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Smart Innovation Ecosystems

BULGARIA - national & regional innovation framework & North-East BULGARIA Regional analysis of the innovation status

Bulgarian Business Forums

Table of Contents

BULGARIA - national & regional innovation framework 3

- Research, development & innovation GOVERNANCE 5
- Research, development & innovation SYSTEM 8
- POLICY & STRATEGIES boosting research, development & innovation 11
- PROGRAMMES boosting research, development & innovation 22

North-East BULGARIA Regional analysis of the innovation status 32

- Introductory data about the region 33
- Macroeconomic indicators and business environment 39
- Business support framework 49
- Private funding 51
- Foreign direct investments 57
- Education environment 60
- Research & Innovation 66
- Public authorities - innovation and digitalization 73
- Conclusions - SWOT Analysis 77

BULGARIA - national & regional innovation framework

The Republic of Bulgaria is a parliamentary republic with local self-government and it is divided into municipalities and districts (provinces) in accordance with the Constitution. The municipality, where local self-government is practised, serves as the primary administrative territorial entity. The district's objectives include carrying out local government, fusing local and national interests, and implementing regional policy.[1]

There are three levels of government in Bulgaria: central, regional, and local. The three-level governance reflected in the public administration's structure makes a clear distinction between central and territorial governance, which includes both regional and local government structures. The Chief Inspectorate, Ministries, State Agencies, Executive Agencies, the administrations of State Commissions, and any administrative structures created by law or by means of a decision of the Council of Ministers comprise the central administration.

There are three levels of territorial administration: district/province (28) , regional (6) , and municipal (265). District administrations report to the Council of Ministers, and district governors are political appointees.[2]

The District governor is the only entity with executive authority in the district (province), carrying out local government operations and ensuring that regional policy is implemented while keeping in mind both local and national interests. The district governor:

- organises and maintains the development and implementation of district strategies and programs for regional development,
- interacts with local self-government bodies and local administration,
- ensures compliance between national and local interests.

The District administration and the District governor are the related institutions to the Ministry of regional development and public works for the means of management, implementation and integration of the national and regional development plans and strategies (incl. spatial planning systems and strategies).[3] The District governor is also responsible for the preservation and protection of state property on the territory of the district, ensures compliance with the law on the district's territory, and performs administrative control over the implementation of administrative policies.[4]

The area of the country is split into statistical regions with three hierarchical levels in accordance with the requirements of the Classification of Territorial Units for Statistics (NUTS), used by the European Union: NUTS1: 2 statistical zones; **NUTS 2: 6 statistical regions – Planning regions**; NUTS3: 28 administrative districts – Provinces;

1. Местно самоуправление | МРРБ (mrrb.bg)
2. https://data.europa.eu/doi/10.2767/969353
3. https://www.president.bg/docs/Bulgaria2020.pdf
4. https://varnaregion.egov.bg/wps/portal/district-varna/administration/structure/organisation-chart

Correspondence between the NUTS levels and the national administrative units[5]

	NUTS 1 #	NUTS 2 #	NUTS 3 #	LAU #
BG	Statistical zone - 2	Statistical region - 6	Administrative district / province 28	Municipality - 265

The country is split into six territorial regions, three in the north and three in the south, according to the European Classification of Territorial Units for Statistical Objectives (NUTS): Northwest Region, North Central Region, **Northeast Region (Severoiztochen),** South East Region, South Central Region, and South West Region.[6]



Figure no. 1. Common classification of territorial units for statistics in Bulgaria[7]

The European Semester Country Report 2022[8] for Bulgaria presents that the government of the country is prioritising scientific research as it is of strategic importance for the development of the country. The report presents indicators from the National Recovery and Resilience Plan (NRRP) - 58.9 % of funds support climate objectives and 25.8 % support digital objectives.
The innovation performance change over time of the country is presented in Fig… .



Figure no. 2. BG-Bulgaria Profile over time Source: European Innovation Scoreboard 2022

5. National structures - NUTS - Nomenclature of territorial units for statistics - Eurostat (europa.eu)
6. Classification of Territorial Units for Statistics in Bulgaria (NUTS) | National statistical institute (nsi.bg)
7. NUTS_v2016_EN.png (1100×850) (nsi.bg)
8. https://commission.europa.eu/publications/2022-european-semester-country-reports_en

Sofia area (part of Yugozapaden region and has only 18.8% of the population) produces nearly half of the nation's GDP, the other five of Bulgaria's six planning regions are among the 20 poorest in the EU. The country is creating a good environment with the potential to deliver breakthrough growth for businesses and innovation and it is currently ranking 35th among the 132 economies featured in the Global Innovation Index 2022[9].

- Research, development & innovation GOVERNANCE

Management bodies

The ***"Activity Separation Model"*** is utilized by the Bulgarian government, much like it is in Germany, Norway, Finland and the Netherlands; in this model, the responsibilities of the Ministry of Economy are clearly defined for the industrial innovations and technologies (dealing with the private sector), and in the case of the Ministry of Education and science - for the development of human potential and research (oriented towards the public segment). According to the analysis and evaluation of the management system and monitoring the Bulgarian Innovation strategy for smart specialization 2014-2020 developed by the Ministry of Economy and Industry is presented that the institutional responsibility of several departments for the attitude of the strategy predetermines the limited possibility of innovation policies that are coherent and with a clear focus. [10]

Over the past years, governmental reforms that involved the formation of new entities or the transfer of tasks between already existing ones, regarding the governance structure for the Research, Development, and Innovation (RDI) System in the country has led to additional changes.

In 2021, the Ministry of Innovation and Growth (MIG) was established by the 47th National Assembly. Under its jurisdiction, there are structures such as the European Funds for Competitiveness, the Bulgarian Development Bank, the Bulgarian Investment Agency, and Sofia Tech Park. The above-mentioned are the main managing bodies but their work is actively supported by the Ministry of Agriculture and Food, Ministry of Transport and Information Technology and Communications, Ministry of Health, The Ministry of Internal Affairs and the National Fund under the Ministry of Finances. In the processes of implementation of the state policy in the field of scientific research and innovation, the work of the ministries is supported by the National Research Council and the National Innovation Council (consisting of representatives from universities, other scientific organisations, employer organisations, NGOs, other government bodies, and other interested parties in the field of science and innovations), further merged to National Research and Innovation Council.

» The National Innovation Council

The National Innovation Council[11] was established in 2004 with the aim of providing assistance to the Ministry of Economy and Energy in developing and putting through practice the country's innovation policy in accordance with the Republic of Bulgaria's Innovation Strategy. Until 2014, The Ministry of

9. https://www.wipo.int/edocs/pubdocs/en/wipo_pub_2000_2022/bg.pdf
10. https://www.mi.government.bg/files/useruploads/files/innovations/smartstrategyactivityreport%E2%84%963. pdf
11. Национален съвет по иновации | Консултативни съвети | Социален диалог | Българска стопанска камара (bia-bg.com)

Economy and Energy[12] defined and was responsible for the implementation of the public innovation policy. At the operational level, the process was coordinated by the Enterprise Policy Directorate. The National Innovation Council at the Ministry of Economy and Energy was an advisory body in which representatives of the state administration, business organisations, scientific circles, education, and non-governmental organisations participated.[13]

A *Council for Intelligent Growth* was established as an advisory body to the Council of Ministers in 2016 for the purposes of sustainable and effective management for the implementation of the "Innovation Strategy for Smart Specialization 2014-2020" (ISIS). The Council for Intelligent Growth (SIR) establishes the guidelines for the development of the thematic areas of the economy, vision, and strategic goals, coordinates, and monitors the implementation of ISIS. The establishment led to the termination of the operations of the National Innovation council.[14]

In addition to the National Innovation Strategy for Smart Specialization 2014-2020, during that period Bulgaria has several **regional and municipal S3s** (Severen – Tsentralen Region, Sofia, Plovdiv, Varna and Ruse). The strategic committee oversees the central management of the Bulgarian S3. An Administrative Partnership Network and an Interinstitutional Working Group assist this. The bottom-up body is made up of the nationally appointed Regional Partnership Network and other stakeholders, while a central technical body provides overall coordination of S3 governance in the country.[15]

The country's innovation policy is managed by the Ministry of Innovation and Growth in the context of:[16]

- National Development Program BULGARIA 2030
- The Innovation Strategy for Smart Specialization 2021-2027

Legislative framework

The Ministry of Innovation and Growth is working with the Ministry of Education and Science to create a new *Law on the Promotion of Scientific Research and Innovation* as part of the implementation of the innovation development policy. The Law will:

- update the current legal framework with elements of public-legal relations between the participants in the research and innovation ecosystem in the country in order to create conditions for realizing their full potential;
- specify the authorities and procedures for developing the national policy for promoting innovation and scientific research, as well as the roles of each institution involved in its creation, implementation, monitoring, and evaluation. It will also specify how the policy will be financed;
- outline the principles and regulations that will govern technology transfer finance as well as the roles of the organisations engaged in developing, implementing, monitoring, and evaluating technology transfer policy.

12. Министерство на икономиката и индустрията ● Официален сайт (government.bg)
13. Национален съвет по иновации | Консултативни съвети | Социален диалог | Българска стопанска камара (bia-bg.com)
14. https://www.strategy.bg/PublicConsultations/View.aspx?lang=bg-BG&Id=3502
15. https://s3platform.jrc.ec.europa.eu/bulgaria
16. https://www.mig.government.bg/politiki-i-strategii/inovaczii/

The Investment Promotion Act (IPA[17]), which established the principle of equality between Bulgarian and foreign citizens and businesses, was announced to require coding in primary schools in 2018. The Bulgarian government designated high-tech industries as preferential, which resulted in cheaper investment capital requirements. Businesses benefited from more government initiatives in the areas of social security, taxes, and vocational training. There are many IPA incentives for investments, including grants for R&D and affordable land prices. With a range of objectives, including:

- Ensuring digital skills
- Aligning business demands and education
- Supporting young Bulgarian talents both locally and globally

The *Digital National Alliance* (DNA) has spearheaded numerous initiatives to advance digitalization without cost, giving young people access to digital tools so they may engage and interact with individuals across Europe and support them in discovering new employment opportunities.[18]

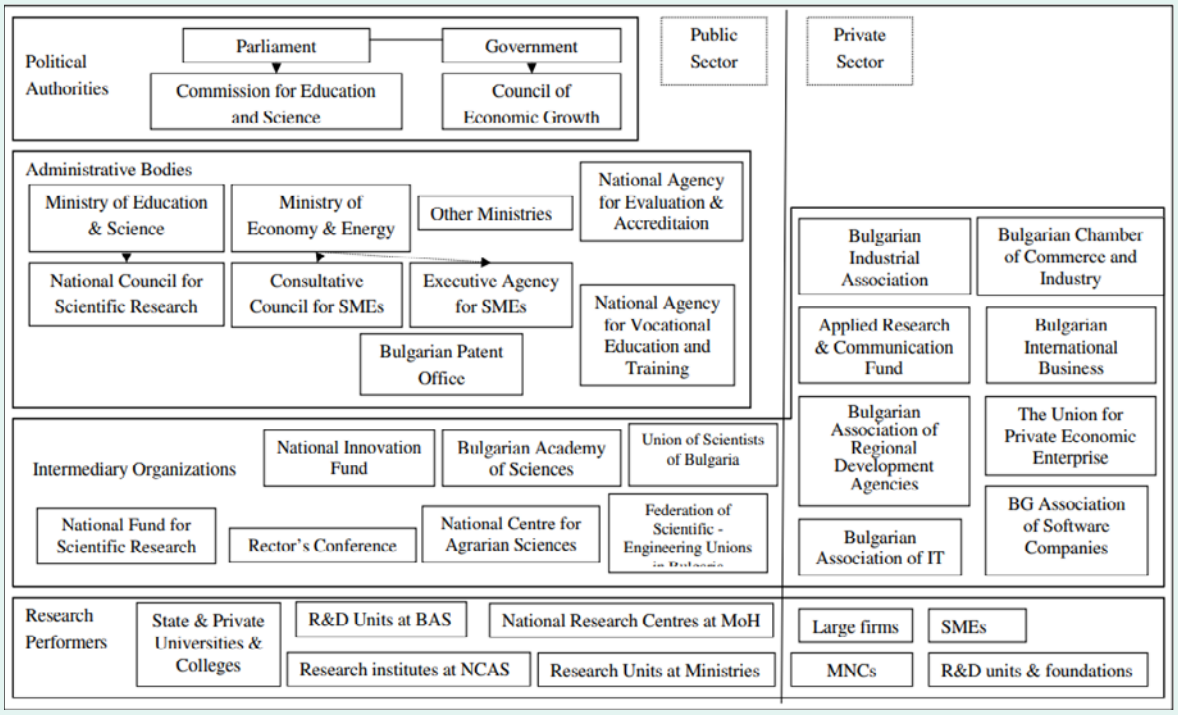


*Figure no. 3. Structure of the Bulgarian STI system prior to 2021[19] (*Administrative bodies: In 2021 The Ministry of Innovation and Growth was established).*

17. https://investmentpolicy.unctad.org/investment-laws/laws/37/bulgaria-investment-promotion-act
18. https://digital-competitiveness.eu/wp-content/uploads/ESCP_Digital-Riser-Report_2020-1.pdf
19. PSI-CountryProfile-Bulgaria.doc (europa.eu)

• Research, development & innovation SYSTEM

According to the Bulgarian Centres report[20] published by the European Commission in 2021, the public research system is composed by:

- the state-owned higher (tertiary) educational institutions performing research (HEIs)
- public research organisations - generally the two leading academies, Bulgarian Academy of Sciences (BAS) and the Agricultural Academy (AA)
- other public research institutes (centers/labs) operating under various sectoral ministries or agencies

The private RDI segment is composed of:

- private research organisations (including those listed as non-profit NGOs),
- privately held businesses engaged in R&D&I

A mapping of Bulgarian research infrastructures and research equipment performed in 2017 resulted in: 161 research infrastructures, facilities and equipment, divided between:

- 57 in Physical, Material Science and Engineering;
- 61 in Medical and Agro-biosciences field;
- 29 in Social Science and Humanities;
- 14 in e-Infrastructure for multidisciplinary research fields.

12 research infrastructures were considered having EU-level significance, 84 national and 65 having regional significance.

Academic institutions - universities, and university technological transfer centres (through the rating system of higher education institutions in Bulgaria the public can compare 52 higher education schools - from which 14 are with private funding status, hundreds of specialties, distributed in 52 professional fields[21]
According to the National Statistical Institute, there are 54 higher education institutions in total: in the school year 2021/2022 there are 21 Colleges and 17 Colleges in the structure of universities and specialised higher education schools that are not included in this number).[22]

Under the N*ational Roadmap for Research Infrastructure*, research infrastructure categories are defined as: Unique research infrastructure, Research centres, Research facilities, Pan-European infrastructures, Research complexes, E-infrastructure, European Open Science Cloud.

> **International research infrastructures**: European Organization for Nuclear Research , Joint Institute for Nuclear Research (JINR, Dubai), Research in the area of thermonuclear synthesis (ITER)

20. https://www.ipa.government.bg/sites/default/files/bulgarian_centres_report.pdf
21. https://rsvu.mon.bg/rsvu4/#/
22. https://www.nsi.bg/bg/content/3400/%D0%B2%D0%B8%D1%81%D1%88%D0%B8-%D1%83%D1%87%D0%B8%D0%BB%D0%B8%D1%89%D0%B0-%D0%BF%D0%BE-%D0%B2%D0%B8%D0%B4

> Unique research facilities: Regional Astronomical Centre for Research and Education (RACIO), Bulgarian polar base St. Kliment Ohridski, National Cyclotron Centre

> Bulgaria in Pan-European Research Infrastructures (ESFRI):

- E-infrastructure (CLaDA BG) for Resources and Technologies for the Bulgarian Language and Cultural Heritage, Member of the Pan-European Research Consortia CLARIN ERIC and DARIAH ERIC,
- European Social Survey for Bulgaria (ESS),
- Study on Health, Aging and Retirement in Europe (SHARE),
- National University Complex for Biomedical and Applied Research,
- Center for Contemporary Microscopy for Fundamental and Applied Research in Biology, Medicine and Biotechnology (EUROBIOIMAGING),
- Research Infrastructure for Cell Technologies in Biomedicine (INFRAACT),
- National Geoinformation Center,
- Infrastructure for Sustainable Development of Marine Research and Participation in the European Infrastructure (EURO ARGO) – MASRI,
- National Research Infrastructure for Observing Atmospheric Aerosols, Clouds and Gas Pollutants Integrated within the Pan-European Infrastructure ACTRIS,
- CTA-MAGIC International Cooperation in the Field of Particle Astrophysics,
- Electronic Infrastructure for Research of the Bulgarian Medieval Written Heritage (ELINIZB),
- "Extreme Light" ELI-ERIC Consortium (ELI-ERIC-BG),
- Bulgarian Observation Station of the Pan-European Radio Telescope "Low-frequency Array" (LOFAR) – LOFAR BG,
- Distributed System of Scientific Collections - Bulgaria (DISSCo BG),
- Distributed Research Infrastructure "Bulgarian Network for Long-Term Ecosystem Research" (LTER BG)

> National research and innovation complexes – projects of key importance for the development of the competitiveness of the Bulgarian economy and technological base, split on thematic areas as it follows:

» Information and Communication Technologies

1. Center of Competence "Quantum Communication, Intelligent Security Systems and Risk Management" – QUASAR
2. nstitute for Scientific Research in Computed Science and Artificial Intelligence (SCAI)

» Mechatronics and Clean Technologies

1. Energy Storage and Hydrogen Energetics (ESHER)
2. Eco and Energy-saving Technologies – Digitalization of Technological Processes
3. Digital Technology Systems for Clean and Secure Environment – 5D ALLIANCE
4. Laboratory of Aerospace Mechatronics (LAM)
5. Centre of Excellence "National Centre of Mechatronics and Clean Technologies"
6. Centre of Competence "Intelligent mechatronic, eco and energy-saving systems and technologies" – (IMEECT)
7. Centre of Competence "Clean Technologies for Sustainable Environment – Water, Waste,Energy for Circular Economy" (CLEAN&CIRCLE)
8. Centre of Competence "Technologies and Systems for Generating, Storing and

9. Consumption of Clean Energy", HITMOBIL
10. Center of Competence "Mechatronics and Clean Technologies MIRACLE"

» Healthy Lifestyle and Biotechnology Industries

1. Center for Plant Systems Biology and Biotechnology (CPSBB)
2. National Infrastructure for Research and Innovation in Agriculture and Food RINA
3. Research Infrastructure for Food, Nutrition and Health, Linked to Bulgaria's Participation in the Pan-European Infrastructure FNH-RI (FNH-RI BUL)
4. Center of Competence "Sustainable Utilization of Bio-resources and Waste of Medicinal and Aromatic Plants for Innovative Bioactive Products"
5. National Center for Biomedical Photonics (NCBP)
6. Extreme Coherent Light in the Mid-IR and X-Ray Area as a Laboratory Infrastructure (HEPHAESTUS)
7. Diagnostics and Technology Center for Plant Health - PLANTHEALTH
8. Research Infrastructure for Innovative Research of Biomolecules, Biomembranes and Biosignalling
9. Center of Competence "Fundamental, Translational and Clinical Studies in the Field of Infections and Infectious Immunology"
10. Center of Competence "Personalized Innovative Medicine" (PERIMED)
11. Center of Competence "Personalised Medicine, 3D and Telemedicine, Robot-Assisted and Minimally Invasive Surgery"

» New Technologies in the Creative and Recreational industries

1. Center of Excellence "Heritage BG"
2. Distributed Infrastructure from Centers for the Production and Research of New Materials and Their Applications, As Well As for the Preservation, Access and e-Storage of Artefacts (Archaeological and Folklore) – INFRAMAT
3. Laboratory complex in the science and technology park "Sofia Tech Park"

According to the Bulgarian Centres Report[23] , the majority of the organisations taking part in the Centres of excellence (CoE) and competence (CoC) are two different types of public institutions: 1. The Institutes of the Bulgarian Academy of Sciences (BAS) and 2. Higher Education Institutes (HEIs)

Bulgarian Academy of Sciences – is an independent national research organisation that operates under separate laws compared to higher education institutions' laws.[24] BAS is attracting funding from contracts for scientific, scientific and applied research and economic activity. Its allocation is accounting to 50% of its total budget. The other 50% of the total budget of the institution is in form of a subsidy from the state budget.[25] BAS consists of 42 scientific institutes, 8 academic specialised units, 9 specialised units, and is producing 48% of the total scientific research output in Bulgaria.[26]

The Institutes of the Bulgarian Academy of Sciences are independent parts of the BAS's organisational structure and function as separate legal organisations.

23. https://www.ipa.government.bg/sites/default/files/bulgarian_centres_report.pdf
24. https://www.ipa.government.bg/sites/default/files/bulgarian_centres_report.pdf
25. https://www.bas.bg/?page_id=29
26. https://www.bas.bg/?page_id=29

Agricultural Academy – AA c**onsists of 27 scientific institutes, 19 experienced stations and 2 experimental bases** and works closely with the Ministry of Agriculture and Food.[27]

Other organisations – Scientific organisations related to ministries and state structures.

Enterprises – According to the Bulgarian National Strategy for Development of Research 2020 a fewer research activities are carried out by the private sector, which is partially reflected in the small number of SMEs that apply for funds from the National Innovation Fund. A small number of significant high-tech firms have well-established R&D departments that focus mainly on technology transfer. 412 878 is the total number of non-financial enterprises in 2021, from which 40.36% are located in the capital region - Yugozapaden, another prerequisite for the centralization of resources.[28]

Strong NGOs sector[29] – incl. service providers, think tanks, professional organisations and others. A great example is the Bulgarian Innovation Forum with its main objective related to sustainable growth, and the establishment of connections between Bulgaria's many ecosystems of innovators, talents, businesses, universities, and financing sources. The forum aims to create a robust and long-lasting innovation environment in Bulgaria that will allow good ideas to spread globally.

• POLICY & STRATEGIES boosting research, development & innovation

A. INNOVATION POLICY

In order to promote innovation, close the research-industry gap, and boost the competitiveness of the private sector, Bulgaria approved the National Innovation Strategy (NIS) in 2004. NIS included both financial and non-financial measures, including the National Innovation Fund (NIF), support for young professionals and entrepreneurs, the development of technology centers, the creation of clusters, incentives for foreign investment in R&D, and the establishment of university entrepreneurship centers.

After joining the EU in 2007, Bulgaria had access to several EU-level funding programs for R&D and innovation support, including the Competitiveness and Innovation Program and the Framework Program for Research, Technological Development and Demonstration. Additionally, Bulgarian businesses acquired access to the EU Patent Office and started taking advantage of the EU's innovation incentives.

By 2012, EU structural and cohesion funds had taken over as the primary source of public funding for Bulgaria's economy's development and modernization. All of the planning regions within Bulgaria have created Regional Innovation Strategies under the EC's "Innovating Regions in Europe" initiative and between 2001 and 2008, and developed their own unique frameworks for implementing R&D and innovation strategies within their territories. The recommendations from these regional strategies have generally not been implemented at the national level; instead, they have been only partially incorporated in Strategies for Regional Development and the National Strategy for Regional Development.

The development of a Smart Specialization Strategy was the missing tool for the improvement of the country's R&I capacity. The European Commission (EC) has therefore determined that the submission of a

27. https://www.agriacad.bg/bg/science-and-education/scientific-board
28. https://www.nsi.bg/en/content/8212/number-enterprises
29. https://bti-project.org/en/reports/country-report/BGR

Smart Specialization Strategy shall be an ex ante requirement for access to structural funds in the period from 2014 to 2020.[30]

Currently, the Ministry of Innovation and Growth coordinates innovation policy in the following sectors to promote sustained economic growth:

Green economy:

- Implementation of the green transition, which will boost the economy's growth, sustainability, and competitiveness;
- The Ministry of Innovation and Growth will oversee the creation and adoption of a National Road Map to improve the conditions for the deployment of the potential for the development of hydrogen technologies and the mechanisms for hydrogen production and supply - a crucial step in achieving the objectives of the Green Pact already identified in The National Recovery and Resilience Plan);

Digital economy:

- In order to achieve a quality digital transformation and a beneficial influence of technology on Bulgaria's industry and society, appropriate policies are being designed to aid in shaping a bright digital future for the country;
- A focused microelectronics policy is also essential for Bulgaria's development. Strategic components for important industrial value chains are integrated circuits. New markets for integrated circuits are developing as a result of the digital transformation, including highly automated vehicles, cloud computing, the Internet of Things, connectivity (5G/6G), aerospace/defence, computing power, and supercomputing.

Space policy:

- Bulgaria creates and engages in the high-tech strategy of the European Union for the peaceful exploration and use of space. Astronomy and astrophysics, Earth observation research and applications, telecommunications, micro-navigation research, space biology and medical, education and awareness, etc. are all areas of active space policy collaboration and development;
- An agreement was signed by the Ministry of Innovation and Growth between the Government of the Republic of Bulgaria and the European Space Agency (ESA), and the National Assembly ratified it on June 8, 2022. The agreement maintains the previous five-year collaboration allowing Bulgarian businesses and research institutions to actively participate in the European space industry. The development of new space technologies, applications, data utilisation, and space engineering courses will involve participation from universities, small and medium-sized businesses, and academic institutions around the nation.

Defense:

- NATO member states resolved to launch the Defense Innovation Accelerator and NATO Innovation Fund in the North Atlantic DIANA on June 14, 2021. Bulgaria supported the involvement of the Defense Institute "prof. Tsvetan Lazarov" and the Institute "Big data for the benefit of the intelligent society" GATE

30. https://www.mi.government.bg/files/useruploads/files/innovations/full_report_3s.pdf

at SU "St. Kliment Ohridski" as test centers under the DIANA initiative;
● The participation of Bulgaria in the NATO Innovation Fund, which will have a tenure of 15 years and a budget of 1 billion euros, was agreed by the Council of Ministers on June 8, 2022. The fund will assist start-ups and other high-tech businesses that are in line with the strategic objectives of NATO.
A major objective of the Ministry of Innovation and Growth is to create a competitive economy that will ensure the growth and development of Bulgarian regions, promotion, and acceleration of innovations and investments throughout the country.

Another key objective of the Ministry of Innovation and Growth is to make sure that the competitiveness funds of the EU and the National Recovery and Resilience Plan are being used effectively, efficiently, and in a results-oriented way, as well as to encourage cross-border projects, including those involving European funding.

The most important national R&I strategies and priorities are:

- **National Development Program BULGARIA 2030**
- **Innovation strategy for the smart specialization of the Republic of Bulgaria (2014-2020)**
- **Innovation strategy for the smart specialization of the Republic of Bulgaria (2021 - 2027)**
- **National Development Strategy of scientific research in the Republic of Bulgaria 2017 – 2030**
- **Better Science for a Better Bulgaria 2025 Vision for a research policy strategy in support of society and economy**
- **NNRP**

National Development Program "BULGARIA 2030"[31]

The Ministry of Innovation and Growth determines the conduct of innovation policy in the country in the context of the National Development Program "BULGARIA 2030". Bulgaria 2030 is the highest-level strategic document in the hierarchy of national program documents, setting out the vision and general goals of state development policies, including their territorial implications. As part of the document, three strategic goals (accelerated economic development, demographic upswing and reduction of inequalities) and 13 national priorities are defined, including "Smart Industry," a program aimed at developing and introducing innovative products, processes, and business models. In addition to improving resource efficiency, it also supports and implements innovations that address the economy's still high carbon intensity.

Currently, **The Innovation strategy for the smart specialization of the Republic of Bulgaria** (2014-2020)[32] is based on the principles of the innovation strategy (2004) and further integrated into the Innovation strategy for the smart specialisation of the Republic of Bulgaria (2021 - 2027) to guide investments by European funds to the most promising sectors and activities. The Council of Ministers adopted the Innovation Strategy for Smart Specialization 2021-2027 of the Ministry of Innovation and Growth. It is a condition for providing Bulgaria with access to the resources of the two European programs for Bulgaria-**Program "Competitiveness and Innovations in Enterprises" 2021-2027** and **Program "Scientific Research, Innovations and Digitization for intelligent transformation" 2021-2027** both with a budget accumulated to BGN 5 billion. The strategy's goal is for Bulgaria to become a hub for medium-and high-

31. https://www.mig.government.bg/politiki-i-strategii/inovaczii/
32. https://www.mi.government.bg/files/useruploads/files/innovations/ris3_26.10.2015_en.pdf

tech breakthroughs in key industries with established market positions and capacities. The objective is to foster and build an innovative, cutting-edge, and sustainable entrepreneurial ecosystem in the country. This also entails enhancing enterprise innovation and the system for scientific research.[33]
Smart Specialisation Strategy 2021-2027

In comparison to earlier, less comprehensive strategies, Bulgaria's S3 is observed as the country's first complete national innovation plan. The need to incorporate the bottom-up perspective presented the biggest obstacles for its governance. Due to the general detachment of the innovation systems and its components, as well as the internal geographical inequality in terms of capability and resource availability, this has been perceived as a new and difficult aspect. The need to further empower the S3 leadership structure and the operation of the technical body by defining particular duties and a coordinated activity among institutional entities posed a significant challenge in addition to the enhancement of the quadruple helix's role. An unbalanced development between regions has resulted from the place-based aspect, one of the most significant aspects of S3, not being sufficiently improved. This is particularly true in relation to local governance capacity to manage the implementation of the strategy and related processes and access to funds. S3 generally made it possible to acquire funds, but this also brought about new challenges in terms of deciding how to allocate these funds at the national and regional levels.[34]

National Strategy for Research and development[35]

It is one of the prerequisites for achieving the objectives outlined in the Partnership Agreement between the Republic of Bulgaria and the European Union for the 2014-2020 program period. It is defining the state's objectives and corresponding measures and actions for the advancement of scientific research from 2017 to 2030. The strategy is strongly related to the Innovation Strategy for Smart Specialization 2014-2020.

** **National Development Strategy of scientific research in the Republic of Bulgaria 2017 – 2030**

National Development Strategy of scientific research in the Republic of Bulgaria 2017 – 2030[36] is a continuation of the previous period of the strategy (2012-2020). The strategy is also consistent with key national documents (Innovation strategy for smart specialisation 2014–2020, National Development Program: Bulgaria 2020, National Reform Program 2016, National Research Development Strategy 2020, Strategy for the development of higher education in the Republic of Bulgaria for the period 2014-2020, Methodology for strategic planning in the Republic of Bulgaria) and other key European documents (Europe 2020: A Strategy for Smart, Sustainable and Inclusive Growth; EC Framework Program for Research and Innovation; European Research Area Roadmap; and others). During the period 2012-2020 the implementation of the strategy was unsatisfactory as the commitments made to the EU related to the national participation in the construction of the European Research Area were not fulfilled and official data showed decline in the field of scientific research due to lack of state policy support and appropriate reforms and long-term priorities in the field.

Better Science for a Better Bulgaria 2025 Vision for a research policy strategy in support of society and economy

33. https://www.investor.bg/a/536-finansi/366106-dve-programi-na-inovatsionnata-strategiya-shte-predostavyat-5 -mlrd-leva-na-biznesa
34. https://s3platform.jrc.ec.europa.eu/w/challenges-in-governance-of-smart-specialisation-in-south-east-europe
35. https://www.strategy.bg/StrategicDocuments/View.aspx?lang=bg-BG&Id=1231
36. https://www.strategy.bg/StrategicDocuments/View.aspx?lang=bg-BG&Id=1231

"Better Science for a Better Bulgaria 2025"[37] is the next step the Ministry of Education and Science is taking. The updated research plan seeks to have the biggest possible influence on the national level, affecting both society and the economy. **Founded on four fundamental principles: Partnerships in three dimensions** (Partnership amongst the research and innovation performing and dependent/demanding organisations – scientific organisations, universities and businesses, their confederations and civil society organisations;Partnerships amongst institutions developing and implementing (sectorial or generic) policies in science and innovation, basically aimed at inter-ministerial coordination;Partnerships amongst institutions developing and implementing (sectorial or generic) policies in science and innovations, and research and innovation performing and dependent/demanding organisations); **Complementarity and synergy** (complementarity and synergies with other strategies' objectives and results, such as the Innovation Strategy for Smart Specialisation, the National Reform Programme, the Strategy for development of research in the agrarian sector 2009-2018, Economic analysis of Bulgaria and others); **Equal involvement of stakeholders** (The entire community of research and innovation stakeholders is impacted by this principle. It is a matter of open discussion and ought to include all beneficial suggestions and actions that will significantly and favourably affect the results of its application. This plan, which is sponsored jointly by the Ministries of Economy and Finance, should protect both coherence and the availability of the resources required for its effective implementation); **Trust** (Systematic confidence in Bulgaria's R&D system has been eroded over the past years. Additionally, it has diminished the trust that firms and entrepreneurs have in Bulgaria's research system to give them access to knowledge and technology that will help them grow and expand their companies).

The strategy has 4 Pillars:

Pillar 1: Renewed commitment to raising public investment in research
Pillar2: Reforms in the R&D system
Pillar3: Strategic priorities, alignment with smart specialization and beyond
Pillar 4: Human resources

National strategy for small and medium-sized enterprises for 2021–2027

The "National strategy for small and medium-sized enterprises" 2021–2027[38] defines the framework of policies for SMEs based on a thorough examination of the SME system in Bulgaria. It was created for the Ministry of Economy (ME) and all other stakeholders in the state administration, who are in charge of developing and carrying out policies to promote the growth of small and medium-sized businesses in Bulgaria.

National strategic document "Digital transformation of Bulgaria for the period 2020-2030"[39]

The National Program "Digital Bulgaria 2025", the priorities of the "National Development Program BULGARIA 2030," and a number of other national strategic documents with a technological component are included in this document's definition of the vision and goals of the Republic of Bulgaria's policy on digital transformation for the years up to 2030. It considers the objectives of the UN 2030 Agenda for Sustainable Development and how new technologies can be used to accomplish them, as well as strategic documents of the European Commission such as "Building Europe's Digital Future," "Europe fit for the Digital Age," and "New Industrial Strategy for Europe."

37. https://era.gv.at/public/documents/2882/BG_Better_ScienceBetter-final_en.pdf
38. Портал за обществени консултации (strategy.bg)
39. Портал за обществени консултации (strategy.bg)

In 2020 the national strategic document "Digital Transformation of Bulgaria for the period 2020-2030"[40] was accepted. Measures to improve digital skills and increase consumer and business demand for internet-based services and support for high-speed connectivity are included. The strategy aims to incorporate technological subjects and digital skills into all educational and vocational training and retraining systems' curricula. The areas of impact include: Digital infrastructure, Cybersecurity, Research and innovation, Education and training, Adaptation of the labour market – education, training and social protection, Digital economy, Agriculture, Transport, Energy, Environment and Climate, Healthcare, Finances, Culture, Disinformation and media literacy, Territorial development, Digital governance, Security and participation of citizens in the democratic process.[41]

Strategy and action plan for the transition to a circular economy of the Republic of Bulgaria for the period 2021-2027

Aims to promote resource efficiency through implementation of the waste management hierarchy, reducing landfilling, promoting the reuse and recovery of waste and reducing the health and environmental impacts of waste. A green and competitive economy, less waste and more resources, and an economy that benefits the consumer have all been formulated as strategic goals.[42]

National Roadmap for Research Infrastructures 2020-2027

Under the Operational Program "Science and Education for Smart Growth", the Ministry of Education and Science has published a strategic document which is in accordance with the Bulgarian research organisations and higher education institutions and includes 51 infrastructures, including 15 Centers of Competence and Centers of Excellence.[43]

Bulgaria's National Recovery and Resilience Plan

The RRP's implementation helps Bulgaria's institutional framework and handle a variety of issues related to the business climate. The RRP also consists of improvements to the ecosystem for research and innovation.This relates to a new governance structure that includes the establishment of a new advisory body, the Innovation Board, as well as a new legal framework for the advancement of research and innovation (R&I) and research universities. The reform will be supported by additional features for funding research. A key deliverable related to supporting the innovation and growth of Bulgarian businesses is the launch of the Economic Transformation Programme. The plan consists of four main pillars : "Innovative Bulgaria", "Green Bulgaria", "Connected Bulgaria" and "Fair Bulgaria". The largest funding will be received by "Green Bulgaria" – almost half of the whole funding. Innovative Bulgaria is in second place, followed by "Connected Bulgaria" and "Fair Bulgaria".[44]

"Innovative Bulgaria" funding is **28% of the funds under the NRRP** (areas of funding - Education and skills, Scientific research and innovation, Smart industry). The financing will be provided from the

40. https://www.mtc.government.bg/en/category/283/national-strategic-document-digital-transformation-bulgaria-period-2020-2030-0
41. https://www.mtc.government.bg/sites/default/files/digital_transformation_of_bulgaria_for_the_period_2020- 2030_f.pdf
42. https://www.moew.government.bg/bg/strategiya-i-plan-za-dejstvie-za-prehod-kum-krugova-ikonomika-na-rep ublika-bulgariya-za-perioda-2021-2027-g-10910/
43. https://naukamon.eu/wp-content/uploads/2021/06/RoadMapBulgaria_2020-2027_EN-1.pdf
44. Bulgaria's National Recovery and Resilience Plan: Latest state of play | Think Tank | European Parliament (europa.eu)

following sources: 1) Recovery and Resilience Mechanism (RRM) - (69.4%), 2) Public financing -n (12.4%), 3) Private financing - (18.2%). **4 reforms** will be performed, ex.: "Reform of the educational system and learning through whole life", "Development of science", "Development of industrial parks". There are **8 projects** included in the Innovative Bulgaria piller. Most of them will address the following developments: "Modernization of the school infrastructure and building STEM centres", "Digital skills training, economic transformation". About 60% of the costs in the pillar are for economics, primarily a project called "Economic Program Transformation" and specifically contained in warranty tools and technology modernisation. Project costs that are intended to advance education make up 30% of the total.

"Green Bulgaria's" financing equals **42% of the funds under the NRRP** (areas of funding: Low carbon economy, Biodiversity, Sustainable agriculture. The financing will be provided by: 1) Recovery and Resilience Mechanism (RRM) - (65.5%), 2) Public financing - (5.8%), 3) Private financing - (28.7%). **14 reforms** will be performed, ex.: "Energy efficiency of buildings", "Liberalisation of the electricity market", " Stimulating the production of energy from RES", "Decarbonisation of the energy sector". **13 projects**, most of them aiming at: "Energy renovation of the building stock", "National infrastructure for storing electric energy from RES", "Construction of 1.4GW RES and batteries". More than 87% of expenses are for energy, approximately 12% - for agriculture and just over 1% - for ecology.

In the piller "Connected Bulgaria" will be invested **18% of the funds under the NRRP** (areas of funding: Digital connectivity, Transport connectivity, Local development).The financing of will be provided by: 1) Recovery and Resilience Mechanism (RRM) -(69.3%), 2) Public funding - (26.3%),3) Private financing - (4.4%). **14 reforms**, including: "Efficient use of radio frequency spectrum", "Updating the strategic framework", "Electric mobility", "Reform of the water sector". There are **12 projects**, most of which are aimed at: "Deployment of the digital infrastructure", "Purchase of new rolling stock for the railway transport", "Water supply and sewage systems". Over 60% of the costs are for transport, nearly 25% of the costs are for communication technologies in connection with digital connectivity and close 15% - for waters.

"Fair Bulgaria" is **12% of the funds under the NRRP** (areas of funding: " Business environment", "Social inclusion", "Health Care". The financing will be provided by: 1) Recovery and Resilience Mechanism (RRM) -(84.4%), 2) Public funding - (14.9%) 3) Private financing - (0.7%). **20 reforms**, including: "Combating corruption", " Development of electronic healthcare", "Reform in the field of social services", "Reform for accessible and effective justice". **25 projects**, most of them aiming at: "Digitization of information arrays in the administration", "Modernization of long-term care", "Modernization of medical facilities". 37% of the costs are for health care and 36% - for projects in the social sector. 7% will be allocated to the justice, information technologies and the culture sectors, the science sector will receive 6%, and 1 % is for the process of managing the implementation of the plan. All of the plan's funds for the sectors of healthcare, social services, justice and culture are distributed through this pillar.

Concept for digital transformation of Bulgarian industry (Industry 4.0)

The present Concept's objective is to lay the groundwork for the medium- to long-term modernization, automation, and competitive positioning of the Bulgarian economy (2017-2030). According to the Concept, Bulgaria will deploy Industry 4.0-related goods, technology, business models, and processes in order to become acknowledged as a regional hub of the digital economy by 2030. Adopting the Concept will enable the implementation of specific policies and measures for the digitization of the real economy and the production sector, as well as aid in the coordination of policies, tools, and mechanisms across the

various ministries and in line with the EU's policies in this area.

- Direction 1: Improving the country's science-industry partnerships and accelerated integration of Bulgaria in European and worldwide programs, projects, and networks pertaining to the creation and adoption of Industry 4.0.
- Direction 2: Technological renewal of the Bulgarian economy by implementing standards, building infrastructure, and creating specific mechanisms to encourage the creation and market adoption of technological innovations (new goods, services, and production methods) through Industry 4.0 technologies.
- Direction 3: Building institutional, organisational, and human capacity for Industry 4.0 development in Bulgaria.

B. NATIONAL AND REGIONAL POLICY FOR REGIONAL DEVELOPMENT

The main objectives of the state ***policy for regional development*** are defined in Art. 2 para. 2 of the Law on Regional Development. The two documents in which the foundations of regional and spatial development are laid for the previous program period and determine the guidelines of the strategic documents are the National Strategy for Regional Development of the Republic Bulgaria 2012-2022 and the National Spatial Development Concept for the period 2013–2025.[45]

A national concept for spatial development of Bulgaria determines the medium-term spatial framework for all development investments in the country. It outlines the fundamental framework for polycentric development, which integrates the city centers of different levels and development axes into a single spatial system, supports integrated strategy and promotes municipal collaboration to successfully address territorial concerns. The concept outlines many industries and subjects for which it is recommended the application of an integrated approach to investments:

1. provision of quality and accessible health, educational, cultural, social and administrative services in peripheral and low-urban areas regions;

2. joint implementation of key infrastructure projects, including improving transport accessibility, gasification and construction of industrial zones;

3. development of regional tourism products based on natural resources and the concentration of cultural heritage covering groups from municipalities.

The six regional concepts are meant to act as primary regional (NUTS level 2) documents that specify regional priorities and investment areas.[46]
National Regional Development Strategy of the Republic Bulgaria 2012-2022 is developed as a response to the requirements of the strategy "Europe 2020", "National Development Programme: BULGARIA 2020" serves as a long-term framework document that outlines the vision and overarching goals of the development policies for a ten-year period for all facets of the government, including their geographical manifestations. It contains examination of the territorial and socioeconomic development of the areas; regional development aims and objectives for the time period; evaluation of the resources needed to

45. https://www.eufunds.bg/sites/default/files/uploads/oprd/docs/2021-11/4_SIA_BG_Part_1%2008.2021-fin.pdf
46. https://documents1.worldbank.org/curated/en/632891617099840360/pdf/An-Analysis-of-the-Possibilities-toImplement-Territorial-Instruments-Program-for-Development-of-the-Regions-2021-2027.pdf

achieve the Strategy's goals; standards and measures for gaining the success of the strategy's execution; strategic recommendations for creating Regional Development Plans for the allotted time; essential activities for putting the partnership's guiding principles into practice, including the dissemination of information and publicity.

The National Center for Territorial Development (NCTR) was requested by the Ministry of Regional Development in 2019 to prepare **Integrated territorial development regional strategies** for the 6 regions at NUTS level 2 with the support and advice of the Regional Development Councils and the general public. They were developed to act as the primary regional (NUTS level 2) documents that specify regional priorities and investment areas.

The development of the regions program 2021-2027 accepts the important role of I**ntegrated territorial development regional strategies**, as they are recognized in it as the "territorial strategies" described in Article 23 of the EU proposal for the General Provisions Regulation 2021-2027, this implies that they will guide the planning of integrated interventions financed by EU funds during this period. Under the draft of the development of the regions program 2021-2027 is presented that all types of activities that will be supported under the Priority axis 2, with an emphasis on the territorial development of NUTS level 2 regions should be identified in the Integrated territorial development regional strategies.[47]

The Integrated Territorial Strategy of the North-East Region was approved by the Regional Development Council on September 21, 2022. It is a component of the system of planning documents for spatial development that is governed by the Law on Regional Development. The Regional Development Plan's vision for the North-East region's development aligns with level 2's vision (2014-2020).[48]

The Varna, Dobrich, Targovishte, and Shumen districts are included in the integrated territorial strategy for the development of the North-East region, which is a system of spatial development planning documents governed by the Law on Regional Development.

Strategic priorities of the region are outlined as follows in accordance with the BG 33 Integrated Territorial Development Strategy 2021-2027 and the Maritime Spatial Plan of the Republic of Bulgaria: increasing the region's dynamism on a global scale through the growth of intelligent industries with high growth potential — increasing specialisation in goods and industries with high levels of technological and R&D intensity; business and industrial development infrastructure; support for a marine economy; activation of rural areas through sustainable agriculture; diversification of the region's tourist product.

Strategic priority 1: Increasing the dynamism of the region on a global scale;

Specific objective: 1.1. "Creation of a smart industry with significant growth potential"

- 1.1.1 "Increasing specialisation in goods and sectors with high levels of technology and R&D intensity"
- 1.1.2. "Development of business and industrial infrastructure"

Specific objective: 1.2. "Sustainable utilisation of specific local development potential"

- 1.2.1. "Support for a marine economy"
- 1.2.2. "Sustainable agriculture and rural activation"

47. https://stateaid.minfin.bg/bg/page/432
48. https://www.namrb.org/bg/aktualno/regionalniyat-savet-za-razvitie-prie-integriranata-teritorialna-strategiyana-severoiztotchniya-rayon

Strategic priority 2: Achieving equal access to quality education, healthcare and social services. Social inclusion;

Specific objective: 2.1. "Investment in education and skills"
Specific objective 2.2. "Improving access to quality health and social services"
- 2.2.1. Access to quality health services: development of electronic healthcare;

Strategic priority 3: Territorial development and cohesion, and ensuring a sustainable environment.
Specific objective:3.1. "Fast and secure transport and digital connectivity"
Specific objective: 3.3. "Preservation and improvement of environmental quality"
Specific objective: 3.4. Cross-border and transnational cooperation:

Municipal Level:
Municipal Development Plan of Varna Municipality for the period 2014-2020

It is the primary strategy document that specifies the goals and priorities for Varna Municipality's sustainable and integrated socio-economic development and it is produced for a period of seven years in accordance with the provisions of the regional development legislation (Regional Development Act and Regulations for Application of the Regional Development Act). The Varna Municipality's Municipal Development Plan, a strategy plan, integrates comparative advantages and local development potential with a clear vision, objectives, and priorities with the goal of raising the standard of living for residents of the municipality through sustainable development.[49]

Plan for Integrated Development of the Municipality of Varna

The Integrated Plan for Urban Regeneration and Development of Varna is created as a tool for planning and managing the urbanised territory of the city's growth through the application of a unified approach for the spatial, temporal, and functional coordination and integration of political and managerial actions, as well as the mobilisation of resources and tools. This integrated plan is the key planning document for identifying all-encompassing and integrated solutions to urban environment challenges, making the most of the geographic advantages, and ensuring adequate and sustainable use of territorial resources that are now accessible. It incorporates the forecasts from various strategic planning documents relating to regional development and spatial planning - Regional Development Plan for the North-East Planning Region, the Development Strategy of the Varna District and the Municipal Development Plan of Varna Municipality. The plan was created in the form of a funded project under the OP "Regional Development" 2007-2013.[50] **The plan was further integrated into the next planning period and currently it is developed for the 2021-2027 period** with the following vision: a sustainable future for Varna includes an integrated green region with a developed ecosystem, economy, and services that are complex and focused on people.

Strategic objective 2. "Regional leader in integrated development of the region with knowledge and innovation. (Priority 1. Green city (including realisation of goals, priorities and projects included in The Varna-Green City initiative);

The public had the chance to submit new activities and project ideas proposals for updating the Program for the implementation of the Plan by filling out the "Project Idea Sheet" from 14.12.2022 to 13.01.2023,

49. https://varna.bg/en/15
50. https://varna.bg/en/15

as part of the implementation of the Communication Strategy, a key component of the Plan for Integrated Development of the Municipality of Varna for the period 2021–2027.

Varna Green City Action Plan (strategy document)

The Varna City Council approved the Green City Action Plan in August 2022. (GCAP). In accordance with the GCAP, the municipality aspires to create a "green, clean city that supports healthy and sustainable living through innovative and resilient solutions."

- Investing in a Greener Future
- Clean and Resilient Energy
- A Connected, Modern and Accessible City with a good quality of life
- Responsible and Sustainable Resource Use

The stakeholder engagement plan included 173 unique stakeholders representatives from municipal government agencies, research centres and universities, civil society groups, private companies (e.g. factories, construction, tourism, transport, energy, and water), national government agencies, national utility companies and international NGOs.

Examples of actions to be taken under the action plan:

"Set up a community energy efficiency programme", "Ensure that future Municipality Energy Strategies incorporate the findings and recommendations of GCAP", "Provide incentives to both developers and private homeowners, for the incorporation / installation of renewable electricity generation (e.g. tax exemptions, cost subsidisation), Integrate renewables at a large scale in the city", "The Municipality to establish a supplementary reporting programme for all existing and new industries to develop and share policy on the monitoring, reporting and publication of key environmental data (e.g. air, water, carbon emissions, noise pollution and waste disposal) to inform efforts for reducing pollution in-line with EU Limit Values.", "Work with ViK Varna to introduce "smart" technology, i.e. IoT smart metering, across the potable water network", "Develop and implement an integrated recycling program to promote the use of resourceful construction and demolition materials and create green jobs (i.e. inert construction and demolition waste as secondary aggregate).", "Introduce Low Emission Zone and time-based congestion charge zone within the city centre.", "Upgrade ITS (Intelligent Transport Systems) to enhance existing traffic management/control centre.", "Develop a 'Mobility Hub' Transport Strategy as part of the on-going SUMP to increase public or pedestrian modalities. Measure and track the network demand to inform the development of the strategy." and more actions missing from the above mentioned.

Varna "City of Knowledge"- an initiative of the Mayor of Varna Municipality

Mission: It is a cause that seeks to transform the economic profile of the city using digital, green, and innovative technologies and solutions in order to promote the long-term development of the maritime capital.

Vision: "Varna - City of Knowledge" combines the efforts of the city's local administration, industry, business, and scientific community to help the city reach its greatest potential. The 25 parties to the Memorandum of Cooperation and Partnership announce their willingness to cooperate in order to promote economic growth through knowledge and innovation-based investments that result in creating

jobs with high productivity and income.

WiFi4EU - Varna: Ten sites in the city offer free public wireless connections with high-speed Wi-Fi under the WiFi4EU initiative. In Dobrich municipality there are 12 sites, in Targovishte - 3 and in Shumen - 4 sites are providing the free public service under the WiFi4EU initiative.

The third level of Bulgaria's development planning system, municipal, consists of plans for integrated community development resulting from merging two previous types of documents—Municipal Development Plans and Integrated Urban Regeneration and Development Plans. The Ministry of Regional Development and Public Works' Methodological Guidelines are presented for the development and implementation of Plans for Integrated Development of a Municipality.[51]

• PROGRAMMES boosting research, development & innovation

According to the Digital Riser Ranking Report[52] , Bulgaria was the top digital riser among countries in Europe and North America in 2020. Bulgaria's superior performance may be mostly attributed to its **"Digital Bulgaria 2025" lighthouse initiative**, which was introduced in 2018 as an extension of the national program **"Digital Bulgaria 2015".**

The **Executive Agency** "Programme Education is managing both The Operational Programme "Science and Education for Smart Growth" 2014-2020 and the Programme "Education" 2021–2027.

"The Operational Program "Science and Education for Smart Growth" 2014–2020 encourages reforms in higher education, pre-school and school education. The Executive Agency seeks to accomplish two key goals that are directly related to the European Union's strategy for smart, sustainable and inclusive growth and economic, social and territorial cohesion through execution of the measures of the program

- to serve as one of the primary tools for attaining the following goals set forth by the Republic of Bulgaria within the context of the Europe 2020 Strategy:"Increasing investment in science and research up to 1.5%;
- Reducing the rate of early school leavers to below 11%;
- Raising the rate of higher education graduates to 36% of people of the age 30 - 34;",
- to act as an effective tool to carry out cohesion policies in accordance with the agenda at the national and Community level.

In order to make important advancements in the national scientific and education systems, the resources of the program are concentrated in the thematic areas:

A. Building research and development (R&D) capacity in the Innovation Strategy for Smart Specialization's priority areas (IS3)
B. Supporting the system of higher education
C. Promoting education in schools, training, and lifelong learning

51. https://documents1.worldbank.org/curated/en/632891617099840360/pdf/An-Analysis-of-the-Possibilities-toImplement-Territorial-Instruments-Program-for-Development-of-the-Regions-2021-2027.pdf
52. https://digital-competitiveness.eu/digitalriser/

2014-2020

	Name of the program	Measure/ Call	Target beneficiaries	(N) National/ (R)Regional/ (E) European	(I) Individual application or (C) Collaborative
1.	**Competitiveness and innovation in enterprises**	"Voucher scheme for the provision of ICT services to SMEs"	1) to be legal entities or sole traders registered under the Commercial Act or the Cooperatives Act 2) to be micro, small or medium enterprises, in sectors: High-tech and medium-high-tech industries, Knowledge-intensive services, Low-tech and medium-low-tech industries	National	Individual application
2.	**Competitiveness and innovation in enterprises**	"Stimulating the implementation of innovations in enterprises"	micro, small, medium and large enterprises who develop their main economic activity in one of the sectors that are not ineligible for application with other plans and programs financed with EU funds.	National	Individual application
3.	**Competitiveness and innovation in enterprises**	Encouraging entrepreneurship	1) legal entities (owned limited liability company, Ltd., or sole traders, registered under the Commercial Law or the Law on Cooperatives; 2) registered after 31.12.2016; 3) applicants who, at the date of application, are independent enterprises according to the Law on Small and Medium Enterprises; 4) candidates where, on the date of the announcement of the procedure, more than 50% of the enterprise is owned by one natural person-entrepreneur.5) Projects of only applicants who develop their main economic activity and the activity they are applying for in the following sectors are admissible: Sectors of the National Strategy for the promotion of small and medium-sized enterprises, identified as priorities for the creation and development of new enterprises, Sectors related to overcoming European and regional challenges	National	Individual application

4.	**Competitiveness and innovation in enterprises**	Development of clusters in Bulgaria	Clusters registered as: - associations within the meaning of the Law on non-profit legal entities, carrying out activities for private benefit according to Chapter Two, Section I of the same law or - legal entities registered under the Commercial Law, (additional requirement upon application: Applicants must include a minimum number of members in dependence of their size - micro, small or medium enterprises , higher education institution or research organisation) in the following sectors of the economy: High-tech and medium-high-tech industries, Knowledge-intensive services, Low-tech and medium-low-tech industries	National	Individual application
5.	**Competitiveness and innovation in enterprises**	procedure "Increasing energy efficiency in large enterprises"	Large enterprises - develop their main activity in the following sectors B "Mining Industry"; C "Processing industry"; D "Production and distribution of electrical and thermal energy and gaseous fuels"; E "Water supply; Sewage Services, Waste Management and Remediation" F "Construction"		
6.	**Competitiveness and innovation in enterprises**	Development of product and production innovations	meaning of the Commercial Act or the Cooperatives Act or are an equivalent person within the meaning of the legislation of a Member State of the European Economic Area; Scientific organizations may (but not necessarily) be involved as project partners: a) Accredited Bulgarian higher education institutions, or b) Faculties of Bulgarian higher education institutions, according to Art. 26 of the Law on Higher Education or the service units operating at the faculties (within the meaning of Article 25, Paragraph 3 of the Law on Higher Education), or c) Institutes or academic specialized units of the Bulgarian Academy of Sciences, or d) Experimental laboratories and research institutes within the meaning of Art. 60 of the Administration Act, or e) Association for scientific research and development activity at "Sofia Tech Park" JSC.		

7.	**Competitiveness and innovation in enterprises**	Development of management capacity and growth of SMEs	micro, small or medium enterprises,with its main activity in the following sectors according to KID-2008:High-tech and medium-high-tech industrial productions, Knowledge-intensive services, Low-tech and medium-low-tech industrial productions		
8.	**Competitiveness and innovation in enterprises**	Support for pilot and demonstration initiatives for efficient use of resources	1) traders within the meaning of the Commercial Law or the Law on Cooperatives or are an equivalent person within the meaning of the legislation of a member state of the European Economic Area; 2) Applicants who are micro, small and medium enterprises; 3) Applicants who have a minimum of three completed financial years (2014, 2015 and 2016); 4) Operate in sector C “Processing industry”		
9.	**Competitiveness and innovation in enterprises**	Scheme Support for the development of innovations by start-ups	legal entities or sole traders registered under the Trade Act or the Cooperatives Act; candidates are not ineligible according to the demarcation line with other plans and programs financed with EU funds.		
10.	**Human Resources Development Program 2020-2027**	Procedure: Training for employed persons	Employers who can participate alone or in partnership with up to 2 other employers “Employer” is any natural person or legal entity that carries out economic activity, regardless of its ownership, legal and organisational form.		
11.	**Human Resources Development Program 2020-2027**	procedure : Specific trainings	Employers in knowledge-based sectors, high technology and ICT and manufacturing with higher labour value added, **Eligible partners**: Employers in knowledge-based sectors, high technology and ICT and manufacturing with higher labor value added		

12.	**Human Resources Development Program 2020-2027**	Flexible opportunities for employment and training in enterprises with variable activity intensity	Eligible candidates: employers developing their activity in the following economic sectors according to KID 2008: – Sector C "Processing industry", sections 10 to 33 inclusive; Sector F "Construction", sections 41 to 43 inclusive; Sector I "Hospitality and restaurant industry", sections 55 and 56 **Eligible Partners**: 1) employers developing their activities in the following economic sectors according to the 2008 Labor Code: Sector C "Processing industry", sections 10 to 33 inclusive; Sector F "Construction", sections 41 to 43 inclusive; Sector I "Hospitality and restaurant industry", sections 55 and 56 and/or 2) Vocational training centres (in cases where they are 100% owned by the applicant).		
13.	**operational programme "Education and Science for Smart Growth"**	Priority axis: 2. Education and lifelong learning	Ministry of Education and Science	European Social Fund (ESF)	
14.	**operational programme "Education and Science for Smart Growth"**	Priority axis 1 – Scientific research and technological development	Ministry of Education and Science	European Regional Developmen t Fund (ERDF)	
15.	**Rural Development Program**	Measure 4.1.2 Investments in agricultural holdings under Thematic sub-programme for the development of small holdings; Measure 4.2.2 Investments in processing/marketing of agricultural products under the Thematic sub-programme for the development of small farms	to be sole traders or legal entities registered under the Trade Act or cooperatives registered under the Cooperatives Act; to be registered as farmers in accordance with Ordinance No. 3 of 1999; have received from agricultural activity at least 33 percent of their total income/income for the previous calendar year;have an economic size of the farm, measured in standard production volume in the limits between the BGN equivalent of 6,000 euros and 7,999 euros inclusive, and more than 50 percent of the farm's SPO is from the "Livestock", "Fruits and vegetables" sectors and/or "Essential oil and medicinal crops"; e) to be micro-enterprises or small enterprises within the meaning of Art. 3, para. 2 and 3 of the Law on Small and Medium Enterprises		

Forthcoming 2021-2027

One of the main tools for carrying out Priority 1 "Education and Skills" of the **National Development Programme Bulgaria 2030**, as well as the strategic objectives set in the **Strategic Framework for Development of Education, Training, and Learning in the Republic of Bulgaria (2021-2030), and the Strategy for Development of Higher Education in the Republic of Bulgaria for the period 2021-2030, is the Programme "Education" (2021-2027)**. Complementarity and demarcation of the program with other programs and tools: NRRP, Regional Development Program 2021-2027, Program for Research, Innovation and digitalization for smart transformation 2021-2027, Human Resources Development Program 2021-2027, Technical Assistance Program 2021-2027.

During the program period 2021-2027, business representatives will be able to apply for European funds to finance their projects under the "Recovery and Resilience Plan", the "Competitiveness and Innovation in Enterprises" program, the "Human Development" operational program and the 'Rural Development Programme'.

	Name of the program	Measure/ Call	Target beneficiaries	(N) National/ (R)Regiona l/ (E) European	(I) Individual application or (C) Collaborative
1.	**The National Recovery and Resilience Plan (NRRP)**	procedure "Increasing energy efficiency in buildings in the sphere of production, trade and services"	micro, small, medium and large enterprises in the field of production, trade and services	E/ Next Generation EU	Individual application
2.	**The National Recovery and Resilience Plan (NRRP)**	procedure "Construction of new RES for own consumption in combination with local facilities for energy storage in enterprises"	SMEs, small mid-cap companies, mid-cap companies; from all sectors with the exception of enterprises from sector D "Production and distribution of electric and thermal energy and gaseous fuels", sector A "Agriculture, forestry and fisheries", sector K "Financial and insurance activities", micro-enterprises with headquarters and activity on the territory of a rural municipality, as well as enterprises whose main activity is primary processing of agricultural and forest products.	E/ Next Generation EU	Individual application

3	**The National Recovery and Resilience Plan (NRRP)**	"Transition to a circular economy"	SMEs and large enterprises from sector C "Processing industry", incl. partnership between them for the purpose of achieving industrial symbiosis	National	Individual application
4.	**The National Recovery and Resilience Plan (NRRP)**	procedure "Technological modernization"	Micro and SMEs	National	Individual application
5.	**The National Recovery and Resilience Plan (NRRP)**	"Solutions in the field of information and communication technologies and cyber security in small and medium-sized enterprises"	Micro and SMEs		
6.	**"Competitiveness and Innovations in Enterprises" program**	"Restoring SMEs by improving energy efficiency"	micro, small and medium-sized enterprises with main activity in the production sector of the economy (sector "C")		
7.	**Programme "Education" 2021 – 2027**	Priority: 1. INCLUSIVE EDUCATION AND EDUCATIONAL INTEGRATION/ Priority: 2. MODERNIZATION AND QUALITY OF EDUCATION Specific purpose: ESO4.6	Ministry of Education and Science Specific target: Children, students, parents, teachers, pedagogical specialists and non-pedagogical staff; incl. educational mediators; children and students with special educational needs, at risk, chronically ill and gifted; children and students from marginalised groups, such as the Roma, as well as those seeking or receiving international protection and from other vulnerable groups (including accommodated in Accommodation Centers from family type). Children and students with learning gaps, children and students at risk of dropping out of the education system, parents of children and students from vulnerable groups, incl. Roma, persons who left school prematurely, etc/ Participants in the educational process, the Ministry of Education and Culture and its secondary budget managers,, the institutions in the system of preschool and school education, including private kindergartens and schools, when applicable, public boards in educational institutions, municipalities, non-governmental organisations with proven experience and expertise in the field, universities and scientific organisations.	ESF	

8.	**Programme "Education" 2021 – 2027**	Priority: 1. INCLUSIVE EDUCATION Specific purpose: ESO4.7. Promoting lifelong learning, in particular flexible opportunities to enhance qualification and reskilling for all, taking into account entrepreneurial and digital skills, better anticipation of the changes and requirements for new skills depending on the needs of the market, the facilitation of transitions in professional development and the promotion of professional mobility	Ministry of Education and Science Specific target: Persons over 16 years of age with primary and lower education - youth, adults beyond compulsory school age, persons with special educational needs, youth and adults from marginalised groups such as the Roma, as well as those seeking or having received international protection from other vulnerable groups as well. The participants in the educational process, the Ministry of Education and Culture and its secondary budget managers, , the institutions in the system of school education, municipalities, non-governmental organisations with proven experience and expertise in the field, social partners, when applicable applicable, in their capacity as partners/associate partners	ESF	
9.	**Programme "Education" 2021 – 2027**	Priority: 3. RELATIONSHIP OF EDUCATION WITH THE LABOUR MARKET Specific purpose: ESO4.5. Improving the quality, inclusiveness, effectiveness and compliance of systems for education and training with the needs of the labour market, including by validating non-formal and informal learning, so that contribute to the acquisition of key competencies, including. entrepreneurial and digital skills, also by promoting the introduction of dual training and apprenticeship systems	Ministry of Education and Science Specific target: Students, pedagogical specialists, non-pedagogical staff, including educational mediators, vocational training teachers, mentors, parents, students, doctoral students, professors in higher education, representatives of marginalised groups, incl. people with disabled and Roma, children and students seeking or granted international protection and from other vulnerable groups;Higher schools, BAS, SSA, scientific organisations with accreditation for training in the educational and scientific degree "doctor", MES and its secondary administrators with budget, schools teaching in the high school stage of secondary education, including private schools when it is applicable; Employers, the nationally representative organisations of employers and employees, branch and professional organisations, National Agency for Vocational Education and Training, municipalities, NGOs.	ESF	

10.	**Programme "Education" 2021 – 2027**	Priority: 3. RELATIONSHIP OF EDUCATION WITH THE LABOUR MARKET Specific purpose: ESO4.7. Promoting lifelong learning, in particular flexible opportunities to enhance qualification and reskilling for all, taking into account entrepreneurial and digital skills, better anticipation of the changes and requirements for new skills depending on the needs of the market, the facilitation of transitions in professional development and the promotion of professional mobility	Ministry of Education and Science Specific target: Doctoral students, academic staff of higher schools and scientific organisations Higher schools, scientific organisations with accreditation for training in the educational and scientific degree "doctor", national representative organisations of employers and employees	ESF	
11.	**Programme "Education" 2021 – 2027**	Priorities for technical assistance	Ministry of Education and Science Specific target: managing authority employees performing planning, management, implementation, monitoring, evaluation, information provision and publicity and control of software; Other structures supporting the implementation of the Priority axis, in order to ensure and maintain high levels of competence, incl. members of the Committee for software monitoring; Beneficiaries under the Priority axis and their partners, as well as potential beneficiaries; Key beneficiaries and partners in system operations under Priority axis: incl. Regional administrations of education and its secondary budget administrators, schools (general education and vocational), kindergartens, universities.		

12.	**Rural development program**	Measure 6.4 "Investments in support of non-agricultural activities"	1. Existing or newly created micro-enterprises registered as sole traders or legal entities under the Trade Act and the Cooperatives Act. 2. Natural persons registered under the Trades Act. 3. Farmers registered as sole traders or legal entities under the Commercial Law, the Law on Cooperatives or the Law on Religions, whose farm has a standard production volume of more than 8,000 euros.		
13.	**Rural development program**	INVESTMENTS FOR NON-AGRICULTURAL ACTIVITIES IN RURAL AREAS (2023-2027)	1) micro-enterprises, 2) farmers and 3) natural persons.		

North-East BULGARIA Regional analysis of the innovation status



- Introductory data about the region

According to NSI data the territory of the Republic of Bulgaria is divided into 28 administrative districts (provinces) which are subdivided into 265 municipalities as of 31 December 2019. The towns of Plovdiv and Varna, as well as the municipality of Sofia, are separated into administrative territorial areas. The Varna municipality is divided into 5 territorial areas.[53]

The total population in Bulgaria as of 31.12.2021 is 6 838 937, BG 33 has 913 468 inhabitants.[54] BG 33 is approximately 13.4% of the total population of the country. 13.20% of the country's area is in the (BG33) NER region. With an area of 14 645 sq.km, it is the smallest of the level 2 regions. Compared to the other two northern regions, the NER's economic situation is considered to be favorable.

According to NUTS 2021 classification[55] Bulgaria is classified with the code BG, where **NUTS 2 region – (BG33) The Northeastern Region (Severoiztochen)**, consists of four districts (provinces): BG331 Varna Province, BG332 Dobrich Province, BG333 Shumen Province and BG334 Targovishte Province.

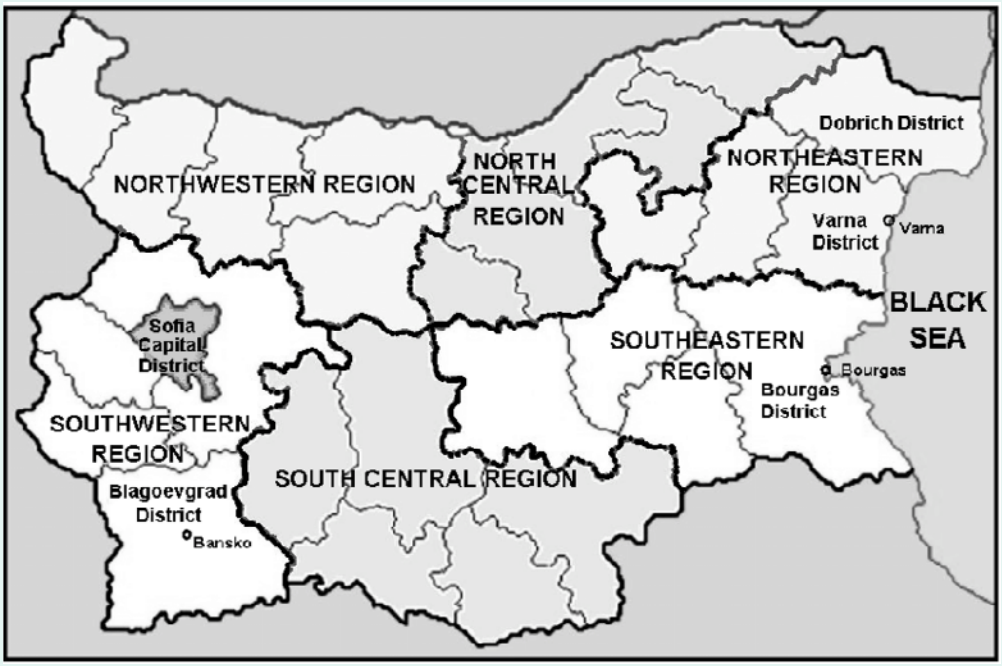


Figure no. 4. TheNUTS II regions of Bulgaria

The region's road network spans 2,682 km, of which 487 km are Class I roads and 95 km are motorways.), **and tourism** (it is among the two leading level 2 regions in the country in terms of tourism development), **the service industry is strongly developed in the region**. Regarding power generated from renewable energy sources, NER is in the first place. Another indicator ranking the region in the 1st place in the country is that it has enduring traditions in agriculture and cereals occupy more than 60% of the region's arable land.[56]

53. Administrative-territorial and territorial division of the Republic of Bulgaria as of 31 December 2019 (nsi.bg)
54. https://nsi.bg/en/content/2977/population-statistical-regions-age-place-residence-and-sex
55. Background - NUTS - Nomenclature of territorial units for statistics - Eurostat (europa.eu)
56. https://stateaid.minfin.bg/bg/page/432

Varna District



Fig. no. 5. Varna District

The district of Varna consists of 159 settlements, 83.2% is the share of the population in the cities and it is located on a territory of 3819 sq.km.[57] Varna District has a population of 468 614 where the population is concentrated in the municipality of Varna – 341 737.[58] Varna District is the biggest of BG 33 (51.3 % of the total population of BG33 is concentrated there).

Varna is the most developed District in BG33: Economic Development in Varna Province (Very good)

Varna is the only district in the North-Eastern area to succeed in attracting more residents over the past 10 years. Young and active people, a robust service sector that includes traditional tourism and rising number of digital enterprises, and a developed industry support the process of the development of the marine area. With a greater level of wages in the city of Varna as well as in the industry sector in the neighbouring towns, the Varna province leads the North-Eastern region in terms of wages.[59]

Income and living standard: The GDP of Varna District continues to grow and its size reaches BGN 16.3 thousand/person from the population in 2019.

Labor market: The trends of the labor market in 2020 place Varna District in a relatively favorable position. The coefficient of economic activity decreases slightly and remains below the national average. At the same time, however, employment is increasing and unemployment is decreasing to 2.2%, remaining one of the lowest in the country (at 5.2% for the country).

The use of European funds is increasing, but remains relatively low. As of June 15, 2021, the amounts paid to beneficiaries under the district's operating programs are BGN 1.5 thousand/person (compared to BGN 2.2 thousand in the country). Within the district, Byala municipality has the most funds paid out, and least of all – in the municipalities of Vetrino and Dulgopol.

57. https://www.regionalprofiles.bg/bg/regions/varna/
58. Население по области, общини
59. https://www.infobusiness.bcci.bg/sever-8-2-2021.html

Infrastructure: The District is performing very well in terms of the district's infrastructure. Local taxes: In the municipalities in the Varna District, the average level of the local taxes remains high in 2021. Taxes remain one of the highest on trade retail, Real estate properties, and of the legal entities.

Administration: Local government self-evaluations for the advancement of e-Government and the provision of "one-stop shop" administrative services are rapidly rising in 2021 and are well ahead of the national averages. Additionally, transparency is given higher marks as it is best represented in the municipalities of Beloslav and Devnya. Social Development in Varna District:

Demographics: Varna is in second place (after the capital) according to this indicator. Varna District continues to attract citizens and the high mechanical growth rate in 2021– 6.%. The district is among the districts with the highest share of the urban population (83.2% against 72.9% in the country).

Healthcare: In 2020, Varna had one of the lowest percentages of residents with health insurance (83.9% versus 88.7% nationally). The Varna district has more doctors than the national average, yet there aren't enough beds in the hospitals.

Regional statistics - Varna Province[60] (Between the years 2016 and 2020)

- Population decreases with 2530 people (mechanical rate is increasing)
- The unemployment rate (%) decreases with 5 % from 7.1 to 2.1
- The number of enrolled students in all types of schools (primary, junior high school and high school stage) decreases with 1449 students.
- Foreign direct investments in non-financial enterprises (thousand euros) were the highest in 2017 - 1 946 022.5, and the least in 2020 (1 487 864.7).
- Costs for acquisition of tangible fixed assets (TPA) (thousand BGN) in 2016 were 951 254 and in 2020 - 1 056 602.

Non-financial enterprises:

- Increase in Turnover (thousand BGN): In 2016 - 15 556 339, in 2020 - 17 693 257
- Increase in Produced output (thousand BGN): in 2016 - 9 004 396, in 2020 - 10 059 383
- Increase in Added value by factor costs (thousand BGN): in 2016 - 3 428 400, in 2020 - 4 257 382

Research and development

- Decrease in Costs for scientific research and development (R&D) - (thousand BGN): 2016 - 34 444, in 2020 26 459 (highest number is for 2019 - 42 560)
- Increase in Personnel engaged in scientific research and development (R&D) - number: in 2016 - 2 138,in 2020 - 2383.

60. Област Варна | Национален статистически институт (nsi.bg)

Information society

- Increase with 3.7 in Relative share of households with internet access (%): in 2016 - 73.8, in 2020 -77.5
- Increase with 5.3 in Relative share of persons aged between 16 and 74 using the Internet regularly (every day or at least once a week) - %: in 2016 67.2, in 2020 - 72.5.

The education component of social development is stated to be average.

Students in colleges and universities 1000 people (2021) 50.00 students:

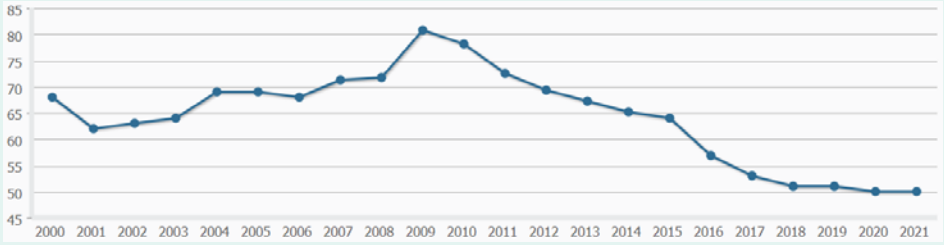


Fig. no. 6. Source: https://www.regionalprofiles.bg/en/regions/varna/ 2000 – 68; 2009 – 80.76; 2015 – 64

City of Varna: The most developed area in Varna Province/District:[61]

With a total production value of approximately BGN 10 billion in 2018 and 215,000 people employed throughout the district in 2019, Varna is the region's major economic hub. The "maritime capital" of Bulgaria has a top-notch educational system, is known for drawing talent, and has effectively reoriented its economy toward greater added value by using digital skills and research and development initiatives in the shipbuilding, informatics, and medical fields.

In the areas of public services, business, financial services, insurance, transportation (Located on the Black sea Coast, water transport is represented by the Varna port complex, which serves important national public transportation,and it is a part of the country's enlarged TEN-T network. Rail connections to lines 2 and 3 are available at the port, another port in BG33 of great importance is the third-largest cargo port on our Black Sea coast - Port of Balchik. Cereals, liquid vegetable oils, and livestock are the principal exports. Air transport is provided by Varna Airport.

Regional Comparative advantages

- The specific geographical location of BG 33 as the only NUTS2 region bordering two large water basins and transport arteries - the Danube and the Black Sea,
  - the only naval academy in the country is situated in Varna,
  - high level of performance of maritime industry and maritime shipping and services related to maritime transport and port activities;
  - well developed tourism sector

61. Varna_Profile_IME_2020_EN.pdf

- The wealth of cultivated land - The gross added value by the agricultural economic sector is the highest in the region.
- The quality of human potential - large number of higher education institutions and enrolled students in secondary and higher education, continually rising average wages, etc.
- Varna province has the potential to be a regional IT hub:
  - rising number of digital enterprises (The ICT sector is most rapidly developing in the city of Varna)
  - The Technical University located in Varna is generating young graduates ready to join the labour market each year after completing Bachelor, Master or PhD degrees. Other 6 public and private institutions in the region are providing education in IT, Tech, engineering fields in numerous disciplines related to the needs of the labour market.
- The existing industrial structures are prerequisite for the high potential of the industrial and technological sectors further development: chemical industry; metal and mechanical engineering and machine building; shipbuilding and ship repairing; light and food industry; textile industry; electrical engineering;production of building materials and construction, production of furniture, etc.

Dobrich Province



Fig. no. 7. Dobrich Province/District

Economic Development in Dobrich Province[62] (Good):

The GDP per capita in the district continues to grow, but the growth and its size are smaller than the average for the country. The district's unemployment rate is rising along with the decline in economic activity. Although it is still lower than the national average in terms of population, the district's use of European funds is expanding.

As of June 15, 2021, the value of the paid funds to beneficiaries under the operational programs is 1,722BGN/person of the population (at BGN 2,217/person in the country). In the municipalities of the district, local taxes are comparatively low in 2021. The evaluation of the municipalities for the transparency of the local self-government bodies is increasing significantly in 2021 and the district takes the top place with 83.6% (compared to 73.2% in the country). The ratings for the transparency are particularly high in the municipalities of Dobrich and Balchik. However, the development of e-government and the provision

62. https://www.regionalprofiles.bg/bg/regions/dobrich/

of "one-stop" administrative services in the municipalities of the district improved in 2021, but one-stop services lag behind national average scores. The mechanical growth rate is rising and is positive for the first time in almost 15 years.

Shumen Province

Economic Development in Shumen Province[63] (Average)



Fig no. 8. Region of Shumen

The GDP (reaches BGN 10.2 thousand), income and wages are continually increasing but still below average for the country. Employment is declining and unemployment is increasing in the Shumen district, both indicators are also still below average. The educational level of the workers continues to be a problem for the labor market. The district is among the areas with relatively small amounts of use of European funds. As of June 15, 2021, the value of the amounts paid to beneficiaries under the operational programs is BGN 1,690/person (compared to BGN 2,217/person in the country), the municipality of Novi Pazar has the highest share of use of operational programs.

The majority of the country's first-class roads and highways are found in Shumen. Local tax rates in the district's municipalities are comparatively low. The appraisal of the local self-government bodies' transparency is greatly improving. Local administrations' self-assessments on the development of e-government and the provision of one-stop administrative services increase in 2021 but remain relatively low. Healthcare suffers from a shortage of doctors and hospital beds.

63. https://www.regionalprofiles.bg/bg/regions/shumen/

Targovishte Province

Economic Development in Targovishte Province (Average)



Fig no. 9. Region of Targovishte

Eurostat data is presenting a 13.90% decrease in the population density in the period 2009-2018.[64] Although the district's GDP is growing pretty quickly(reaches BGN 10.5 thousand), its overall amount is still quite small (approx. BGN 17.2 thousand in the country). The amount of poverty is dropping. Indicators of the labour market place Targovishte as having the worst performance. A huge challenge for the labour market in the district is the deteriorated educational status of the workforce.

The condition of the road surface is among the best in the country. District administrations continue to rate themselves higher than the national average when it comes to e-government development. The use of European funds in the area remains low. As of June 15, 2021, the amounts paid to beneficiaries under the operational programs are BGN 1,321/person at BGN 2,217 in the country, and there is no municipality in the district that even reaches the average value in the country. Local taxes in the district are low. In 2021, the self-evaluations of the administrations in the region for the advancement of e-government and the provision of one-stop services grew and are higher than the national average. In 2021, the transparency rating for the district is 76.0% (compared to 73.2% in the country), being the highest for a municipality Targovishte, and the lowest – for Opaka municipality. Access to general practitioners (doctors) in the area is very limited.[65]

- Macroeconomic indicators and business environment

Gross domestic product

According to NSI data at NUTS 2 district level as of August 2021 the gross domestic product in the Northeast region in 2019 reached BGN 12.3 billion. Among BG 33, Varna region has the largest contribution - 62.60% (BGN 7.7 billion), and Targovishte region is in last place with 9.75% (BGN 1.2 billion). Varna province (BGN 7,346 million for 2020 or 60.7%) is the most successful during the period of the analysis, and Targovishte province has the lowest indicators (BGN 1,217 million).

64. https://stateaid.minfin.bg/bg/page/432
65. https://www.regionalprofiles.bg/bg/regions/targovishte/

The North-East region of Bulgaria ranks third in the country in terms of gross domestic product, behind South-West and South-Central Bulgaria, with a value of BGN 13,300 per person. The Varna area also has the highest gross domestic product per capita for 2019 with BGN 16,000. In 2019, the region's gross added value was BGN 10.6 billion, of which BGN 6.6 billion was in the Varna region.[66]

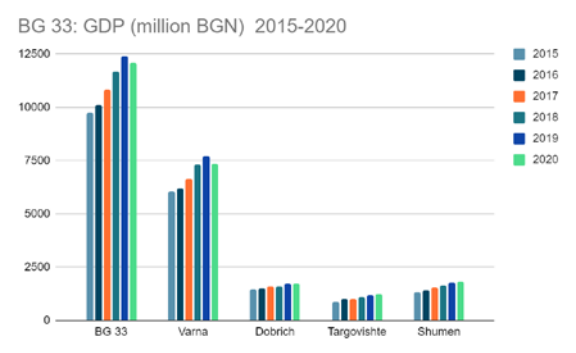


Figure no. 10. GDP evolution in BG 33: GDP (million BGN) 2015-2020[67]

GDP AND GVA BY ECONOMIC SECTOR

In 2020 Varna province accounts for 60.66% of the GVA in the region, 60.67% of the GDP and has the highest GDP per capita in the region. From the total regional GVA the industry sector GVA is 27.41% and 66.15% is the GVA from the Services sector.

According to statistics of the Institute for Market Economy[68], more than half of the GDP in the north region of the country is accumulated in Varna Province (The relationship of the domestic economy level and the industry sector are related mainly to the Devnya area industries and the shipbuilding sector.)

GDP AND GVA BY ECONOMIC SECTOR (evolution over time)

In BG33 during the period 2014 - 2020 the total GDP per capita increased by 34,23 % (2014 -9812 BGN; 2020 - 13171 BGN) and total GDP increased by 29.88% from 9344 to 12164 Million BGN.

In 2021 The GDP per capita in BG 33 region is 15135 thousand BGN (Varna province: 17872 thousand BGN). In the same year the total GDP: 13892 Million BGN.

The GVA 2014-2020 increased by 30.15% (8107 Million BGN , 10552 in 2020), in the Agriculture, Forestry and Fishery with 47 Million BGN or 7.47% (629 in 2014 and 676 in 2020), in the industry sector with 588 Million BGN or 25.68% (2289 in 2014 and 2877 in 2020), and highest increase was in the services sector with 1755 Million BGN or 33.82% (5188 in 2014 and 6943 in 2020).

In 2021 the Gross Value Added by economic sectors in total: 12153 Million BGN (1187 Million BGN in the Agriculture, Forestry and Fishery (9.76%), 3041 Million BGN (25.02%) in the industry sector and 7924 - 65.20% of the total BG 33 GVA are in the services sector).

66. https://www.economic.bg/bg/a/view/ikonomicheski-i-investicionen-profil-na-severoiztochen-rajon
67. https://esc.bg/wp-content/uploads/2022/10/ESC_4_025_2022.pdf
68. https://ime.bg/var/images/pres_SB_020221.pdf

Employment and labor market

The RIS data for 2021 is presenting the share of employment in different sectors, as following:

Share of employment in:	BG 33	BG	EU
Agriculture & Mining	9.1	7.7	4.6
Manufacturing	14.6	18.8	16.4
Utilities & Construction	14.1	10.3	8.2
Services	56.7	56.1	62.9
Public administration	5.6	7.1	7.1
Average number of employed persons per enterprise	5.3	6.0	5.2
GDP per capita (PPS)	12.800	16.500	31.200
GDP per capita growth (PPS)	4.10	5.74	3.21
Population density	64	63	109
Urbanisation	70.4	70.1	75.3
Population size (000s)	920	6,950	446,450

The share of average number of employed persons per enterprise is below average for BG and slightly above average for EU

GDP per capita growth (PPS) is below average for BG and slightly above average for EU.

The share of employment is:

- above average for BG and above average for EU in Agriculture and Mining, Utilities and Construction
- above average for BG and below average for EU in: Services
- below average for BG and below average for EU in: Manufacturing and Public Administration.

Employment in high-tech sectors (high-technology manufacturing and knowledge-intensive high-technology services), Percentage of total employment by NUTS 2 regions, BG33 region data (presented as % of total employment rate): There are 0.1 performance changes between the years 2015 (1.4) and 2021(1.5). In 2020 the value was 1.4 and in 2016,2017, 2018 - 1.9, and in 2019 - 1.6. (the data are aggregated according to the sectoral approach at NACE Rev.2 on 2-digit level and is oriented on the ratio of highly qualified working in these areas).

NUTS Region BG33 Severoiztochen

Population (Inhabitants)	Employment Rate (% of population aged 20-64	Unemployment rate (% of labor force aged 15-74)	GDP 2020 per inhabitants in PPS (% of the EU-27 average)
924 870.0 *2020	71.9 % *2020	6.1 % *2021	41.0 %

In 2021 the ***unemployment rate*** in the Severoiztochen Region (6.1%) scored lower than in the EU (7.1%) but there are numerous regional differences. In 2020, the unemployment rate was as low as 3.4% in Yuzhen tsentralen, but peaked at 13.0% in the least developed region of Severozapaden. According to the European Semester Bulgarian country report 2022 for the period 2015 to 2019, the unemployment rate dropped rapidly, but rose by 2.1 points (pps)[69] in Severozapaden and by 1.3 points in the capital area, in BG 33 Severoiztochen, it increased by only 0.2 ponts (pps). Sofia, the province in Bulgaria's capital, had the highest crude rate of population growth compared to all other EU NUTS 3 regions, with a growth rate of 50.8 persons per 1000 (11 800 people).[70]

The labour market in BG 33 is generally similar to the country data, however the trends in 2020 in the separate areas in BG 33 are different. The labor force is 423.2 thousand people (71.1% coefficient of economic activity - below the average in the country 72.2). Shumen district is the leader with 75%, Varna district - 71.8% and the lowest is Targovishte district - 63.4%. The employment rate for the BG 33 region decreases to 66.7% (country average 68.5%) by 2020. Varna province is the only province in the region, where it is higher than the average in the country– 70.2%. The lowest is in Targovishte province - 56.5%. The unemployment rate in the Northeast region is the highest in the country (followed by the North-West region) - 6.2% (5.2% for the country). In Varna province the unemployment rate is significantly more favorable - only 2.2%, and 10% and even higher in the other 3 provinces that are forming the BG 33. In 2020 the challenges BG33 is facing regarding the labor market in the area are related to the aging population and average low educational level of the workforce.

Indicators:	Value:	Varna	Dobrich	Targovishte	Shumen
Economic activity rate 15-64 completed years	(Per cent)	71.8	69.9	63.4	75
Employment rate 15-64 completed years	(Per cent)	70.2	63.2	56.5	66.5
Unemployment rate	(Per cent)	2.1	9.4	10.5	11.1
Relative share of the population aged between 25 and 64 years with higher education	(Per cent)	24.8	22.3	15.8	24.6
Schools (primary, lower and upper secondary educations stage)	Number	125	67	50	65
Enrolments in all type of schools (primary, lower and upper secondary educations stage)	Number	48927	15237	10397	16703
Foreign direct investment in non financial enterprises as of 31.12	Thousand EUR	1487864.7	369227.0	273659.2	118034
Staff engaged in R&D	Number	2383	331	12	735

69. https://commission.europa.eu/publications/2022-european-semester-country-reports_en
70. Eurostat regional yearbook — 2022 edition - Products Flagship publications - Eurostat (europa.eu)

SME density

According to the NSI the total number of non-financial enterprises in the country is 412 878 from which 389 592 are micro enterprises and 28 532 are SMEs.

The total number of non-financial enterprises in BG 33 for 2021 is 52 167, from which 52 088 are Micro (48 496) and SMEs (3592). Almost 7% of all BG 33 enterprises are SMEs, and if we include and Micro enterprises the number is rising to 99.85%. The ratio of non-financial firms in the Varna province in 2019 reached 71 per 1000 people, which is greater than the national average, while it is nearly twice as low in the Targovishte province, at 37 per thousand people.[71]

Population of active enterprises in BG 33:[72]

Districts in BG33	2015	2016	2017	2018	2019	2020
BG 33 Severoiztochen	51 771	52 695	52199	51 984	51 214	49 693
BG 331 Varna	32690	33366	33020	33 015	32 519	31 525
BG 332 Dobrich	8 624	8 720	8 563	8 461	8 163	7 817
BG 333 Shumen	6 611	6 705	6 707	6 615	6627	6 501
BG334 Targovishte	3 846	3 904	3 909	3 893	3 905	3 850

According to the NSI statistics in BG 33 in 2021 (52 167) the active non-financial enterprises increased with 2474 more enterprises than those in 2020 and with 396 more than in 2015. *(Birth rate is higher than the death rate of enterprises for that period)*. In 2018 the EU enterprise death rate was 7.8 %, while in BG33 Severoiztochen was among NUTS level 2 regions with the highest enterprise death rates (13.2 %).

Number, structure and growth of enterprises by statistical region, Bulgaria, 2018:

Statistical region	Number			Structure			Growth, 2017 – 2018, %			Growth, 2008 – 2018, %		
(NUTS 2)	SMEs	LEs	Total	SMEs	LEs	Total	SMEs	LEs	Total	SMEs	LEs	Total
TOTAL	412782	753	413535	99.82%	0.18%	100.00%	1.78%	1.21%	1.78%	28.12%	-9.39%	28.03%
BG 33	53523	82	53605	99.85%	0.15%	100.00%	0.85%	5.13%	0.85%	19.61%	18.00%	19.52%

71. https://www.regionalprofiles.bg/bg/news/economic-and-investment-profile-of-the-north-east-region/
72. https://ec.europa.eu/eurostat/databrowser/view/BD_SIZE_R3__custom_690164/bookmark/table?lang=en&bookmarkId=d2a6d7f4-d182-4961-9b6a-c33e49a75ee0

In 2018 12.96% of the SMEs in the country were performing in the BG33 region. 99.85% of the businesses in the region were SMEs, they faced growth of 0.85% for the period 2017-2018 and 19.61% for the period 2008 - 2018.

According to the Economic and investment profile of the Northeast region the area's economy is structured similarly to the country, with a higher proportion of agriculture (8% against 4% for the country). The share of gross added value in the agrarian sector reaches 13% in 2019 (compared to 4% for the country) in Dobrich and makes it one of the most agricultural areas in the country and in the region. In the Targovishte and Shumen regions, industry accounts for 1/3 of gross added value (compared to 1/4 nationally), and services account for less than 60% (compared to over 71% nationally). Services make up 73% of the region of Varna's added value, compared to 71% in the country which is strongly related to both the size of the area and its tourist appearance.[73]

BG 33 region has significant agrarian potential, participation of the agrarian sector in the created gross added value (2015-2020 average) is only 7%. The sector with the largest share is the service sector. Its strong presence is present in Varna and Dobrich areas, due to the tourism sector, and for Varna also to the transport sector.[74]

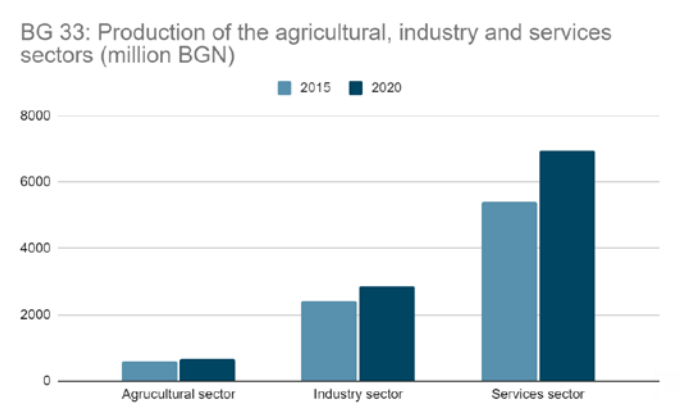


Figure no. 11. Evolution of main sectors in Region BG33, 2-15-2020; Source: https://esc.bg/wp-content/uploads/2022/10/ESC_4_025_2022.pdf

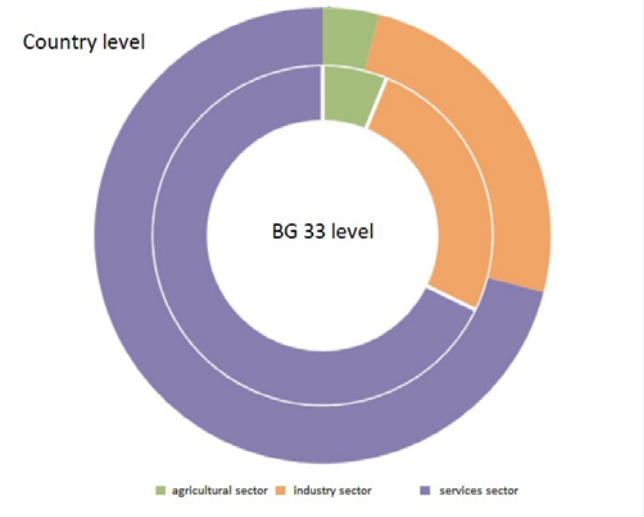


Figure no. 11. The gross added value by economic sectors, %, 2019 according to NSI

According to the Bulgarian Industry Map in the BG 33 region there is a higher number of companies in the IT - ICT, Food industry, Textile, Marine, Furniture and mechanical engineering sectors. The larger proportion of those companies is presented in the region's economic centre - Varna.

73. https://www.regionalprofiles.bg/bg/news/economic-and-investment-profile-of-the-north-east-region/
74. https://esc.bg/wp-content/uploads/2022/10/ESC_4_025_2022.pdf

BG33 Industry Map:[75]

Sector	Varna	Dobrich	Targovishte	Shumen	Total number of companies per sector for BG 33
Automotive	8	8	3	3	22
IT - ICT	557	46	15	46	664
Energy	28	7	3		38
Mechanical engineering	45	13	5	13	76
Mechatronics	4		2		6
Food Industry	323	127	59	123	632
Cosmetics	20		1	5	26
Textile	171	91	32	81	375
Marine	277	14	2	2	295
Furniture	140	43	19	26	228
Biotechnology	3				3
Renewable Energy Sources	2				2
Education and science	15	3		2	20

Analysys from The Institute of Market Economy define the ICT sector as the most rapidly developing in the city of Varna. For the period of 2015 to 2018, the production of IT companies almost doubled, and 600 new jobs were created. The city is already positioned as a leading IT destination, with two major investments from 2019 (Coca-Cola opened a financial services centre and Belgium's KBC opened a shared services centre). According to statistics of the Institute for Market Economy: As of 2019, more than 4,500 people are employed in the ICT sector in the North-Eastern region, mainly working in Varna (1200 more than the people employed in 2013).[76]

In 2022 there are more than 140 IT enterprises performing in the area of BG33 and more than 1200 IT employers hiring in Bulgaria.[77]

Varna Province> Trade and agriculture are the sectors that dominate the ranking for the 100 largest companies in the area. The revenues of agricultural companies in the Varna province grow from BGN 2.53 to 2.62 billion in 2020. Other important sectors in the area are related to tourism - hotels & restaurants

75. https://bgindustrymap.com/bg
76. https://ime.bg/var/images/pres_SB_020221.pdf
77. https://dev.bg/company/select/locationvarna/

(514.4 million), building and construction(2.14 billion), manufacturing (2.48 billion) and the leader is the trade sector with 62.6 billion BGN. The largest production is in chemicals, rubber and plastic goods, food, metal products, glass, concrete, etc., paper and cardboard, electrical equipment, clothing, machinery and equipment, metallurgy, electronics, automobiles.[78]

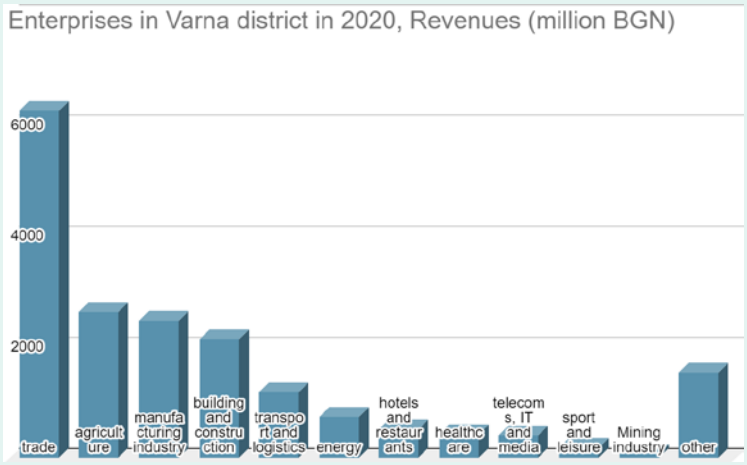


Fig. no. 13. Source:https://www.capital.bg/biznes/kompanii/2022/06/01/4342072_nai-golemite_kompanii_v_oblast_varna_liderite_ot/

From the top 10 companies with the largest revenues in BG 33, 3 are located in Varna, 3 are located in Devnya (Varna Province), 2 are located in Shumen, 1 is located in Targovishte and 1 in Tervel (Dobrich Province).

According to GEM, the Entrepreneurial Framework Conditions in Bulgaria in 2019 are:
(1 = highly insufficient, 5 = highly sufficient)



Figure no. 14. Source: Global entrepreneurship monitor

According to the national experts, Bulgaria has a number of significant low performance indicators, however the country' situation is favorable and better performance is observed in comparison to previous years. The most critical ones are related to the entrepreneurship education at both levels - school stage and post school stage and the lack of targeted government policies: Support and Relevance (3.15), and Entrepreneurship programs (3.45), and R&D Transfer (3.62). Bulgaria shows some strengths in entrepreneurial finance (4.88). The strongest among the EFCs in Bulgaria is the access to physical infrastructure (6.82), followed by Internal Market Dynamics (5.17) and access to commercial and legal infrastructure (5.05).[79]

78. https://www.capital.bg/biznes/kompanii/2022/06/01/4342072_nai-golemite_kompanii_v_oblast_varna_liderite_ot/
79. https://www.gemconsortium.org/economy-profiles/bulgaria-2

Innovative companies

Overview of the innovative activities in the bulgarian non-financial enterprises:

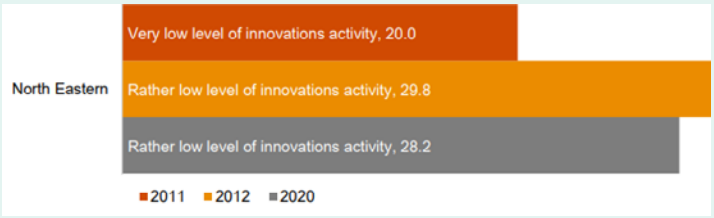
- Three out of four SMEs in the EU are equipped with outdated machinery
- In the past five years (55.6%) of SMEs have invested in new technology.
- The share of SMEs with a very low level of innovative activities is decreasing during the period 2011-2020 but half of the businesses engage in low degree of innovative activities.
- In 2019, 29% of SMEs released a new or upgraded product (19.7% of microenterprises, 34.7% of small businesses, and 49.1% of medium-sized businesses)
- 12% of SMEs have their own R&D unit
- In 2016 Bulgaria had a share of innovative firms of 22.7%. Innovativeness is present in 20.5% of small businesses, 44.3% of medium-sized businesses, and 81.9% of large businesses. (NSI data)
- In Bulgaria, SMEs introduce 16.3% of new products or processes, compared to the EU average of 33.3%; 15.7% of new marketing or organisational innovations (while the EU average is 33.4%); 13.8% of SMEs that innovate in-house (while the EU average is 28.9%); 3.7% of SMEs that collaborate with others in new product or process innovations (while the EU average is 12.2%); Sales of new-to-market and new-to-enterprise innovations is 6.0% (while the EU average is 13.4%).(SBA Fact Sheet for 2019)

BG	2020		
	Innovation-active enterprises	Enterprises with product innovation	Enterprises with business process innovation
Total	36.2	22.8	25.8
By industries (NACE Rev. 2)Industry1	41.0	26.3	28.5
By industries (NACE Rev. 2)Services2	31.5	19.4	23.2

ENTERPRISES THAT HAVE NEW OR IMPROVED PRODUCTS NEW TO THE MARKET, AS A SHARE OF ALL ENTERPRISES[80]

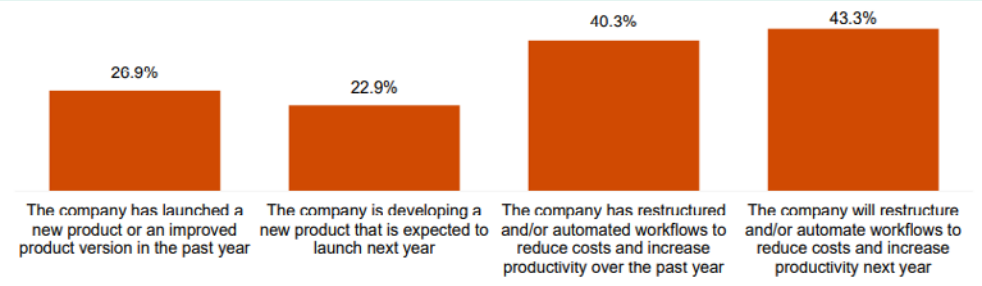
There is an improvement in the means of the innovations activities in the region with 8.2 for the period 2011-2020 and as the enterprises in the region were observed to be with a very low level of innovation activities in the beginning of the observed period they have been developed to the "Rather low level of innovation activity" in 2020.

BG 33: Innovation Index (enterprises)

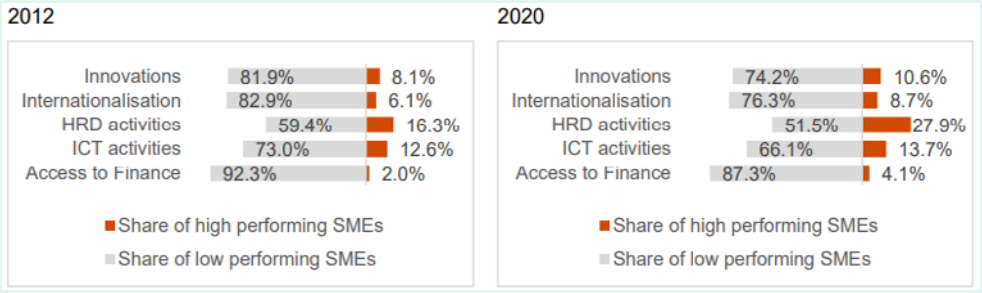


80. https://www.nsi.bg/en/content/2714/enterprises-have-new-or-improved-products-new-market-share-all-enterprises

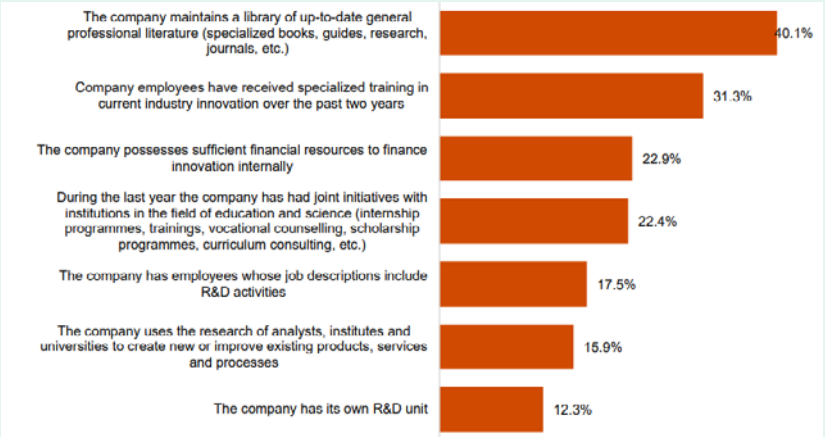
According to The 2019 – 2020 PwC SMEs survey companies are unlikely to launch or plan to introduce a new product but more likely they tend to conduct work process reorganisation. In order to cut costs and boost productivity, a sizable portion of SMEs reorganised and/or automated workflows in 2019 (40.3%), and a somewhat higher percentage plans to do so in 2020 (43.3%). A microenterprise's portion of such innovative activity is 35.4%, a small business' share is 42.9%, and a medium-sized business' contribution is 64.2%.



The share of high performing SMEs for the period between 2012-2020 has been increased in means of Innovations with 2.5%, and in ICT activities with 1.1%.



The development of the innovation infrastructure of the companies relates generally to the maintenance of professional libraries (40.1%). Almost one third of the enterprises have provided specialised training to their employees in the field of current industry innovations (31.3%).Enterprises that claim to have adequate financial means to finance innovation internally make up 22.9% of the total. In 2019, 22.4% of SMEs participated in cooperative projects with academic institutions. 15.9% of businesses use research produced by scientists, institutions, and universities to develop new or enhance already-existing goods, services, or procedures.



- Business support framework

Bulgaria has been steadily moving toward being a significant center for innovation after years of serving as a location for outsourcing. More than 400 businesses, 15 venture capital and growth equity firms, and an expanding number of accelerators, supporting organisations, and co-working spaces are located in Bulgaria.

Industrial zones

In accordance with the law for industrial zones in Bulgaria, industrial zones are defined as designated areas of the country's territory where investment proposals by both domestic and international persons and legal companies are fostered[81]. In Bulgaria, there are more than 70 industrial zones operating and more than 5 in process of development.

The distribution of the industrial zones across the country and in GB33 region is the following:

- "National Company Industrial Zones": total 11 - 6 operating (1 located in Varna) and 5 in development (1 in Suvorovo, Varna Province)
- *Other industrial zones* : 68 (incl. 47 Industrial zones and 21 industrial parks in that number): 5 located in Varna province; 4 in Dobrich province; 2 in Shumen province*; 1 in Targovishte province; Also, under the Regional Urban Development Fund in Varna district there are 6 industrial zones, 1 is completed, 1 is under implementation, two are terminated and 2 are in the stage of idea.[82]
- 2 new industrial parks in developed stage (in Dobrich and in Vetrino - Varna province)[83]

Science and Technology Parks (STP):

1. The Black Sea High-tech Park - Varna (BSHTPV) The activity is developed in three main sectors: Researches/ Innovations/ Technologies; High-Technology environmental; Conference Center.;
2. Business Park Varna

Industrial Parks (IP)

In 2021, the new Law on Industrial Parks was promulgated, which for the first time regulates the status of industrial parks. According to the new law "An industrial park is a designated territory, located in one or more municipalities, for which structural, technical and organisational conditions for production activities are provided.

According to production activities, IP is:

- type A – general, in which there is no specialisation of production activities;
- type B – specialised, in which one type of production and related activities or similar production activities are carried out;
- type C – specialised, in which high-tech and related activities are carried out.

81. https://www.bcci.bg/bulgarian/events/industr_zakon.htm
82. https://jessicafund.bg/en/city/varna-en/?sector_filter=228
83. https://www.24chasa.bg/biznes/article/13454430

All industrial zones and parks established in accordance with private sector terms and conditions are required to register in an electronic private sector register, the formation and maintenance of which is within the responsibility of the Minister of Economy.[84]

Business incubators/ co-working spaces

In the late 1990s the first Business Incubator in Bulgaria was registered in Ruse with the aim of supporting SMEs. Since then more than 20 regional business centres, incubators, and agencies for regional development have been established. The Bulgarian Small and Medium Enterprises Promotion Agency (BSMEPA)[85] was established in 2004 as an administrative structure within the Ministry of Economy of Republic of Bulgaria.

There are more than 100 Business incubators/accelerators/co-working spaces in the country . The distribution in BG33 is the following:

- More than 5 Business incubators in BG33: 1 High-Tech Business Incubator, 1 East Accelerator in Varna and more than 10 business centres in the Varna province; 1 Business centre - Business incubator (in Targovishte); 1 Agribusiness Center - Business Incubator (in Shumen) 1 Business centre (in Dobrich);
- More than 10 co-working spaces in BG33.

The majority of incubators were built with funding numerous European projects and other international initiatives. Many business incubators have terminated their activities in the past 20 years due to poor quality of the services offered, a lack of funding and poor management. Some of the current incubators also display flaws in the range of services they offer, such as a lack of coaching and mentoring, mentoring and supporting businesses in the process of access to funding, and access to networks. Universities and other research organisations are rarely represented in the networks of existing incubators. By the number of coworking spaces (ex. about 2% of all the office space in Sofia are co-working spaces) Bulgaria is ranked 19th in Europe by the European Coworking Hotspot Index by Cushman & Wakefield. In Bulgaria the co-working spaces are generally private initiatives of local companies.[86]

Clusters

Clusters in Bulgaria have over 20 years of history, currently being more than 70 clusters. In 2009, for the first time, they united in the Association of Business Clusters. According to the Executive Agency for the Promotion of Small and Medium Enterprise, the clusters are classified as:"Developed", "Developing", and in the initial stage. In 2021 there are "Developed (4) and "Developing" (21) with different areas of activities. In the initial stage – 42 clusters and Uncategorized - 12 clusters.[87]

84. https://www.strategy.bg/PublicConsultations/View.aspx?lang=bg-BG&Id=5019
85. https://www.sme.government.bg/
86. https://www.mi.government.bg/files/useruploads/files/sme/FINAL_DG_Reform_SME%20Strategy_Technical%20Report_2020-04-27.pdf
87. https://www.eufunds.bg/sites/default/files/uploads/oprd/docs/2021-11/4_SIA_BG_Part_2%2008.2021-fin.pdf

In Bulgaria there were 18 Active Clusters until 2020.[88] In 2020 a new cluster was founded - In BG 33 region. In BG33 regional clusters are focusing on marine technologies, information and communication technologies, high technologies, tourism, agricultural equipment, bakery, bee-production and clothing were established. Active Clusters in BG 33:

1. Marine Cluster Bulgaria
2. Black Sea Energy Cluster
3. ICT Cluster located in Varna

Digital Innovation Hubs

According to the SSP[89] There are 7 Digital Innovation Hubs in Bulgaria (5 in preparation, 1 fully operational and 1 – potential from DIHs H2020).

Other significant players of the Bulgarian business ecosystem include:

> **national and regional business organisations and associations** (ex.Technology Transfer Offices and Technology Centres such as RAPIV, **The Bulgarian Chamber of Commerce and Industry, the Bulgarian Startup Association (BESCO), Enterprise Europe Network, the Association of Bulgarian Leaders and Entrepreneurs (ABLE), Bulgarian Business Forums and one of the most significant high-tech conferences in Southeast Europe - Innowave Summit organized by the organization on an annual basis, pre-accelerators (i.e. Start-It-Smart), Startup ecosystems),

> **more than 10 Seed and VC funds/hubs, Business Angel investors, Startup ecosystems** - more than 2 Tech Education providing online platforms, more than 50 Start-up events and communities (at least 5 events are happening on a yearly basis) from which in BG 33 more than 5 start-up events (2 on annual basis), and online access to all of the available start-up online education platforms and events

> **18 Entrepreneurship centres** since 2018 operating in universities in the country.

***The Bulgarian Chamber of Commerce* is a non-governmental organisation established in 1980. The NGO is one of the leading partners of the state in the processes of determining economic policies.[90] There are regional chambers of Commerce and Industry in each province of BG33 as partners of the general entity.

- Private funding

A growing number of founders who started their ventures in the country have now raised Series A or even later rounds. As of the beginning of 2021, local entrepreneurs have access to over €200 million in VC capital.

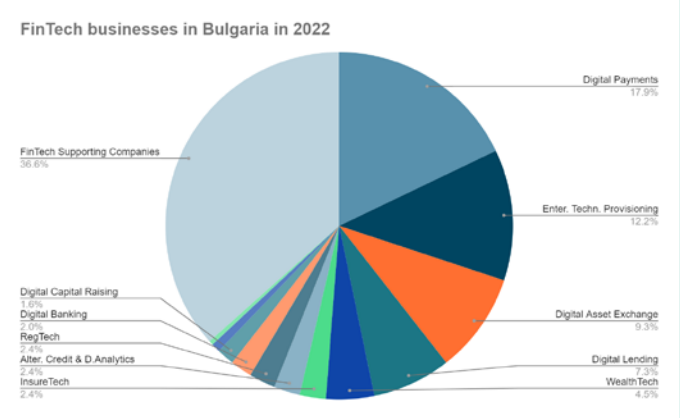
88. https://www.mi.government.bg/files/useruploads/files/sme/FINAL_DG_Reform_SME%20Strategy_Technical%20Report_2020-04-27.pdf
89. https://s3platform.jrc.ec.europa.eu/digital-innovation-hubs-tool?p_p_id=eu_europa_ec_jrc_dih_web_DihWebPortlet&p_p_lifecycle=0&p_p_state=normal&p_p_mode=view
90. https://www.bia-bg.com/

According to the The Annual Fintech Report 2020 released by the Bulgarian Fintech Association:

- There number of fintech businesses in Bulgaria is estimated to be 100 (100, 66 of which are emerging and 34 – established; 84 of the identified Fintech companies are being headquartered in the capital Sofia);
- The fintech industry's overall operational revenue has been expanding quickly over the past three years, steadily increasing by about 25% annually;
- Fintech businesses in Bulgaria achieved a record-breaking operating revenue of EUR 361 million in 2020.
- The Payments sector, followed by Blockchain and Capital Markets, is where the majority of Bulgarian fintech firms operate;
- A third of all VC investments in Bulgaria were made in the fintech sector in 2019;

Annual Fintech Report 2022, data is presenting:

- There are 156 fintech businesses in Bulgaria in 2022 of which 92% are SMEs, mostly located in Sofia - 131, Varna - 14, and Plovdiv - 5 (Digital Payments - 44, Enter. Techn. Provisioning - 30, Digital Asset Exchange - 23, Digital Lending - 18, WealthTech - 11, InsureTech - 6, Alter. Credit & D.Analytics - 6, RegTech - 6, Digital Banking - 5, Digital Capital Raising - 4, Digital Identity - 2, Digital Custody - 1, FinTech Supporting Companies 90+).



- In 2021, the number of FinTech employees reached an all-time high of 11,862.
- a 14% annual growth on average, the industry's total and operating revenues are rising and reached peaks of BGN 1.8 billion and BGN 1.55 billion in 2021, respectively.
- More than BGN 10 million has been invested in Bulgarian FinTech SMEs during the past two years (equals one-fifth of all VC investments made in Bulgaria in 2021).

2022 FinTech Ecosystem Snapshot, Bulgaria:

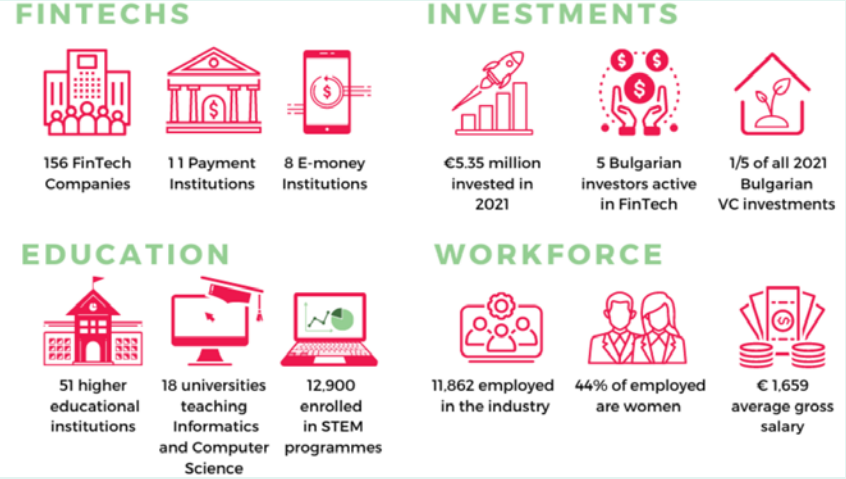


Fig. no. 15. Source: FinTech Ecosystem Snapshot

In 2012, when LAUNCHub and Eleven began supporting and mentoring startups in their early stages of development, the Bulgarian startup ecosystem was established. Following that, the number of venture capital firms in the nation increased along with the number of startups. With some of these startups, multi-million dollar agreements were made when purchasing foreign companies. There is also a network of angel investors offering a variety of financial options who assist start-up businesses in realising their business plans.

According to the Digital Riser Report, Bulgaria was the top digital riser Among countries in Europe and North America in 2020.Bulgaria's superior performance may be mostly attributed to its "Digital Bulgaria 2025" lighthouse initiative, which was introduced in 2018 as an extension of the national program "Digital Bulgaria 2015". Additionally, the Digital National Alliance spearheaded other free programs to advance digitalization, such as ensuring digital skills, coordinating business demands with educational goals, and fostering young Bulgarian talent both domestically and internationally.

Regulations: The Investment Promotion Act (IPA), which established the principle of equality between Bulgarian and foreign citizens and businesses, was announced to require coding in primary schools in 2018. The Bulgarian government designated high-tech industries as preferential, which resulted in cheaper investment capital requirements. Additional government efforts provided benefits to businesses in the areas of social security, taxes, and vocational training. Numerous IPA incentives exist for investments, such as subsidies for R&D and favorable land prices.

Bulgarian growth equity and venture capital ecosystem in 2020

Second and third-generation funds have both completed successful fundraising rounds while new Bulgaria-based funds have been launched. In 2020 Neo Ventures were looking to engage with new prospects in a few specific industries, including health technology, space technology, and AI platforms. With the founding of the EIF-backed Sofia Angels Ventures, the community of business angels is also growing. With EIF on board, there will be a chance for larger tickets to match angel investments, so we see a healthy expansion of the business angel network in the nation.[91]

91. https://bvca.bg/en/overview-of-the-growth-equity-and-venture-vapital-ecosystem-in-bulgaria/

At the end of 2020, a new fund called Sofia Angels Ventures entered the market, it is comparable to the ones already present, but also, it enables angel investors to take part in every transaction. The capital of the fund is expected to be 13 million euros, with participation from the three founders , and the majority of the funding will come from the European Investment Fund (EIF). In addition, each transaction must follow the fund's guidelines, which state that 50% of the investment must come from the fund and the other 50% must come from private investors. This means that at least another 13 million euros must come from a co-investor if 13 million euros are invested from the fund by the end of the investment period. In contrast to the prior model of funds for risk financing, this is the first such fund to be registered in Bulgaria and the first to include the EIF. Up until this point, the venture capital funds operating in Bulgaria were incorporated in either the Netherlands or Luxembourg. The fund's investments will be directed to companies in the field of ICT (information and communication technologies).[92]

With the founding of the EIF-backed Sofia Angels Ventures, the community of business angels is also growing. With EIF on board, there will be a chance for larger tickets to match angel investments, so we see a healthy expansion of the business angel network in the nation.[93] Other examples of importance on a national and regional level are the BBF Angels Club - Experts from the BBF Angels Club assist investors and companies during all stages of market realization or subsequent investment and the The Global StartupVillages Program - a tailor-made support for each young entrepreneur in rural and remote areas.

Trends in the PE and VC in Bulgaria

- Increasing concentration of fund managers in industries where they have developed extensive domain knowledge
- Bulgarian-based businesses (supported by the FMFIB) and managers that are after regional opportunities, with primary private investors
- All funds are expected to develop their own specialised markets and establish their own unique competitive advantages

Examples: In collaboration with businesses, Eleven Ventures is making investments in 4 industries: FinTech, HealthTech, Future of Food, and Future of Work. ***LAUNCHub Ventures*** is making investments in Web 3.0, Blockchain, Marketplaces, Digital Health, Fintech, Proptech, Big Data, and B2B SaaS. The following investment sectors were listed by New Vision 3: FinTech, AI, Big Data, IoT, Shared Economy & Platforms, and Blockchain. Since its start, ***PostScriptum Ventures*** has been committed to businesses that are focused on renewable energy and the environment.

- Some of the VCs focus on assisting entrepreneurs from Central and Southeastern Europe
- The business angels' community has established Chapters in several cities across Europe, including London and Vienna, to support the regional diaspora
- A representation of the business angels' community and a few VC funds are funding significant initiatives, such the San Francisco-based Bulgarian Innovation Hub, which aids in the growth of U.S. -based businesses with roots in Bulgaria.
- International entrepreneurs are establishing operations in Bulgaria thanks to Bulgarian VCs

92. https://forbesbulgaria.com/2021/06/01/%D0%BA%D0%BE%D0%B3%D0%B0%D1%82%D0%BE-%D1%84%D0%BE%D0%BD%D0%B4%D1%8A%D1%82-%D1%81%D1%80%D0%B5%D1%89%D0%BD%D0%B0-%D0%B1%D0%B8%D0%B7%D0%BD%D0%B5%D1%81-%D0%B0%D0%BD%D0%B3%D0%B5%D0%BB%D0%B8%D1%82%D0%B5/
93. https://bvca.bg/en/overview-of-the-growth-equity-and-venture-vapital-ecosystem-in-bulgaria/

Examples: Woom (BrightCap's investment), which recently expanded its Spanish R&D staff by moving them to Sofia. Because of this, programs like ***RE:TURN***, which links the Bulgarian diaspora abroad with the country's investors and entrepreneurs, are crucial and have helped make RE:TURN a landmark project for BVCA.

Bulgarian Fintech Association

The top fintech businesses in Bulgaria are united under the non-profit ***Bulgarian Fintech Association***. The Association's goal is to build a platform that unites all parties in Bulgaria with an interest in the financial technologies industry and to promote dialogue and idea sharing among them. In order to promote the growth of the industry, the Bulgarian Fintech Association works to represent and defend the shared values of its members before regulators, investors, financial institutions, foreign associations, partners, and other parties.

Bulgarian Venture Capital Association, BVCA

The association aims to establish and maintain good communication with the government on matters pertaining to the nation's investment market and on steps that must be taken to create an inviting business environment for investments, including the easing of regulatory constraints and the boosting of tax incentives for pension funds, insurance companies, and other private investors.

SEE REPORT 2022

According to the SEE report 2020 data - South East European startups have increased in total company value by 49.9 times since 2012, much faster than its neighbours in CEE (9.1 times) and the European average (12.1x).

Transportation, Fintech, and enterprise software are leading in SEE. In the area, VC financing is at an all-time high. Combined venture capital funding for firms in the SEE has already surpassed $1.3 billion in 2022. As business owners are increasingly inclined to look for VC funding to expand more quickly. Foreign and domestic investors alike are increasingly interested in creative SEE companies.

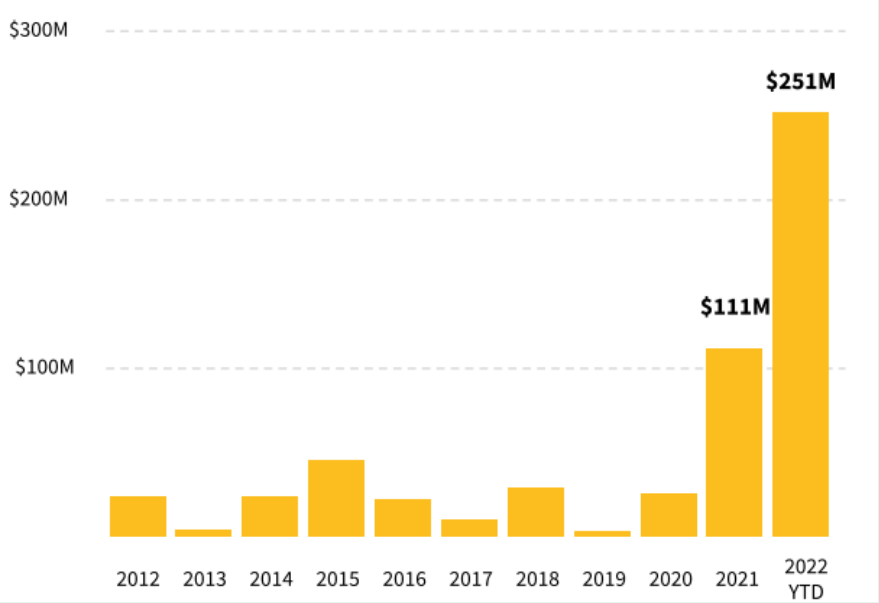


Fig. no. 16. Source: Dealroom.co. AUM - Assets Under Management.

Bulgarian startups are on the top list and 3 times more likely to be VC-backed compared to other SEE startups (ex. in Kosovo, Albania or Montenegro). Country enterprise value growth (2017-2022) is 6.2 times (from $ 903M reaches $ 5.6 B).

SEE has already produced 9 Unicorns, from which Payhawk comes from Bulgaria (2022 year). Bulgaria is in the top 5 in the list of distribution of startup job openings in SEE with 21%, the country is number one in the list for startup job openings per 100,000 inhabitants (80+).

SEE currently has 11 future unicorns spread across 5 countries, those coming from Bulgaria are: Gtmhub, Hyperscience, and Nexo*.

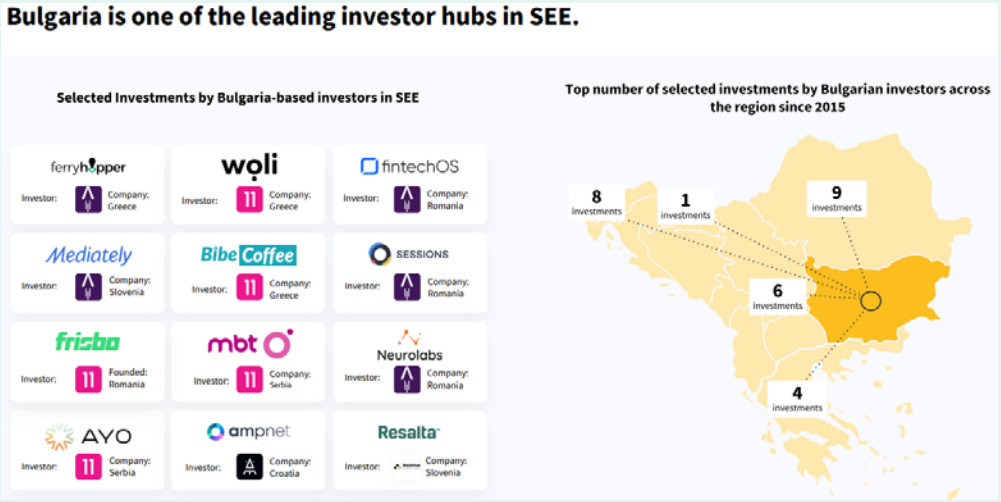


Fig. no. 17. Source: Dealroom.co.

South Eastern Europe is a popular location for international startups opening offices abroad, particularly in Bulgaria (60+) and Romania (115+). In SEE, Bulgaria has the most locally-based funds. 65% of the enterprise value generated in the region to date is in the fileds of enterprise software, fintech, and transportation. With bigger rounds and more venture capital funds participating, the investment climate in Bulgaria has matured. Only after the record-breaking year of 2021 (475M), 2022 is already the second-highest year for VC investment into startups in Bulgaria (with 244M). The next wave of prosperous enterprises in SEE and elsewhere are being developed with the assistance of angel investors (ex. from Bulgaria are Mr. Hristo Borisov, Mr. Georgi Zahariev). Since 2012, Bulgaria has seen a wave of new investment and has seen a huge raise in the funding in the past 18 months than ever before:

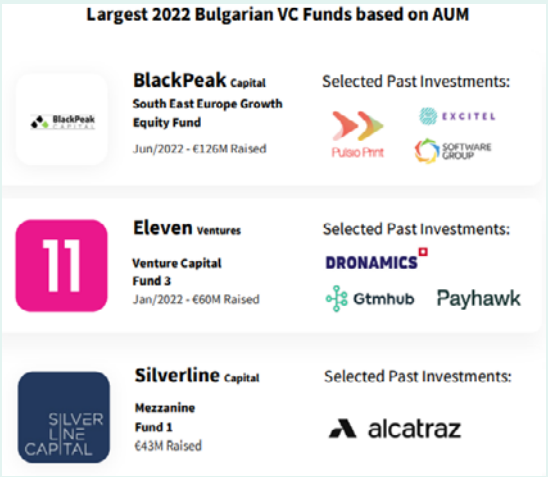


Fig.no. 18. Source: Dealroom.co. AUM - Assets Under Management.

Foreign VC investment into SEE startups as data observed in the SEE REPORT 2022 is presenting the accumulated investments in the 1st headquarter of 2022 to be 1.2 B., in comparison to 1.5 B in 2021, 0.7 B in 2020. Also, it is stated that Bulgaria has received the highest volume of VC funding when excluding megarounds.

There are two Bulgarian organisations with a membership in the EBAN community.[94]

- Foreign direct investments

Investment growth in the country was moderate in 2020 but sharply decreased in 2021. After a significant decline at the beginning of the pandemic, exports of commodities recovered to their pre-pandemic level in Q2 of 2021. Private investment is predicted to suffer as a result of the heightened uncertainty, while public investment, which is supported by RRF funding, is predicted to entirely make up for this decline.[95]

The sectors with the highest % of FDIs are: Agriculture, forestry and fishing: (25%), Wholesale and retail trade, repair of motor vehicles and motorcycles:(18.66%), Real estate activities:(12.43%), Electricity, gas, steam and air-conditioning supply: 2 733 544.8 (9.69%), Other professional, scientific and technical activities: 1 806 515.0 (6.4%), Manufacture of rubber and plastics products, and other non-metallic mineral products: 1 319 893.5 (4.68%).

In manufacturing sectors the highest % of FDIs are in: Manufacture of rubber and plastics products, and other non-metallic mineral products:(4.68%), Manufacture of basic metals and fabricated metal products, except machinery(3.66%), Manufacture of food products, beverages and tobacco products: (3.43%), Manufacture of chemicals and chemical products: (2.33%),Manufacture of transport equipment: (2.16%), Manufacture of machinery and equipment n.e.c.: (2.08%), Manufacture of wood and paper products, and printing:(1.71%)

The total FDI in BG33 for 2021 are 2.269.086 thousand euro (0.12% decrease for the period observed).

2015-2021 FOREIGN DIRECT INVESTMENTS IN NON-FINANCIAL ENTERPRISES IN SEVEROIZTOCHEN (BG 33) REGION[96] (Thousand Euro)

Indicators:	Value:	**Varna**	**Dobrich**	**Targovishte**	**Shumen**
Foreign direct investment in non financial enterprises	Thousand EUR	1487864.7	369227.0	273659.2	118034

94. https://www.eban.org/membership-directory/
95. 2022-european-semester-country-report-bulgaria_en.pdf (europa.eu)
96. https://www.nsi.bg/en/content/1833/foreign-direct-investments-non-financial-enterprises-3112-statistical-regions-and-districts

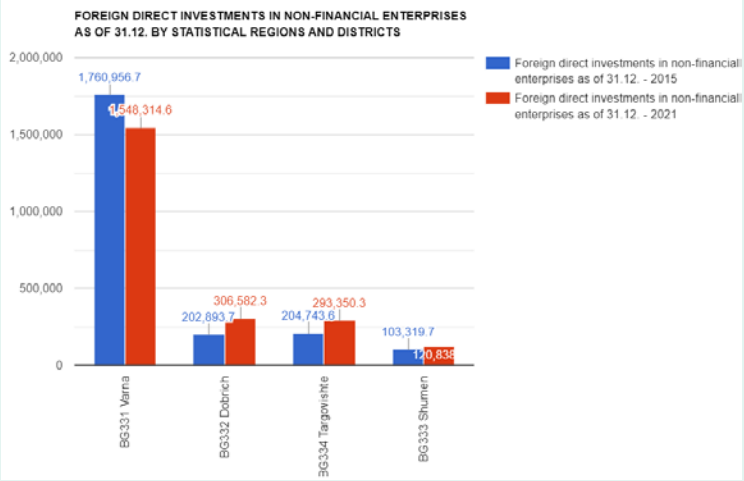


Fig. no. 19. Source: https://infostat.nsi.bg/infostat/pages/reports/query.jsf?x_2=595

Investment profile - Varna province: Despite some modest downward tendencies, investment and business activity in the Varna region are still very strong in 2019. The district's non-financial enterprise density has risen to 71 per 1,000 people, continuing to be fairly high (at 61 per 1,000 in the country). Contrary to the general trends in the country, the internal and foreign investment lags slightly behind. The amount of costs for the acquisition of fixed tangible assets fell by 1% (at a 15% country growth rate) to BGN 2.7 thousand/person of the population (at BGN 3.2 thousand in the country). To little more than 3.7 thousand euros per person (slightly less than 3.7 thousand euros in the country), the volume of foreign direct investments fell by 6% (about 3% growth in the country). The value of production is growing at a slower rate in the district (5% vs. 8% nationally) and is worth BGN 23.3 thousand BGN /person (vs. other 3 districts in BG 33 - 15/16 thousand BGN/ person).

Investments profile is stated to be at average level: Number of non-financial companies per 1,000 people (2020) – AVERAGE: 69.00 (In 2009, 2010, 2019 – 71.00)

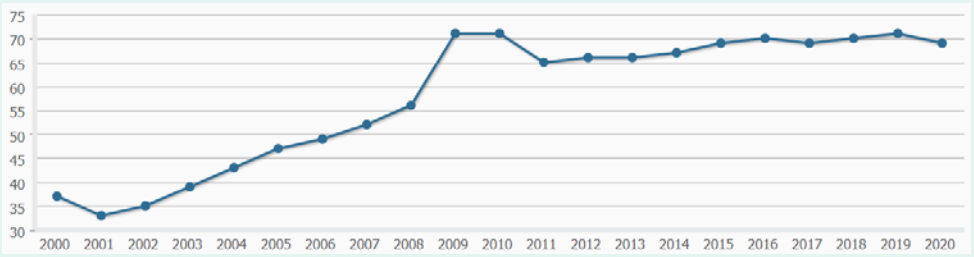


Fig. no. 20. Source: https://www.regionalprofiles.bg/en/regions/varna/

Foreign direct investment in non-financial enterprises per capita (cumulative) (2020) – AVERAGE: 3166.00 EUR

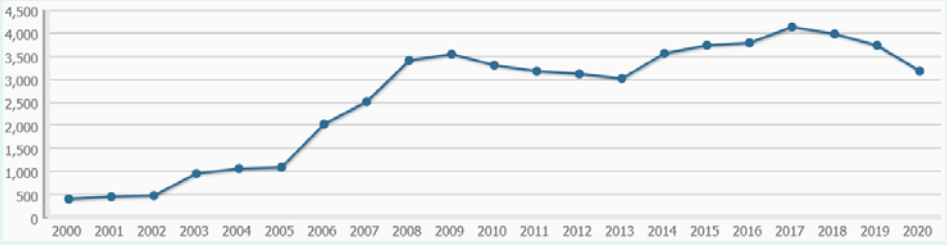


Fig. no. 21. Source: https://www.regionalprofiles.bg/en/regions/varna/ 2000 – 391.42; 2009 – 3532.42; 2017 – 4120

Foreign direct investments (FDI) in the non-financial sector in the province of Varna as of 31.12.2021 amount to 1,548.3 million euro (industry - 811.3 million euros with an increase in the relative share by 0.6%, in the sector "Operations with real estate"- 285.9 million euro with an increase in their relative share regarding the previous year by 2.4 point and reaching 18.8%, the service sector (trade, car and motorcycle repair, transport, warehousing and posts, hotels and restaurants) - 273.6 million euros with an increase in their relative share by 0.3% and the sector "Professional activities and Research; administrative and auxiliary activities" - 102.1 million euros.

Construction, "Creation and dissemination of information and creative products; telecommunications," and "Professional activities and research; administrative and auxiliary activities" all saw a relative decline in FDI of 1.1 percentage points each in comparison to 2020. **In 2021, Varna district ranked 5th in the country in terms of foreign direct investment**. Their share in the total amount for the country is 5.5% and, respectively, 68.2% for the BG33 region. Within Varna province, the largest volume of foreign investments is the municipality Devnya with 740.0 million euros, followed by the municipality of Varna with 713.5 million euros. The two municipalities together form 93.9% of the total volume of FDI in the province.[97]

The investment activity in the **Dobrich district** is relatively low and unfavourable in 2019. The number of enterprises decreased slightly to 55 per 1,000 of the population (at 61 per 1,000 people in the country). Strong shrinkage (by more than 10%) is observed at the costs for the acquisition of durable material assets and their amount reaches BGN 1,811/person (at BGN 3,155/person in the country). There is also a decrease in foreign direct investments - up to 1,707 euros/person (at 3,655 euros/person in the country), as well as in the volume of production - up to BGN 14.5 thousand/person (compared to BGN 28.0 thousand/person in the country).

Investment profile in Targovishte province:Both investment and production have decreased. Due to the local economy's pronounced industrial profile and the significant presence of major companies, Targovishte has a very low number of businesses—37 per 1000 people in 2019—with a tendency to grow. Despite ongoing production growth, the district's productivity remains low at BGN 16.5 thousand per person (at BGN 28.0 thousand in the country).The Amount of expenses for the acquisition of fixed tangible assets and of foreign investment is relatively stable, although they are significantly below the average levels in the country. Costs for acquisition of fixed tangible assets reach BGN 2,236/capita (compared to BGN 3,155 in the country), a foreign direct investments – 2760 euros/person (approx. 3655 euros in the country).

Investment profile in Shumen province:The district's investment activity is low. A drop is seen in the expenses associated with purchasing long-lasting tangible assets as well as the amount of foreign investment attracted. The number of enterprises in the district is low - 41 per 1,000 of the population (at 61 per 1000 people in the country). The cost of purchasing durable physical assets is BGN 1,804 per person (compared to BGN 3,155 per person in the country), and the cost of foreign direct investments is EU 665 per person (compared to EU 3655 per person in the country). These indicators also lead to a comparatively low production volume of BGN 16.7 thousand per person (compared to approximately BGN 28.0 thousand per person nationwide).

97. https://www.nsi.bg/tsb/wp-content/uploads/2023/01/Press-release_6_FDI2021.pdf

- Education environment

As a result of Bulgaria's EU membership (since 2007),, numerous significant attempts to catch up to the nation's shortcomings in entrepreneurial education have been launched. The National Strategy for Fostering the Development of SMEs and other strategic papers made the promotion of entrepreneurial spirit and skills a top priority in line with EU policies.[98]

Improvements in the education curriculum

ccording to the Ministry of Economy's Implementation Report on the Entrepreneurship Action Plan 2020 - Bulgaria for 2017 there were several improvements in the curriculum, as following:

- Including STEM disciplines through the educational institutions:
- "Technology and Entrepreneurship" specialty has been included in the general education curriculum at the primary education level (I-IV grade), lower secondary education level (V-VII grade), and first stage of secondary education level since 2016. (VIII-X grade);
- "Entrepreneurship" specialty has been included in the structure of vocational education since 2018 (VIII grade).
- In 2017, 221 curricula in Bulgarian institutions were modified, and students in 193 fields got entrepreneurial education.

General facts:

- Approximately in the country 1.4 million people are engaged with educational activities in the country, 40% are students in lower education, 28% are participating in continuing professional education courses and about 16% are the students in higher educational institutions and children in kindergartens on annual basis;
- According to NSI - 220.4 thousand students were enrolled and 46135 graduated in higher education institutions for the academic year 2021/22 in Bulgaria; 31180 were enrolled and 6769 graduated in higher education institutions for the academic year 2021/22 in Northeast region BG 33 (4587 in Varna).
- As of 31.12.2021, 6,542 people, of which 679 are foreign citizens, are studying for the educational and scientific degree PhD "doctor" in the country (ex. of fields of education in numbers related to R&D&I: Environment - 39, Physical, Chemical and Earth Sciences - 214, Information and communication technologies - 227, Technical sciences and technical professions - 627, Mining and production technologies - 62, Engineering, manufacturing and construction, interdisciplinary programs and qualifications - 18, Healthcare - 865).
- 12% of students in Bulgaria, pursuing bachelor's and master's degrees, study in private educational institutions.
- The number of students in BG33 is continuously decreasing as in 2014/2015 in the region the

98. https://jei.uni-ruse.bg/Issue-9-2009/14.pdf

number of students is presented to be 100 226 and in 92 335 - 7.87% decline, which is in accordance with the national trend of annual decrease in the number of students by average 1.1%.[99]

14% of the enrolled students in higher education institutions are in BG 33 and 21.7% are with a secondary level of education (country basis)[100]. Despite the numerous higher education institutions in Varna province the % of people aged 25-64 with higher education (25%) is lower than the average for the country (29%), but the number of people with secondary education that are forming higher % of the population in the area (61%) is higher that the average in the country (54%). In the other 3 provinces from BG33 the percentage of people with primary or lower education is above 25% (17% in the country), in Targovishte province it is 38%. ICT usability is increasing at the fastest rates reaching 76.1% (higher than the national average of -73.9%), and a large share of people who have basic digital skills (25.7%) in the region. One notable exception is Targovishte, which has one of the lowest national rates of digital skills (14.7%).[101]

According to the data presented by NSI for the academic year 2021/22:

- 12.96% of the universities in the country are located in BG33 region, 85.71% of the BG33 universities are located in Varna, and 12.04% of the teaching staff in higher education institutions in the country are located in BG 33 (Severoiztochen) region.
- Almost 76% of the enrolled students in higher education from BG 33 are enrolled in Varna. 22.11% are enrolled in Shumen. 14.14% of the students enrolled in the country are from BG 33 region.
- 23% of the students enrolled in Professional bachelor's degree, 14.05% of the students enrolled in Bachelor's degree programs, and 13.37% of the students enrolled in Master's degree programs in the country are from BG 33.
- 14.67% of the graduates are from BG 33 region (67.76% from Varna, 29.70% - Shumen and 2.52 - Dobrich)

Statistical zone Statistical region District	Higher schools			Teaching staff				
	Total	Colleges	Universities and equivalent higher schools	Total	In colleges		In universities and equivalent higher schools	
					Total	Of which: under labour contract	Total	Of which: under labour contract
Total	**54**	**4**	**50**	**20 695**	**672**	**294**	**20 023**	**12 506**
Severoiztochen	**7**	**-**	**7**	**2 493**	**63**	**29**	**2 430**	**1 834**
Varna	6	-	6	1 917	25	16	1 892	1 487
Dobrich	-	-	-	38	38	13	-	-
Shumen	1	-	1	538	-	-	538	347

99. http://www.bgregio.eu/media/Programirane/2021-2027/3_SIA_BG_Part_3_Final.pdf
100. https://esc.bg/wp-content/uploads/2022/10/ESC_4_025_2022.pdf
101. https://www.regionalprofiles.bg/bg/news/economic-and-investment-profile-of-the-north-east-region/

Statistical zone Statistical region District	Students enrolled				Graduates			
	Total	At colleges	At universities and equivalent higher schools		Total	From colleges	From universities and equivalent higher schools	
		Professional bachelor's degree	Bachelor's degree	Master's degree		Professional bachelor's degree	Bachelor's degree	Master's degree
Total	**220 439**	**7 799**	**139 000**	**73 640**	**46 135**	**1 864**	**23 269**	**21 002**
Severoiztochen	**31 180**	**1 796**	**19 532**	**9 852**	**6 769**	**552**	**3 131**	**3 086**
Varna	23 608	1 118	15 140	7 350	4 587	381	2 423	1 783
Dobrich	678	678	-	-	171	171	-	-
Shumen	6 894	-	4 392	2 502	2 011	-	708	1 303

Table no. 1. : HIGHER SCHOOLS, TEACHING STAFF, STUDENTS ENROLLED AND GRADUATES BY STATISTICAL ZONE, STATISTICAL REGION AND DISTRICT IN 2021/2022 ACADEMIC YEAR, Source: NSI

Research universities

In 2020, revisions to the higher education law introduced the status of a research university. It is presented to higher education institutions that, through excellent scientific research and successful scientific research activities, significantly contribute to the development of significant public sectors. The number of scientific publications cited in international databases Scopus and/or Web of Science, the number of scientific monographs and book chapters visible in these databases, the number of patent applications filed by the graduate school, as well as the number of independent citations in Scopus and/or Web of Science, are all included in the "scientific results" indicator, by which the higher schools will be evaluated. The second evaluation indicator, "scientific capacity and reproduction of the academic staff," will be based on the number of scientists who have earned the scientific degree "Doctor of Sciences" and doctoral candidates.[102] With decision No. 539 of July 22, 2021 the Council of Ministers accepted the List of research universities for a four-year period.

The total number was 7 universities from which only one was from the BG33 region - Medical University "Prof. Dr. Paraskev Stoyanov" - Varna. With decision No. 839 October 27, 2022 for adoption of an updated List of Research Higher Schools 3 more were added but still there is only one located in BG 33 region. Research universities will receive additional targeted funding for the development of scientific activity. In the coming years, the main source of these funds will be the National Recovery and Resilience Plan under the "Scientific Research" Fund of the Ministry of Education and Science (MES) - almost BGN 240 million are foreseen to the research universities by the end of 2026. For this purpose, each of these universities must present a four-year strategic research and innovation development program.[103]

Universities in BG33:

Technical University, Varna provides education in Bachelor, Master and PhD degrees in the following professional fields: Communication and Computer Engineering, Electrical Engineering, Electronics and Automation, General Engineering, Machine Engineering, Plant Growing, Power Engineering, Social Activities, Transport, Navigation and Aviation and professional Bachelor degrees in Machine Engineering, Plant Growing,Transport, Navigation and Aviation fields.Total enrollment of over 7000 students.[104]

102. https://www.segabg.com/node/187932
103. https://web.mon.bg/bg/101062
104. https://fs.tu-varna.bg/specialties/

Nikola Vaptsarov Naval Academy, Varna provides education in Bachelor degrees in the fields of Navigation, Ship mechanical engineering, Ship electrical engineering **and Master degrees** in the fields of Information and communication technologies. Total enrollment of over 2500 students.

University of Economics – Varna provides education in Bachelor, Master and PhD degrees in professional fields: "Economics", "Administration and Management", "Tourism" and "Informatics and Computer Sciences". Total enrollment of over 7500 students.

The Medical University of Varna provides education in Bachelor degrees in the fields of Nursing, Midwifery, Health Care Management, Nursing Management, Kinesitherapy, Professional Bachelor degrees in Healthcare and Social Work, and Master degrees in Medicine, Dental Medicine, Pharmacy, Health Care Management , Nursing Management, Pharmaceutical Management, Health Information technology and Master's in Public Health Programme. Total enrollment of over 2000 students.

Varna Free University teaches over 10,000 students in more than 67 bachelor's and master's programs (ex. Cybersecurity, Software engineering and management, Data science and Digital marketing and web design programs) **and 29 PhD programs** (ex. of PhD in the field of Computing and computer science are Information Systems and Technologies, and Computing and Computer science programs).

Varna University of Management teaches Bachelor programs in the fields of Software systems and technologies, Hotel management, Business administration, Gastronomy and culinary arts, International business management, Hospitality and culinary arts, Food technology in the culinary arts, Pedagogy of education in hospitality and restaurant business, Pedagogy of education in economics and management, **Master programs** in the fields of business administration and International tourism and **PhD program** in the field of tourism. Total enrollment of over 800.

Shumen University: Under its faculty of technical sciences there are programs in "Management of security systems", "Communication and computer technology", "Geodesy" and "Engineering logistics". The university teaches Bachelor programs, Master programs and PhD programs and has an LLL program. It has several faculties: Faculty of Humanities, Faculty of Mathematics and Informatics - programs: Mathematics; Informatics and computer science;Economics;Pedagogy of training in ... (mathematics and informatics). he Faculty of Natural Sciences includes 5 departments: Plant Protection, Botany and Zoology, biology, Geography, Regional Development and Tourism, Physics and Astronomy, Chemistry. Total enrollment of over 6000 students.

Veliko Tarnovo National Military University: (Faculty in Shumen) provides programs for cadets and students in 3 fields of higher education: social, economic and legal sciences, technical sciences (ex. Automotive technology and transport logistics; Construction and special machines; Communication technique and technologies; Computer technologies for design; Computer systems and technology; Cyber security; Computer systems and cyber security; AI), security and defence and doctoral students in 5 accredited scientific specialties in the faculty - "Organization and Management of the Armed Forces", "Radiolocation and radionavigation", "Dynamics, ballistics and flight control of aircraft", "Communication networks and systems", "Application of the principles and methods of cybernetics in various fields of science" and 13 at the headquarter in Veliko Tarnovo in professional fields of Electrical engineering,

electronics and automation, Communication and computer engineering, Transport, shipping and aviation, General engineering, and others.

Innovative schools

The List of Innovative Schools for 2021/22 lists 510 schools from 137 municipalities in 28 regions of Bulgaria that have been given innovative status. New teaching techniques, the addition of creative components to training's structure or content, new or enhanced management practices, the training and educational environment, as well as newly created learning materials, curriculum, and programs are all covered by the proposed innovations. For the first time, 73 of them are classified as innovative. Innovations from earlier years persisted in 437.[105] For 2022/2023 the list added 32 schools and the number rises to 542 Innovative schools. In BG 33 there are 58 (Varna province: 28;Dobrich province: 12;Targovishte province: 10;Shumen province: 8) - 10.7% of the total number.

Great example of a secondary level education institution in BG33: Professional high school of computer modelling and computer systems with a STEM centre „Creative free space" established in Varna in 2020. The school is a state institution and it was created on the initiative of the Minister of Education and Science as a result of successful cooperation between the Technical University, Varna and the University of Economics, Varna. Specialties for the academic year 2022/2023 include: System programming, Artificial intelligence programming, Robots programming, E-commerce, Renewable energy sources, Electric power engineering. Specialties from previous years enrollment include:

Security equipment and security systems, Economic Informatics, Microprocessor technology, Machines and systems with digital program control, Industrial aesthetics and design.

Varna: the third-largest city in Bulgaria, is home to a number of institutions that provide professional education. There are high schools for electrical engineering (150 places), shipping and marine engineering (100 seats), forestry (130 places), construction and surveying (130 places), fashion and textiles (100 places), trade and economy (270 places), and food technology (100 seats). The majority of the outlying municipalities also provide vocational training, such as for ship fitters (25 seats), sales representatives (50 places), chefs (100 places), and farmers (100 places) (180 places). Along with secondary schools for languages and sciences, the area is home to numerous artistic schools. Along with the only naval school in the country - *Nikola Vaptsarov Naval Academy, there are four state institutions - Technical University of Varna, University of Economics – Varna, The Medical University of Varna , and two private universities, Varna Free University and Varna University of Management, and a Faculty of Shumen University*.[106] Varna province is among the provinces with the best performance in the field of education. In accordance with the recent national decline in higher education student enrollment, the district's enrollment is declining. Despite the decline the number is still much higher than average 50 per 1000 of the population compared to 32 per 1000 in the country in 2020.

Dobrich: A considerable variety of vocational schools are available in the Dobrich municipality. The most prevalent profile is tourism, which includes welders, electricians, locksmiths, (160 students) and other technical professions (300 students). The professional fields include veterinary medicine (100 students)

105. https://www.segabg.com/node/187932
106. https://www.regionalprofiles.bg/bg/ec/varna/

and economics and finance (110 students). Given the vital role that agriculture plays in the local economy, the agricultural school comparatively has a low enrollment (110). The periphery municipality lacks any vocational schools. A recognized language school, as well as ones with a focus on the natural and mathematical sciences, are located in the centre. The performance of the Dobrich District in the indicators measuring education is weak. The labour force's relatively low level of education in 2020 continues to be a difficulty for the labour market. The percentage of adults aged 25 to 64 with a higher education is 22.3% (compared to 29.2% nationally), and the percentage with only a primary or lower education is 25.6% (vs. 16.9% nationally). Branches of the Shumen University and the Varna Technical University and University of Management - Varna provide higher education.[107] Those who graduated from secondary education in 2020 in general education and vocational schools are respectively 482 and 375 students and the number enrolled in the "professional bachelor" degree of higher education for the academic 2020/2021 year is 656.[108]

Shumen: In the district, eight high schools and one auxiliary school offer professional education. A technical high school and a high school for agriculture are the only two vocational schools in the municipality of Veliki Preslav; the other six are in the municipality of Shumen. The training is for professionals in the fields of apparel, chemical and food technology, rural tourism, mechanical engineering (including automotive), and building and architecture. As in other regions of the country, the excessively large share (nearly 20%) of agriculture-related places in the enrollment plan is presented. In 2016, the number of students decreased for the tenth year in a row, in line with the general trend in the northern part of the country. With a modest decline to 27.1%, the proportion of adults aged 25 to 64 with only an elementary education is still higher than the national average (16.9%). Additionally, the proportion of higher education graduates rose to 24.6% (29.2% nationally). After 2006, interest in Shumen University drastically decreased. In a decade, the proportion of students fell from 45 to 38 per 1,000 people, but it is still higher than the national average (32 per 1,000). The Shumen University offers training in three main areas - humanities, natural sciences and mathematics and informatics. In 2004, the Faculty of Technical Sciences was opened, which prepares engineers in fields such as "Architecture, construction and geodesy" and "Communication and computer technology". Along with the Shumen University, a faculty of the Veliko Tarnovo National Military University and a faculty of the Medical University of Varna also perform on the territory of the district of Shumen.[109]

Targovishte: Nearly all of the professional education institutions in the district are located in Targovishte municipality. There is only one veterinary and agricultural professional school in Loznica, and according to the admissions schedule for 2016–17, there are spaces available for 25 veterinarians, 60 farmers, and 25 agricultural economists. In contrast, Targovishte provides a greater selection of courses, including 100 spots in a school of culinary and tourism, 130 in an economics and informatics vocational school, 80 in an agricultural school, 90 in a construction school, and 100 for mechanics and electricians. In Targovishte, there are two high schools with specific profiles: a sports high school, and a high school for foreign languages. Targovishte is among the districts with the lowest coverage of the education system. The share of the population aged 25–64 with primary and lower education has increased in recent years and in 2020 is the highest in the country - 38.3% (compared to 16.9% in the country). The share of graduates decreases to 15.8% (at 29.2% in the country). There are no higher education institutions and the majority of schools in the district are elementary schools.

107. https://www.regionalprofiles.bg/bg/ec/dobrich/
108. https://www.nsi.bg/tsb/wp-content/uploads/2021/05/Obrazovanie_Dobrich_2020.pdf
109. https://www.regionalprofiles.bg/bg/ec/shumen/

• Research & Innovation

Innovation index

Severoiztochen (Northeast) NUTS II region BG33 is an Emerging Innovator, according to the Regional Innovation Scoreboard.[110] The region is ranked in 78th place in the Regional Innovation Scoreboard (RIS). During 2014 -2021 the RIS index Severoiztochen (Northeast). NUTS II region BG33 has had the following development:

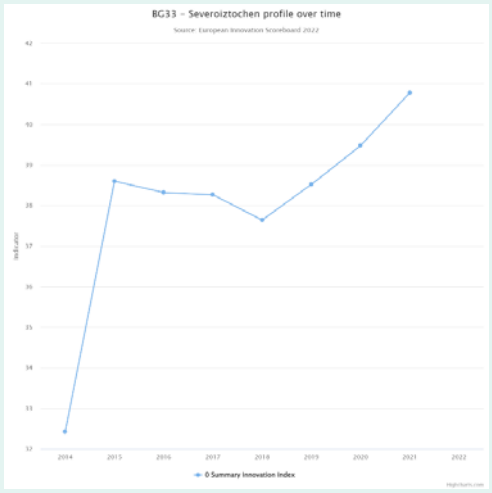
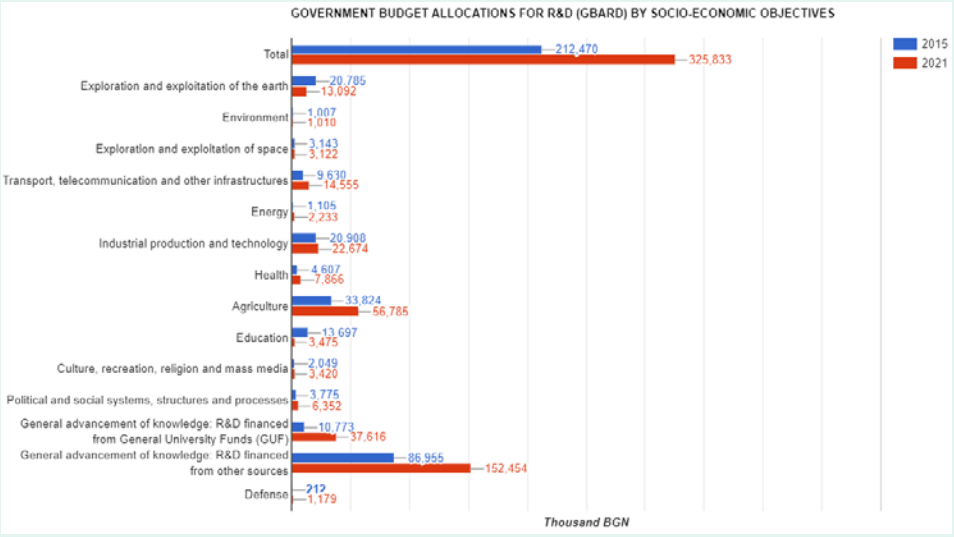


Figure no. 22. Evolution of the Innovation index of BG 33 region over time;
Source: Summary Innovation Index over time(base year 2014)

There is 8.358 points performance change between the years 2014 (32.4) and 2021 (40.8) and 1.306 points performance change between the years 2020 (39.473) and 2021. **Performance in terms of innovation has improved over time (8.4%)**. The services sector accounts for the largest portion of the gross added value produced. In 2019, every area increased in their sectoral share, with growth ranging from 1.04 to 1.07 times.

GOVERNMENT BUDGET ALLOCATIONS FOR R&D (GBARD) BY SOCIO-ECONOMIC OBJECTIVES[111]



110. https://data.europa.eu/doi/10.2873/674111
111. https://www.nsi.bg/en/content/2708/government-budget-allocations-rd-gbard-socio-economic-objectives

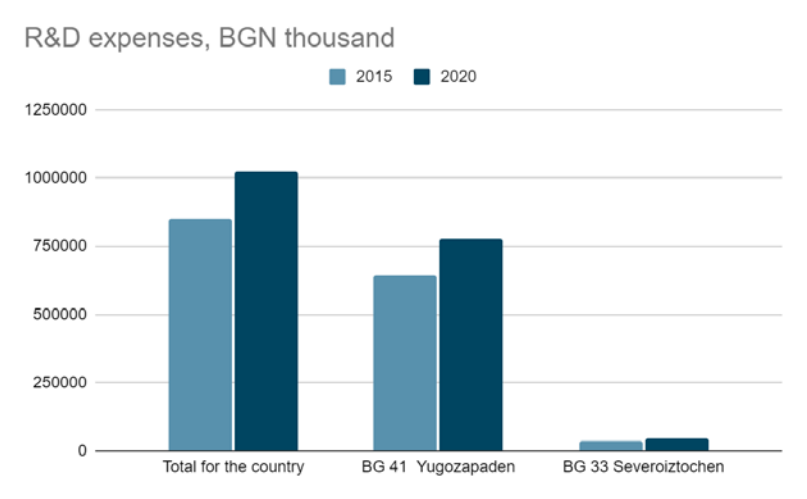
According to Eurostat data from 2009 to 2018, the country's average R&D spending was 0.49 percent of GDP, compared to 2.1% for the EU-28. In 2018, business enterprises spent 594.8 million BGN on R&D (60.6% of which came from SMEs), and there were 13.0 thousand R&D workers and researchers overall (of which 71.1% worked for SMEs).

According to NSI data: GBARD in 2021 with the highest level is in the field of General advancement of knowledge: R&D financed from other sources - 46.78% (slightly improvement of the % over time - in 2015 the allocations in the field were 40.92%) , followed by **Agriculture - 17.42%**. In comparison the government allocations in the agriculture field for 2015 were 15.91%. In 2021 for **General advancement of knowledge: R&D financed from GUF is 11.54%. Industrial production and technology - 6.95%** (in 2015 were allocated 9.84%). Transport, telecommunications and other infrastructures - 4.46%, Health - 2.41%, Education - 1.06%, , Exploration and exploitation of space - 0.95%, , Energy - 0.68%, Environment- 0.30%

TOTAL INTRAMURAL R&D EXPENDITURE (GERD) BY STATISTICAL REGIONS AND SECTORS – 2021[112]

	2021(Thousand BGN)				
Statistical areas	Total	Business enterprises	Government	Higher education	Non-profit institutions
Total for the country	1 074 004	707 194	291 274	69 282	6 254
Severoiztochen (BG 33)	48 188	20747	17 338	...	...

For 2020, R&D expenses in The South-West (Yugozapaden) region was 76% of those made in the country, followed by the South central region - 8.9%, and in the other regions the expenses were between 3.1-4.5%. 70% of all expenses were related to enterprises. 47% of those employed in R&D are in the production sphere, and 25% in public institutions.[113]



112. https://infostat.nsi.bg/infostat/pages/reports/query.jsf?x_2=671
113. https://esc.bg/wp-content/uploads/2022/10/ESC_4_025_2022.pdf

On a national level the business enterprise sector has a share of almost 66% of the four institutional sectors of R&D performance, the largest in 2021. It was followed by the government sector, in which research institutes and organisations formed 27.12 % of the total R&D expenditure. The spending on R&D by tertiary schools and university hospitals amounted to 6.4 % and respectively by the non-profit organisations - almost 0.6% of total R&D expenditure. In BG33 the R&D expenditures are equal to 4.48% of the total amount for the country. The enterprise sector has 1.93% of the total amount for the country and 43.05% at BG33 level, followed by the government sector with almost 36% at BG33 level and 1.61% of the total R&D expenditure at the country level.

BG 33: total GERD evolution 2015 - 2021;

BG:33 Business enterprises sector GERD evolution 2015 - 2021:

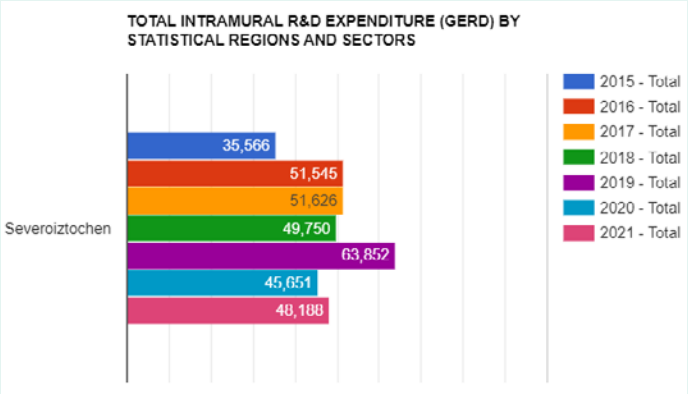


Fig. no 23. Source: https://infostat.nsi.bg/

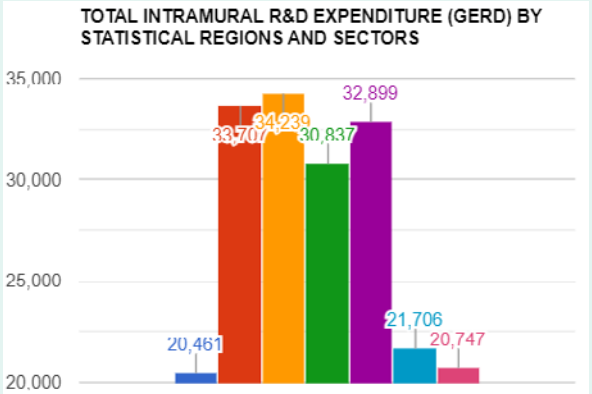


Fig. no 24. Source: https://infostat.nsi.bg/

The overall amount spent on research and development activity (R&D) in 2019 was 1 002.1 million BGN. R&D intensity (R&D expenditure as a percentage of GDP) increased from 0.76% in 2018 to 0.84% in 2019.[114]

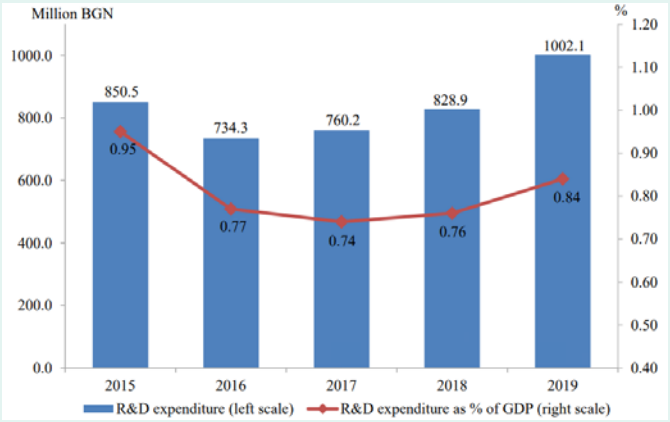


Figure no. 25. Source: NSI

For 2020, R&D expenses in The South-West region was 76% of those made in the country, followed by the South central region - 8.9%, and in the other regions the expenses were between 3.1-4.5%. 70% of all spendings was related to enterprises. 47% of those employed in R&D are in the production sphere, and 25% in public institutions.[115]

114. https://www.nsi.bg/sites/default/files/files/pressreleases/NIRD_2019_en_O2NGWYK.pdf
115. https://esc.bg/wp-content/uploads/2022/10/ESC_4_025_2022.pdf

Compared to businesses in EU28, the enterprises in Bulgaria devote much fewer resources to intangibles like R&D, software, data, IT, and website operations. According to the 2019-2020 PwC SMEs survey the creation and management of an internal R&D unit as well as the hiring of a dedicated R&D staff are the least common innovation-related activities in the country's enterprises. One in ten businesses (12.3%) have their own R&D department, and one in six SMEs have employees performing R&D work(17.5%).[116]

In 2018 the R&D intensity of operations was at least twice as high in the capital city region compared to the other regions of Bulgaria. The employment in high-tech industries accounted for 7.9% while knowledge-intensive services accounted for 39.6% higher than the national average.[117]

In 2021, the total **number of the personnel engaged in R&D** is 16057 of which 59.45% were researchers. 35.64% of the total number of the personnel engaged in R&D were engaged in Manufacturing activities, 30.13% in Professional, scientific and technical activities, and 23.51 in Information and communication activities. In the Government sector: 5 018 of which 2 877are females and in Higher education sector:8 509 of which 4 673 are females.

The distribution within the districts of GB33 region is the following:

BG 33 Region: Regional National statistics (Source: NSI)

Indicators: **Personnel engaged in scientific research and development (R&D) - number**	Years				
	2017	2018	2019	2020	2021
Varna District	2 378	2 564	2 601	2 383	2 386
Dobrich District	319	336		331	
Targovishte District	15	24		12	
Shumen District	676	749	769	735	722

Patents

According to the GII 2022 Patents by origin were equal to 293.0 in 2020, an increase of 33 % from the previous year and a ranking of 38 on the indicator. According to the Patent Office of the Republic of Bulgaria, the submitted patent requests and actions on the territory of the Republic of Bulgaria for the period 2020 - 2022 are in the fields of: Chemistry, pharmacy; Electrical engineering, electronics; Mechanical engineering.

The applications for inventions by type of applicants were separated into 3 groups: by BAS and Universities, by Legal entities and by Individuals, accumulating a total number of: 246 in 2020, 171 in 2021 and 171 in 2022.

Acting patents in total are: 14 104 in 2020, 14 545 in 2021, and 14 681 in 2022. Registered industrial designs in the period 2020-2022 are 302, and registered trademarks in the period 2020 - 2022 are 14,577.[118]

116. https://www.mi.government.bg/files/useruploads/files/sme/FINAL_DG_Reform_SME%20Strategy_Technical%20Report_2020-04-27.pdf
117. https://joint-research-centre.ec.europa.eu/system/files/2021-09/jrc126268.pdf
118. https://www.bpo.bg/uploaded/files/1102-Statistika-2020-2022.pdf

The low penetration level of intellectual property-related activities in Bulgarian SMEs is determined by their level of innovation:

- 6.7% of businesses have registered patents, 2.8% have registered patents in the EU, and 2.2% elsewhere
- 3.5% of SMEs have declared plans for registering such in 2020

In terms of registered trademarks, the numbers are higher: 20.1% of businesses report having registered trademarks in Bulgaria, 9.7% in the EU, and 5.0% elsewhere. 6.9% of SMEs reported having plans to register such.

The size of the business significantly affects intellectual property-related activity. Microbusinesses account for a very small percentage of registered patents (2.5% in Bulgaria, 1.6% in the EU, and 1.3% in other countries), compared to 22.6%, 11.3%, and 11.3%, respectively, for medium-sized businesses. Lack of funding is another obstacle to these operations; 75.7% of businesses in Bulgaria have presented this as a reason for not undertaking such activities.[119]

In BG 33 there are: 7 universities and a faculty of non BG33 university, of which 2 are private institutions; 3 Research Institutes within the premises of universities in the region; 2 National Institutes (BAS); 3 Regional centres (BAS). **Almost all of the universities in BG33 are performing research activities**, but only MU Varna is accredited as a "Research university".

At **Varna University of Management** all lecturers are actively engaged in the process of developing scientific research activities in the following areas:[120] "Organization of an annual International Scientific Research Conference", "Organisation and participation in youth events with the partaking of prominent scientist from the European academic community", "The release of the first Bulgarian scientific magazine "European Journal of Tourism Research" for scientific research in the field of tourism", "The release of Journal of Pedagogy and Educational Management", "The release of VUM Management Review", "The development of a Bulgarian-Romanian centre for sustainable development of tourism", "The development of software packages and educational handbooks".

Research Institute within the TU Varna has several objectives:[121]

– to establish cross-sectoral cooperation between different academic fields, based on in-depth and fundamental knowledge of each field;"

– to remove barriers between people inside and outside academia and to establish international contacts for research purposes;"

– to increase the flexibility and mobility of teachers and researchers at the university;"

– to achieve a greater connection between the university, business and society;"

– to create a living unified research environment that is evolving and will lead to tangible results."

The R&D&I activity at **Shumen university** is one of its general objectives and it explores fundamental and scientifically applied research through: innovative, artistic-creative, and other creative activities, as well

119. https://www.mi.government.bg/files/useruploads/files/sme/FINAL_DG_Reform_SME%20Strategy_Technical%20Report_2020-04-27.pdf
120. https://vum.bg/research/
121. https://fs.tu-varna.bg/research-institute/

as exploratory, analytical, predictive, expert, developmental, technological, normative, and implementing activities. The fundamental objective of the Shumen University's research and creative endeavors is the advancement of traditionally recognized intra-university priority areas as well as priority scientific fields on a national and international scale. Specific goals include the following: the production of novel scientific insights and technologically innovative products in several scientific disciplines and application of the results of scientific research and artistic-creative activity for the scientific-methodical provision of the training organised by the university in the areas of higher education within its structure. Other specific goals include the application of scientific findings and their distribution; raising the level of scientific expertise of the university's academic staff; encouraging creativity and fostering environments that will allow graduate and undergraduate students to develop their creative skills; Knowledge exchange on a national and international scale.

Areas of scientific research: pedagogical sciences, humanitarian sciences, health care and sports, agricultural sciences and veterinary medicine, social, economic and legal sciences, natural sciences, mathematics and informatics and technical sciences.[122]

Within the framework of the **University of Economics - Varna** is a service unit called **"Research and Doctoral Studies."** The main objective is to make sure that the academic staff's potential is deployed and used more effectively in order to carry out high-quality theoretical and scientifically-applied research that meets the needs of training and practical service. The presence of a highly qualified academic staff with enduring qualities, a doctoral student staff that is qualitatively formed, a favourable environment for implementation of an intense scientific life through scientific communication and scientific research activity. In 2015 the **Research Institute at the University of Economics - Varna** was founded by the Council of Ministers of the Republic of Bulgaria to conduct long-term research operations in the institution's key scientific fields. The institute consolidates the University of Economics - Varna's six current research centres into one building. Main priorities for the Research Institute at the University of Economics - Varna: Economic, social, and territorial cohesion; Green economy and sustainable development; Digital transformation and digitalization; Innovation and competitiveness; Crisis management.[123]

The R&D activities at the Naval Academy VVMU "N.Y. Vaptsarov" are generally related to development of scientific and methodological publications. The publishing centre is a structure of the Scientific Section of "Scientific works of VVMU, Marine Science Forum, Monographs, Publications of scientific conferences, Textbooks and teaching aids". Activities in scientific research and development assist in making VVMU "N.Y. Vaptsarov" a hub for naval sciences and marine technology. Naval armaments and equipment, shipping, marine technology, and maritime education and qualification of personnel for the Navy and the maritime industry are the school's main research focus areas. Perspective and scientifically applied research are the two main areas of scientific effort. In the areas of naval armaments and equipment, maritime science, and technology, theoretical studies, concepts, forecasts, reviews, and analyses are carried out. The scientific division is engaged in projects from the plans for the Ministry of Defense's research and development operations, for the requirements of marine and water transportation, and for the Military Academy of Medical Sciences. The university cooperates at regional, national, and international levels with institutes and executive units. Cooperation agreements between VVMU and the Institute of Hydro- and Aerodynamics, the Institute of Oceanology, industries affiliated with the Republic

122. https://www.shu.bg/nid/
123. https://www.ue-varna.bg/bg/p/7809/za-nas/nauchnoizsledovatelski-institut

of Bulgaria's military-industrial complex, etc.In organisations like the National Oceanographic Commission at UNESCO, the High-Tech Business Incubator in Varna, and others, VVMU takes part in the founding of scientific alliances and the development of cooperative prospective research programs.[124] The university has a planetarium as part of its infrastructure for the need of education in the fields of Astro and Marine Navigation.[125] Other important educational facilities include 35 laboratories and 11 simulators, which allow training to be conducted in similar conditions as in reality.[126]

Medical University of Varna

Innovation Strategy of MU-Varna 2021-2025 [127]

"The strategy is developed in accordance with the strategic goals of European research space"

Priority scientific directions of the MU Strategy:

> **Food and nutrition**; Expected results: development and production model of nutritional supplements in a study workshop of the Faculty of Pharmacy. Creation of a state-of-the-art chromatographic laboratory analysis.
>
> **Regenerative medicine and implantology**; Expected results: development of tissue cultures in a type for direct transplantation and partial replacement of damaged structures of the human body and creation of a tissue bank – with a clinical and research department.
>
> **Neurosciences and diseases of the central nervous system**; Expected results: development of a model for diagnosis, prediction of diseases and outcome and neurodegeneration and its application as a therapy of last resort.
>
> **Oncology and rare diseases**: Expected results: establishment of a modern genetics laboratory. Mastering the technique of cyber-surgery in oncological diseases.
>
> **Prevention, management of diseases and health systems**; Expected results: development and model of electronic files, registers (hospital and population) and models for telemonitoring, storage and transfer of medical information; building a centre for evaluating the functioning of the health system.

Specific goals: Innovation and education, Innovation and R&D, Innovation and Healthcare"

Research Institute **at the Medical University of Varna** (RIMU-Varna) was founded in 2016, by the Council of Ministers of the Republic of Bulgaria. Foundational, clinical, and translational research are mostly conducted at RIMU-Varna. According to national scientific priorities in the domains of medicine, dental medicine, pharmacy, healthcare, public health, and other multidisciplinary areas, this research is conducted in the areas that are a priority for the Medical University of Varna. RIMU-Varna supports the use and dissemination of research findings with the purpose of enhancing human health and medical treatment. The Medical University of Varna is developing a reputation as a research institution of

124. http://www.naval-acad.bg/research
125. http://www.naval-acad.bg/training-facilities/planetarium
126. http://www.naval-acad.bg/training-facilities
127. https://www.mu-varna.bg/BG/ACRO/Documents/%D0%A1%D1%82%D1%80%D0%B0%D1%82%D0%B5%D0%B3%D0%B8%D1%8F%20%D0%B7%D0%B0%20%D0%B8%D0%BD%D0%BE%D0%B2%D0%B0%D1%86%D0%B8%D0%B8%20%D0%BD%D0%B0%20%D0%9C%D0%A3-%D0%92%D0%B0%D1%80%D0%BD%D0%B0%202021-2025.pdf

significant national and international stature thanks to the notable scientific activities of RIMU-Varna. The six departments of the RI-MUV correspond to the MUV's primary scientific interests (2021-2025)[128]

Institute of Oceanology (IO) **(BAS) - founded in 1973 in Varna** by the Council of Ministers. The Institute of Oceanology conducts research in the following areas: "physics, chemistry, biology and ecology of the sea; geology, geomorphology and archaeology of the seabed and the coastal zone; coastal zone hydrodynamics and lythodynamics; marine climatology, hydrology and hydrometeorology;operational oceanography, oceanographic data and information management".[129]

National Institute of Meteorology and Hydrology (Varna) - scientific research institute – an independent legal entity, with a budget within the budget of the Ministry of Environment and Water. Engaged in observations and research in the fields of meteorology, hydrology and water problems.

Bulgarian Ship Hydrodynamics Centre (BSHC) , (BAS) - established in 1976 in Varna with the support of the International Maritime Organization (IMO) and the United Nations Development Program (UNDP) as a centre for scientific experimentation and study in the field of hydrodynamics ships, floating objects, and marine-based facilities.The BAS General Assembly, the BSHC has been further reorganized as a detached research unit within the frameworks of the Institute of Metal Science, Equipment, and Technologies "Acad. A. Balevski" at BAS since 2010. The BSHC conducts a broad range of basic and applied research in the areas of ocean engineering, sea and river crises and catastrophes, marine ecology and coastal protection, facilities for fisheries and aquaculture, renewable energy sources, national security, and defense.[130]

- Public authorities - innovation and digitalization

History[131]

The Unified System for Civil Registration and Administrative Services of the Population (ESGRAON), which was founded in 1977 by the Council of Ministers of the Republic of Bulgaria, is where the phrase "Bulgarian electronic government" first appeared, based on the Scandinavian model, gathers and retains data about citizens in a variety of categories. Important principles like "one-stop shop" and "single collection and multiple use" of data, including personal data, "in order to provide fast, accessible, cheap and high-quality administrative and legal services to citizens" were established in 1985. Private business was not legalised at that time. Political changes in 1989 led to the creation of a new administrative and legal system. Numerous electronic services were stopped. As a result of the globalisation of information and communication technology through the internet and the negotiations for Bulgaria's entrance to the European Union during the 1990s, the present reform process toward e-governance started. The National Policy for the Information Society was adopted in 1999, making Bulgaria one of the first nations in Europe to have such a strategy. Since 2001 the Republic of Bulgaria has been working on the establishment of e-Governance. The **Information and Communication Coordination Center** - developing and implementing e-governance technologies. The Center was crucial in coordinating the adoption of the EU's e-Europe and e-Government guidelines until 2008.

128. https://www.mu-varna.bg/EN/AboutUs/Pages/Research-Institute.aspx
129. https://www.bas.bg/?page_id=24441&lang=en
130. https://www.marinecluster.com/en/members-more/bulgarian-ship-hydrodynamics-centre-bshc-varna-at-bulgarian-academy-of-sciences
131. https://www.freiheit.org/sites/default/files/2021-01/re-designing-public-services-for-the-21st-century_bg_0.pdf

Mid Term trends and significant events 2011 - 2016 Without any significant publicity or education campaigns, 50% of Bulgarians chose online registration for the regular census in 2011; Development of the Digital National Alliance (DNA), created in 2014; 70% of voters in a 2015 referendum on electronic voting, which had a comparatively large voting turnout, approved of it; Creation of a draft of the National program "Digital Bulgaria 2015"

2016 - The year for the "Electronic Governance" - adoption of the new Law on e-Government: The institutional framework established in 2016 is distinguished by two key elements: the establishment of a Unified System Operator, who will coordinate the integration and maintenance of new and existing e-solutions for the administration, and the creation of the State Agency "Electronic Government," (The existing infrastructure for e-identity is primarily associated with online banking).

Obstacles and weaknesses: Public distrust due to the absence in the **Law on e-Government** of any regulation for the citizens' control over their data, for the registers built and stored by public institutions and data flows. Another reason for distrust is that it was first adopted in 2007 and reshaped and re-adopted 5 times only until 2016; Parties in the parliament were not looking in one direction and at first when adopting the period for implementation of the e-government was stated to be several months and later extended to 4 years period. Another prerequisite for the unpleasant citizens' situation is the unstable situation in the country's governance - in that period there were elections each year and this is a continuing event (7 elections in the country for the period 2017 - 2022).

Available electronic services: e-financial services (online banking); e-business services (e-commerce)

e-administrative services:

- In the 2011 population census, for the first time the National Statistical Institute offered online registration; Most of the municipalities offer some form or aspect of electronic services; A number of universities, including private ones, provide distance learning and interactive online courses.

Current Situation: Due to its poor performance in most indicators, according to DESI, Bulgaria faces significant challenges in digitising its public services. According to the European Commission's Digital Economy and Society Index (DESI) for 2022, Bulgaria is ranked 26th out of the 27 EU members. Over the previous five years, Bulgaria's DESI score increased at an average annual rate of 9%:

- *Human capital* - on digital skills the country scores 32.6, 13.1 lower than the EU average. Bulgaria underperforms the EU average in terms of the percentage of ICT professionals in the labour force (3.5% against 4.5%).
- *Connectivity: Bulgaria performs exceptionally well in terms of Fibre to the Premises coverage* (85% of households compared to 50% in the EU) and has affordable costs, although both fixed and mobile broadband take-up is low (just 25% of the available 5G spectrum has been allocated, the EU average is 56%).
- *Integration of digital technology*: SMEs continue to adopt digital technology at a rate that is approximately half of the EU average. Big data, the cloud, and AI are only used by 6%, 10%, and 3%, respectively, of Bulgarian businesses.
- *Digital public services*: Only 34% of internet users in the country (compared to 65% in the EU) communicate with the government online and the country is ranking 25th in the EU in this indicator. In order to contribute to the 2030 Digital Decade aim of all major public services being supplied entirely online the country should improve in terms of the provision of digital public services for citizens (accumulating a score of 59 in 2022 - 16 lower than the EU average - 75). Bulgaria has already

started the reform of the National Registry and laid out a plan to advance digital transformation in order to meet this objective.

- The country receives a score of 58 out of 100 for the amount of information that is pre-filled in online forms for public services, which is 6 points lower than the EU average.

- With A score of 76 for digital public services offered to enterprises, Bulgaria also performs less than average in the EU.

- The use of open data is 3% lowen than the average in the EU.

Data from the UN e-Government Development Index (EGDI) report for 2020 show that the country is 44th out of 193 in terms of e-Government Development Index, and have officially joined the very high category of e-governance development, in the e-Participation Index, there is a rising in the ranking by as many as 12 positions and from the 35th place to the 23rd place among 193 countries. In 2022 there are decreases in the rankings: + 8 and the country is 52nd in in terms of e-Government Development Index and + 6 in the e-Participation Index ranking it on 29th place.[132]

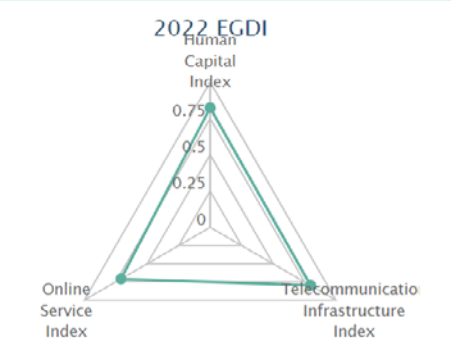


Fig. no. 26. Source: https://publicadministration.un.org/egovkb/en-us/Data/Country-Information/id/26-Bulgaria/dataYear/2022

Under the funding for the **National Recovery and Resilience Plan** the overall budget allocated for the digital transition is EUR 1.6 billion (25.8% of the total funding for the plan). Several components include necessary reforms and investments, with a special emphasis on digital connection (under pillar 3 - Connected Bulgaria) and the digitalization of the public sector (pillar 4 - Fair Bulgaria). Despite the long history of inclusion of e-government in the country , Government agencies must take action to update the infrastructure so that citizens may connect with public platforms easily from both a communication and a form-filling and form-uploading perspective.

According to reporting data, 398 administrations (67.80%) offer electronic administrative services in 2021 accessible through:

- The single portal for access to electronic administrative services (www.egov.bg) – 345 administrations; information on 1,329 electronic services is published on the portal, as a result of the Unified model for application, payment, and provision of electronic services, 860 of them are implemented through centralised application, more than 1,100 electronic forms have been created for their application (service forms and supporting documentation).
- An administration-specific portal - 116;
- a portal created to implement the Unified model for application, payment, and provision of electronic services - 160;

132. https://publicadministration.un.org/egovkb/en-us/Data/Country-Information/id/26-Bulgaria/dataYear/2022

- Federated/virtual portal to egov.bg – 29;
- A portal that has been developed for a group of administrations – 28.

For access to electronic administrative services, 534 administrations use the State e-Government Agency portals, and 144 of the administrations use other portals, specifically developed for them or for a group of administrations. 191 administrations do not provide services electronically through an electronic portal or through electronic registered mail. During 2021, 165 administrations kept electronic or paper registers pertaining to the delivery of electronic services to individuals and organisations, while 232 agencies disapproved. There are 266 administrations providing electronic services to residents and enterprises that are not administrative services and are not required to be listed in the Register of Services. In addition to administrative bodies to the Unified application model, payment and provision - by the end of 2021, 480 administrations have been added , of which 33 are central, 300 municipal and regional, 27 regional and 120 specialised territorial administrations.[133]

The e-governance development strategy 2014-2020 in the Republic of Bulgaria

Regional and local level: Several eGovernment initiatives of local interest are being implemented by regions and municipalities. They carry out operations associated with the supply of electronic services via horizontal e-government systems. These consist of eForms for requesting eServices, eDelivery, and ePayment. The administrations have the opportunity to join the single model for requesting, paying for and providing electronic administrative services, which is now being managed by the Ministry of eGovernment. Municipalities, which are Bulgaria's local self-government entities, coordinate local eGovernment activities. The organisation that stands for local governments on a national level in the Republic of Bulgaria is the National Association of Municipalities.[134]

Under the Recovery and Resilience plan it is intended to further develop the Agricultural fund system for electronic services "Electronic Agriculture" which will allow all public bodies and systems for managing support and control over the volumes, movement of resources and raw materials in Bulgarian agriculture to be digitised.

E-municipality Varna is a great example for electronic services on municipal level. It is a service provided by the municipality for the sectors:

- Electronic services of Varna Municipality through the portal
- Electronic service and information provision for state institutions and municipalities
- Public records
- Checkout, payment and information about local taxes and fees
- Electronic submission of documents under the tourism law
- Nursery, Preschools, Kindergartens and First Grade education admissions
- Public procurement - Buyer profile
- Secure electronic delivery system

133. https://iisda.government.bg/annual_report/564
134. https://joinup.ec.europa.eu/collection/nifo-national-interoperability-framework-observatory/governance-bulgaria

Under the official website ot Varna Municipality there are 11 websites, from which examples are:

- VISIT.VARNA.BG
- LIVE.VARNA.BG
- VARNANAMLADITE.COM

The example of VARNANAMLADITE.COM:

A platform that presents information under the Directorate "Education and Youth Activities" of the Municipality of Varna and the main source regarding national, regional funds and initiatives, the Varna volunteering service and other important information for the use of NGOs and youth organisations and representatives in the region.

The Geospatial Information System

The Municipality of Varna intends to implement a **centralised and integrated Geospatial Information System**: The Geospatial Information System will be consolidated and integrated by the Municipality of Varna. The municipal budget for 2022 has almost BGN 4.2 million set aside for this purpose. The Planning program was approved by the "Architecture and Town Planning" Committee within the budget for 2022-2024. All data will be combined into a single database under the new system, which will significantly enhance services for both people and companies. The administration will be able to offer computerised administrative services through it in addition to having an informative site for public registries. Another highlight of the program is the creation of a green cadastre of tree vegetation and green areas in the central part of Varna. BGN 180,000 is planned for it in the budget.

- Conclusions - SWOT Analysis

A supportive innovation environment is currently developing in the country. To encourage R&D&I, Bulgaria has steadily created a variety of laws and regulations.The Government prioritising high-tech industrial and technological advancement through numerous policies and strategies for scientific research and ICT designated high-tech industries as preferential, which resulted in cheaper investment capital requirements and additional benefits to businesses in the areas of social security, taxes, and vocational training; in NRRP slightly more than the half of the funds support climate objectives and almost ⅓ support digital objectives, resulting in good environment with the potential to deliver breakthrough growth for businesses and innovation: EIS 2022 country profile is presenting performance increases in Research systems, Innovatos, Linkages, Employment impacts, and Sales impacts, and strong performance increases since 2015 in: product innovators (SMEs), innovative SMEs collaborating with others, knowledge-intensive services exports; Initiated innovation in sectoral policies: green economy, digital economy, space policy and defense; These policies have set the framework for an innovation environment, led the creation of public R&D and innovation entities, and given incentives for R&D and innovation activity. The results of the analysis show a constant increase in Gross domestic product (GDP) in the country. The presence of innovation strategies, policies and the establishment of a Ministry of Innovation and Growth in 2021 in order to facilitate them, together supporting the so-called innovative system, are the provisions to further

develop and implement a competitive economy (national, regional, and local). Among the essential components of the system are:

Business representatives - Start-up businesses, SMEs, large corporations, and high-tech businesses (Startups, small businesses, and medium-sized enterprises struggle to use their innovative potential because they lack the resources essential to conduct research and development activities. The large corporations and high-tech businesses have crucial positions to implement creative ideas. In order to do R&D, develop innovative and cutting-edge products and procedures, have an impact on the market, improve cash flow, and take leadership positions, they have the requisite knowledge, funds, and qualified personnel. In 2020 R&D spendings are the most in the South - West region (76%) and in BG33 approximately 3-4%. R&D intensity is slightly increasing over time. With a share of 67.2% of the overall R&D expenditure in 2019, the business enterprise sector had the biggest institutional R&D performance.

Numerous research and development centers - developed and many in process of idea or development (They create and disseminate new knowledge but exclude government research as well as R&D departments of businesses and research facilities for higher education. They stand for advances in science, cutting-edge technologies, and innovations.)

More than 50 University units - 10 among them are so called "Research Universities" (providing the general public with various learning opportunities, promoting lifelong learning, and playing a crucial part in the transmission of information through research and its practical, applied usage, which is embodied in innovation)

Hundreds of intermediary organisations (business incubators, consultancy organisations, branch associations, trade associations, regional development agencies, technology parks, and innovation centers, etc.),

Increasing availability of financing institutions (venture capital companies, business angels networks, foreign direct investments, national and international funding programs).

STRENGTHS

NER's economic situation is considered to be favourable in comparison to the other northern regions in the country, the unemployment rate is lower than in the EU; Between 2014 - 2020 the total GDP per capita increased by 34,23 %; GVA increased by 30.15%;

Continuous increase in the Agriculture, and in the industry sectors, highest increase in 2020 was in the services sector. In 2021 the services sector was 65% of the total regional GVA. In the areas of public services, business, financial services, insurance, transportation and tourism the service industry is strongly developed in the region.

- A growing sector of active SMEs.

- ICT usability is increasing at the fastest rates reaching (higher than the national average).

- Strategic transport-geographical area (transport infrastructure – relatively high share of motorways from the national network, rail, air transport, and water transport roads along the Danube and the Black Sea- prerequisite for market expansion and cooperation on local/regional/national and international level)

- Developed structure-determining industries – chemical industry, transport engineering, products from mineral raw materials, food industry;

- Availability of scientific institutes and higher education institutions and scientific potential for the development of high-tech industries;

- Availability of raw material and energy sources with potential for development by attracting foreign investments;

- Well-developed engineering infrastructure

- Trend towards growth in the industrial sector

- Presence of enterprises with expertise and well established relations on local, national markets.

- Relatively high share of foreign investments - the presence of private and foreign ownership of enterprises supports the processes of quality production of products and services and increasing productivity in certain services.

- Well developed service sector

- High growth rate of the knowledge-intensive sectors of the economy

- **6 Universities** located in BG33, more than the half of the universities are producing significant scientific output,2 Research Institutes within the premises of universities in the region; **307 Schools** (primary, lower and upper secondary);

- Availability of **qualified researchers in the field of natural and mathematical sciences, computer science technology and engineering sciences and medicine** due to high performance of R&D in universities, 2 National Institutes (BAS) and 3 regional academic centres under its jurisdiction on the theritory of BG 33, and other organisations/enterprises engaged with R&D processes.

- A growing sector of active SMEs; Availability of potential for development of high-tech productions

- Emergence of regional clusters and branch organisations; Presence of a network of NGOs

- Active implementation of the processes to meet the requirements and criteria of the EU (environmental, safety requirements, implementation of quality management systems and others.);

- **Varna province is the economic Hub and R&D&I hub of the North-East Region**; The overall economic development and the social development of Varna province are very good:The biggest province (51.3 % of the total population of BG33 is concentrated in the province). More than half of the GDP in the north region of the country is accumulated in Varna Province;

The ratio of non-financial firms in the Varna province in 2019 reached 71 per 1000 people, which is greater than the national average; it accounts for approximately 60 % of the GVA in the region in 2020. **Varna province is the only province in the region, with employment higher than the average in the country**-employment is continuously increasing and unemployment is decreasing to 2.2%, remaining one of the lowest in the country in 2020.

Varna province continues to attract citizens (2nd in the country after the capital), with a high value of mechanical growth – 6% and **the only district in the north-eastern area to succeed in attracting more residents** over the past ten years. The district is among the districts with the highest share of the urban population.

Trends in Non financial enterprises: **Increase in Turnover, Increase in Produced output, Increase in Added value by factor costs**; personnel engaged with (R&D) is increasing; **Increase in relative share of households with internet access**;

The “maritime capital” of Bulgaria has a top-notch educational system, is known for drawing talent, and has effectively reoriented its economy toward greater added value by using digital skills and research and development initiatives in the shipbuilding, informatics, and medical fields.

Varna province leads the North-Eastern region in terms of wages. A good environment for the development of startups and digital development;

- 015-2021: Birth rate of enterprises is higher than the death rate of enterprises for that period. Growth in the number of Micro and SMEs. Strong NGO sector; In the region a higher number of companies are present in the IT

- ICT, Food industry, Textile, Marine, Furniture and mechanical engineering sectors.

- **In terms of power generated from renewable energy sources, NER is in the first place. Another indicator ranking the region in the 1st place in the country is that it has enduring traditions in agriculture and cereals occupy more than 60% of the region's arable land** (in almost all municipalities of the region and highly developed crop production, exploited opportunities of the national agricultural fund).

- **Advancement of e-government and the provision of one-stop shop services is growing and are higher than the national average in 2 of the provinces in BG33**

- **The share of employment is above average for BG and above average for EU in: Agriculture and Mining**, The share of employment is above average for BG in Services, Utilities and Construction.

WEAKNESSES

National Development Strategy of scientific research in the Republic of Bulgaria 2012-2020 results were unsatisfactory as commitments made to the EU related to the national participation in the construction of the European Research Area were not fulfilled and official data showed decline in the field of scientific research due to lack of state policy support and appropriate reforms and long-term priorities in the field, outdated educational infrastructure and deteriorated quality of the educational system, low quality and low level of intensity of research and innovation activity.

- Lack of a good connection between higher education and research and development activities and businesses.

- Regional Innovation Strategies under the EC's "Innovating Regions in Europe" generally have not been implemented resulting in: lack of connections between business, policies, education, and research, as well as constrained innovation politics on regional level, systematic confidence in Bulgaria's R&D system has been eroded over the past years, it has diminished the trust that firms and entrepreneurs have in Bulgaria's research system to give them access to knowledge and technology that will help them grow and expand their companies.

- Clear imbalance of the proportion of funds for R&D in the separate planning areas (strong geographical concentration of the research activities in the capital area), only 1 "Research University" in BG33, 2 BAS centres and not well determined and established R&D infrastructure. Intra-regional differences and imbalance in the living environment

- Varna province, especially when observing the economic centre

- Varna city and Shumen and Targovishte (significant demographic losses - migration to the economic centre and to external migration - national/international).

- In 2018 BG33 Severoiztochen was among NUTS level 2 regions with the highest enterprise death rates. A high percentage of decrease in LEs was seen in BG 33 , with drop rates of -18.0% in 2018.

- In 2020 the labour market in BG 33 provinces trends are different for each province - ex. the lowest economic activity is in Targovishte province, and the employment rate decreases even under the country average - the highest in Varna.

- The unemployment rate is among the highest in the country except for Varna city
- In 2021 the unemployment rate in the Severoiztochen Region (6.1%) scored lower than in the EU (7.1%) but higher than the national level.
- BG33 is also facing challenges regarding the labour market in the region related to the ageing population and average low educational level of the workforce. Again Targovishte province has the lowest indicators in terms of GDP.
- The use of European funds remains relatively low in all provinces. Employment in high-tech sectors is low. ;
- Low e-government performance and the low level of provision of one-stop shop services led to low level of transparency in 2 provinces in BG33.
- Decrease in spending for (R&D) on annual basis - High level of population decrease, especially in the periphery of the region
- Ranking of SIR among underdeveloped European regions, highly dependent on new challenges and threats
- globalisation, climate change, demographic decline, energy dependence;
- The service sector is dominant, which places the local economy in the position of strong dependence on market fluctuations;
- Obsolete production facilities
- Fragmented low-efficiency agriculture
- Insufficiently developed public-private partnerships- Insufficient absorption capacity of funds under pre-accession and structural funds
- Slow penetration of the knowledge economy

OPPORTUNITIES

More than **50 reforms and 50 projects** will be implemented only under NRRP to support the innovation policy foundations from the previous reporting period and implement the new policies and strategies on national/regional level (in **NRRP** slightly more than the half of the funds support climate objectives and almost ⅓ support digital objectives);

- The achievement of the ultimate goal **"Innovative Bulgaria"** with national and regional economy based on knowledge and smart growth through measures in the field of education, digital skills, science, innovation, technology, and the interrelationships between them by implementing projects under competitiveness funds of the EU and the NRRP and other regional and national programs;
- BG 33 to take advantage of: partnerships amongst the research and innovation performing and dependent/demanding organisations – scientific organisations, universities and businesses, their confederations and civil society organisations, partnerships amongst institutions developing and implementing (sectorial or generic) policies in science and innovation, basically aimed at inter-ministerial coordination; Partnerships amongst institutions developing and implementing (sectorial or generic) policies in science and innovations, and research and innovation performing and dependent/demanding organisation and increase public trust in the regional R&D system under the **"Better Science for a Better Bulgaria 2025"**

- By following the regional strategic priorities: to increase the region's dynamism on a global scale through the growth of intelligent industries with high growth potential — increasing specialisation in goods and industries with high levels of technological and R&D intensity; business and industrial development infrastructure; support for a marine economy; activation of rural areas through sustainable agriculture; diversification of the region's tourist product;

- Supportive and developed environment with the potential to deliver breakthrough growth for businesses and innovation: EIS 2022 country profile is presenting performance increases in Research systems, Innovatos, Linkages, Employment impacts, and Sales impacts, and strong performance increases since 2015 in: product innovators (SMEs), innovative SMEs collaborating with others, knowledge-intensive services exports, which will reflect and on regional level.

- The presence of a large city with significance on European level and presented as economic hub in the country - Varna: Further expand the city importance on national and international level through cooperation and investments ; Increasing the role of Varna in the network of European cities and as the second urban centre of the country with high economic, transport-commercial, scientific, educational and cultural importance - the "sea capital"; Stimulating the development of social partnership and activating public dialogue for participatory budgeting;

- Good energy security and availability of conditions for the use of RES;

- Strong potential of Varna in the field of medicine and biotechnology,

- The Government designated high-tech industries as preferential, which resulted in cheaper investment capital requirements and additional benefits to businesses in the areas of social security, taxes, and vocational training - new investments Improving the efficiency of public spending and ensuring redistribution of public spending on activities increasing the growth potential of the economy

- Construction of modern scientific research infrastructure, wider introduction of program project financing

- Attracting foreign direct investment in knowledge-intensive sectors of the economy

- Specialisation in high-tech sectors using a highly skilled workforce

- Utilisation of the country's renewable energy production potential

- Establishment of the region as a producer of organic agricultural products -

- Improving the connections of higher education and research and development activities with business activities in the area;

- Improvement of regional and local infrastructure - development of transnational infrastructure networks, provision of access to European infrastructure networks, construction of a coastal transport corridor;

- Development of new energy sources with high energy potential for the development of the national economy;

- Using the potential for the development of technological zones, including in partnership with local universities to support the transformation of the local economy; Digitization of productions and use of modern ICT;

- Transition to a circular economy, reduction of resource and energy dependence and reduction and utilisation of waste. Cross-border cooperation with Romania - Improvement of the investment climate in Bulgaria.

THREATS

-Shared institutional responsibility for implementation of policies and strategies may result in the limited possibility of their implementation;

- Unsatisfactory performance over the new reporting period to further cause negative effect to the regional development , leading to: unfavourable demographic trends, insufficient specialised staff and business infrastructures.

- Decrease or lack of specialists for the labour market

- Occurrence of a shortage of qualified teaching, scientific and medical personnel due to weak attractiveness of these professions in the country

- Deepening of unfavorable demographic trends

- Difficult realization in the labor market of those leaving the education system due to its low Quality

- Further deepening of differences in welfare and development between the center (the coastal area, especially Varna) and the periphery (rural, remote areas)

- Emigration of young people from the area - Focus and Investment only in the regional city and neglect the needs of small municipalities

- Global economic/energy crisis

- Environmental crisis

- Transboundary pollution along the Danube and Black Sea

- Environmental pollution (air,waters, soils and water area) in the industrial and residential agglomeration “Varna-Devnia”

- Challenges caused by climate change

- Macroeconomic and political destabilization in Europe or the Balkans

- Failure to compete in business terms with other the EU innovation hubs

- Underdeveloped public-private partnerships

- Ignorance by manufacturers of EU production and trade standards

- Chronic shortage of financial means for completion and maintenance of the existing infrastructure

- Challenges to the sustainability of public finances in relation to the aging of population,

- Imposition of sanctions by the EU in case of non-fulfilment of commitments in the field of environment