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Contribution of Bulgaria

to the CSTD 2016-17 priority theme on 'New innovation approaches to support the  
implementation of the Sustainable Development Goals'

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**United Nations Commission on Science and Technology for Development (CSTD)  
Inputs for CSTD 2016-17 Priority Themes**

**BULGARIA**

**New innovation approaches to support the implementation of the Sustainable Development Goals**

**SOURCE: Ministry of Environment and Water**

The Ministry of Environment and Water/MEW pursues the integration of the policy on environmental protection with sectoral policies (incl. these for technological development and innovation and establishment of conditions for sustainable economic growth and employment). The ministry provides the following information (which is publicly available) concerning the innovative approaches introduced in Bulgaria which ensure cooperation and interaction among stakeholders, in order to achieve the sustainable development goals through a balance of economic, social and environmental dimensions:

**•-collaborative and oriented to a specific mission innovation - approaches that combine multiple sources and forms of knowledge in an innovative process and organization structures to stimulate innovation;**

Bulgaria ensures financial support with funds provided by the European structural and investment funds through the instrument Operational Programme "Innovation and Competitiveness 2014-2020," (OPIC) for the activities that lead to increased innovation activity of Bulgarian enterprises by establishing the necessary innovative environment and innovative infrastructure, as well as stimulating activities for research and development (R & D) and innovation for enterprises by means of partnerships between businesses or among businesses and research institutes and universities. Strengthening the innovative activity of enterprises is achieved both through stimulating investment (both public and private) in R & D and through increased investment in product, process, marketing and / or organizational innovation. Eco-innovation and innovation in low-carbon economy is an integral part of OPIC's approach to innovation. This creates prerequisites to build an integrated innovation capacity, moving up in the value chain and establish long-term competitive advantages, incl. in the fields of environmental protection and resource and energy efficient and low-carbon technologies.

The support focuses on the following groups of activities:

- developing cooperation for innovation between enterprises and among business and academia, incl. internationalization of the innovation process;
- support for innovation in enterprises, incl. development and introduction of new products, processes and business models in enterprises;
- supporting the development of environment and research and innovation infrastructure for business needs.

In particular, the establishment of cooperation for innovation between enterprises and among business and academia, incl. internationalization of the innovation process is stimulated by the implementation of joint projects, including clustering and participation in pro-innovative networks and platforms. Opportunities are established for enterprises and leading national and / or European academic and research groups to cooperate, which results in the creation / development of innovative capacity and sharing resources for the development and implementation of innovative processes and products, protection and transfer of copyright and license rights, commercialization of research results.

On the other hand, especially as far as high technology is concerned, an approach to identifying and structuring innovation clusters has been applied according to the model of clustering - in relation with transferring technology that is generally necessary for innovation in individual enterprise clusters.

On the third hand, the joint cooperation is supported by the development of technology transfer offices and technology centers. The support focuses on the management of the science-business relationships, intellectual property rights, commercialization through licenses and start-ups, awareness of researchers regarding intellectual property rights and commercialization.

Calls for proposals under OPIC aimed at establishing innovation partnerships between business and academia haven't been announced yet, but in the previous similar financial instrument - Operational Programme "Development of the Competitiveness of the Bulgarian Economy" 2007-2013, (OPDCBE) there were resources to create new and strengthen existing pro-innovative infrastructure in order to create a favorable environment and conditions for the development of innovative enterprises. The funds were provided for the establishment and / or expansion of technology transfer centers, technology incubators, technology platforms, technology parks, etc., as well as the diversification of the services they provide.

Owing to the provided financial support the first scientific technology Park - Sofia Tech Park was established. It aims to unite the efforts of businesses and science, focusing primarily on the development and implementation of projects in the three focal areas of the science and technology park - ICT, Life Sciences and Clean Energy. At the end of 2015 the research infrastructure was completed, coming up to nearly 20 million BGN in support of the Bulgarian innovative business and about 20,000 square meters of new and renovated space was created to accommodate application-research laboratories, general incubator, innovative lectures, educational, discussion forums, places for demonstration of new technologies.

OPIC will provide an integrated investment and advisory support to complete the Sofia Tech Park, with the aim of identifying, attracting and promoting innovative ideas and projects that lead to commercialization of innovative products, processes and services, thus stimulating the economic development of sectors with high added value.

With funds from OPDCBE were implemented:

- 21 projects for creation of new and strengthen existing offices for technology transfer of innovative knowledge, information and best practices, some of which specialized in areas such as air quality, climate change, energy efficiency and renewable energy sources;
- 4 projects for creation of new and strengthen existing technology centers, two of which with activity for developing environmental technologies;
- 42 projects for development of clusters, some of which create partnerships in the field of renewable energy, materials recycling technologies, electric vehicles.

***For more information:***

[http://www.opcompetitiveness.bg/module6.php?menu\\_id=296](http://www.opcompetitiveness.bg/module6.php?menu_id=296)

[http://www.opcompetitiveness.bg/module6.php?menu\\_id=295](http://www.opcompetitiveness.bg/module6.php?menu_id=295)

[http://www.opcompetitiveness.bg/module0.php?menu\\_id=47](http://www.opcompetitiveness.bg/module0.php?menu_id=47)

[http://www.opcompetitiveness.bg/module3.php?menu\\_id=90](http://www.opcompetitiveness.bg/module3.php?menu_id=90)

<http://sofiatech.bg/en/>

- **Social and financial innovation - organizational and financial innovations that produce social and environmental impact, along with the traditional return on investment.**

Bulgaria already has experience in the implementation of innovative financial instruments to support technological modernization, incl. the introduction of resource and energy efficient

technologies and investments in innovation (incl. environmental) of enterprises through structured financial engineering instruments under the Framework Financial Agreement for the implementation of the JEREMIE initiative of the European Union (EU) to OPDCBE including:

- Guarantee Products -First Loss Portfolio Guarantee;
- Equity Products -Acceleration & Seed Fund , Risk Capital Fund , Mezzanine Fund;
- Debt products -Portfolio Risk Sharing Loan .

The application of these tools address some of the major challenges faced by small and medium-sized enterprises (SMEs) in Bulgaria, namely the inability to gather sufficient capital for their business because of limited access to innovative financial instruments, collateral requirements and the cost of debt financing, and capital markets that do not offer cost-effective solutions for small businesses.

The National Guarantee Fund (NGF) was established in 2008 as part of the group of the Bulgarian Development Bank. The Fund issues guarantees, that complement the collateral required by the commercial banks in order to approve loans for the Bulgarian businesses.

NGF facilitates the access to funding for SMEs and contributes to the decrease of the interest rates of the loans granted to them . With the support of the Fund loans to start-ups and firms with no previous credit history have been offered.

In the process of creating is a new guarantee instrument to be applied in accordance with the adopted in 2015 Operational Program "Initiative for SMEs" to OPIC, which will aim to improve access to debt financing for SMEs in Bulgaria.

Specific innovative financial instrument in Bulgaria, which contributes both to the development of environmentally friendly businesses and overcoming poverty by creating jobs for the long-term unemployed, incl. those with low qualifications, is the supportive measure for disclosure of "green" jobs, introduced in 2010 by the amendment to the Employment Promotion Act.

According to the definition in the law, "green" are jobs created in economic activities related to the production of goods and provision of services facilitating environmental protection , under a list of economic activities approved by the Minister of Environment and Water and the Minister of Labour and Social Policy. The encouragement measure provides for each "green" job, created and filled by an unemployed person whose registration has been maintained without interruption for not less than six months and who is hired upon referral by a division of the National Employment Agency, the employer shall be provided with sums for the period of employment of any such person but not more than twelve months. An important requirement for employers wishing to apply for subsidy under the "green" jobs promotion measure, is to present documents certifying registration at the EU Eco-Management and Audit Scheme - EMAS or an introduced system of environmental management according to the standards of BDS EN ISO 14001, EN ISO 14001, ISO 14001, or the awarded right to use the EU Ecolabel for a product - result of the primary economic activity of the employer.

***For more information:***

<http://jeremie.bg/category/products/>

<http://www.ngf.bg/en/about-ngf>

[http://www.opcompetitiveness.bg/module3.php?menu\\_id=376](http://www.opcompetitiveness.bg/module3.php?menu_id=376)

**SOURCE: Ministry of Education and Science**

***The Ministry of Education and Science*** , in which competence is the integration of the policy on science and research with sectoral policies (incl. for technological development and innovation and to create conditions for sustainable economic growth and employment), provides the following information for Bulgaria on innovative approaches to ensuring cooperation and interaction among stakeholders to achieve sustainable development goals through a balance of economic, social and environmental dimensions:

**•-Collaborative and oriented to a specific mission innovation - approaches that combine multiple sources and forms of knowledge in an innovative process and organization structures to stimulate innovation;**

Research infrastructures are an integral part of any scientific and research system. Their presence ensures acquiring new knowledge by serving fundamental and applied research. On the one hand, they are used to solve complex interdisciplinary scientific matters, whereas on the other, they help to commercialize research results, which introduce new innovative products and services that improve country competitiveness. Access to modern scientific infrastructure ensures the framework for the development of scientists and science and it is a prerequisite for technology and knowledge transfer to and from industry. Research infrastructures are the center of the knowledge triangle: education, research and business.

The development of research infrastructures is one of the five pillars of the **European Research Area (ERA)** and this is a leading motive in the provision of the National Roadmap for Bulgaria (NRB). The National Roadmap for Bulgaria's Research Infrastructures is essential for achieving these aims and it is one of the most successful European initiatives that attract European and international scientific organizations in the implementation processes of scientific research.

**The first NRB of scientific infrastructures was adopted in 2010 with Council of Ministers' Decisions № 692** and it served as a base for defining national needs in the field of scientific infrastructure.

**With Council of Ministers' Decision № 569/31 in July 2014 an update of the NRB** was adopted for review and assessment of existing and new research infrastructures to identify those that fit into the European priorities and frame priority areas for modernization and/or development of new scientific facilities. The Roadmap includes a number of scientific infrastructures.

**In advanced stage of development are:**

- National Grid Infrastructure (member of EGI.eu); Bulgarian Supercomputing Center: high-performance infrastructure for computer modeling, simulations and research applications in industry, medicine, pharmaceuticals, energy, transport, finance and environment - PRACE;
- National university complex for biomedical and applied research (NUCBAR , in compliance with the Bulgarian participation in BBMRI);
- Regional astronomical center for scientific research and education - RACIO;
- Energy storage and hydrogen energetics;
- European Social Survey - ESS;
- Infrastructure for biological microscopy and biomedical imaging methods - Euro-BioImaging;
- National interdisciplinary research e-infrastructure for culture and humanities - DARIAH - BG; National interdisciplinary research e-infrastructure for integration and development of electronic resources for Bulgarian language - CLARIN;
- Distributed infrastructure of centers for production and research of new materials and their applications for conservation, access and e-store of artifacts (archaeological, folklore) (INFRAMAT).
- National cyclotron center;
- Distributed infrastructure for sustainable development in maritime development - EURO-ARGO.

**In early stages of development are:**

- Research and innovation in agriculture and food;
- Allianz cell technologies - ACT;
- National Geoinformation Center;
- Eco and energy saving technologies.

**The mapping of research infrastructures' facilities, apparatus and equipment in Bulgaria was carried out in 2015.** Research organizations and universities were invited to provide information about present scientific infrastructure, its location and area of impact. The mapping of the available RI facilities, equipment and apparatus, purchased under EU projects, national funding and other international financing mechanisms is an update of the mapping conducted in 2008.

**In 2015, NRB** consultations were held at national and regional level, involving various stakeholders (academics, business associations and representatives of government institutions). These consultations continued in 2016, and they reflected the state of preparedness of research infrastructures in the Roadmap to take active part in the European Platform of Research Infrastructures (RI) and meet the criteria for ISIS relevance.

**In 2016, business evaluation of projects was performed** concerning the NRB through the development of business plans of the national research infrastructures.

The Business Assessment, performed by independent evaluators, was used by the Ministry of Education and Science (MES) to distinguish three groups of RIs in Bulgaria as per objectives of National Strategy for Intelligent Specialisation:

- National Centre for distributed and high performance computing (EGI and PRACE)
- National interdisciplinary research e-infrastructure on resources and technologies for Bulgarian language and cultural heritage, integrated within the European infrastructures CLARIN and DARIAH (ClaDa-BG)
- National university complex for biomedical and applied research (BBMRI)
- Center for Modern microscopy for fundamental and applied research in biology, medicine and biotechnology (EuroBioImaging)
- Research Infrastructure “Energy storage and hydrogen energetics “ (RI ESHE)
- Regional astronomical center for research and education (RACIO)
- Distributed infrastructure of centers of production and study of new materials and their applications, as well as conservation, access to e-store artifacts (archeological and folklore) (INFRAMAT)
- National Infrastructure for Research and Innovation in Agriculture and Food (RINA)
- Research Infrastructure in cellular technology in biomedicine (RICTB)
- National Geoinformation Centre (NGIC)
- European Social Survey for Bulgaria (ESS)
- Eco-friendly and energy-saving technologies
- National Cyclotron Center
- Infrastructure for sustainable development in the field of marine research, linked to the participation of Bulgaria in the European Infrastructure Euro-Argo

**Source: Ministry of Education and Science**

These infrastructures have the potential to be enhanced through using funds from the Operational Programme “Science and Education for Smart Growth, as well as Programs under Horizon 2020. In the Operational Plan for Implementation of the Strategy for Research Development (adopted by CMD № 900 / 25.10.2016) an activity No.9 is provided and defined as „Implementation of the National Roadmap for Scientific Infrastructure“, which includes 8 instruments for launch, development, monitoring and development, monitoring and extending the roadmap. The activities and instruments in the Operational Plan have a timeline, funding sources and indicators to monitor implementation. Execution of projects in the Roadmap is set by the multiannual plan of indicative financial resources of a document, binding policies and financial instruments for the

implementation of ISIS. **There is an indicative investment by 2020, amounting to 432 mln. Leva**

Between 2014-2016, the Ministry of Education and Science provided national research infrastructures in the Roadmap amounting to about 8.3 million leva, namely:

-4 mln. Leva for construction and renovation of the National Center for High-Performance and Distributed Computing

-4 mln. Leva to build the National Cyclotron Center

-200,000 leva for partial equipment of the Regional Centre for Astronomical Research and Education – Rozhen

-95,000 leva have been paid and 79,000 levs for payment (in the period between 2014-2016) – a membership fee for participation in European consortia of the Roadmap of the European Strategy Forum on associated national sites: National Center for High-performance and Distributed Computing for participation in CLARIN and EGI; Center for Modern Microscopy for basic and applied research in biology, medicine and biotechnology – for participation in EuroBioImaging

***Innovation Potential for Commercialization of Ris***, as well as conduct an Interim Evaluation of the Functioning of Ris in Bulgaria. As a result, the existing national Ris will be upgraded with partnerships at the regional and European level, and there will be also opportunities for new national Ris to apply and be included in the NRB.

***For more information:***

<http://vsmap.mon.bg/mon/>

<http://horizon2020.mon.bg/?go=page&pageId=232>

<http://www.mon.bg/?go=page&pageId=4&subpageId=53>

<http://www.mon.bg/?go=page&pageId=13&subpageId=706>

#### **SOURCE: Bulgarian Academy of Science**

The Bulgarian Academy of Science and Bulgarian universities apply new innovative approaches and develop innovative projects in support the implementation of sustainable development goals.

- **Social and organizational innovations**

The Institute for the Study of Societies and Knowledge to Bulgarian Academy of Science explores social processes at various levels (local, national, regional and global) in their evolution, as well as through targeted effects as a result of technological and social innovation. At the sight of scientists is the actual time in our processes of establishing local communities, occurring in response to social needs, which are the source of variety in character, organization and scope of social innovation aimed at solving them. In ISSK developed methodology for targeted development of local communities, elaborating a model of integrated community interaction with local government and other key institutions. There have been developed and submitted to the government social innovation (Center complex service "here and now" and a model to support employment in the usual environment) for the effective integration of people with disabilities in society and reduction of poverty (2014-2016, funded by CBC Bulgaria-Greece and Bulgaria-Romania CBC). A pilot mechanism has been developed for the transfer of knowledge from science to users of scientific results with the aim of creating new knowledge-intensive products and services (2009-2011, funded HRD OP). The interdisciplinary composition of researchers in ISSK allows social phenomena and processes to be analysed in their complexity laying the focus on the accumulation of scientific and technological knowledge into practice and finding adequate mechanisms to achieve sustainable effectiveness of searched solutions.

Within the framework of the project "Training eco-entrepreneurship in three provincial universities in Bulgaria" implemented in the period 2015-2016 with the financial support from the German Federal Environmental Foundation in partnership with the University of Rouse "Angel Kanchev", the Business Academy "D.I. Tzenov – Svishtov and the University of Food Technologies – Plovdiv, developed an innovative training module for inter- and transdisciplinary training in eco-entrepreneurship for the total of 100 students from different specialties in the partner universities. The innovative training approach is to acquire specific entrepreneurial transferable skills based and specified on the basis of specific needs and problematic conditions that were previously identified. The approach of the training is pragmatic and interactive and at the end of the three month course students are capable to develop specific problem solutions. Decisions are made in the form of business plans for eco-entrepreneurship start-ups, scientific development for the eco-entrepreneurship segment or portfolio-presentation of an eco-entrepreneurship profile.

As part of the "Change in social functions, role and status of Science in Society" research project (2010-2014) the role of knowledge and technology transfer from academia to business and industry has been clarified as well as its institutionalisation at this stage — in the form of specialised units affiliated to research organisations and a stand-alone mediator centres. They deal with the new innovation processes in the context of developing a knowledge-based economy, while paying special attention to consumer – oriented paradigm change towards innovation and open network with a new type of relationship between the needs of different actors, where the needs of consumers are becoming the basis for the science — industry interactions. It has been demonstrated that key words such as "trust" and "responsibility" are becoming increasingly important in the process of commercialisation of scientific and technical products. The trend is highlighted as particularly important to get more and more diverse actors in innovation activities such as general government, local authorities, funding agencies and NGO representatives. The main factors to improve the effectiveness of innovation processes have been identified (such as intellectual property issues and facilitate the creation of spin-off firms) as well as the European Commission policy initiatives in support of their development, including in terms of stimulating social innovation and innovation in the so-called "***cultural and creative industries***". They deal with new innovative infrastructure such as smart cities, clusters, living labs, technology platforms, etc. The concept of "social innovation" is addressed from the point of view of the development of modern techno - science, insofar as a strong tool, i.e. technological connotation and designating applications of new methods and approaches (including scientific and technological logistics) to resolve existing social problems.

The results are published at:

Ivancheva, L. "Knowledge society" or science in a new social context. Technical University of Sofia, 256 c, 2015, ISBN 978-619-167-149, 6.

Ivancheva, Innovation and transfer of knowledge and technology: Modern Trends and current European political dimensions. *Mechanical and electrical engineering, LXIII, 2014, vol. 1, pp. 38 to 43.*

## **SOURCE: Ministry of Labor and Social Policies**

**The Ministry of Labor and Social Policies** provides the following information regarding policies and measures to achieve the sustainable development goals on the priority themes for development for the 2016-2017 period.

A social economy policy is conducted within the Ministry. This policy aims to create a genuine, supportive environment for the development of innovation to support social enterprises, working on social inclusion and employment of disadvantaged groups, including those that were at risk of



poverty. The policy is based on two important documents: National Concept for the social economy, which was adopted by Decision No 13 of the Council of Ministers of 04.04.2012 and two-year implementation plans of the national concept (first Action Plan for Social Economy 2014-2015, adopted by Decision No 43 of the Council of Ministers dated 30.01.2014; Second two-year Action Plan for Social Economy 2016-2017, adopted by decision of the Council of Ministers No 146 of 02.03.2016). The documents can be found at the following website: <http://seconomv.mlsp.government.bg/> . A National prize was set up in 2015 to support social innovation and social economy, and was awarded for the first time in several categories of social businesses that demonstrate a capacity for innovation. More information can be found on the aforementioned web page.

Combating poverty and eradicating all its forms and dimensions, including extreme poverty, is at the heart of the United Nations' 2030 Sustainable Development Programme. One of the priorities of the new programme (24) is the commitment to the eradication of poverty in all its forms and dimensions, including eradicating extreme poverty by 2030, ensuring all people a minimum standard of living, including through social protection systems.

### **1. We are therefore providing information on the poverty line for Bulgaria:**

The line of poverty is an indicator of poor people in society, it shall be updated annually on a proposal of the Minister for Social Policy and Labor by October 31<sup>st</sup> of the previous year, in compliance with the requirements of the methodology for determining and updating the poverty line (Council of Ministers Decree No 345/2006, SG No. 106/2006, amended, SG No. 89/2007).

The poverty line is determined on the basis of the results of the household budget survey carried out in Bulgaria by the National Statistical Institute (NSI), as a percentage of total net median equivalised income (so-called MONED) and whether they meet the **“minimum personal needs”**.

The minimum personal needs are as follows:

Household expenditure for food under the so-called poverty line, ‘poor households’ must ensure daily caloric intake of 2 700 K calories;

The ratio between the costs of food and non-food consumer goods and services of households in the consumption of the poverty line chosen must correspond to the ratio between the same type of expenditure, but average of 20 percent of households with the lowest income.

The poverty line in this respect ensures that poor households would be able to meet the minimum personal needs.

**The poverty line in the country is therefore high enough to meet the minimum personal needs of the poorest sections of the population.**

### **2. Minimum wage**

The minimum working wage is an instrument for reducing in-work poverty, i.e.the “working poor”.

Statistics on income and living conditions show a significant reduction of the risk of poverty among workers. From 2015 to 2014, the risk of poverty for persons employed decreased from 9.2 % in 2014 to 7.7 % in 2015.

In the implementation of the policy to reduce the level of in-work poverty, the amount of the minimum wage is established, so that the net amount (after deduction of contributions and taxes) at the lowest remuneration for work performed will be higher than the national poverty line.

**SOURCE: Ministry of Agriculture and Food**

The MAF has competence of activities in the context of the sustainable development goals 2030: National strategy for sustainable development of agriculture in Bulgaria 2014-2020, Rural Development Programme 2014 - 2020, Strategic plan for the development of the forestry sector, Maritime and Fisheries Programme 2014-2020.

**SOURCE: Computerworld BG**

Agriculture is one of the important sectors of Bulgaria, although it is still too ‘fragmented’ in small farms (more than 300 000) and the quantities offered are too small for the large international users of agricultural produce such as China, India and others. We have the potential to play a more active role in the export of organic products through cooperation with providers and by shortening the route to the final consumer. Direct access to consumers (retailers, restaurants, shops) is one of the most important means to increase profits for farmers and stockbreeders, while e-commerce and online based management systems are an important tool for shortening of the supply chain. Innovation, notably through the deployment of ICT technologies, will help Bulgarian enterprises to improve their competitiveness by dealing with problems such as labor shortages, attracting young people back to organic farming and coping with the constant fluctuations in prices.

The sector generates 5.6 % of the GDP in Bulgaria, but many farms are small and dominated by the field cereals such as wheat, while at the same time livestock farming occupies only 27 % of the fields compared to an EU average of 42 %. Bulgaria has a positive balance in agricultural exports, a wide range of competitive products such as grains and oilseeds, protein crops (mainly soya), dairy products and honey.

Livestock also has great potential, as markets in the EU may “take many more products”. In order to be able to cope with the price pressure from large companies, small farms must be cooperating and be incorporated into more powerful organizations and to rely on new internet-based technologies for direct negotiations with end-users.

“The biggest threat and risk for the Bulgarian farms is the ability to better organize production, as is the uneven distribution of added value along the chain from producer to end-user”. In this respect, the MAF has already organized the so-called “farmer’s markets”, while in 6 provincial centers such markets already operate permanently. There are plans for such farmers markets to be set up in all provincial capitals.

**Setting up producer groups** is one of the measures by which the EC is supporting small farms. So far recognized 15 producer organizations and 39 groups with 333 members in total have been officially recognized in the country, with 5.77 % of vegetable production already covered. The protected designations for the protection of European products is another measure that stimulates the interest of purchasers who wish to know the origin and quality of the products they buy. These processed products generate one quarter of EU business.

At national level, the State provides aid for the participation in fairs, with around BGN 1 million spent on farmers presenting their own production at farmer markets (nearly 1000 farms were involved), with another half a million BGN financing the “I support the Bulgarian!”. An agreement has been concluded with chain stores and shops for direct sales of products, similar to the “Farmer’s markets”. On 6 November a European – wide measure was introduced in support of grain exporters to not submit an export license for transactions outside of the EU. Licenses remain for the dairy sector, but the measure increased the competitiveness of Bulgarian goods because of the reduced import taxes in countries such as Canada and the United States of America.

**Innovation in the agricultural sector** is at the heart of European policy in this programming period and will be even more relevant in the one after 2020, “The EU has 45 programs with 9 of them focusing on innovation in agriculture, the food industry and forestry. The European Rural Development Fund, the European Social Fund, the European Regional Development Fund, but also for innovation in the Erasmus +, COSME, LIFE, Horizon 2020 have the greatest impact.

Measure 4.1 of the Rural Development Programme supported by the European Rural Development Fund is the most popular in Bulgaria, but the projects under it (the submissions for which end on December 7th), concern innovation, supported by a patent right or utility model registered within 2 years prior to the date of submission of an application for support. This will hardly work for many of the Bulgarian farmers, enabling them to see the progress of their property.

*European innovation partnership, or sub-measure 16.1*, can bring more benefits to our agricultural production. This measure provides for the establishment of a network of several entities, including farmers, brokers, analysts, research institutes or experimental stations carrying out research and scientific services, HEIs with accreditation to relevant occupations, non-governmental organizations active in the field of agriculture or forestry, environmental protection or water, food processing and for advisory organizations involved in agriculture or foodstuffs. “When a university or ICT company start thinking on the idea of a specific innovation, it must ‘pull in’ other ‘actors’ as well.” The measure supports innovations generated through this interactive approach since the participant must be a farmer seeking a solution to his issues. “Each Party shall determine what innovative projects to give money to, with the budget for employment of these operational groups numbering EUR 20 million. Each group usually consists of NGOs, a school and an IT company, and funds are allocated to a specific project in a business plan. The concept should be tested on the specific property, i.e. to check whether it will be successful in practice. In the first phase the task force is financed and the possibilities for further multiplication of the idea in the region are explored, while in the second the investments for the introduction of the innovative idea are supported. Up to BGN 1 million are foreseen for each project, but unfortunately this measure has not yet been implemented in Bulgaria and has not, so far, been in the indicative calendar for 2017.

#### **Innovative cloud system for the management of livestock farms (CocoFarm).**

This project includes a number of key factors — sensors submitting data automatically about an animal’s health and location, microclimate controls appropriate to the type of animal and Computing software applications that analyze big data and generate easy to understand graphs and create alarms for various events. All the data and analysis are also available on a smartphone, and the application has the potential provide access to a wider market for the consumer. “4 in 10 consumers would have changed the brand if another manufacturer provides traceability of the product sold. Such decisions could introduce new business models that optimize supply. A farmer could even sell eggs directly to the customer”.

The system can be accessed from anywhere providing other functionalities, including warehouse management, business analysis, zootechnical diaries, etc. A similar application is being developed for the dairy business as well.

**Short supply chains** are particularly important for producers of fruit and vegetables, especially the good – tasting yet “fragile” varieties that take less time to perish. The National Horticulture Union project supports fruit and vegetable growers with its ‘Gardner’ project – a website giving equal conditions and opportunities to both the manufacturer and the purchaser. The project, supported by the America for Bulgaria foundation, provides opportunities to Bulgarian

manufacturers to pick up their tenders and communicate with other participants in the Platform as traders, shops, processing establishments and restaurants. “This shortens the chain to the trader and enables the produce to reach the consumer fresh in 24 to 48 hours”. The site “combats” traditional sales channels, which still have a very high influence. The website is subscription – based and in one year and there have been over 20 000 visitors.

**More information:**

[http://computerworld.bg/50197\\_etargoviyata\\_i\\_ikt\\_inovaciite\\_sa\\_shansat\\_na\\_selskostopanskiya\\_ni\\_sektor](http://computerworld.bg/50197_etargoviyata_i_ikt_inovaciite_sa_shansat_na_selskostopanskiya_ni_sektor)

### **Ministry of Agriculture and Food**

- **Could you provide 1-2 examples from Bulgaria regarding the implementation of new innovative approaches and the manner, in which they have contributed to the sustainable development?**

#### Development of Social Entrepreneurship

The Agricultural University – Plovdiv is actively working on the issues related to social entrepreneurship within the project „Skills for Business Consultants in the field of social entrepreneurship”. The project is being implemented for the period 2015-2018.

The project was developed under the requirements of the European Erasmus + KA2 strategic partnerships program in the field of education and training, the main purpose of which is to build strong partnerships between education and businesses to promote innovation and competitiveness. The project participants are 7 institutions from 6 countries - Bulgaria, Greece, Ireland, Italy, Malta, Estonia.

The main purpose of the project –Building skills and techniques for business consultants in social entrepreneurship. The goal is being achieved by the following sub-goals:

- State analysis of social entrepreneurship in the EU;
- Characteristic features of the qualification that is necessary for effective provision of consultancy services for social entrepreneurs;
- Good practice transfer from the social sphere to business consultants for the development of new consultancy techniques;
- Developing a comprehensive training program for business consultants that meets both the identified needs of business practice and academic standards;
- Establishing a learning portal that contains all the educational materials developed under the project; Developed Training Programs Uploaded to the Educational Portal.

#### Achieved Results

Research of the state and potential for the expansion of social entrepreneurship in Europe

- National Report for Bulgaria – state analysis, potential and troubles for social entrepreneurship development
- Social entrepreneurship models in the partner countries

The five main flagships over which those models were built are:

1. Implemented practices at a regional level;
2. Services offered and related activities (training, mentoring, consultancy etc.);
3. Supporting structures for the development of social entrepreneurship;
4. Good practices of entrepreneurship consultancy services;
5. Necessity to consult potential social entrepreneurs.
6. Business consultants’ qualification – professional profile, education, specialization, experience;
7. Identifying inter-personal skills and competences of those employed in the sphere of business consulting;

8. Characteristic features of the effective support of social entrepreneurs;
9. Evaluation of the skills that are necessary for support in the field of social entrepreneurship, laying the focus on consultancy techniques;
10. The needs of training and evaluation of the lacking skills of business consultants in social entrepreneurship.

- Publications

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10. Terziev V. K. Bencheva N. A. Arabska E. D.(2016) Implications on development of social economy in Bulgaria, prospects for development of education and science, Международная научно-практическая конференция Перспективьи развития науки и образования, Научный журнал икономика и финанси, Academic publishing house of the Agricultural University, Plovdiv ISBN 978-617-7214-28-0academic publishing house of the Agricultural University, Plovdiv, Bulgaria P.55-63.
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- **Do you have any documents, records or reports for specific examples cited or, more generally, on the role of new innovative approaches to support the implementation of the sustainable development goals of the country or regions?**

For more information:

[http://www.capital.bg/politika\\_i\\_ikonomika/bulgaria/2016/11/13/2862827\\_mliako\\_bioproducti\\_i\\_med\\_sa\\_agrosektorite\\_s\\_potencial/](http://www.capital.bg/politika_i_ikonomika/bulgaria/2016/11/13/2862827_mliako_bioproducti_i_med_sa_agrosektorite_s_potencial/)

‘Information technologies in agrobusiness’, Bloomberg agribusiness TV Bulgaria, ‘The world is a business’

Institute for Agricultural Planning and Innovation — <http://agroinnovations.bg/>

### **The role of science, technology and innovation in ensuring food security by 2030**

#### **SOURCE: Bulgarian Academy of Science**

The innovative approaches for Bulgaria are:

1. After long pressure by various stakeholders it was agreed, albeit slowly, that rather than being disposed of food should be better distributed to the poor. On 27 October 2016 the Parliament voted to exempt the donation of close to expiry date food from VAT.

It is assumed that this will motivate large food chains to donate food rather than send it to landfills.

According to the Bulgarian Food Bank each year over 670 thousand tons of food are destroyed.

At the same time, 21.2 % of Bulgarians, or around 1.54 million people, live in poverty.

Further changes were introduced to the law governing food and food banks.

However, these regulatory changes should be subject to monitoring in order to see how they are implemented and what further changes are needed in order to ensure actual access to food for the poorest in the country.

2. The social economy and social enterprises are an important part of the necessary social innovations. The Ministry of Labor and Social Policy in Bulgaria has an advisory group on social economy, composed by different stakeholders. This contributes to promoting activities in the field and a gradual ‘normalisation’ of the practices in this respect.

At the same time, the development of a legal framework in this area is faced with numerous problems, and in particular the absence of political will to develop a law that should clearly separate the organisational units of the social economy from other economic operators. Particularly problematic is the empowerment of members of these organizational units on the basis of the principle “one person, one vote”. In this context a discussion panel of the regulatory framework of the social economy would be very useful.

3. International scientific networks which can contribute to improving the social dimensions of development in the social field, in which Bulgaria also participates, are gradually being built. Examples of such systems are: Adequate minimum income (EMIN); Social Economy and Social Enterprises (EMES), etc.

The mission of the Institute of plant physiology and genetics (IPPG) to the Bulgarian Academy of Sciences is linked to conducting research that is contributing to the resolution of global issues

such as feeding the population in the ongoing adverse climatic changes, which also sets out the main priorities.

— creation of new plant forms for the arable sector, food processing and pharmaceuticals industries, health and environmental protection.

— research into the physiological and biochemical bases of Regulation of the plant's metabolism in plants and safeguard mechanisms that help to overcome the negative effects of the environment and to increase their resilience.

— studies on the organization and functioning mechanisms of the researched structures in order to characterize the enrichment of genetic resources and their use for the enhancement of economic importance for the country's plant species.

To identify environmentally sustainable solutions for feeding the populace, the IPPG is testing plants both at the molecular level as well as their relationship with environmental air, soil and water. The resulting scientific data concerns raising the productivity of plant by optimising their water exchange mineral nutrition, maintaining an optimal environment for active symbiotic relationships with micro-organisms, minimizing adverse effects on the environment, increasing resilience photosynthesis through phytohormones and plant growth regulators. The project is developing and exploring new genotype cultivars with improved food and biological properties — maize (*Zea mays* L.), tobacco (*Nicotiana tabacum* L.), cultural sunflower (*Helianthus annuus*), tomato (*Solanum lycopersicum* L.) and pepper (*Capsicum annuum* L.). Assessment shall be performed of the genetic diversity of varieties of wheat (*Triticum aestivum* L.) with a high tolerance of drought, leaf pathogens and increased nitrogen efficiency.

New innovative biotechnologies are being encouraged, such as seaweed biomass production, protecting and enhancing biodiversity through a complex survey of valuable medicinal herbs (oregano, white oil, the valerian, peppermint, thyme, sage), Bulgarian endemic and rare species that are critically endangered or new species (non-traditional for our country, gooseberry Stevia, echinacea, tayberries) in favour of agriculture, the pharmaceutical, cosmetic and food industries. Genes that are key to increase the tolerance of crops are being identified to stress environmental conditions through the use of protein and chromosomal DNA markers and examined the regulation of gene expression.

#### **Examples of innovative developments over the last years:**

— development of screening methods for assessing the genetic types of wheat arid - resistance selection, to improve the effectiveness of nutrition, water exchange and quality of the grain.

— the genetic resources of common wheat (*Triticum aestivum* L.) in Bulgaria have been characterized and a collection of more than 200 old and modern wheat varieties and breeding lines has been made. The test material is assessed on important business signs such as maturity period, height, productivity, field resistance to disease and pests

— a unique sunflower line has been created, resulting in hybridisation through the transfer of genetic material between cultural sunflower *Helianthus annuus* and medical plant *Echinacea purpurea*, followed by targeted selection and breeding.

— a pepper line (безантоцианова капия) with a high dry matter content of lycopene, vitamin C, complex and reducing sugars with тобамовируси краставичномозаечния virus resistance.

— a tomato variety has been created with a “non-traditional” form and golden yellow colour of the fruit, unusual for our food containing nutrients, absent in red tomatoes.

Agricultural Academy provides information about the role of science, technology and innovation to ensure food security by 2030:

The Agricultural Academy (AA) is an organization for scientific, applied, support and ancillary activities in the field of agriculture, helping with the realization of the strategic objective of ensuring food security of the country, preservation of natural resources and improving the quality of life.

In AA operate 562 scientists carrying out research projects related to food security in the following major areas: sustainable use of natural plant resources, animals, soil and water and reduce the adverse impacts associated with climate change; maintenance of genetic resources and creating new, high-yielding varieties and animal breeds, well adapted to changing climatic and economic conditions; develop healthy foods to improve the length and quality of life; provision of certified and quality seeds, seedlings and breeding material.

The strongest advantages of the research institution (AA) for sustainable development are:

- The integration of all functional units of the innovation process in agriculture from idea to research product
- A regional network of institutes and experimental stations engaged in scientific, applied and consultancy located geographically in all regions of the country.

The scientific projects are funded through several sources:

- Funds from the budget subsidy (institutional support)

Project proposals are evaluated and accepted by expert councils, composed of authoritative academic rank for a term of four years and are in accordance with previously adopted long-term priorities. Projects in the selection and maintenance of genetic resources have a long-term duration and their continuity is ensured. Much of the projects result with the creation of a new research product - a new variety, new technological solutions or integrated technologies for growing different crops or animals that can be directly embedded in agricultural production. There are 345 scientific products owned by the institutes and experimental stations of the AA which have certificates for protection from the Bulgarian Patent Office.. Just recently in 2016 8 new varieties of different cultures and 2 breeds received new certificates.

In 2016, the structural units of the SAA participated in 130 projects - 38 in plant breeding, 31 in animal husbandry, 46 in the field of soil science, agricultural technology and the protection of plants, 10 in the field of safety and quality of food and 5 the field of management of agricultural production. These projects are funded through budgetary subsidy provided by MAF and through their own income provided by the sale of scientific products.

- Projects funded by Bulgarian competition programs

Opportunities to receive external funding for research projects in the field of food security in national competitive programs are not many. The National Science Fund finances a relatively small number of projects per year in all scientific fields, and each time between 3 and 5 of the project proposals have participation of researchers from the AA in scientific fields related to food security. These projects are usually implemented over a period of three years.

Despite the small number, the activity of researchers in the preparation of the proposals is significant. For example for the competition session NSF in 2016 were prepared 31 proposals for fundamental research, 4 - for Young Scientists Competition and 9 for the competition for bilateral cooperation with China.

- Projects funded by international competition programs

Researchers from the Academy also apply to calls for proposals from international competition programs for the development of projects related to the priority food security. In the last year the AA participated in 43 such projects - 3 projects under the European Programme for Plant Genetic Resources, 17 projects under the "Horizon 2020" programme, 2 projects of the International Atomic Energy Agency and 21 projects in various Operational programs and international organizations and institutions. These projects typically last three years.

The scientific results of the projects are published in Bulgarian and international scientific journals. The Agricultural Academy publishes five scientific journals: Bulgarian Journal of Agricultural Science, Plant Science, Animal Science, Soil Science Agrochemistry and Ecology, Economics and Management of Agriculture. Some of the journals are referred to and indexed by global data bases and from this year have open access.

The practical research results reach farmers and other persons stakeholders through open days and seminars. In 2015, 67 demonstration fields and visits to farms were set up, where 50 open



days and meetings of teams of scientific units with farmers took place. During these events information on the latest plant varieties, animal breeds and innovation in the technological aspects of farming was presented. During the last year 94 scientific and practical conferences were held, as well as seminars, symposia, round tables, etc. On these forums problematic issues of modern agriculture were discussed including such related with food security. For dissemination brochures, newsletters, flyers were printed and videos were created in total circulation of 20,503 copies. Scientists participated in 130 radio, 98 television shows and featured in 241 pgs. press reports.

The envisaged amendments to the Law on AA will ensure greater sustainability of research in the field of food security, faster transfer of results to the agricultural business and will contribute to the generation of innovative policies on agriculture and food and better jobs with local authorities towards reducing imbalances in regional development.

**Agricultural Academy provides information about the **role of science, technology and innovation to ensure food security by 2030:****

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