Research and innovation policy measures for Croatia

Name of the Support measure	Start date	End date	Status (CC to complete)	Estimated public budget in 2010 in euro	Comment
Brain Gain - Homing programme	2006	2008	To be archived		
Fellowships for Doctoral Students	2005	2010	To be archived	238.318,11	• Actual expenditure in 2010
I-Projects- Applied Information Technology Projects	2000	No end date planned	To be updated	886.588,89	• Actual expenditure in 2010
Junior Researchers Programme	Before 1995	No end date planned	To be updated	44.962.907,02	• Actual expenditure in 2010
KONCRO - Business Competitiveness Improvement Programme	2006	2009	To be archived		• Submission of applications for KONCRO was postponed in 2009 due to insufficient available funds.
National Training Courses and Summer Schools for Doctoral Students	2005	2010	To be archived	135.135,14	• Planned budget for 2010
NZZ Installation grant	2007	No end date planned	To be updated	457.426,22	• Actual expenditure in 2010
Partnership in Basic Research	2005	No end date planned	To be updated	381.877,16	
Procurement of foreign journals	Before 1995	No end date planned	To be updated	3.238.225,81	• Actual expenditure in 2010
Programme "Brain Gain" - Postdoc	2004	2011	To be updated	208.837,84	• Actual expenditure in 2010
Programme "Brain Gain" - Senior	2004	2009	To be archived		
Programme "Brain Gain" - Visitor	2004	2009	To be archived		
RAZUM - Development of knowledge-based enterprises	2006	No end date planned	To be updated	974.347,03	• Actual expenditure in 2010
Research Equipment	Before 1995	No end date planned	To be updated	1.959.119,99	• Actual expenditure in 2010
Research projects	Before 1995	No end date planned	To be updated	16.993.997,87	• Actual expenditure in 2010
Science award	2005	No end date planned	To be updated	4.100,00	• Planned budget for 2010
Scientific Publishing Activity	Before 1995	No end date planned	To be updated	2.181.905,00	• Actual expenditure in 2010
Support for Croatian Scientists in Joining the European Science Foundation Programme	2005	No end date planned	To be updated	945.945,95	• Actual expenditure in 2010
Support for scientific and professional conferences and associations	Before 1995	No end date planned	To be updated	996.326,35	• Actual expenditure in 2010
TEHCRO - Infrastructure for technology transfer	2006	No end date planned	To be updated	279.054,05	• Actual expenditure in 2010
The Unity through Knowledge Fund (UKF)	2007	2009	To be archived		
VENCRO - Venture Capital Programme	2008	No end date planned			• The budget still has not been allocated due to difficulties in finding an appropriate private partner.