

# Science, Innovation and Information Society

In 2010, ARC Fund continued to affect change in Bulgarian society through its portfolio of services in support of policy design and assistance in their implementation. In the areas of research, development, innovation and information society, ARC Fund provided a comprehensive annual policy report on innovation, fed the ERAWATCH and RIM with standardized reports on the regional and national innovation system focusing on R&D and provided analyses of priority ICT policy areas.

## Innovation.bg



The annual *Innovation.bg* report provided a reliable assessment of the national innovation system, status-quo and innovation potential of the Bulgarian economy. It recommended innovation policy improvements in Bulgaria and the EU, based on the latest theories and empirical evidence. For the sixth consecutive year, the report constituted an important part of the process of raising awareness of the role that innovation plays as a national competitiveness factor. It also served to inform and shape the development of national priorities supporting the implementation of the new EU 2020 Strategy and in particular the Innovation Union, one of the seven flagships of this strategy.

The *Innovation.bg* report provided an analysis of the state-of-the-art of the national innovation system and outlined recommendations on how to improve innovation policy. The report was structured along five main themes:

- gross innovation product;
- entrepreneurship;
- investment and financing of innovation;
- human capital for innovation;
- information and communication technologies.

The 2010 edition of the report examined the impact of the global financial and domestic economic crisis on innovation activity in the Bulgarian economy and

suggested possible directions for Bulgarian innovation policy to take over the next decade.

*Innovation.bg 2010* presented an updated **Innovation Index of Bulgarian enterprises**. The Index is a composite measure of innovation activity of enterprises based on the annual sociological surveys of the business sector conducted by the Enterprise Europe Network – Bulgaria. The report was reviewed and approved by the Expert Council on Innovation established by ARC Fund in 2003.

Based on a time-series of the innovation index, 2010 could be considered the year

of innovation in Bulgaria. Among the main reasons for this statement are that:

- (1) the 2008-2009 financial crisis significantly altered the economic map of the world, marked the end of two decades of continuous economic growth and created unprecedented opportunities for the repositioning of national economies;
- (2) Bulgaria weathered the crisis in relatively fine general macroeconomic shape but now needs to turn this advantage into a good macroeconomic platform by modernizing its public administration and developing long-term growth policies and priorities;
- (3) The European Union consolidated its institutional development and the newly elected European Commission initiated the negotiations on EU policy and budgeting for the period up to 2020. The year was bound to be a hard one for the Bulgarian economy, but it is now a good time to formulate Bulgaria's 2020 goals and to prioritize both market and

social innovations as effective means to achieve them.

The report *'Innovation.bg 2010: The Innovation Policy of Bulgaria: Opportunities for the Next Decade'*, highlighted the possibilities that 2010 presented for critical decision-making and the mobilization of enterprise and innovation activity and human and intellectual capital in the achievement of economic recovery from the crisis as well as contributing to sustainable growth. For Bulgaria this means the need to update the current National Innovation Strategy, providing linkages and guidelines for the development of science and the economy, and a clear commitment to its implementation at the highest level of government. The report challenged the myths in Bulgaria that there is no linkage between academia and business and that the businesses do not invest in R&D. The report also challenged the way entrepreneurship is usually measured and assessed.  
Website: [www.arcfund.net](http://www.arcfund.net)

### Sixth National Innovation Forum

On March 01, 2010, the Applied Research and Communications Fund, Enterprise Europe Network – Bulgaria, the Ministry of Economy, Energy and Tourism, and the World Bank Mission to Bulgaria participated in the Sixth National Innovation Forum under the auspices of the Prime Minister of the Republic of Bulgaria, Mr. Boyko Borissov. This forum, entitled 'Science, Technology and Innovation: Policies for Growth in the Next Decade', focused on the role and importance of innovation as a driver of economies and the health of the innovation system in Bulgaria. The World Bank, national ministries, the Bulgarian Parliament, municipalities and the private sector were represented in the discussion panels at this event.

The National Innovation Forum is a unique annual event for Bulgaria, aimed at uniting the efforts of all stakeholders and interested parties to discuss the innovation environment in the country and to propose measures for their optimization.

The event focused on improving the degree of cooperation between companies and academia within the country and between Bulgarian and foreign organizations, in order to stimulate the national economy and enhance the competitiveness of businesses. It was reiterated that this was to be done by a serious reform in academia, including reforms in the academic career development system, the financing of higher education and the



*Prime Minister Boyko Borissov speaking at the Sixth National Innovation Forum, held on 1 March 2010*

Bulgarian Academy of Sciences and by strengthening its governance systems.

During the forum, the findings of the annual report on the innovation development in Bulgaria – Innovation.bg 2010, were presented and discussed. The winners in the National Contest for Innovative Enterprise of the Year were awarded.

This high level forum highlighted a number of issues which are essential for the economic convergence of Bulgaria with European Union averages and outlined the requirements for the creation of a healthy business environment that would attract innovative foreign investment, reduce structural unemployment and stimulate the knowledge economy in Bulgaria. It was noted that improving Bulgaria's absorption capacity for EU structural funds would help improve business conditions in the country. The good practice of several municipalities

(like Gabrovo) in the absorption of EU funds was discussed.

The *Innovation.bg* report pointed out that a higher percentage of enterprises undertook innovative activities in 2009 compared with 2008 (71% and 43% respectively). This was partially attributed to the accession of Bulgaria to the European Union and the steps which Bulgarian businesses had taken to improve their competitiveness within the European single market. Other potential contributing factors to this positive trend were that businesses had brought themselves in compliance with European legislation as well as responded to the global financial and domestic economic crises by improving their competitiveness through innovation.

In summary, the forum participants indicated the steps necessary for the realization of Bulgaria's full innovation potential.

These steps included the need to:

- Update the current National Innovation Strategy;
- Further institutionalize and implement the existing Regional Innovation Strategies;
- Reignite the National Innovation Fund;
- Provide government co-financing for EU funded projects of national importance (similar to FP7 co-financing);
- Improve the legislative framework

through impact assessments and reduce the administrative burden on businesses through increased e-Government;

- Create a stable economic environment so that business can discern the risks stemming from their innovation activities;
- Have a clear high-level policy commitment to support the innovation agenda.

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### Annual Innovation Award

The award in the 'Innovative Enterprise of the Year' contest is given annually to Bulgarian enterprises which have successfully developed and/or introduced innovations or to Research and Technological Development (RTD) organizations for their research that has increased the efficiency of business performance and/or has led to a sustainable economic impact. The innovation

performance of companies is evaluated by an independent jury on the grounds of data provided by the companies and in-depth technology audits of the applicants.

Applicants are evaluated against a special methodology by an expert panel and a jury in two categories: (1) innovative small company (up to 50 employees), (2)



Winners of the 'Innovative Enterprise of the Year' contest at the Sixth National Innovation Forum, 1 March 2010

innovative medium and large company (over 50 employees).

a statuette made by the sculptor Petko Arnaudov.

The winner in each of the two categories receives an honorary diploma and

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### European Research Area

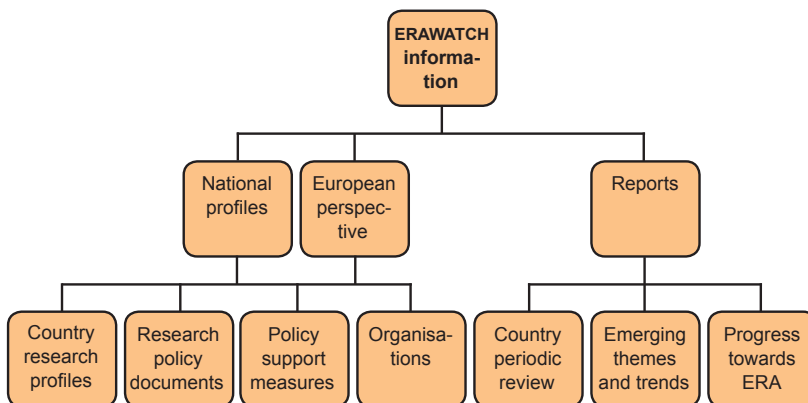
ARC Fund has been the national contact point of the **ERAWATCH** (ERA – European Research Area) initiative since its inception in 2004. This is a pan-European initiative jointly carried out by the European Commission's Directorate-General for Research and the European Commissions Joint Research Centre - Institute for Prospective Technological Studies (JRC-IPTS). The initiative is aimed at collecting and using precise data in the formation of various policies contributing to the realization of the European Research Area. It provides structured and comprehensive information about national and regional research policies, players, organizations and programs. The ERAWATCH online service has been developed in

collaboration with CORDIS. Currently ERAWATCH covers 49 countries in total: 27 of which are EU Member States, and the remainder which consist of countries associated with the European Community's Research Framework Program as well as the main trading partners of the EU.

ARC Fund continued its work on ERAWATCH as a national correspondent for Bulgaria. In this capacity, it produced an annual report, country profile and completed online templates which focused on national and regional research policies, organizations and actors.

Website: [www.cordis.europa.eu/erawatch/index.cfm](http://www.cordis.europa.eu/erawatch/index.cfm)

**Figure 1.** Structure of the main ERAWATCH instruments for dissemination of research policy information



*ERAWATCH: Baseload research inventory service IV*

For the fourth year, ARC Fund provided information about the Bulgarian national and regional research systems. The country profile focused on the main mechanisms for developing research policies in Bulgaria, the most important political documents, a reflection of Bulgaria's EU membership, the regional dimension of research activities and the activities of the main institutions involved in research. In 2010, some new aspects of the research policy were added and analyzed, including the labor market for researchers, the orientation and instruments for achieving the internationalization of science and technology (S&T) cooperation, and the identification of policy measures to solve the grand challenges on Bulgarian society through transnational R&D cooperation. A special section of the profile was devoted to

recent research policy developments in Bulgaria, such as the declared national goal for raising the R&D funds to levels of between 1.5% and 2.0% by 2020, the elaboration of a Draft of the National Reform Program 2010-2013 (November 2010), the adoption of a National Roadmap for Research Infrastructures (September 2010), the amendment in the Law on Scientific Research Promotion (October 2010), the two evaluations of the universities and the creation of a new rating system in 2010, the launch of the JEREMIE and JESSICA funds (July 2010), and the passing of the new Law on the Development of the Academic Staff (May 2010, amended in October and December 2010).

Website:  
[www.cordis.europa.eu/erawatch/index.cfm](http://www.cordis.europa.eu/erawatch/index.cfm)

*ERAWATCH Country Report 2010: Bulgaria*

In 2010, ARC Fund developed the annual *ERAWATCH Country Report 2010 for Bulgaria*. The report reviewed the performance of the national innovation system and made an assessment of recent policy changes. It also focused on the interactions between national policies and the European Research Area. According to the report, Bulgaria faces a chronic shortage of public financing for R&D and what funds there are appear to be stretched across an oversized institutional structure inherited from the days of centralized planning. The outdated legal and institutional framework related to innovation and research, as well as the lack of long-term national financial planning of research, obstructs the promotion of private investment in

R&D and the achievement of the national R&D investment objectives. Still, several changes have occurred in the research policies of Bulgaria between 2009 and 2010, including the policy decisions for setting the target for an increase of R&D expenditure, for the establishment of large scientific and research centers, the launch of a more effective monitoring and evaluation system of funded projects under the National Science Fund, and the introduction of a procedure for Bulgaria's future participation in European infrastructures. Regarding education policy, a new Law on the Development of the Academic Staff (LDAS) was adopted and the first university rating system was introduced with the intention to serve as a tool for

discretionary funding by the state according to universities' achievements.

Website:  
[www.cordis.europa.eu/erawatch/index.cfm](http://www.cordis.europa.eu/erawatch/index.cfm)

**Table 1:** Effectiveness of knowledge triangle policies

	<b>Recent policy changes</b>	<b>Assessment of strengths and weaknesses</b>
Research policy	Decrease of public spending for R&D and negative effect of the crisis. Enacted Law for Amendment and Supplement of the Law for Promoting Scientific Research (LPSR)	The LPSR provides for the building of large research centers and for better functioning of the NSF. These changes come, however, with a reduction of public funds for R&D.
Innovation policy	A national GERD goal has been declared for 2020: 1.4% – 2.0% of GDP	While adopting a national R&D goal has been a major breakthrough it comes against the backdrop of a lack of updated National Innovation Strategy and the ceasing of operation of the National Innovation Fund.
Education policy	Changed policy on academic career promotion (new Law on the Development of Academic Staff). The university rating system was launched but public financing was reduced	Career development and university ratings are critical for the proper functioning of the system. However, these are just policy texts, which still have a long way to go for effective implementation and enforcement. Part of the text of the new law was rendered unconstitutional, which stopped the procedures for habilitation and obtaining of PhD degrees. The first ranking of the universities, which is intended to support the discretionary allocation of public resources according to achievement, did not take into consideration the specifics of different universities.

**Table 1:** Effectiveness of knowledge triangle policies (Continuation)

	Recent policy changes	Assessment of strengths and weaknesses
Other policies	Both 2010 and 2011 budgets envisage a cut in resources for R&D, innovation and education. Delays in the absorption of European funds persist.	Considerable weaknesses result in the continuing delay of the Operational Programs (OPs) implementation, including delays of state and regional bodies' payments to business, and increasing uncertainty for realizing business investment programs combined with no increase of the public financing of R&D and innovation. There are reports that beneficiaries experience difficulties in securing co-financing for the implementation of projects under the Competitiveness and Innovation Program of the EU (CIP) and other EU-funded programs.

Source: ERAWATCH Country Report 2010: Bulgaria

### Regional Innovation Monitor

The Regional Innovation Monitor (RIM) is an initiative of the European Commission's Directorate General for Enterprise and Industry. It describes and analyzes innovation policy trends across EU regions. The RIM presents an overview of regional innovation support measures, policy documents and organizations. It is an online benchmarking tool for innovation policy approaches and trends at the regional level and a platform of communication for innovation stakeholders.

In 2010, ARC Fund elaborated and updated the profiles of the six Bulgarian planning regions within the Regional Innovation Monitor platform. It presented information for each region on its economic develop-

ment, research, technological development and innovation potential as well as its trends, governance, and policy. Additionally, the major research-related organizations in the region and regional research policy documents were presented in detail.

For most of the regions, the analysis on the structure and operation of the regional innovation system showed an insufficient supply of innovations due to the lack of critical mass of research and academic organizations. It also highlighted that the prevalence of SMEs and micro firms with a restricted capacity for purchasing and adapting innovations which negatively affects the innovative performance of the regions. Website: [www.rim-europa.eu](http://www.rim-europa.eu)



## Unlocking Bulgaria's Hidden Growth Potential

In March 2010, the Ministry of Education, Youth, and Science of Bulgaria requested support from the World Bank for work on the development of policy recommendations regarding Higher Education, Science, Technology, and Innovation (STI) in Bulgaria. ARC Fund worked with the World Bank in focusing on science, technology and innovation. This work was anchored around four pillars:

1. competitiveness and innovation evaluation;
2. providing recommendations for improving the efficiency and effectiveness of domestic and European R&D funding;
3. enhancing the performance of STI programs and instruments;
4. Organizing a forum and a series of technical workshops to consult about the different recommendations.

ARC Fund was contracted to support this work given their experience and expertise in Bulgaria's research, development and innovation system. This work investigated Bulgaria's R&D quality and potential to scale-up public R&D spending and EU funding. The operational functioning and performance of key government programs and instruments in the STI area were assessed. To this end, ARC Fund was recruited to review and provide recommendations for improving the efficiency and effectiveness of R&D spending and absorption of EU funding and to analyze and make proposals to improve the performance of programs and instruments to support the commercialization of public and private research and innovation. These activities consisted of the production

of four technical reports corresponding to the second and third pillars above. These four reports included:

- a) Innovation policy & public spending: This note provided a description of current policy responsibilities in the area of science, technology and innovation and of the allocation of innovation-related expenditures between ministries, agencies, and R&D-performing institutions including the Bulgarian Academy of Sciences (BAS) and universities in Bulgaria.
- b) Capacity to absorb EU funds: This note presented an assessment of bottlenecks in Bulgaria's capacity to absorb EC funds provided under the Structural Funds and under the EU competitive funds FP7 and CIP.
- c) Review of innovation instruments: This note reviewed the operation and performance of the National Innovation Fund and the National Science Fund, including eligibility criteria, organization of the call for proposals, selection criteria and the peer review process, counterpart requirements, monitoring and evaluation arrangements.
- d) Framework to assess BAS restructuring: This note developed a framework to examine the implications of the proposed restructuring of the Bulgarian Academy of Sciences (BAS) and clarified the performance metrics to be used in evaluating the restructuring options of research and development institutes.

These notes were presented to the World Bank in June of 2010.

## Support for policy development in the field of information society

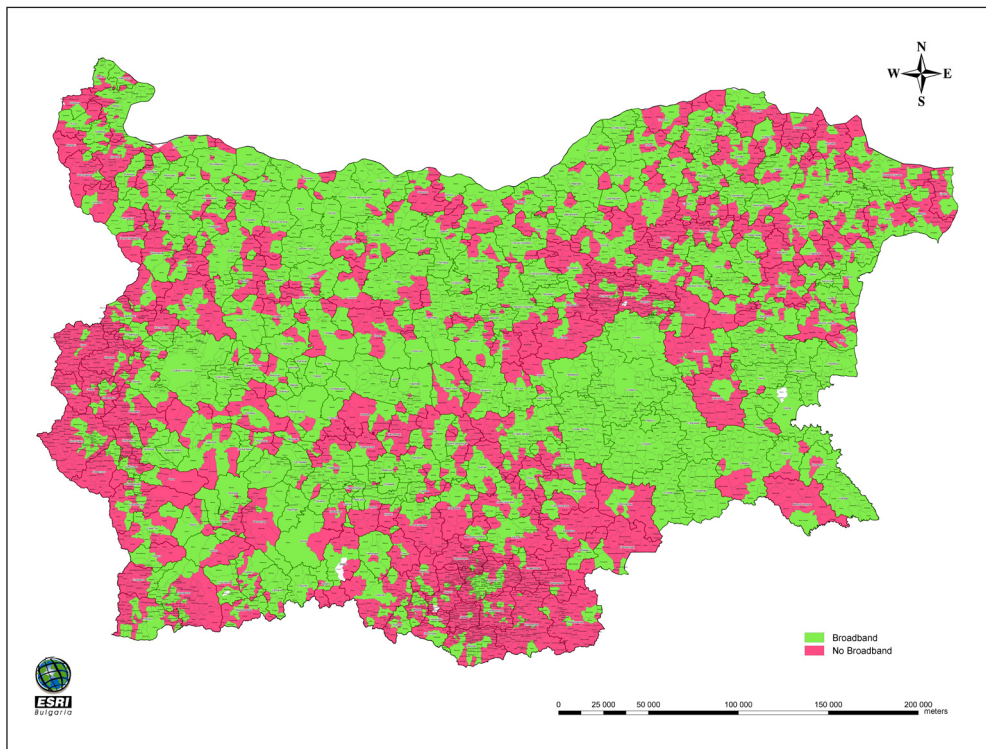
- The Ministry of Transport, Information Technologies and Communications (MTITC) has utilized ARC Fund's policy research and expertise for **shaping national policy on improving broadband infrastructure in underdeveloped and rural regions.**

ARC Fund implemented an innovative methodology, studying access to broadband internet and socio-economic development on the village/town level for the entire country.

According to ARC Fund's survey, at least **91.5% of the country's population lives in a location with at least one broadband internet provider** (speed range above 1 Mbps and

monthly rate of up to 30 BGN). **42% of all settlements have at least one broadband provider, including all of the towns** in the territory of the country. Approximately the same proportion (**41%**) of the locations in rural areas has at least one broadband provider and these account for 82.5% of the entire rural population of the country. At least one broadband provider operates in 26% of the settlements in mountain areas but this is where 81% of the mountain area population of the country lives.

MTITC has used ARC Fund's data to identify both those regions that are eligible for the implementation of projects funded under the *Regional*



*Development OP<sup>1</sup>* and the present situation in the country regarding access to the internet in general. The data, collected by ARC Fund, challenges the existing information on the availability and type of internet access, and significantly improves the coverage and the reliability of official data available within respective state authorities (*Commission on Regulation of Communications, MTITC*).

The Ministry credited ARC Fund's research and policy recommendations in various ways. For example, the Ministry used the results in official presentations of the Broadband Initiative at the national and EU level and implemented some of ARC Fund's recommendations when drafting the *E-Governance Strategy* in July 2010 and later adopted in December 2010 (e.g. improving some of the measurable indicators set up by the Strategy; setting up a priority for open standards within "Stimulating the use of e-services" goal; underlying the requirements for e-accessibility according to the Web Accessibility Initiative; unification of domain-names of public administrations).

The Commission on Regulation of *Communications* acknowledged ARC Fund's research by using some of its results to improve their own data on broadband coverage, types of internet access and other metrics, in the annual report on communication market development and regulation, prepared for the European Commission, DG Information Society and Media.

- **Methodology for selection and monitoring of pilot broadband regions**

<sup>1</sup> The OP provides for spending roughly EUR 20 Min. on projects aiming at improving broadband infrastructure in these regions in next three years.

In the framework of public-private partnership between MTITC, ARC Fund, ICT Cluster and ESRI Bulgaria Ltd. a new approach was developed for **the selection and monitoring of pilot regions, where broadband infrastructure will be built**. It is based on the innovative methodology elaborated by ARC Fund, which relies on the integration of sociological studies' results with large-scale databases from various public sources. Using GIS software, the methodology provides for the selection of regions across administrative borders, based on authentic socio-economic development, a perspective which was missing in all previously available studies. **After the initial selection of 19 pilot regions, MTITC put forward the use of this approach**, planning to set up an online platform which will use this approach and data, collected by ARC Fund, in order to map for the first time the existing private and public communication infrastructures throughout the country. This will help to ensure more effective public spending on new infrastructure only where it does not currently exist and include a way for increasing its cooperation with the Ministry of Agriculture and Food, which will spend €5MM for promotion of ICT-support centers in rural areas.

- Using ARC Fund's findings that R&D expenditures are underreported in general, and in the ICT sector in particular, the Ministry of Economy, Energy and Tourism (MEET) has set an ambitious goal of **reaching 1.4 to 2.0 % of GDP for R&D expenditures in 2020** against the initial suggestion of the Ministry of Education, Youth and Science (MEYS) of 0.6 %. This goal has already been approved by the Council of Ministers and is in-



*Mr. Julian Nikolov, Director, Economic Policy Directorate, MEET*

cluded in the formulation of national policies in line with the *Europe 2020* priorities. ARC Fund was credited by Mr. Julian Nikolov, Director of the Economic Policy Directorate, MEET at the closing Policy Forum, held on July 31, 2010.

MEYS based their estimation on official data for R&D spending, while ARC Fund data-mining and further primary research on R&D spending within the ICT branch suggested that R&D spending in the private sector is under-reported or unaccounted by 2 to 5 times at the National Statistical Institute (NSI). This would mean that, contrary to the belief of MEYS, at least in the ICT sector, the private sector invests and produces significantly higher amounts of R&D than reported. This was later confirmed from qualitative studies for other sectors. MEET acknowledged the studies of

ARC Fund, backed up with additional analysis of the competitiveness of the Bulgarian economy, and changed the initial target between 1.4 – 2.0%. ARC Fund, MEET and NSI agreed to work on a common agenda to gradually increase R&D reporting and to direct innovation oriented measures towards high-growth and high value added sectors and companies in the national economy.

- ARC Fund participation in all important public debates on national IT policy improves the **transparency of decision making**. The eBulgaria2020 community established on Facebook reached close to 1,000 members by the end of 2010. Among them are members of the *Parliamentary Committee on Transport, Information Technology and Communications*, others are former and current members of parliament, directors of agencies and directorates in state authorities, business associations, industry leaders, key journalists from the sector (including specialized press), civil society organizations, academic IT experts and others. The **eBulgaria 2020 group has been cited by journalists as a news source** and it serves as an instrument for increasing transparency in policy making (e.g. in two cases of an open competition for the post of Director of the *e-Governance Directorate* at the MTITC, several applicants submitted their programs for discussion by the members or raised questions and participated in the group's debates)