

# Research and Innovation Policy

*Innovation.bg 2015*

For the eleventh consecutive year the annual report ***Innovation.bg* assesses the innovation potential of the Bulgarian economy** as well as the status and potential for growth of the Bulgarian innovation system. It makes **recommendations for improving the public innovation** policies in Bulgaria and in the EU, building on the most recent theoretical and empirical studies and taking into account the specific economic, political, cultural and institutional framework in which the country's innovation system operates. Over the past 10 years, *Innovation.bg* has proposed numerous specific measures for improving the country's innovation policy and practice, which have been supported by business and academia. The lack of specific and sustainable actions by Bulgarian governments on the proposals made – despite their commitment to the process at the highest political level – reveals a serious institutional deficit in the development and application of policies in the field.

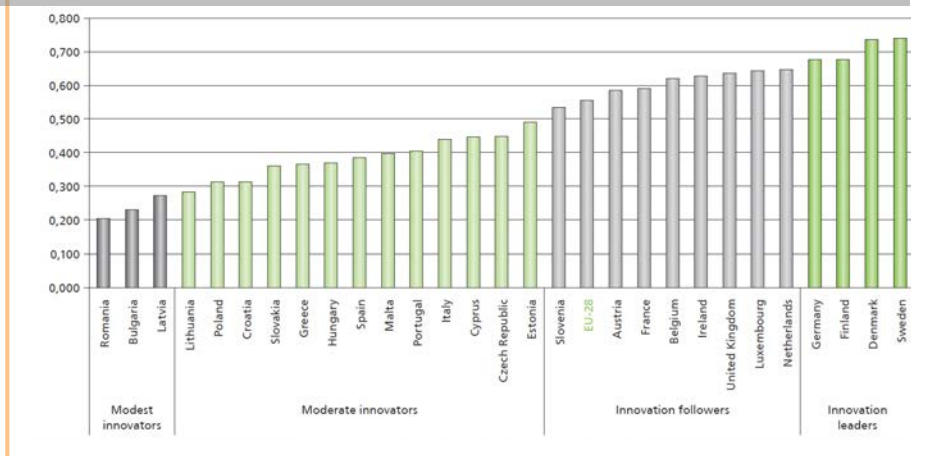
*Innovation.bg 2015* analyzes the status and potential for growth of the national innovation system based on five groups of indicators:

- aggregate innovation product;
- entrepreneurship;
- investment and financing for innovations;
- human capital for innovation;
- information and communication technologies.

A highlight in *Innovation.bg 2015* is the **analysis of the management of innovation-related activities** applied by Bulgarian innovation enterprises. Innovation is a creative process and its successful launch entails many risks. Nevertheless, most of the activities for generation, development and implementation of new ideas can be fostered, guided and assessed so as to facilitate the innovation process and enhance its positive impact on the performance and market positions of a company.



Figure 1. Innovation Union Scoreboard 2015



Source: Innovation Union Scoreboard 2015.

### National Innovation Policy in 2015

As a number of international indices and rankings indicate, a typical feature of innovation leaders is a well-functioning innovation ecosystem built on the basis of a streamlined interaction among stakeholders, investment in human capital and a developed innovation infrastructure. The lack of such growth-enabling factors in the other countries creates a pronounced dividing line between innovation leaders and followers – a divider which is gaining an ever increasing importance, to the extent that it started to substitute the familiar categories of “developed” and “developing” countries.

One of the main findings of the 2015 *Innovation.bg* report is that **Bulgaria is expected to improve its innovation performance**, mainly in the field of incremental innovation, while still lagging behind the average EU-28 level.

Despite the ambitious strategic framework adopted for the new EC programming period 2014 – 2020, **a number of problems persist:**

- The innovation potential of the Bulgarian economy is driven primarily by the impact of external factors (European structural financing, EC pressure for developing an innovation-

oriented policy framework), and hampered by the existing obstacles at the national and local levels (lack of understanding among policymakers of the importance of innovation; low administrative capacity; lack of mechanisms for promoting entrepreneurial and innovation culture; corruption).

- Numerous cases of misappropriation of public funds intended for science have gone unpunished.
- There is no comprehensive vision on the priorities of the national economy and the innovation system in particular, resulting in ad hoc policies and inconsistent and unsustainable measures for their enforcement. The input indicators of the national innovation ecosystem and of its functioning vary significantly from year to year, thus highlighting the precariousness of the Bulgarian innovation policy, which has no clear direction and parameters.

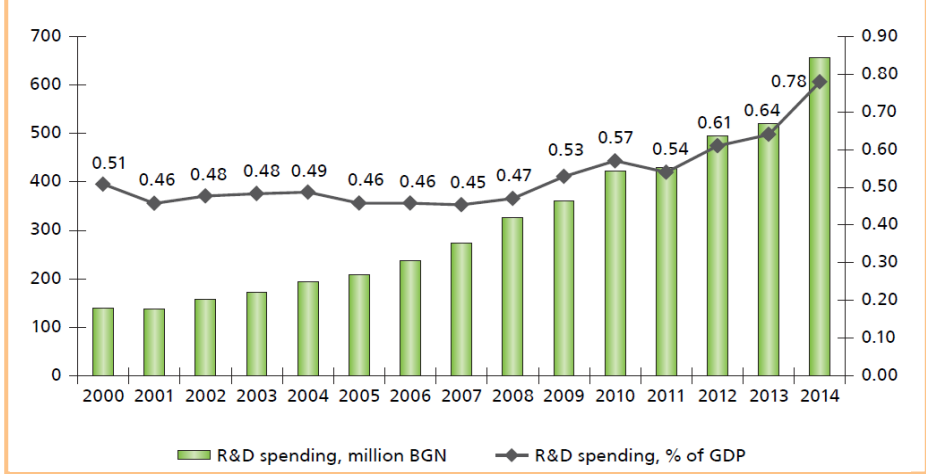
R&D spending in Bulgaria rose by about 26% in 2014 as compared to the previous year – the highest growth of this indicator since 2000, mostly as a result of the



participation of private sector companies in international value added networks. Since 2010, the main sources of R&D investment have been foreign investments and the European structural funds, whose importance for the national economy has grown. In 2014, this trend continued and their share in the total R&D spending reached 51%. Given its pull effect in terms of business expenditure for R&D, external financing becomes central to the existence and development of the national research and innovation system.

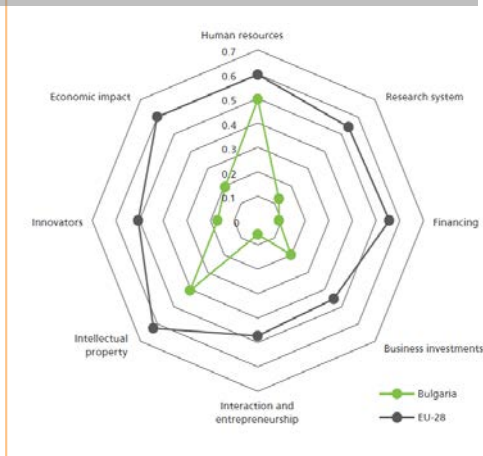
**innovation.** Although 80% of companies have innovation strategies, they are rarely communicated clearly to company staff. While such strategies have the potential to focus the use of limited resources, their full effect cannot be achieved if staff, business partners and clients are not sufficiently aware of them. Bulgarian companies have a lower level of readiness for organizational and cultural innovations compared with companies from other countries. Data on the innovation cycle indicate that Bulgarian SMEs are on par with companies from other countries with respect to the generation of ideas but seek to associate their innovation strategies with processes that potentially hamper the achievement of good commercialization results.

**Figure 2. R&D spending in Bulgaria, 2000 - 2014**



Source: NSI, 2015.

**Figure 3. Innovation Union Scoreboard: Bulgaria compared to EU-28**



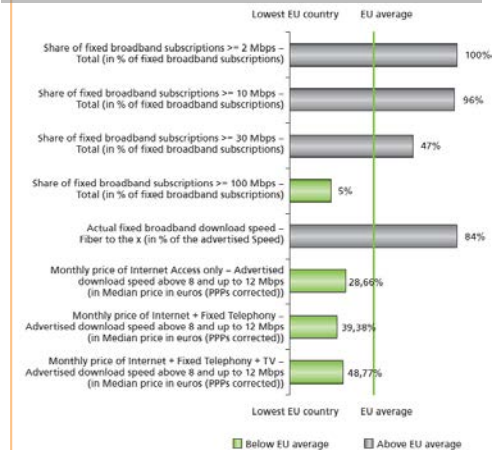
**Source:** Innovation Union Scoreboard, 2015.

The Bulgarian ICT sector continues to be a key source of national competitiveness, making up 10% of exports and over 6.5% of GDP. In 2015, Bulgaria won the European Outsourcing Association award in the category "Offshoring Destination of the Year" by generating investment in cities other than the capital – mainly Plovdiv, Varna and Burgas – thus creating expectations for increased employment in this sector. In addition to higher remuneration of staff, some companies outsourced their R&D in the country. In this context, it is worrying that the government took a position in favor of the status quo and against innovation in a landmark case against a shared travel company, regardless of the fact that the company had established an R&D unit in Bulgaria.

While business enterprises have internal drivers for growth generation, supported further by European financing, higher education is the component of the national innovation ecosystem sustaining the heaviest adverse effects:

- For a fifth year in a row, the R&D budget of the higher education sector is decreasing. In 2014, spending through university research funds for R&D was halved, while the decrease compared to the peak 2009 was 90%.

**Figure 4. Bulgaria Country Profile by Broadband Speed and Prices Indicators, 2014**



**Source:** Digital Agenda Scoreboard, 2015.

The intention to make education a priority in the 2016 budget is a step in the right direction provided that it is sustained in the long term until 2030.

- A worrying sign is the extremely low patent activity of the higher education sector. Only 8 out of 51 higher education institutions have registered patents. In 2014, for a second year in a row there was a fall in the number of research publications.
- While universities form the largest share of beneficiaries in EU-28, in Bulgaria they hold the fourth (last) place among the institutional sectors with only 9 higher education institutions receiving financing under Horizon 2020.
- In 2014, for the first time in the last seven-year period there was a reduction in the number of graduates with bachelor's (-7%) and master's (-3%) degrees, resulting from the continued reduction of the number of students over the recent years. Evidently, Bulgarian higher education does not manage to offset negative demographic trends at home by attracting foreign students, which also indicates that there has been no improvement in the quality of education.
- The number of Bulgarian students abroad is about 10% of the students

studying in Bulgaria. As the data of the second edition of the Global Talent Competitiveness Index 2014 show, among 93 surveyed countries Bulgaria holds the 89<sup>th</sup> place by "brain drain" and the unenviable 88<sup>th</sup> place by "brain gain".

- Among the 61 countries in the World Talent Report 2015 of the Institute of Management Development in Switzerland, Bulgaria holds the last place and has regressed from the result in the preceding year, including in the indicators investment and development – 54<sup>th</sup> place; appeal – 60<sup>th</sup> place; readiness – 60<sup>th</sup> place.
- Bulgaria and the other Central and East European countries continue to be net donors of highly qualified human resources because of the difference in the remuneration rates applied in the EU for researchers participating in European research projects. A qualified researcher can significantly increase his or her rate in a project by registering, for example, in an Austrian university instead in a Bulgarian one. The continued discrimination of Bulgarian and East European talent in the EU undermines the convergence policies of the Union.

- Low educational quality makes for limited human resources in software outsourcing (software engineers/programmers) and customer service centers (good language skills), both of which enhance the competitiveness of the national economy. Poor teaching of mathematics and IT is likely to continue being an obstacle (given, for example, the teaching of software coding in preschool education in China).

Education is among the national priorities only in government documents and in political speeches. It is obvious that the artificial (not governed by market rationale and not reflecting the changes in society) inflation of the sector (unjustified number of higher education institutions, growing number of academic staff) does not lead to qualitative changes such as more patents and research publications, and participation in EU research projects.

It can be expected that more sectors will share the experience of ICT services, machine manufacturing and other fields which face serious growth barriers not in terms of demand, quality, or productivity but in terms of human potential. Reversing this trend would require serious political commitment.

### *Eleventh National Innovation Forum and Contest for Innovative Enterprises 2015*

On 8 December 2015 the Applied Research and Communications Fund, Enterprise Europe Network – Bulgaria and the Representation of the European Commission in Bulgaria, with the support of Directorate General GROW, EC, the Executive Agency for SMEs, EC, and the Norway Grants, organized **the Eleventh National Innovation Forum "Development of the innovation ecosystem for sustainable economic growth in Bulgaria."** The Forum featured the award ceremony of the Innovative Enterprise of the Year 2015 national contest.

Dr. Ognian Shentov, Chairman of the Applied Research and Communications Fund, opened the Forum by outlining the key external and internal factors for the development of the innovation potential

of the Bulgarian economy and highlighted the growing input of the ICT sector to the national GDP. Dr. Shentov emphasized the importance of the external funding for the national innovation ecosystem's further development and the role of the higher education, which continues to lag behind in recent years and is characterized by the ever growing brain drain.

Mr. Ognian Zlatev, Head of EC Representation in Bulgaria, highlighted the importance of the economic growth, based on knowledge and innovation, which remains one of the top priorities of the European Commission despite the topical issues related to security. He also stressed on the high potential of the country's advanced economic sectors and on the significance



*The President of the Republic of Bulgaria Mr. Rosen Plevneliev speaking at the Eleventh National Innovation Forum*

of the public investment in the national entrepreneurial ecosystem, mentioning in particular the Juncker Plan for 315 billion Euros of investments in the EU economy.

The President of the Republic of Bulgaria Mr. Rosen Plevneliev acknowledged the importance of the findings in the annual Innovation.bg report. He also emphasized the high potential of the Bulgarian innovation ecosystem and the

importance of education and innovations for the growth of every modern economy. Mr. Plevneliev highlighted the strategic place of the ICT sector in the country's economy and gave examples of innovative Bulgarian enterprises that earned leading positions on the international markets – Walltopia, Aglika Trade, Roo'Bar. The reform in the education system and the need for implementation of e-government were also outlined in his speech.

During the forum, President Plevneliev presented awards to the **winners in the National Contest for Innovative Enterprise of the Year 2015**. The impact of innovations was recognized in nine areas:

- 1) "Innovative technologies in traditional sectors" – *Bulteh 2000 Ltd*. The company is the leading distributor of control and automation systems for the dairy and food industries in the world's biggest markets, e.g. India, Brazil, China and Mexico.
- 2) "Technological leader in a global value chain" – *Aiger Engineering Ltd*. Aiger Engineering designs and manufactures innovative solutions for the tobacco business, which can also be applied in the



*Eleventh National Innovation Forum "Development of the innovation eco-system for sustainable economic growth in Bulgaria", from left to right: Dr. Ognian Shentov, Chairman of the Board of the Applied Research and Communications Fund and Mr. Rosen Plevneliev, President of the Republic of Bulgaria.*

pharmaceutical and packaging industries.

3) “Innovation for market leadership” – *Mobile Systems Ltd.* Mobile Systems is a leading Bulgarian IT company, which has developed the global top 3 most downloaded word processing application for Android devices *OfficeSuite*.

4) “Workplace innovation” – *Solvay Sodi Jsc.* The company was recognized for its integrated cycle for collecting, analyzing and implementing employees’ innovative ideas.

5) “Innovation for a better quality of life” – *Aleks 1977 Ltd.* Aleks 1977 uses its in-house method to harmlessly draw snail extract, which is a key component of cosmetic and medicinal products used to treat the digestive system and promote skin regeneration.

6) “Social innovation” – *Triada Soft Ltd.* Triada Soft Ltd has developed “Magical world,” an interactive learning system for children with special educational needs.

7) “Green innovative start-up” – *Make Bulgaria Ltd.* The company has developed an innovative system for thermal wall

insulation.

8) “Innovative business cluster” – *Srednogie Med Industrial Cluster.* The cluster is recognized for its commitment towards the development of the economic competitiveness of the Srednogie region in Bulgaria, based on the innovative “Shared Value” concept.

9) “Innovation management,” in line with the IMP<sup>3</sup>rove methodology – *A Data Pro Ltd.* A Data Pro is a provider of knowledge intensive services for content processing, analysis and creation. It received the highest marks among over 10 innovative Bulgarian companies that were benchmarked in 2015 by IMP<sup>3</sup>rove innovation management assessment.

During the National Innovation Forum, Mr. Ruslan Stefanov, Coordinator of the *Innovation.bg* group at ARC Fund, presented the main challenges for the development of the national innovation system, as outlined in this year’s *Innovation.bg* and *Green Innovation.bg* reports. Mr. Stefanov highlighted the need to promote innovation in the public sector, especially on a regional level, and suggested that Bulgaria would



*Finalists in the Innovative Enterprise of the Year 2015 National Contest*

benefit greatly from a centralized institution that supports all innovation activities in the country, following the example of Innovation Norway.

Dr. Milen Vrabeviski, founder and executive director of Comac Medical, one of the three Bulgarian companies that were awarded an innovation grant under the SME Instrument in 2014-2015, emphasized the importance of working with young talents and investing in their development from an early age. He also presented his company's policy for selecting candidates from the leading Bulgarian universities and for providing scholarships to children from vulnerable groups. Furthermore, Mr. Vrabeviski shared his successful experience with the EU framework programs and Horizon 2020 in particular.

Mr. Vassil Momtchev, Member of the Board of Directors of Ontotext, which was among the winners of the 2014 edition of the National Contest for Innovative Enterprise of the Year, highlighted the difference between innovations and traditional research activities and expressed his

positive outlook on the development of innovations in Bulgaria, and more specifically in the IT industry. He shared his experience at Ontotext, which was founded exclusively with Bulgarian capital and has become one of the top three software providers of semantic technology in the world. Mr. Momtchev also pointed at the current positive trend of young motivated professionals, who return to Bulgaria in search of career development after finishing their studies abroad.

Mr. Elvin Guri, Executive Director of Empower Capital, concurred with the findings and conclusions of the *Innovation.bg* reports and shared his experience as an investor in the healthcare, software and food industries. He pointed out that despite the lack of good management practices and strategic thinking in Bulgaria, there are many strong local companies, which are already well-established on the international markets and are set to boost the growth of the national economy.

### Green Innovation.bg report



For a second consecutive year, ARC Fund published the **Green Innovation.bg report**. The report includes an overview of the progress made over the year in terms of the overall shift towards low-carbon economy, the main policy measures aimed at helping SMEs achieve green growth and examples of local companies, which have successfully integrated green practices in their work. It also provides **policy recommendations towards achieving the greening of the economy**.

The data suggest that Bulgaria is beginning to decouple its economic growth from greenhouse gas emissions by shifting towards a less carbon-intensive economy. Nevertheless, the CO<sub>2</sub> emissions relative to GDP remain relatively high (in 2011 they amounted to 0.44 kg, compared to 0.20 kg in the EU). On the other hand, emissions of fluorinated gases, which have a much higher global warming potential compared to the other greenhouse gases,



have increased sharply between 2000 and 2012 from 0.03 to 0.47 million tons of CO<sub>2</sub> equivalent per year, due to increased use of refrigeration and air conditioning technologies.

Despite the outdated and inefficient technological base, Bulgaria's energy productivity is slowly improving and reached 1.6 EUR/KOE in 2013. It remains lower than the EU average, which amounted to 7.1 EUR/KOE in the same year. Energy efficiency levels are also slowly improving in all sectors of the economy. Energy poverty among the population is slowly declining, both as a result of rising incomes and energy efficiency improvements in the residential sector. Nevertheless, it remains high in comparison with the rest of the EU. In 2014, households spent on average 12.6% of their income on energy products, compared to 14.4% in 2012.

The manufacturing and energy sectors are still lagging in terms of adopting greener, more efficient technologies, which would result in significant energy savings. The share of renewable energy sources in total energy consumption (18.9% in 2013) is rising and is set to continue to grow in the next decade. However, this growth has been associated with very high feed-in tariffs (FITs) and poor regulatory framework, causing financial losses in the energy sector, as well as with popular discontent and backlash against green energy investment.

Developments in the transport sector are primarily focused on road infrastructure, which accounted for 80.9% and 75.9% of passenger and freight modal split respectively. The share of renewable sources in road transport is about 5.6% and there are very little incentives to use biofuel or hybrid/electric technology in road transport.

Bulgaria will continue to rely mainly on external resources to fund the adoption and development of green innovations. The Operational Programs will remain the main source of funding for SMEs looking to introduce green innovations in their work. The Partnership Agreement on using EU

Structural and Investment Funds for the programming period 2014-2020 between Bulgaria and the EU and the newly approved Operational Programs place a strong emphasis on promoting energy efficiency, renewable energy sources, waste management and green transport systems.

Operational Program "Innovation and Competitiveness" will provide about EUR 1.4 billion in order to stimulate research and innovation, enhance SME competitiveness, support the shift towards low-carbon economy and promote resource efficiency. Operational Program "Environment" will also provide some funding opportunities for SMEs through Priority Axis 2: Improvement and Development of Waste Treatment Infrastructure, which focuses on municipal waste management. About 20% of funds made available through Operational Program "Regions in Growth" will be dedicated to improving energy efficiency in municipal and residential buildings, which will likely provide funding opportunities for companies working in this field. An additional source of funding for green innovations is the Norway Grants funding mechanism. Currently, the government of Norway and the European Commission have agreed on a total of EUR 210 million for the next programming period, part of which will be allocated to support green industry innovation.

**Bulgarian SMEs must overcome several challenges to improve their competitiveness** on the EU level and help the economy shift to low-carbon growth. First, as a result of the financial crisis, on average they had to make redundant 8% of their staff and their added value decreased by 4% between 2008 and 2013. Their recovery was slower compared to bigger enterprises due to their lower productivity and difficulty in diversifying their markets. Despite the positive attitude towards entrepreneurship and the relatively easy procedures to set up a new business, there are a number of structural obstacles that slow down SME growth. Business owners are still burdened with complex administrative red tape, especially in applying for and implementing

EU-funded projects, as well as the slow progress in e-government rollout and lack of coordination between different authorities. Furthermore, local companies suffer from the lack of available funding, low levels of research and innovation, and poor environmental performance. In this regard, **not many companies are**

**investing in green technologies**, with the exception of resource efficiency measures, which were mainly funded by Operational Program “Competitiveness 2007-2013” (with a period for implementation ending in 2015). Only 11% of local companies have tapped into the eco-friendly market and offer green products to their customers.