



INNOVATION ECOSYSTEMS IN BLACK SEA COUNTRIES

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INTRODUCTION

An innovation ecosystem includes economic agents and relationships, as well as non-economic elements such as institutions, technology, and social interactions. All of these parts jointly shape the innovation landscape within a country, which in turn affects various aspects such as job creation and global competitiveness.¹ Ultimately, a well-developed innovation ecosystem is a crucial ingredient in the fueling of economic growth and societal advancement.

In an attempt to keep pace with advancements in technology and globalization more broadly, Black Sea countries have been intensifying their efforts to foster and cultivate their own innovation ecosystems. Amid rapid technological advancements and the widespread development of AI (and, specifically, the democratization of generative AI²), coupled with the fraught geopolitical situation in the region, largely stemming from Russia's ongoing war on Ukraine, it is imperative to understand the nuances of the innovation ecosystems of Black Sea countries. Moreover, the COVID-19 pandemic further highlighted the critical need for stronger research and development (R&D), innovation, and technological readiness. By identifying the similarities and differences among the Black Sea countries in this regard, this publication sets out to compare their performance in a global context and within the region, thereby offering a comprehensive assessment of their innovation capabilities. Accordingly, it discusses and analyzes the positions held by Black Sea countries in various international rankings, indicators, and indices assessing their innovation ecosystems. This analysis provides insights into the performance of these states not only in terms of innovation but also with respect to the elements shaping the innovation landscape, such as market sophistication, institutions, and infrastructure.

The publication begins with an analysis of the selected countries' rankings in the Global Innovation Index (GII) and the European Innovation Scoreboard (EIS) both of which assess the status of nations' innovation landscapes, identifying strengths and weaknesses therein. Meanwhile, by committing some attention to R&D expenditure, this document captures how countries allocate resources to this area relative to their economic output, thereby providing insights into the extent of their devotion to promoting innovation. Moreover, it delivers an overview of the startup ecosystem in each country, with reference to the Global Startup Ecosystem Index, while also covering startup-supporting programs/initiatives and startup migration to foreign countries. In addition, it broadly examines the World Intellectual Property Indicators (WIPI) which analyze a country's situation concerning patents, research organizations, and innovative institutions.

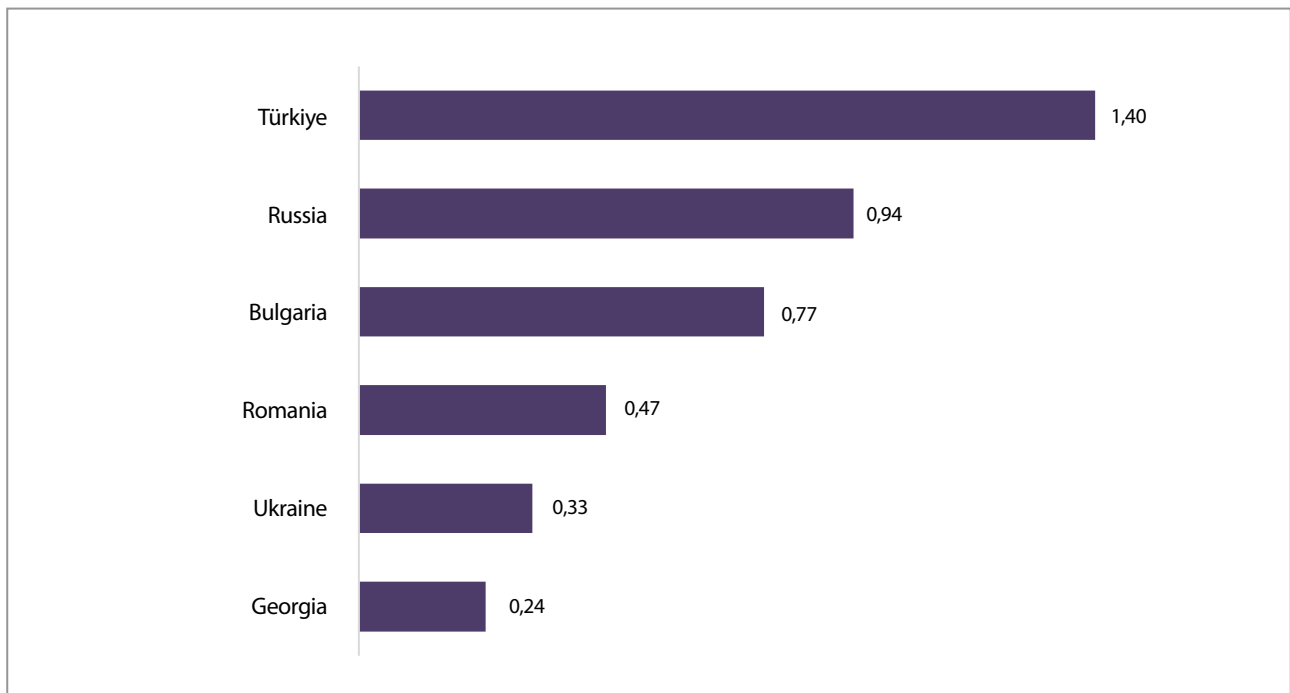
¹ https://www.researchgate.net/publication/283797767_Components_of_Innovation_Ecosystems_A_Cross-Country_Study

² Democratized Generative AI refers to the wide accessibility and application of generative AI technologies, making them available to a broad range of users, regardless of their technical background or resources.
https://www.splunk.com/en_us/blog/learn/democratized-generative-ai.html#:~:text=Simply%20put%2C%20Democratized%20Generative%20AI,their%20technical%20background%20or%20resources.

R&D EXPENDITURE

One way of measuring a country's ability to innovate is by looking at how much it invests in R&D compared to its gross domestic product (GDP). Investment in R&D is the lifeblood of many private sector organizations, helping them to bring new products and services to market. It is also important to national economies, playing a crucial role in GDP growth.³

Graph 1: R&D expenditures (as a % of GDP) in Black Sea countries, 2021-2022



Source: World Bank Group

Based on World Bank Group data,⁴ R&D expenditure as a percentage of GDP varies significantly across the Black Sea countries. In the lead is Türkiye with the highest expenditure, allocating 1.40% of its GDP to R&D. Russia follows with 0.94%, while Bulgaria invests 0.77%. Notably, the percentages for the bottom three countries are lower than 0.50%, with Romania's expenditure standing at 0.47%, Ukraine at 0.33%, and Georgia at 0.24%.

Globally, Israel ranks first with R&D spending at 5.56% of its GDP, followed by South Korea on 4.93% and the United States with 3.46%, and then European countries, namely Belgium (3.43%), Sweden (3.42%), and Switzerland (3.36%). China, the world's second-largest economy by GDP, spends 2.46% of its GDP on R&D, reflecting its rapid advancement and dedication to technological growth. Meanwhile, the European Union (EU) collectively invests 2.28% (three times the average of the Black Sea countries) of GDP in R&D, showcasing a strong commitment to fostering innovation across its member states.

³ <https://www.weforum.org/agenda/2020/11/countries-spending-research-development-gdp/>

⁴ The numbers for Bulgaria, Romania, and Türkiye are from 2021, while the others are from 2022.

GLOBAL INNOVATION INDEX (GII)

THE GLOBAL INNOVATION INDEX (GII) FRAMEWORK

The Global Innovation Index (GII), developed by Cornell University, Institut Européen d'Administration des Affaires (INSEAD), and the World Intellectual Property Organization (WIPO), captures the innovation ecosystem performance of approximately 132 economies, detailing their strengths and weaknesses in this regard. The GII is calculated by averaging the scores of its two main sub-indices: the **Innovation Input Sub-Index** and the **Innovation Output Sub-Index**. Relying on 80 indicators, the GII provides a comprehensive overview of each country's innovation landscape, covering various aspects such as the political environment, education, infrastructure, and knowledge creation.

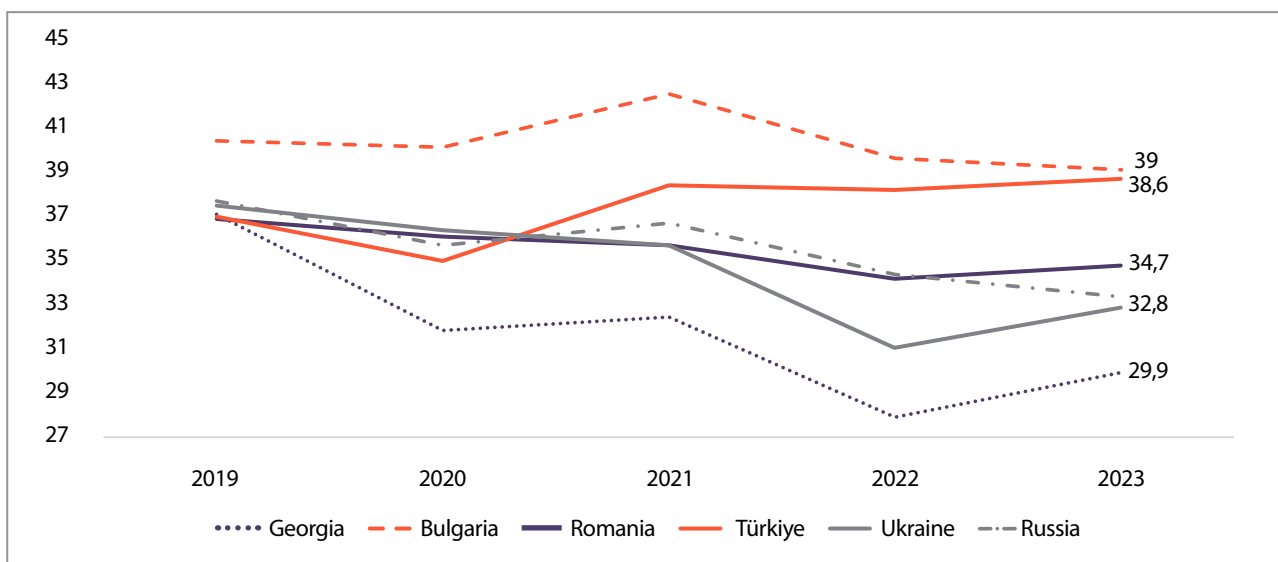
The **Innovation Input Sub-Index** consists of five pillars that capture the aspects of an economy that enable and facilitate innovative activities. These five pillars are: **Institutions, Human Capital and Research, Infrastructure, Market Sophistication**, and **Business Sophistication**.

The **Innovation Output Sub-Index**, on the other hand, offers insights into the outcomes resulting from innovative activities within the economy. It comprises two pillars: **Knowledge and Technology Outputs** and **Creative Outputs**.

GLOBAL INNOVATION INDEX: ASSESSMENT OF BLACK SEA COUNTRIES

Over the period spanning from 2019 to 2023, **Bulgaria** consistently achieved the highest GII score among Black Sea countries, while **Georgia** recorded the lowest score in every year except 2019. In addition, Georgia saw the highest average annual decline (4.7%) compared to the other five countries, dropping from 37 points in 2019 to 29.9 points in 2023. Notably, in 2023, only Türkiye surpassed the score it had achieved in 2019 (rising from 36.9 to 38.6).

Graph 2: GII Scores for Black Sea Countries (2019-2023) (0=lowest and 100=highest)

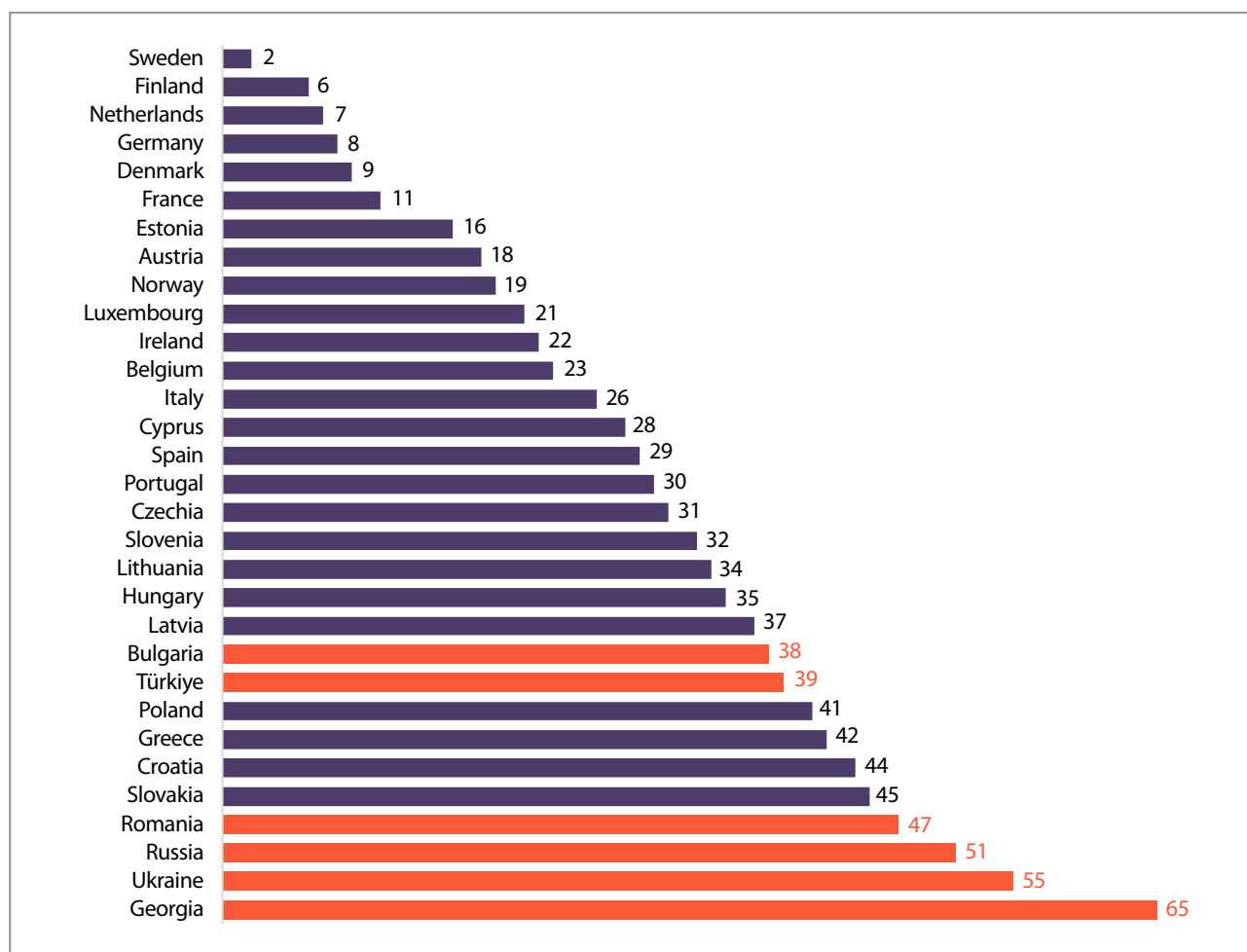


Source: GII

Looking at global trends, the 2021 GII Report emphasized that the COVID-19 pandemic had weakened the innovation ecosystems of numerous emerging and poorer economies. Moreover, the 2023 GII Report highlights that weak economic growth and high inflation, along with the lingering impacts of the pandemic, are hindering global innovation. Following a significant surge in 2021, innovation finance saw a sharp decline in 2022.

Among Black Sea countries, Georgia’s significant drop in the GII can be linked partly to the COVID-19 pandemic but can primarily be attributed to declines in the Institutions, Market Sophistication, and Creative Outputs pillars. The war launched by Russia on Ukraine in 2022 has affected both countries’ performance in the GII. Meanwhile, Bulgaria and Romania have been relatively steady over the same period. Elsewhere, Türkiye’s remarkable progress since 2021 is attributed to the Global Innovation Index Türkiye Action Plan and Strategy (2021-2023), launched in 2020 with the objective of propelling Türkiye to within the top 30 countries in the GII. This initiative led to the formation of a dedicated task force and the preparation of a strategic document.⁵

Graph 3: GII Ranking of EU and Black Sea Countries, 2023 (1=first, 132=last)



Source: GII

In 2023, **Russia (51st), Ukraine (55th), and Georgia (65th)** ranked below all EU member states in the GII, with Romania (47th) ranking the lowest among EU countries. Meanwhile, Türkiye, ranking 39th (one spot below Bulgaria in 38th), performed better than five EU member states.

Between 2019 and 2023, Georgia’s ranking dropped by 17 places, while Ukraine slipped by eight places, and Russia by five. During the same period, **Bulgaria** improved its ranking by two places, **Romania** by three, and **Türkiye** by 10.

According to the GII, in 2023, relative to GDP, Romania and Russia performed below expectations given their level of development. On the other hand, Türkiye, Georgia and Bulgaria met expectations, while Ukraine performed above expectation for its development level.

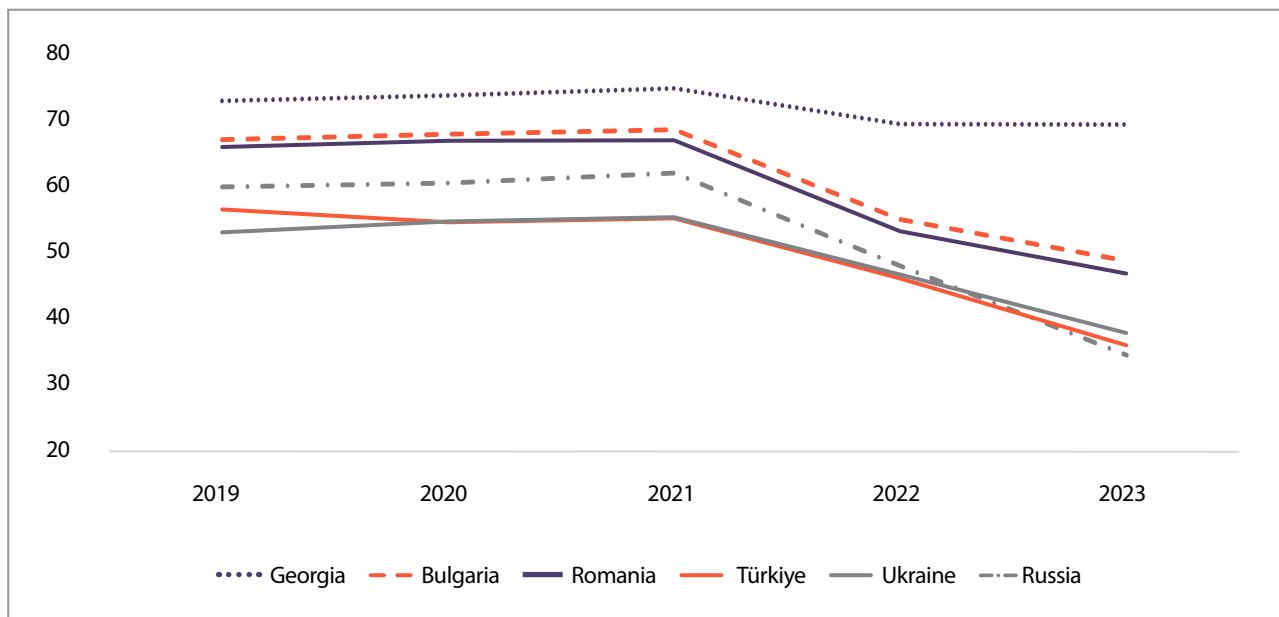
⁵ <https://stip.oecd.org/stip/interactive-dashboards/policyinitiatives/2023%2Fdata%2FpolicyInitiatives%2F99992470>

PILLARS BY COUNTRY

INSTITUTIONS

Nurturing an institutional framework that attracts business and fosters growth by providing good governance and the correct levels of protection and incentives is essential to innovation. The Institutions pillar captures the institutional framework of an economy.

Graph 4: Institutions pillar (2019-2023) (0=lowest and 100=highest)



Source: GII

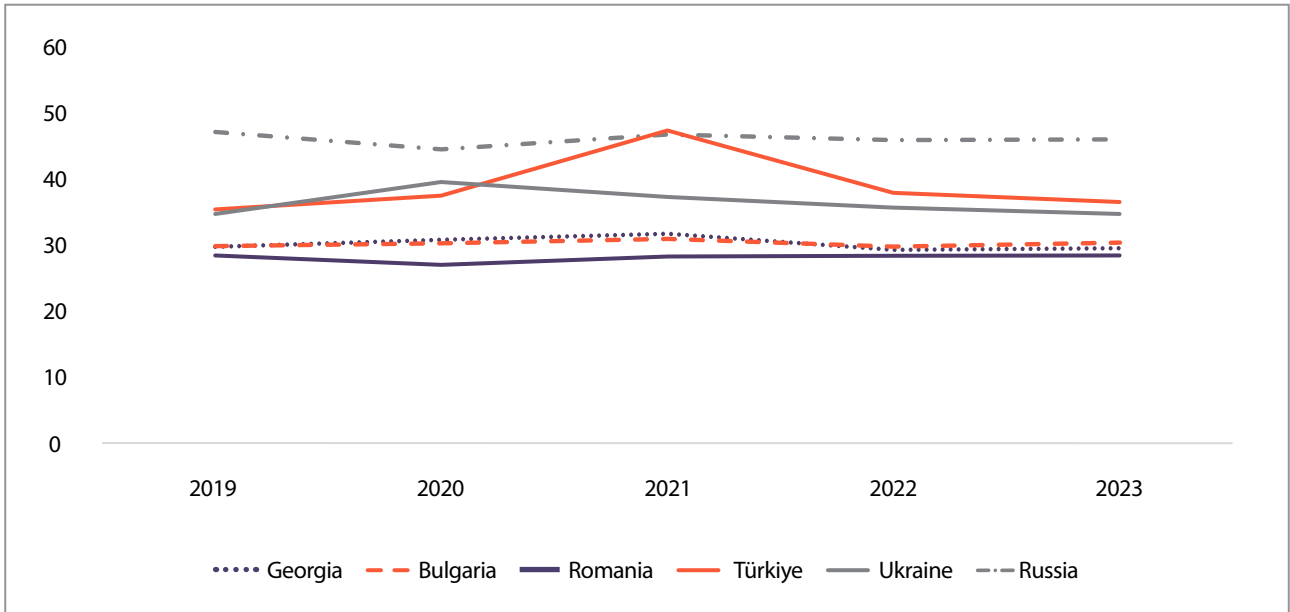
Notably, over the period of 2019-2023, **Georgia** consistently achieved the highest score among Black Sea countries under the **Institutions pillar**.

Over the reviewed years, both **Georgia** and **Ukraine** have performed best in **Institutions** compared to other pillars. Notably, between 2019 and 2022, **Bulgaria** and **Russia** also achieved their highest scores in this pillar compared to the other pillars. Meanwhile, **Romania** and **Türkiye** were also strongest under this pillar up until 2021, after which both have witnessed sharp declines.

HUMAN CAPITAL AND RESEARCH

The level of education and research in an economy significantly influences its capacity for innovation. Accordingly, this pillar assesses the human capital of economies. **Russia** held the highest score compared to the other Black sea countries in the **Human Capital and Research** pillar in all years except 2021.

Graph 5: Human Capital and Research pillar (2019-2023) (0=lowest and 100=highest)



Source: GII

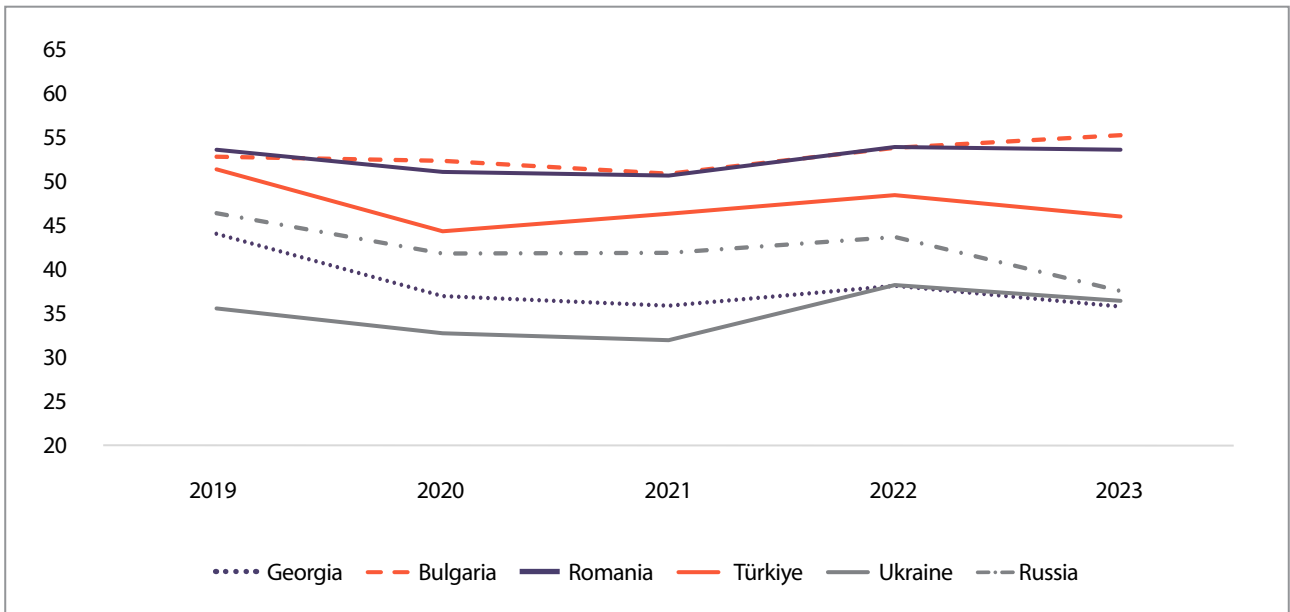
Notably, in 2023, this was the pillar under which **Russia achieved its strongest performance**.

Meanwhile, **Romania consistently attained the lowest score** for this pillar among Black Sea countries, with Georgia and Bulgaria also ranking poorly. Specifically, Bulgaria consistently reported its lowest scores in the Human Capital and Research pillar compared to other pillars.

INFRASTRUCTURE

The Infrastructure pillar includes the following three sub-pillars: Information and Communication Technologies (ICTs); General Infrastructure, and Ecological Sustainability.

Graph 6: Infrastructure pillar (2019-2023) (0=lowest and 100=highest)



Source: GII

Under the pillar of **Infrastructure**, two EU member states, **Bulgaria** and **Romania**, consistently demonstrated the best performance among Black Sea countries in the covered period. Notably, in 2023, they both, along with **Türkiye**, performed best in Infrastructure compared to other pillars.

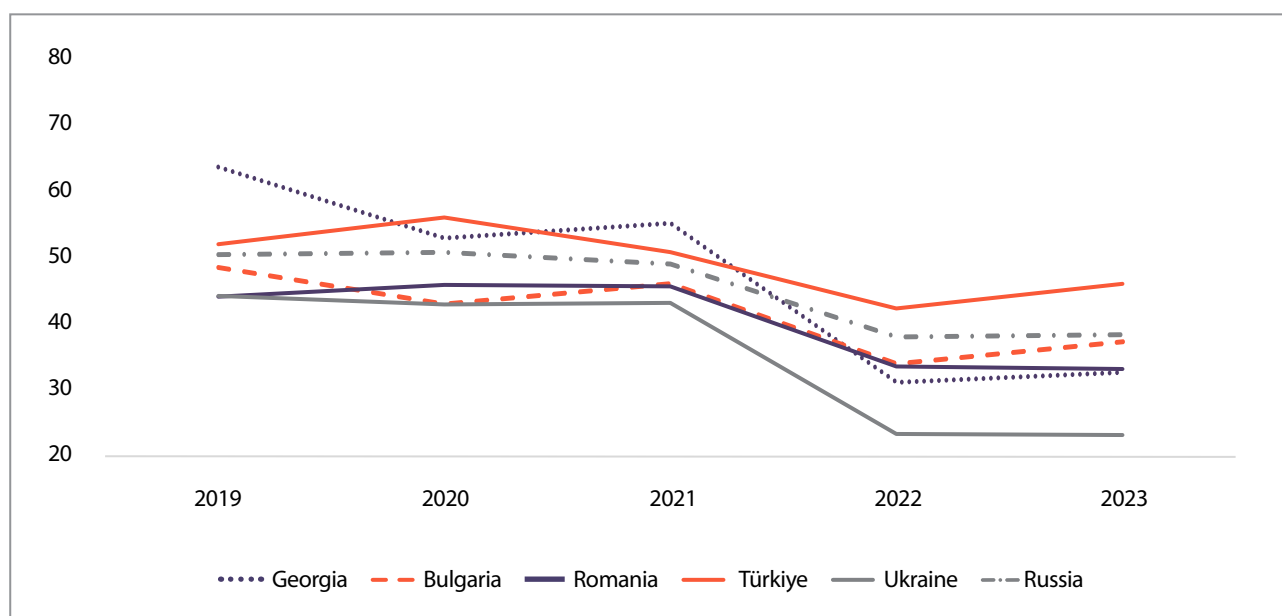
In 2019-2021, Ukraine scored the lowest here among the reviewed countries, with Georgia being the second-worst performer. However, since 2021, Ukraine's score has increased and surpassed that of Georgia.

In **Ukraine**, the most prominent increase between 2021 and 2022 occurred in the sub-pillar of Information and Communication Technologies (ICTs), with significant rises in the indices for **ICT access** and **ICT use**, possibly attributable to the increased role of ICT in Ukraine's war effort.⁶

MARKET SOPHISTICATION

The availability of funding and an environment that supports investment, access to the international market, competition, and market scale are all critical for businesses to prosper and for innovation to occur.

Graph 7: Market Sophistication pillar (2019-2023) (0=lowest and 100=highest)



Source: GII

Trends in **Market Sophistication** fluctuate markedly, making it difficult to identify any country as having a dominant position in this regard. However, it is noticeable that Georgia experienced a sharp decline here: after recording the highest score among Black Sea countries in 2019, its score in 2023 was the second lowest above only Ukraine.

Georgia's significant dip in the 2021-2022 GII may be attributed to some extent to methodological changes in the Market Sophistication indicators. In particular, the "Ease of getting credit" indicator was replaced with "Finance for startups and scaleups." This alteration impacted upon Georgia's ranking, as it discounted the country's strengths in the replaced indicator.⁷ The credit market in Georgia is developed, resulting in a high score previously, whereas finance for startups and scaleups is relatively underdeveloped. This disparity likely contributed to Georgia's diminished performance in the GII during that period.

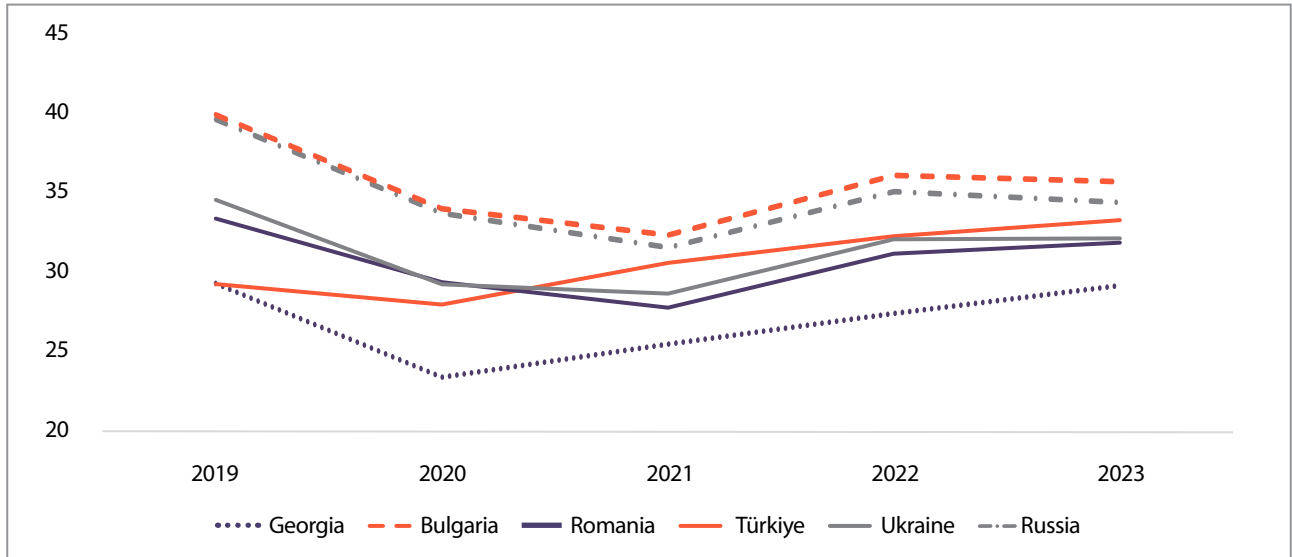
⁶ https://www.researchgate.net/publication/381403164_Smartphone_resilience_ICT_in_Ukrainian_civic_response_to_the_Russian_full-scale_invasion

⁷ <https://www.wipo.int/edocs/pubdocs/en/wipo-pub-2000-2022-appendix1-en-appendix-i-global-innovation-index-2022-15th-edition.pdf>

BUSINESS SOPHISTICATION

The Business Sophistication pillar measures how conducive firms in a country are to innovation by evaluating their use of highly-qualified professionals and technicians to enhance productivity and competitiveness, and harness innovation potential.

Graph 8: Business Sophistication pillar (2019-2023) (0=lowest and 100=highest)



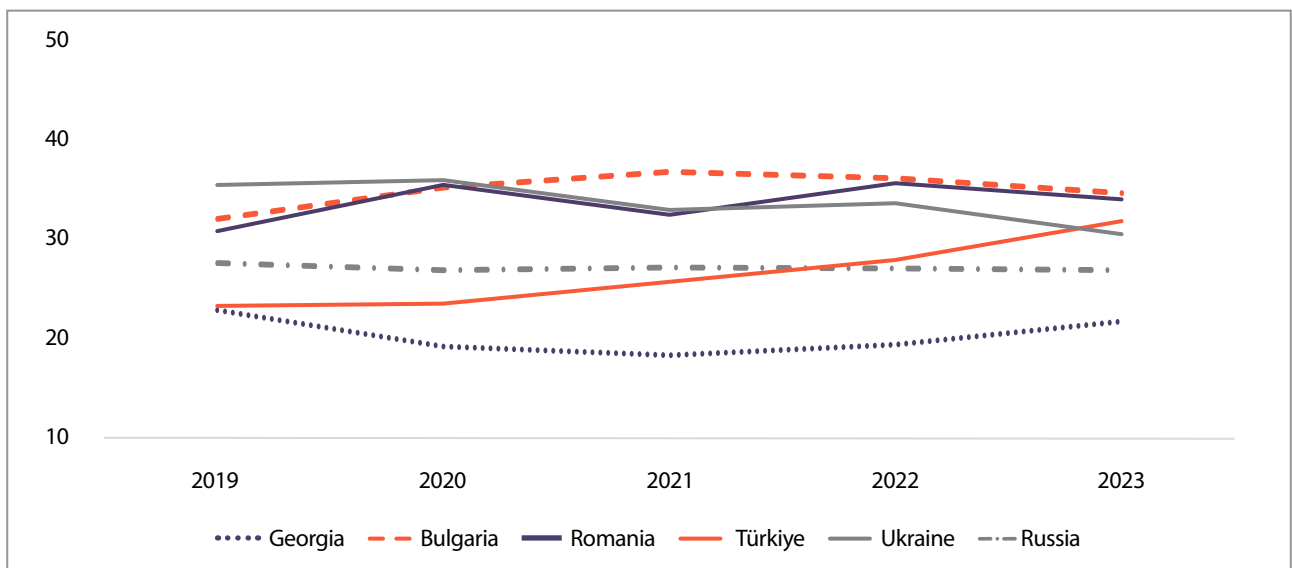
Source: GII

Bulgaria showed the best performance in the **Business Sophistication** pillar from 2019 to 2023, with Russia closely following in second. Meanwhile, Georgia consistently lagged behind the other Black Sea countries.

KNOWLEDGE AND TECHNOLOGY OUTPUTS

The Knowledge and Technology Outputs pillar covers all variables traditionally considered to represent the fruits of inventions and/or innovations. For example, the number of scientific and technical journal articles, patent applications filed by residents, etc.

Graph 9: Knowledge and Technology Outputs pillar (2019-2023) (0=lowest and 100=highest)



Source: GII

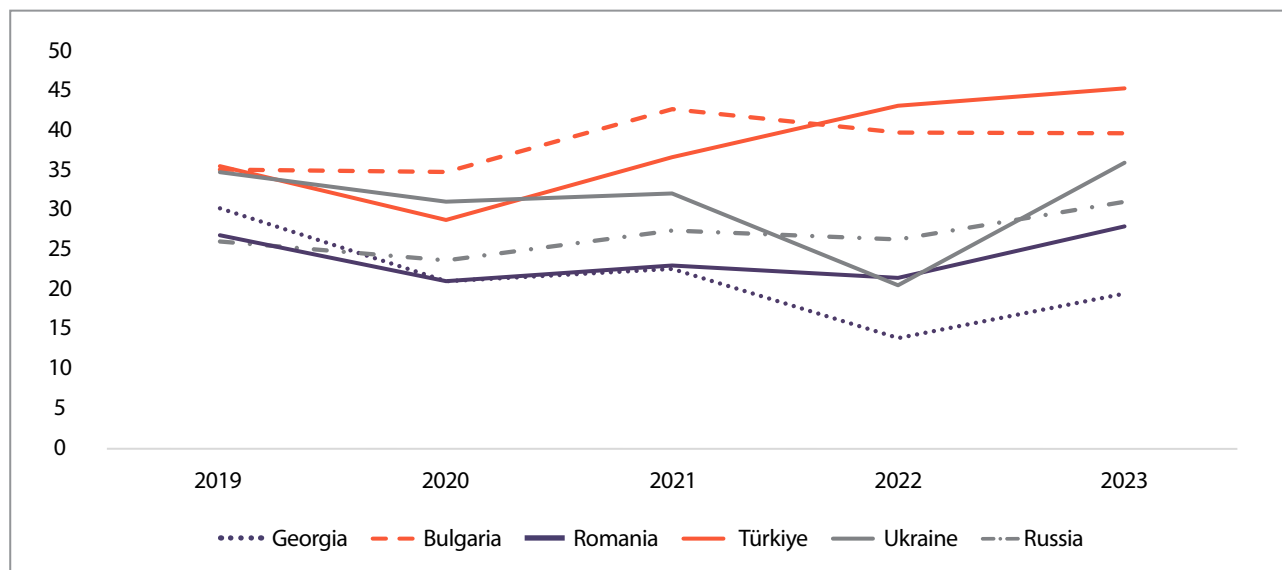
In this pillar, **Bulgaria, Romania**, and **Ukraine** were the top performers, although Ukraine experienced a decline between 2020 and 2023. Meanwhile, Georgia consistently performed worst in this pillar.

Notably, **Türkiye's** performance in the Knowledge and Technology Outputs pillar was its worst compared to other pillars throughout the covered period, while it was **Russia's** weakest pillar in 2023.

CREATIVE OUTPUTS

The Creative Outputs pillar in the GII focuses on the role of creativity in innovation, measuring the creative contributions to innovation.

Graph 10: Creative Outputs pillar (2019-2023) (0=lowest and 100=highest)



Source: GII

Türkiye recorded a significant increase in its score for **Creative Outputs**, ranking highest among the reviewed countries in 2022 and 2023. Before that, in 2020 and 2021, Bulgaria held the top regional position. In the latest rankings, Bulgaria sits below Türkiye but is still higher than the other Black Sea countries.

Romania consistently produced its lowest scores in this area from 2019 to 2023, as did Russia until 2023 when its worst-performing pillar shifted to Knowledge and Technology Outputs. Moreover, in the last two years, **Georgia's** lowest across all pillars was in this one.

EUROPEAN INNOVATION SCOREBOARD (EIS)

THE EUROPEAN INNOVATION SCOREBOARD (EIS) FRAMEWORK

The European Innovation Scoreboard (EIS) offers a comparative evaluation of the research and innovation capabilities of EU member states alongside another 11 European and 11 global competitors. Produced annually for the European Commission, it serves as a tool through which countries can assess the strengths and weaknesses of innovation systems, highlighting areas that require attention and improvement. The EIS includes the following four key components: **Framework Conditions, Investments, Innovation Activities, and Impacts**. Moreover, the EIS evaluates the performance of countries relative to that of the EU, where the EU's score is set at 100 across **all** indices.

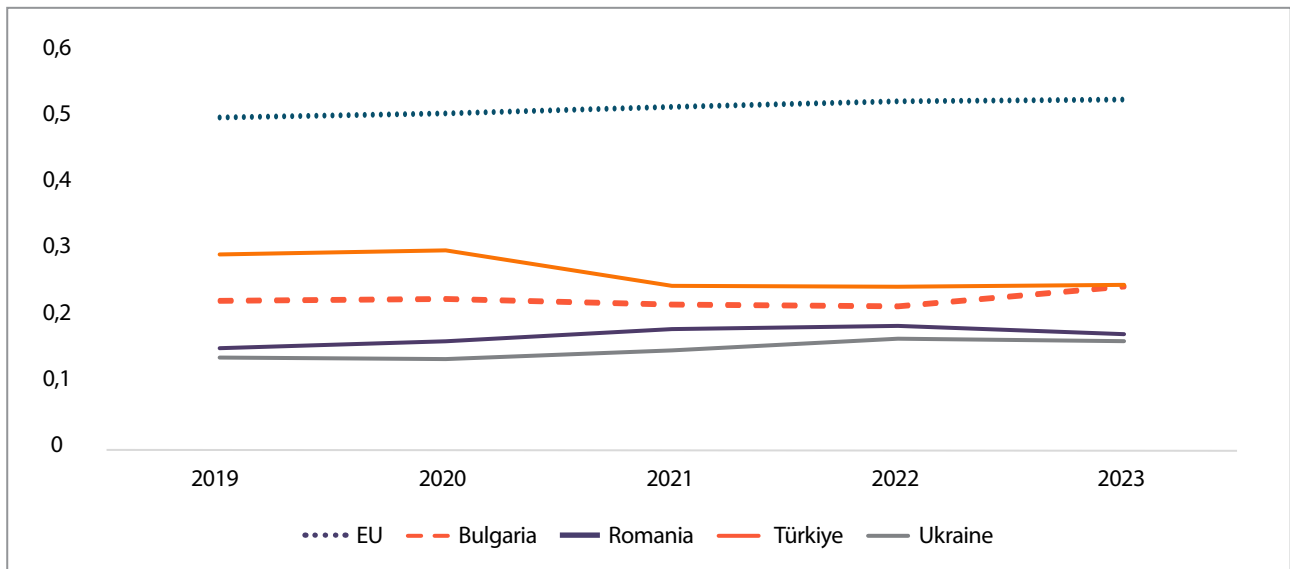
While only four of the Black Sea countries are included in the EIS, the information it provides is nevertheless very useful when it comes to capturing the state of the innovation ecosystem in each of these countries and comparing it to EU standards.

According to the EIS, the four Black Sea countries it reviews, namely Romania, Bulgaria, Türkiye, and Ukraine, are classified as **Emerging Innovators** and all have a **performance level below the average** for Emerging Innovators. Moreover, over the 2016-2023 years, this quartet's performance was increasing at a rate lower than that of the EU (8.5 percentage points), and **the performance gap in relation to the EU was widening**.

SUMMARY INNOVATION INDEX

While the EIS provides a comparative assessment of a country's research and innovation performance across various areas, the **Summary Innovation Index** combines this information across different categories to provide a **composite measure that captures the overall performance of each country's innovation system**.

Graph 11: Summary Innovation Index (normalized scores) (2019-2023)

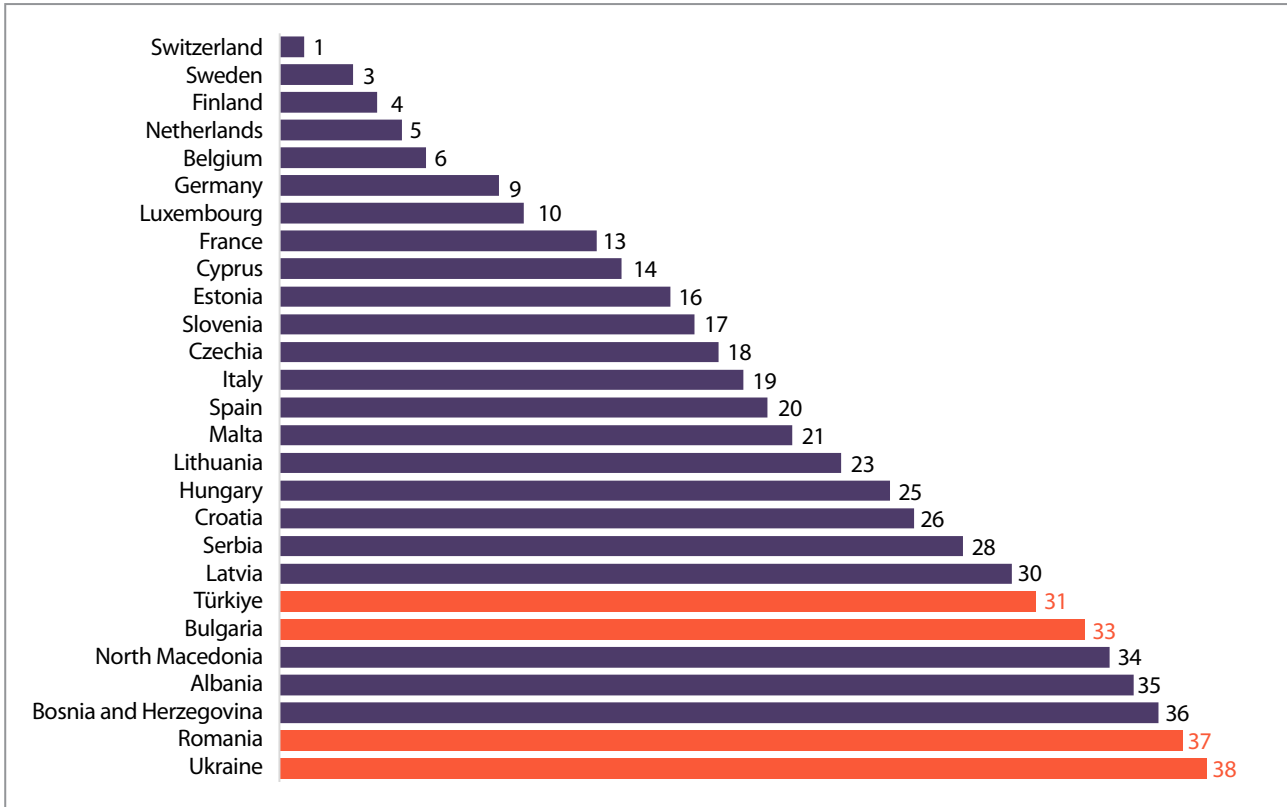


Source: EIS

Again, in the Black Sea context, the Summary Innovation Index examines only four of the six countries, namely Romania, Bulgaria, Türkiye, and Ukraine. **All of these states significantly lag behind the EU 2019-2023 scores.**

In 2023, out of all 38 countries analyzed by the Summary Innovation Index, **Romania and Ukraine occupied the bottom two positions.** Out of the four Black Sea countries included in this index, Türkiye had the highest ranking (31st), closely followed by Bulgaria in 33rd position.

Graph 12: Summary Innovation Index Ranking (2023)



Source: EIS

In 2023, **Ukraine's** performance level equated to **31% of the EU average**, with **Romania** reaching a slightly better **33.1%**. Elsewhere, **Bulgaria's** performance in 2023 amounted to **46.7%** of the EU average, while **Türkiye** achieved **47.6%**.

Regarding specific aspects of the EIS framework, **Bulgaria** excels relative to the EU average in **Intellectual Assets** (Innovation Activities) and **Sales Impact** (Impacts). However, its scores are consistently low in other dimensions such as **Finance and Support** (Investments).

Romania's strongest performance relative to that of the EU average is in **Digitalization** (Framework Conditions) and **Firm Investments** (Investments), while under **Innovators** and **Linkages** (Innovation Activities) it has consistently scored low over the years.

Türkiye's best performances here have been observed in **Sales Impact** (Impacts), **Linkages** (Innovation Activities), and **Finance and Support** (Investments). Conversely, **Employment Impacts** (Impacts) and **Intellectual Assets** (Innovation Activities) are areas in which it has consistently received relatively low scores.

Ukraine achieved its highest score in **Environmental Sustainability** (Impacts). Meanwhile, its worst-performing dimensions over the years have been **Attractive Research Systems** (Framework Conditions) and **Intellectual Assets** (Innovation Activities).

STARTUP ECOSYSTEMS IN BLACK SEA COUNTRIES

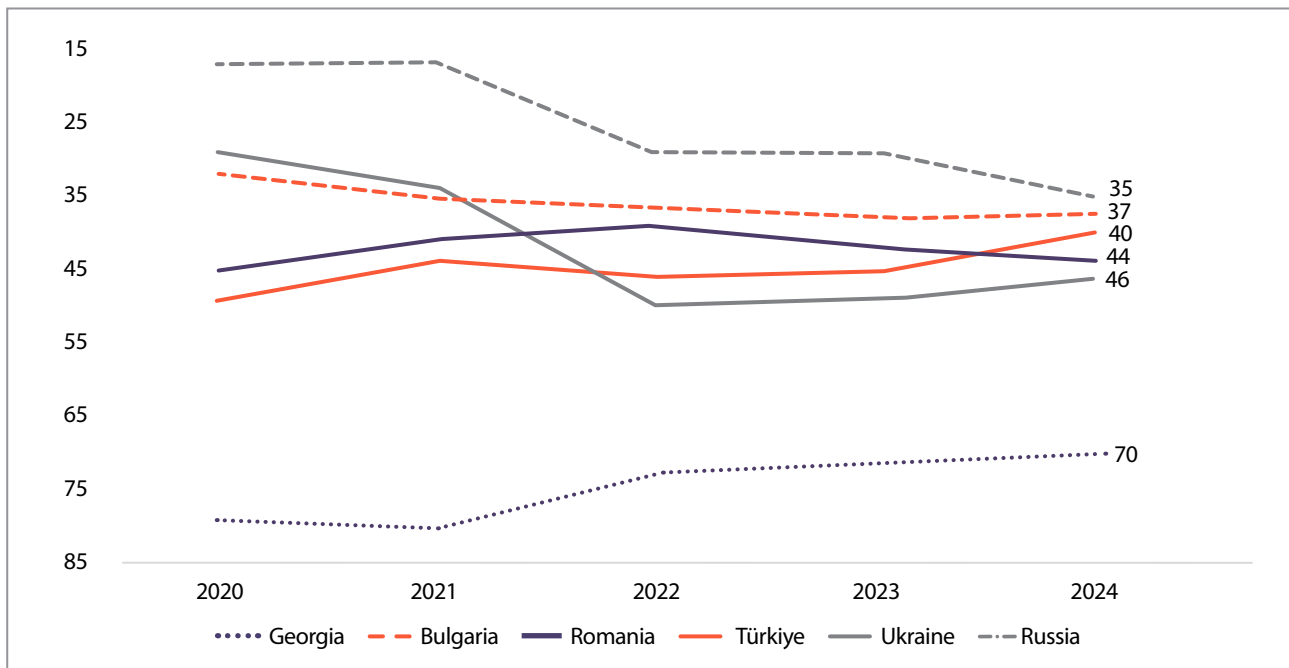
GLOBAL STARTUP ECOSYSTEM INDEX (GSEI)

The Global Startup Ecosystem Index (GSEI) administered by StartupBlink⁸ ranks the startup ecosystems of 100 countries and 1,000 cities. The GSEI employs three main components to determine the total score for each ecosystem: **Quantity, Quality, and Startup Business Environment**.

- The **Quantity** score is derived from an evaluation of the volume of activity within an ecosystem, including the **number of startups, investors, coworking spaces, accelerators, and startup-related meetups**.
- The **Quality** score is based on extensive data gleaned from partners to assess factors such as total startup **investment, unicorn presence, R&D centers, and significance of international events**.
- The **Startup Business Environment** score focuses on national-level parameters affecting business conditions, including **internet speed, R&D investment, labor laws, and corruption perceptions**.

Aside from the general rankings, 11 industry rankings, along with 91 sub-industries are calculated within sectors. In the country profiles, aside from rankings, information such as each country's top industries, notable startups, and other relevant details are also included.

Graph 13: Black Sea Countries' Rankings in the Global Startup Ecosystem Index (2020-2024)



Source: GSEI

Looking at the rankings over the past five years, Bulgaria experienced a drop from 32nd place in 2020 to 37th by 2024. Meanwhile, Türkiye, initially ranked 49th in 2020, underwent fluctuations thereafter, largely because of the substantial devaluation of the Turkish Lira, but due to supportive government initiatives it still rose by nine places to 40th by 2024. Romania began in 45th spot in 2020, before climbing to 39th in 2022, and then staggering down to 44th in 2024. Elsewhere, Russia

⁸ StartupBlink is a global startup ecosystem map and research center that works with over 100 governments: <https://www.startup-blink.com/>

has dropped significantly from 17th place in 2020 to 35th by 2024. This decline is related to its war in Ukraine, launched in 2022. Since then, the Russian startup market has been characterized by a decline in investment activity, sanctions and other restrictions, as well as barriers to development in the global market. Similarly, Ukraine dropped from 29th place in 2020 to 50th in 2022 due in large part to the war, but has started to recover slightly, ranking 46th by 2024. At the same time, Georgia started in 79th spot in 2020 and gradually improved to 70th by 2024, driven by government initiatives and business support platforms.

Table 1. Black Sea Countries' Profiles in the Global Startup Ecosystem Index (2024).⁹

Country	Rank	Rank Change (from 2023)	Country's Top Industry Globally	Main City's Top Industry Globally	Notable Startups
Russia	35	-6	Social & Leisure (31st)	Sportstech (45th)	Uchiru
Bulgaria	37	1	Social & Leisure (26th)	Gaming (7th)	Payhawk
Türkiye	40	5	Software & Data (31st)	Artificial Intelligence (26th)	Getir
Romania	44	-2	Energy & Environment (26th)	Edtech (16th)	UiPath
Ukraine	46	3	Software & Data (35th)	SaaS (14th)	Grammarly
Georgia	70	1	Fintech (55th)	Cryptocurrency (10th EU ¹⁰)	Bitnet

Source: GSEI

Looking at the GSEI rankings, Russia is **highest** in the region, while Georgia sits **lowest**. Despite experiencing a **drop** of six places from the previous year, Russia **remains** the leader in the region in 2024, with Social & Leisure being its top industry (31st globally) and Sportstech (45th globally) the leading sector in Moscow, where startups like Uchiru¹¹ have emerged.

Russia is followed by Bulgaria, which has **moved up** one place to **37th**, excelling in Social & Leisure (26th globally), and where Gaming (7th globally) is the leading category in its capital city, Sofia. Notable startups in Bulgaria include Payhawk.¹²

Meanwhile, Türkiye has seen a **significant rise** (by five places), overtaking Romania to reach **40th** place, with Software & Data (31st globally) being its top industry, and Artificial Intelligence (26th globally) leading the way in Istanbul. Türkiye is home to various startups such as Getir.¹³

Elsewhere, Romania continues its **decline** in the rankings since 2022, and is now placed **44th**, albeit showcasing strengths in Energy & Environment (26th globally), with Edtech innovations (16th globally) leading in Bucharest, where UiPath¹⁴ was created.

⁹ https://lp.startupblink.com/report/?utm_source=homepage&utm_medium=mainbutton&utm_campaign=Index

¹⁰ Global rank was not given for Georgia.

¹¹ Uchi.ru is an online educational platform for schoolchildren, their parents, and teachers. https://uchi.ru/?utm_referrer=https%3a%2f%2fwww.google.com%2f

¹² Payhawk helps to manage and automate everything between bank and accounting software in real time. <https://payhawk.com/why-payhawk>

¹³ Getir is an online grocery shopping platform. <https://getir.com/us/>

¹⁴ UiPath is an AI-powered automation technology enterprise. <https://www.uipath.com/about-us>

Ukraine has **advanced** three places to 46th, with Software & Data (35th globally) as its top industry, and SaaS (Software as a Service) (14th) taking a lead role in Kyiv, where Grammarly¹⁵ stands out as a prominent startup.

Lastly, Georgia has **risen** by one place to 70th, with Fintech its leading industry (55th globally), and Cryptocurrency the stand out category in the capital city, Tbilisi (10th in the EU).¹⁶ Notable startups from Georgia include Bitnet.

In leading countries globally, **Software & Data** is among the top industries, however in Black Sea countries only Türkiye and Ukraine have Software & Data among their top industries, ranking 31st and 35th respectively in global terms, indicating that this sector is not well developed in the region.

STARTUP-SUPPORTING PROGRAMS/INITIATIVES

All Black Sea countries have startup-supporting programs that go beyond funding startup ideas, and provide comprehensive assistance to entrepreneurs at every stage of development. Initiatives such as incubators and accelerators deliver valuable assistance to early-stage ventures, offering essential resources like **mentorship, funding, and networking opportunities**, enabling startups to upscale and succeed in competitive markets. These efforts have a pivotal role in the development of a country's startup ecosystem.

Table 2. Startup-supporting Programs in Black Sea countries.

Country	Program	Outcomes
Bulgaria	Bulgaria Innovation Hub ¹⁷	61 startups given a total of USD 146M funding
Türkiye	TÜBİTAK BIGG ¹⁸	Created 5 funds that supported 2351 startups
Romania	SeedBlink ¹⁹	250 startups given EUR 342M funding
Ukraine	USF ²⁰	380 startup teams given USD 8.7M support
	Startup Ukraine ²¹	30 000 students trained; 500 companies launched
Georgia	GITA ²²	641 startups given USD 11.7M funding via the government, and USD 94M investment attracted ²³
	500 Eurasia ²⁴	69 startups added to its portfolio
Russia	Skolkovo Foundation ²⁵	4000 startups funded given USD 5B funding

Source: PMC Research Center

Specifically, the **TÜBİTAK BIGG state program in Türkiye** has supported 2,351 startups since 2018, with the financial support of the Turkish government.

¹⁵ Grammarly is an online AI-powered writing assistant. <https://www.grammarly.com>

¹⁶ Global ranking not provided.

¹⁷ <https://www.bghub.io>

¹⁸ <https://tubitak.gov.tr/tr/destekler/sanayi/ulusal-destek-programlari/1512-girisimcilik-destek-programi-big>

¹⁹ <https://seedblink.com>

²⁰ <https://usf.com.ua/en/>

²¹ <https://startupukraine.com/en/>

²² <https://gita.gov.ge/en>

²³ Based on data from March 2023.

²⁴ <https://500.co/accelerators/500-eurasia>

²⁵ <https://old.sk.ru/foundation/about/>

In Romania, the private sector has provided financing through **Seedblink, a European investment platform** established in that same country, which has gathered EUR 342 million from across Europe to fund 250 startups. Meanwhile, **Bulgaria Innovation Hub is a public charity** that has collected USD 146 million to fund 61 startups.

The Ukraine Startup Fund (USF), a state institution that helps innovative projects and tech startups to raise funds in the early stages, has supported 380 startups with funding of USD 8.7 million, while Startup Ukraine, the first **training center** for entrepreneurship and innovation in Ukraine, has trained 30,000 students online and helped to launch 500 companies.

In Georgia, **Georgia’s Innovation & Technology Agency (GITA)** has funded 641 startups and attracted USD 94 million in investments. At the same time, the **500 Eurasia:** offers ambitious tech startups a structured 12-week journey, combining personalized mentorship, access to a vibrant entrepreneurial community, and actionable strategies for sustainable growth.

Lastly, **Russia** hosts one of the largest investment organizations of its kind, namely **the Skolkovo Foundation**, which has supported 4,000 startups with USD 5 billion.

INTERNATIONAL STARTUP CONFERENCES/EVENTS AND STARTUP MIGRATION

Countries around the Black Sea region routinely host **international startup conferences**, bringing together participants from all over the world to **exchange ideas and provide support for startups**. The primary objectives of these conferences are to foster innovation and entrepreneurship, encourage investment, offer networking opportunities, showcase the host country, share knowledge, and attract foreign startups to the host country.

Table 3. Some of the Large International Startup Conferences and Events in Black Sea Countries.

Country	Conference	Volunteers/Attendees
Bulgaria	Startup Competition at WMF International Roadshow	40 startups (WMF - 60,000 participants, 89 countries)
Türkiye	Startup World Cup Championship (SWCC) for children and youth	Participants and volunteers from 35 countries
Romania	Techsylvania and Bucharest Tech Week	5000+ participants, 30000+ visitors
Ukraine	IT ARENA and Future of Ukraine Summit	27857 visitors from 30 countries, 988 startups
Georgia	Europe-Asia Connect & Startup World Cup and Axel’s Investment Ecosystem Meeting (Volume 3)	Participants from 10 countries
Russia	Startup Village	10 000 visitors from 80 countries

Source: PMC Research Center

In 2024, Bulgaria hosted the Startup Competition at the WMF International Roadshow²⁶, where 40 startups participated in an effort to gain **access** to WMF 2024, one of **Europe’s largest startup conferences** with 60,000 participants from 89 countries.

Meanwhile, the Startup World Cup Championship (SWCC) 2024²⁷ for children and youth will be held in Istanbul, Türkiye. Delegations from 35 countries will showcase their nation’s innovators at the SWCC, featuring government officials and prominent business figures as jury members, while young participants from represented nations will strive to **attract investors’ attention and obtain funding**.

²⁶ <https://bulgaria.wemakefuture.it>

²⁷ <https://startupworldcup.biz>

Elsewhere, Bucharest Tech Week²⁸ is the **largest** technology festival in Central and Eastern Europe. This annual event comprises five business summits (Innovation, Future Retail, HR, Java, and Software Architecture), convening leading **tech experts, entrepreneurs, and freelancers**. It also features Tech Expo, a B2C technology exhibition, where all tech enthusiasts can interact with the newest products from the tech industry. In 2023, Bucharest Tech Week attracted over 30,000 visitors.

IT Arena²⁹ is an annual tech conference in Lviv, Ukraine, that will be attended by over 25,000 entrepreneurs, innovators, and thinkers from 30 countries for three days of **discussions, business networking, and general inspiration** in September 2024.

Europe-Asia Connect & Startup World Cup in Batumi³⁰ **will connect startups and investors** with veteran venture capital firms³¹ from Silicon Valley. Here, stakeholders have the opportunity to meet participants from 10 countries.

Russia's Startup Village³² serves as a unique platform where **startup founders** meet **mentors, investors, large corporations, scientists, futurists, and government representatives** to discuss technological trends, ideas, and the future of Russian entrepreneurship. The conference once attracted more than 10,000 participants from 80 countries annually, but since Russia launched its war on Ukraine, these numbers have dwindled.

While one of the aims of international startup conferences in Black Sea countries is to attract foreign entrepreneurs, inconsistencies in host countries' migration policies represent a significant barrier. Currently, Russian immigration legislation **does not offer** the classic "entrepreneur" visa, meaning that setting up a company there does not automatically grant a foreign national any type of visa. In Georgia, one can register as an **individual entrepreneur (IE)** if their income amounts to a minimum of GEL 50,000. Georgia also introduced the **digital nomad visa** (Georgia ranks 24th on the Digital Nomad Index³³) in 2020, calling it "Remotely from Georgia," offering **tax-free** status for six months to remote workers, freelancers, and entrepreneurs. Ukraine and Romania have similar policies, offering registration (i.e. a business visa) to individual entrepreneurs conducting business in either country. However, neither **offer** any specific privileges for startups to move to Ukraine or Romania.

In contrast, Bulgaria and Türkiye offer **startup visas**. The Bulgaria Startup Visa program allows entrepreneurs to reside in the country while working on innovative projects, whereby applicants can obtain a **residence permit and work on their projects**. While the Bulgarian Startup Visa provides only a residence permit, Turkish Tech Visa gives talents and startups many more privileges and opportunities, including **income tax and corporate tax exemptions, office spaces** in technoparks and incubation centers, **venture capital investment and project financing supports**, and **mentoring and consultancy support**, all of which significantly accelerates their integration into the Turkish innovation ecosystem.

²⁸ <https://www.techweek.ro>

²⁹ <https://itarena.ua>

³⁰ <https://startupconnect.ge>

³¹ Venture capitalists

³² <https://startupvillage.ru>

³³ Digital Nomad Index by VisaGuide, <https://visaguide.world/digital-nomad-visa/digital-nomad-index/>

WORLD INTELLECTUAL PROPERTY INDICATORS (WIPI)

Developing a robust innovation ecosystem leads in turn to a well-developed intellectual property (IP) system. Indeed, the continuous creation and commercialization of new ideas necessitates strong IP protections for the interests of creators, thus also stimulating further investment in innovation.

SCIMAGO INSTITUTIONS RANKINGS (SIR)

The **SCImago Institutions Rankings (SIR)** assess academic and research institutions, using a combined measure that includes the following three main areas: research performance; innovation achievements; and societal impact. The rankings give a detailed view of institutions based on their contributions to research, innovation, and society.

The SCImago ranking displays the total number of institutions from a particular country that have been evaluated and assigned a rank based on their performance across various indicators. Inclusion here is based on specific criteria: institutions must have published at least 100 documents available in the SCOPUS³⁴ database during the last year, with at least 75% being citable (i.e., articles, chapters, conference papers, reviews, and short surveys).

In 2023, **Bulgaria** had **27 institutions ranked**, comprising **10 government organizations, 16 universities**, and **one medical institution**. The highest ranking among the Bulgarian institutions was held by a government organization (**2485th** place), with the lowest ranked being a university in **8389th** position.

At the same time, **Georgia** had **five ranked institutions**, including **four universities** and **one government institution** (Georgian National Academy of Sciences). The highest-ranked institution in Georgia was placed **6659th**, while the lowest stood in **7880th** position.

As of 2023, 42 institutions were ranked from **Romania**, including **12 government bodies** and **30 universities**. The highest-ranked Romanian university reached **3138th** place, while the top-performing institution overall in Romania was a government organization, securing **1235th** place. Otherwise, its lowest-ranked institution held **7848th** position.

Russia has a substantial presence in the rankings with **338 institutions ranked**, encompassing **152 government bodies, 21 health sector entities, 162 universities**, and **three companies**. The Russian Academy of Sciences, a distinguished government institution, achieved an impressive **9th** place globally. Meanwhile, Lomonosov University was ranked 685th, while the lowest-ranked Russian institution stood at 8431st.

Türkiye boasts **144 ranked institutions**, among them **two government bodies, seven health institutions, 134 universities**, and **one company**. The highest-ranked institution from Türkiye, a university, achieved **1720th place**. At the same time, the lowest-ranked institution, another university, placed **8282nd** in the rankings for 2023. Among health institutions in Türkiye, the highest position to be attained was 3750th.

Lastly, in **Ukraine**, a total of **67 institutions** were listed in the rankings, including **44 universities, 22 government bodies**, and **one from the health sector**. The highest position achieved was **1195th** by a government institution, with the second-best position being 2015th held by a university. Meanwhile, the lowest-ranking government institution from Ukraine took **8432nd** position.

³⁴ Scopus is a large, multidisciplinary database of peer-reviewed literature: scientific journals, books, and conference proceedings.

Of the Black Sea countries, **Russia stands out with the highest number of institutions ranked**, and it is the only country whose institutions are significantly ranked higher than those of the other countries reviewed here. **Georgia, on the other hand, has the worst performance among Black Sea countries**, with its best position being 6659th and with only five institutions ranked.

PATENT APPLICATIONS AND GRANTS

Based on the WIPO's 2022 statistics, **Russia leads among Black Sea countries in absolute numbers with 25,188 patent applications**, despite a slight decrease of 2.8% compared to 2021 year, achieving a high grant rate of 81.2%, with most applications granted in medical technology (9%). Ukraine, despite a notable drop of 36.7% in applications, boasts a grant rate of 76.2%, suggesting a rigorous selection process, with the most granted applications coming under "other consumer goods" at 40%. Meanwhile, Türkiye demonstrates robust patenting activity with 11,114 applications in 2022, with a grant rate of only 38.6%, and most applications accepted in medical technology (8%). At the same time, Bulgaria registered 548 applications with a grant rate of 47.3%, with most successful applications being under "measurement" at 11%. Elsewhere, Romania reported 1,140 applications with a grant rate of 45.2%, with pharmaceuticals (6%) being the most commonly accepted category. Finally, **Georgia, with the fewest applications of the selected countries at 97**, maintains a grant rate of 42.3%, and pharmaceuticals (at 27%) are also its most popular category.

Resident patent applications per million of population vary significantly, with Russia leading at 135.2, followed by Türkiye at 110.1, Romania at 44.9, Bulgaria at 32.8, Georgia at 23.2, and Ukraine at 20.9.

Table 4. Total Patent Applications and Grants in Black Sea Countries in 2022³⁵

Country	Patent applications	Growth rate compared to last year	Patent grants	Patent grant rate	Patent applications per million of population	Most granted category
Bulgaria	548	17.6%	259	47.3%	32.8	Measurement (11%)
Türkiye	11 114	2.3%	4 293	38.6%	110.1	Medical (8%)
Romania	1 140	2.3%	515	45.2%	44.9	Pharmaceuticals (6%)
Ukraine	1 080	-36.7%	823	76.2%	20.9	Other consumer goods (40%)
Georgia	97	26.5%	41	42.3%	23.2	Pharmaceuticals (27%)
Russia	25 188	-2.8%	20 456	81.2%	135.2	Medical (9%)

Source: World Intellectual Property Organization (WIPO)

³⁵ <https://www3.wipo.int/ipstats/ips-search/patent?selectedTab=patent&indicator=101&reportType=13&fromYear=2020&toYear=2022&ipsOffSelValues=&ipsOriSelValues=BG,TR,RO,UA,GE,RU&ipsTechSelValues=>

CONCLUSION AND RECOMMENDATIONS

The analysis of the innovation ecosystems in the Black Sea region conducted here, through reference to rankings in global indices, reveals a complex yet promising landscape. While countries like Russia, Bulgaria, and Türkiye are making significant progress, Georgia, Ukraine, and Romania face considerable challenges.

Black Sea countries are performing strongly under the Institutions pillar, encompassing political, regulatory, and business environments. However, there has been a significant decline in this pillar across all countries since 2021. Notably, among the Black Sea countries, Bulgaria and Türkiye appear to have the most favorable situations according to the indices examined.

The innovation ecosystems of the Black Sea countries are diverse and dynamic. Despite facing various economic and geopolitical challenges, these countries have made notable progress in fostering innovation and entrepreneurship. Russia, despite a significant decline due to its ongoing war, remains the regional leader in this regard. Other countries have shown varying degrees of improvement, generally driven by governmental initiatives and business support platforms. Despite the Black Sea region's relatively limited involvement in hosting international startup conferences, its countries' commitment to innovation and entrepreneurship remains evident.

To strengthen and sustain the startup ecosystems and innovation capacity of the Black Sea countries, the following recommendations are proposed:

- Based on World Bank Group data, R&D expenditure as a percentage of GDP varies significantly across Black Sea countries. Türkiye leads here with the highest expenditure, allocating 1.40% of its GDP to R&D, whereas Georgia has the lowest with only 0.24%. Therefore, increasing this level of R&D investment will be critical to enhance innovation outputs. Ultimately, governments should increase the percentage of GDP allocated to R&D to catch up with global leaders like the United States (3.46%) and China (2.46%).
- **Continuous investment in education and training is crucial.** In particular, programs that focus on STEM education, entrepreneurial skills, and vocational training should be expanded. Moreover, collaboration with international educational institutions could also enhance local capacities.
- **Investment in digital and physical infrastructure will be essential to support innovative activities.** Furthermore, enhancing market sophistication through better access to finance and streamlined business processes could facilitate growth of startups.
- **Black Sea countries should increase their involvement in the global startup ecosystem, particularly in industries like software & data (including AI), which are now top priorities for leading countries.** Currently, only Ukraine and Türkiye are involved to any notable degree here. Boosting their presence, and that of other Black Sea countries, in these critical sectors could significantly enhance their global competitiveness.
- **Both the public and private sectors should continue to expand and refine their startup-supporting programs.** Initiatives such as incubators, accelerators, venture capital, and regulatory environment changes (such as by introducing SAFE³⁶ as a funding instrument) for startup investing must be scaled up and made more accessible. Here, learning lessons from successful programs in other regions could be beneficial.

³⁶ A Simple Agreement for Future Equity (SAFE) is a deal where an investor gets rights to future equity in a company without setting a specific share price at the time of investment.

- **Streamlining immigration policies to attract foreign entrepreneurs is also crucial.** Countries with successful startup visa programs, such as Bulgaria and Türkiye, serve as role models in this regard. Pertinently, simplifying procedures to obtain work and residence permits, along with providing tax incentives, can play a significant part in attracting global talent.
- **Engaging with international partners,** such as the European Innovation Council and the IBRD, has proven beneficial, so expanding such partnerships could bring in even more resources, expertise, and global exposure to bolster local startups.

By implementing these recommendations, Black Sea countries can build more resilient and competitive startup and innovation ecosystems. Furthermore, these steps will not only help to address current challenges but will also pave the way for sustained economic growth and technological advancement.

ANNEXES

ANNEX 1: GLOBAL INNOVATION INDEX (GII)

The GII has two sub-indexes.

The **Innovation Input Sub-Index** consists of five pillars that capture aspects of the economy that enable and facilitate innovative activities. These five pillars are:

1. INSTITUTIONS: Creating an institutional framework that attracts businesses, promotes growth through good governance, and provides adequate protection and incentives is crucial to foster innovation.
 - o Institutional environment
 - **Operational Stability for Businesses** (political, legal, operational, or security risk index); **Government Effectiveness** index.
 - o Regulatory environment
 - **Regulatory Quality** index; **Rule of Law** index; **Cost of Redundancy/Dismissal** (sum of notice period and severance pay for redundancy/dismissal).
 - o Business environment
 - **Policies for Doing Business** (the extent to which governments ensure a stable policy environment for doing business); **Entrepreneurship Policies and Culture** index.
2. HUMAN CAPITAL AND RESEARCH: The quality and extent of education and research activities within an economy are key factors influencing its capacity for innovation.
 - o Education
 - **Government Expenditure on Education** (% of GDP); **Government Funding per Secondary Pupil** (% of GDP per capita); **School Life Expectancy** (primary to tertiary education); **PISA** scales in reading, math, and science; **Pupil-teacher Ratio**.
 - o Tertiary education
 - **Tertiary Enrolment** (% gross); **Graduates from Science, Technology, Engineering, and Mathematics Programs** (% of total tertiary graduates); **Tertiary Inbound Mobility Rate** (the number of students from abroad studying in a given country as a percentage of the total tertiary-level enrolment in that country).
 - o Research and development (R&D)
 - **Number of Researchers** (full-time equivalent); **Gross Expenditure on R&D** (% of GDP); **Average Expenditure of a Country's Top Three Global Companies on R&D**; **Average Score of the Top Three Universities According to the QS World University Ranking**.
3. INFRASTRUCTURE: Effective and environmentally sustainable communication, transportation, and energy infrastructure play a crucial role in enabling the creation and exchange of ideas, services, and goods. They contribute to the innovation ecosystem by enhancing productivity and efficiency, reducing transaction costs, improving market access, and fostering sustainable growth.

- o Information and communication technologies (ICTs)
 - **ICT Access** index; **ICT Use** index; **Government Online Services** index; **E-participation** index.
 - o General infrastructure
 - **Electricity Output** (GWh per million of population); **Logistics Performance** index; **Gross Capital Formation** (expressed as the ratio of total investment in current local currency to GDP in current local currency).
 - o Ecological sustainability
 - **GDP per Total Energy Supply; Environmental Performance index; ISO 14001 Environmental Management Systems** (number of certificates issued).
4. MARKET SOPHISTICATION: The availability of credit and an environment that supports investment, access to the international market, competition, and market scale are all critical for businesses to prosper and for innovation to materialize.
- o Credit
 - **Finance for Startups and Scaleups** (average perception scores (five-year average) of experts on finance for starting and growing firms); **Domestic Credit to Private Sector as a Percentage of GDP; Outstanding Loans from All Microfinance Institutions** in a country (as a percentage of GDP).
 - o Investment
 - **Market Capitalization of Listed Domestic Companies** (% of GDP, three-year average) (market capitalization (also known as “market value”) is the share price times the number of shares outstanding (including their several classes) for listed domestic companies); **Number of Venture Capital Deals Invested In** (three-year average); **Number of Venture Capital Deals Received** (three-year average); **Total Value of Venture Capital Received** as a percentage of GDP (three-year average).
 - o Trade, Diversification, and Market Scale
 - **Weighted Average Applied Tariff** (the average of effectively applied rates weighted by the product import shares corresponding to each partner country); **Domestic Industry Diversification** (based on manufacturing output); **Domestic Market Scale** (as measured by GDP).
5. BUSINESS SOPHISTICATION: This pillar aims to measure the level of business sophistication, evaluating how well firms support innovation activities. It emphasizes that businesses enhance their productivity, competitiveness, and innovation potential by employing highly-skilled professionals and technicians.
- o Knowledge workers
 - This sub-pillar includes five quantitative indicators on knowledge workers: **Employment in Knowledge-intensive Services** (% of workforce); **Firms Offering Formal Training** (% of firms); **Gross Expenditure on R&D Performed by Businesses** (as a percentage of GDP); **Gross Expenditure on R&D Financed by Businesses** (% of total gross expenditure on R&D); **Females Employed with Advanced Degrees** (% of total employed).

- o Innovation linkages
 - **The Extent to Which Businesses and Universities Collaborate on R&D; State of Cluster Development; Percentage of Gross Expenditure on R&D Financed from Abroad** (i.e. with foreign financing as a percentage of GDP); **Number of Joint Venture/Strategic Alliance Deals** (three-year average); **Number of Patent Families Filed** in at least two offices.
- o Knowledge absorption
 - Includes five indicators: **Charges for Use of Intellectual Property** (i.e. payments (% of total trade, three-year average)); **High-tech Imports** (% of total trade); **ICT Services Imports** (telecommunications, computer, and information services imports (% of total trade)); **Foreign Direct Investment (FDI) Net Inflows** (% of GDP, three-year average); **Researchers in Businesses** (%).

The **Innovation Output Sub-Index**, on the other hand, offers insights into the outcomes resulting from innovative activities within the economy. It comprises two pillars:

1. **KNOWLEDGE AND TECHNOLOGY OUTPUTS:** This pillar encompasses all variables typically considered as outcomes resulting from inventions and/or innovations, such as knowledge creation (resulting from inventive and innovative activities), knowledge impact (i.e. the impact of innovation activities at the micro- and macro-economic levels), and knowledge diffusion (includes statistics linked to sectors with high-tech content or that are key to innovation).³⁷
 - o Knowledge creation
 - **Patent Applications Filed by Residents** (both at the national patent office and at the international level through the PCT); **Utility Model Applications Filed by Residents at the National Office; Scientific and Technical Articles Published in Peer-reviewed Journals; Number of Articles to Have Received at Least an H Citation.**
 - o Knowledge impact
 - **Increases in Labor Productivity** (three-year average); **Valuation of All Unicorns in a Country as a Percentage of GDP** (a unicorn company is a private company with a valuation of over USD 1 billion, introduced in 2023); **Spending on Computer Software; High and Medium-high Tech Industrial Output over Total Manufacturing Output.**
 - o Knowledge diffusion
 - **Intellectual Property Receipts** (as a percentage of total trade; three-year average); **Production and Export Complexity, High-tech Net Exports** (as a percentage of total trade); **Exports of ICT Services** (as a percentage of total trade); **ISO 9001 Quality Management Systems** (number of certificates issued).³⁸

³⁷ https://www.wipo.int/edocs/pubdocs/en/wipo_pub_gii_2020-appendix1.pdf

³⁸ https://www.wipo.int/edocs/pubdocs/en/wipo_pub_gii_2020-appendix1.pdf

2. CREATIVE OUTPUTS: The role of creativity for innovation is still largely underappreciated in innovation measurement and policy debates. Since its inception, the GII has always emphasized measuring creativity as part of its Innovation Output Sub-Index.³⁹
 - o Intangible assets
 - **Intangible Asset Value** (as a percentage of the firm's total value; average of the top 15 firms); **Number of Classes in Resident Trademark Applications** (issued at a given national or regional office); **Global Brand Value of the Top 5,000 Brands** (as a percentage of GDP); **Number of Designs Contained in Resident Industrial Design Applications Filed at a Given National or Regional Office.**
 - o Creative goods and services
 - **Cultural and Creative Services Exports** (% of total trade); **Number of National Feature Films Produced; Global Entertainment and Media; Creative Goods Exports** (% of total trade).
 - o Online creativity
 - **Generic Top-level Domains (TLDs); Country-code Top-level Domains (TLDs); GitHub Commit Pushes Received and Sent; Global Downloads of Mobile Apps** (two-year average).

ANNEX 2: EUROPEAN INNOVATION SCOREBOARD (EIS)

The EIS includes **four key components** that encompass 12 key measures:

Framework Conditions captures the main drivers of innovation performance external to the given firm and differentiates between three innovation dimensions:

- **Human resources:** measures the availability of a highly-skilled and educated workforce.
- **Attractive research systems:** measures the international competitiveness of the country's science base by focusing on international scientific co-publications, most-cited publications, and foreign doctorate students.
- **Digitalization:** assesses the extent of digital technology adoption through two indicators - broadband penetration among businesses, and the proportion of individuals with above-basic overall digital skills

Investments: captures investments made in both the public and private sectors:

- **Finance and support:** includes private funding, R&D expenditures in universities and government research organizations, and direct government funding and tax support for business R&D.
- **Firm investments:** captures indicators related to R&D and non-R&D investments by firms to drive innovation, including business R&D expenditures, non-R&D innovation expenses, and innovation expenditures per employee.
- **Use of information technologies:** measures the extent of adoption of information technologies.

³⁹ <https://www.wipo.int/edocs/pubdocs/en/wipo-pub-2000-2023-appendix3-en-appendix-iii-global-innovation-index-2023.pdf>

Innovation Activities: captures different aspects of innovation in the private sector and differentiates between three innovation dimensions:

- **Innovators:** measures the share of SMEs that have introduced innovations either in the market or within their organizations.
- **Linkages:** measures innovation capabilities by examining collaboration between innovating firms, research partnerships between the private and public sectors, and job-to-job mobility of Human Resources in Science & Technology (HRST).
- **Intellectual assets:** captures various forms of intellectual property rights (IPR) generated by the innovation process.

Impacts: captures the effects of enterprises' innovation activities and differentiates between three innovation dimensions:

- **Employment impacts:** measures the effect on employment.
- **Sales impacts:** measures the economic impact of innovation.
- **Environmental sustainability:** captures improvements in reducing the negative impact on the environment.

ANNEX 3: THE GLOBAL STARTUP ECOSYSTEM INDEX (GSEI)

The GSEI employs three main components to determine the total score for each ecosystem: **Quantity**, **Quality**, and **Startup Business Environment**.

- The **Quantity** score is derived from the volume of activity within an ecosystem, including the number of startups, investors, coworking spaces, accelerators, and startup-related meetups.
- The **Quality** score is obtained from extensive data gleaned from partners to assess factors such as total startup investment, unicorn presence, R&D centers, and global events impact.
- The **Startup Business Environment** score focuses on national-level parameters affecting business conditions, including internet speed, R&D investment, labor laws, and corruption perceptions.

Aside from the general rankings, 11 industry rankings are calculated within sectors: E-commerce & Retail; Education; Energy & Environment; Fintech; Foodtech; Hardware & IoT; Health; Marketing & Sales; Social & Leisure; Software and Data; and Transportation.



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