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2023 Country Report - Bulgaria

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**on the 2023 National Reform Programme of Bulgaria and delivering a Council opinion
on the 2023 Convergence Programme of Bulgaria**

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European
Commission

Bulgaria

2023 Country Report



ECONOMIC AND EMPLOYMENT SNAPSHOT

High inflation poses challenges, while structural weaknesses limit growth potential

The Bulgarian economy performed relatively well during the COVID-19 and energy crises. GDP rebounded strongly by 7.6% in 2021, after output contracted by 4% in 2020. In parallel, inflation picked up in the second half of 2021, driven by fuel and food price increases. Economic expansion continued in 2022, with GDP growth of 3.4% despite high inflation rates and political uncertainty. Consumer spending and exports supported GDP growth, while fixed investment declined in 2021 and 2022. High employment rates, coupled with strong increases in wages and social benefits and the government energy support measures, sustained consumer spending. Rapid export growth in 2022 was underpinned by the possibility to satisfy supply shortages of energy, food, metal and other materials, caused among other things by the Russian war of aggression against Ukraine.

Signs of persistence in inflation and supply constraints have emerged. While the initial surge in inflation was largely driven by external factors such as high energy and food prices, domestic factors have become increasingly important. This has led to inflation becoming somewhat persistent. Annual average consumer price inflation (HICP) was 13% in 2022, well above EU headline inflation of 9.2%, but still below inflation rates in the Baltic states, as well as in Poland, Czechia and Hungary. Nominal wages grew by 16.4% in 2022, well above the inflation rate. Fast growth in wages creates potential for second-round effects and more persistence in inflation.

The banking sector, dominated by foreign-owned banks, is profitable and well capitalised. The amount of new loans continued to grow strongly in 2022, notably in the mortgage sector. Credit expansion was supported by increasing bank deposits, income growth and still low nominal interest rates. The shift in the interest rate cycle and the real estate market possibly cooling off are set to test the resilience of the banking sector.

Structural factors continue to weigh on investment and potential economic growth. Fixed capital investment declined cumulatively by 12.3% in the last 2 years, with both private and public investment contributing to the slump. In an environment of dynamic economic activity, with relatively favourable financing conditions and increasing corporate debt shrinking investment indicates structural barriers to more intensive capital accumulation. In addition to high economic uncertainty, factors such as limited inflows of foreign direct investment, backlogs and the efficiency gap in public investment, including investment supported by EU funds, an unsupportive business environment and an over-concentration of economic activity in one single region, weigh on aggregate investment. Technology adoption and transfer is hampered by the low share of business and public R&D spending, the fragmented public research system and low patent activity. In addition to support from the Recovery and Resilience Facility (see Section Recovery and Resilience Plan is underway), Bulgaria also benefits from sizeable EU cohesion funds (EUR 11 billion, representing around 13% of GDP in 2022). Swift implementation of the Bulgarian recovery and resilience plan and cohesion policy programmes is key.

Box 1: Energy policy response in Bulgaria

Bulgaria has adopted several support measures to cushion the impact of energy price inflation on households and businesses. The Commission's 2023 Spring Economic Forecast projects the country's gross budgetary costs to amount to 1% of GDP in 2023. Most measures are ineffective as they reduce the price incentive and are not targeted to the most vulnerable. The measures are expected to be phased out by mid-2023.

Bulgarian household consumers were protected from energy price increases by regulated prices. These were frozen in December 2021 at the levels of July 2021 until March 2022 and increased by 3.4% for electricity and 24% for heating in the second half of 2022. Heating prices increased by 8% in July and then 14% in November. A means-tested targeted heating allowance for the heating season has also been in place. Non-household consumers were compensated by a support scheme that applies to all companies regardless of their consumption. The scheme currently covers all non-household consumers for electricity costs above EUR 102/MWh.

The support scheme to non-household consumers was partly financed by a special contribution on the windfall profits of some state-owned enterprises in the energy sector in 2022. Bulgaria applies the EU solidarity contribution when applying Council Regulation (EU) 2022/1854 ⁽¹⁾. As of January 2023, the country also applies ceilings to the profits that energy producers can obtain from the wholesale market. These ceilings include approximately EUR 90/MWh for nuclear power plants and EUR 180/MWh for renewable electricity generators. The revenue from this measure is transferred to the Electricity System Security Fund.

Bulgaria has taken steps to ensure the security of energy supply. It fulfilled its gas storage obligations, filling 91.53% of the sole underground gas storage facility 'Chiren' by 1 November 2022. It secured liquified natural gas (LNG) deliveries to offset the natural gas supplies cut off by Gazprom in April 2022. The commercial operation of the IGB gas interconnector between Greece and Bulgaria started in October 2022, while construction of the natural gas pipeline in Kostinbrod to connect Bulgaria and Serbia started in February 2023. While energy prices have decreased, uncertainty remains regarding the next winter, which requires continued efforts to structurally reduce gas demand.

Labour and product market inefficiencies together with institutional weaknesses are holding back prospects for faster economic convergence.

Although labour market participation rates have recovered from the COVID-19 pandemic, they are still below the EU average. Economic inactivity and low education levels are important factors behind poverty and income inequality. Non-participation in the labour market is particularly high among young people, the low-educated, people with disabilities, Roma as well as in poorer and rural areas. More dynamic business activity would benefit from

the better functioning of product and service markets by lowering administrative barriers, better integration in the single market and ensuring a level playing field among market participants (see Annex 12). In this respect, a high administrative burden, restrictiveness in regulated professions, a high level of paid work not declared and tax avoidance, indications of non-competitive practices and market outcomes perceived as being influenced by political connections hamper a better allocation of available economic resources. More generally, Bulgaria's poor performance on key institutional and governance indicators in the areas of judicial independence, corruption and corporate governance of state-owned enterprises has a long-term impact on economic potential and welfare ⁽²⁾. Major regional disparities further

⁽¹⁾ The application of a mandatory temporary solidarity contribution at a rate of at least 33% to the extraordinary and unexpected profits of businesses active in the extraction of crude petroleum, natural gas, coal, and refinery sectors. It is calculated on taxable profits, as determined under national tax rules in the fiscal year starting in 2022 and/or in 2023, which are above a 20% increase of the average yearly taxable profits in 2018-2021.

⁽²⁾ Nikolova, Desislava Enikova; Schiffbauer, Marc Tobias; Fazekas, Mihaly; Drozd, Maciej Adam; Pennings, Steven Michael; Vaughan, Kristina Noelle; Kilinc, Umut. Bulgaria

reduce business and growth opportunities, as companies and workers in less developed regions are struggling to boost their productivity and competitiveness.

Labour and skills shortages have become more prominent. According to the 2021 Census, the working age population in Bulgaria shrank by 19.1% between 2011 and 2021. Population ageing and net migration contributed in roughly equal measure to the shrinking number of people of working age. The lack of available skilled staff represents a long-term barrier to investment for 88% of Bulgarian firms according to the investment survey by the European Investment Bank ⁽³⁾. At the same time, adult participation in learning remains very low.

Low educational outcomes also hurt Bulgaria's growth potential.

Underachievement in basic skills, as measured by the OECD's Programme for International Student Assessment (PISA), is twice as high as the EU average. The rates of low achievement in basic skills are particularly high among students from disadvantaged backgrounds, suggesting that socio-economic factors greatly affect educational outcomes. Roma inclusion in education remains a challenge, as well as the inclusion of people with disabilities. Tertiary educational attainment is also low (for those aged 25-34). Investing more to improve people's skills would bring about higher productivity and income, more investment opportunities, getting more people into work or training and social inclusion, thereby supporting the implementation of the European Pillar of Social Rights.

Further progress is needed on Sustainable Development Goals

Despite some progress, Bulgaria needs to step up efforts to achieve the UN's Sustainable Development Goals (SDGs). It

Country Economic Memorandum: A Path to High Income (English), 2023. Washington, D.C.: World Bank Group.

⁽³⁾ EIB Investment Survey 2022: European Union overview.

performs below the EU average on SDG 7 (Affordable and clean energy) and on SDG 13 (Climate action), with a lack of progress on improving the share of renewable energy in final energy consumption. Despite some improvements over the past 5 years, waste generation and management indicators (SDG 12: Responsible consumption and production) remain far below the EU average. Bulgaria outperforms the EU average indicators on SDG 14 (Life below water), in particular on the share of bathing sites with excellent water quality. In addition, the level of eutrophication ⁽⁴⁾ in Bulgarian marine waters is comparatively low. Despite performing above the EU average on SDG 15 (Life on land), Bulgaria shows negative tendencies, in particular on land degradation and status of ecosystems. Bulgaria has made some progress towards achieving SDG 9 objectives (Industry, innovation and infrastructure).

Starting from very low levels, progress has been made on poverty, labour and health-related objectives.

Even though poverty remains above the EU average, over the past 5 years Bulgaria has made significant progress on reducing poverty indicators (SDG 1 No poverty). The country has made some progress on labour market indicators in SDG 8 (Decent work and economic growth), with employment rates on the rise, surpassing the EU average, and shares of long-term unemployed and young people not in employment, education or training falling, although the latter is still significantly above the EU average. In addition, the country is improving on SDG 3 indicators (Good health and well-being), although at low levels.

Nevertheless, significant challenges remain in several other social SDGs, in particular in education.

Bulgaria is moving away from the SDG objectives in SDG 4 (Quality education), where it already ranks among the worst performers in the EU. It also performs worse than the EU average on SDG 3 indicators (Good health and well-being) such as standardised avoidable mortality, fatal accidents at work and road traffic deaths. On

⁽⁴⁾ Excessive richness of nutrients in a lake or other body of water that causes a dense growth of plant life.

SDG 5 (Gender equality), despite performing in line with the EU average, Bulgaria is moving away from the objectives, especially on the gender employment gap and leadership positions held by women.

The public deficit has decreased but uncertainties remain

The public deficit decreased in 2022. The general government deficit was 2.8% of GDP in 2022, down by more than 1 percentage point compared to the previous year. Growth in revenue more than offset the growth in expenditure partly because of the higher prices of some products subject to indirect taxes, such as food and energy. Continued increases in wages also contributed positively to revenue through higher labour taxes. Measures to minimise the impact of high energy prices had a net budgetary effect of around 1% of GDP in 2022, as they were partly financed from a levy imposed on the windfall profits of state-owned enterprises in the energy sector.

The Parliament has not yet adopted the 2023 budget. In the absence of a budget law, the government has extended the 2022 budget including all policy measures adopted after the 2022 budget. The government has presented a 2023 draft budget and a convergence programme for the period 2023-2026 based on a no-policy change scenario. Based on these plans the deficit is expected to exceed 6% of GDP in 2023 and remain in the neighbourhood of 5% of GDP until 2026. The Commission forecasts a deficit of 4.8% of GDP in 2023 and 2024, also on the basis of continued policies.

Main drivers of the projected fiscal expansion are the increases in wages and pensions adopted in 2022. Measures to minimise the impact of high energy prices are also set to continue in 2023, but with a lower cost given the reduction in energy prices and expected phasing out. Similarly, the costs for the accommodation of people fleeing Ukraine is projected to fall substantially this year. Public debt remained low at around 23% of GDP in 2022 but is expected to increase to above

28% of GDP if there is no change in fiscal policy.

Budgetary developments are subject to upside risks. The Bulgarian authorities are working on policy proposals to contain the deficit, including the one of 2023. Should these proposals be adopted public deficit projections and debt sustainability analysis (see Annex 21) could improve substantially.

Dependence on Russian energy sources has been reduced

Although energy imports were heavily dependent on Russia, supply shortages were avoided. Gazprom cut off the supply of natural gas in April 2022, which posed an immediate challenge. Security of gas supply improved, and prices moderated after the IGB gas interconnector between Greece and Bulgaria started operating in October 2022 and gas prices fell in regional markets. IGB enabled Bulgaria to receive the full volume of contracted supplies from Azerbaijan, covering roughly 30 % of domestic consumption. The supply of Russian natural gas was replaced by short-term contracts for LNG deliveries via the Revythousa LNG terminal in Greece. This led to an 82% increase in gas prices for large industrial consumers in the first half of 2022. Households were largely protected from these price developments as they still benefitted from regulated tariffs.

Electricity generation in Bulgaria does not rely on natural gas, but largely on nuclear and coal. There was a significant increase in the electricity generated by the thermal power plants using domestic lignite – not only to satisfy domestic demand, but even more so for exports to the regional market. This secured exceptional record profits for power plant operators, including the state-owned companies. In 2022, Bulgaria failed to take steps towards a coal phase-out despite the commitments made in its recovery and resilience plan (RRP). The two operating nuclear reactors are dependent on Russian fuel. Bulgaria has signed contracts with French

and Swedish operators for an alternative supply of nuclear fuel, which should be in use as of mid-2024 and 2025 respectively.

The Lukoil-owned oil refinery Neftohim Burgas is the main supplier of petroleum products in the country. The refinery is able to mainly process Russian crude oil, and modernisation will allow for diversification to other suppliers. The sanctions on exports of Russian petroleum, in effect since February 2023, present a risk to exports of refined petroleum products. The domestic supply appears protected, through an agreed exemption and the possibility for the government to take operational control of the refinery.

THE RECOVERY AND RESILIENCE PLAN IS UNDERWAY

Bulgaria's RRP aims to address the key challenges related to the green and digital transition, business environment, including rule of law, social inclusion, access to quality education, training and healthcare. The Bulgarian RRP is ambitious and comprehensive. It consists of 103 individual measures (47 reforms and 56 investments), with a total of 346 milestones and targets. In 2021, the plan's total allocation amounted to EUR 6.3 billion in grants, which represents around 10.2% of GDP in 2019. In June 2022, this amount was revised to EUR 5.7 billion (around 8% of GDP in 2021). 58.9% of the plan's total allocation contributes to climate objectives and 25.8% to digital objectives. In addition, the plan is expected to improve Bulgaria's institutional framework and business environment, boost access to quality education, adult learning and healthcare, promote social inclusion and reform the research and innovation system. The following review of progress made in implementing the RRP in no way implies formal Commission approval or rejection of any payment requests.

Bulgaria's recovery and resilience plan is underway, however with increasing risk of delays. Bulgaria submitted one payment request, corresponding to 22 milestones and targets in the plan and resulting in an overall disbursement of EUR 1.37 billion. A high level of governmental instability has led to delays on key legislative reforms, such as those on public procurement, anti-corruption, and the accountability of the prosecutor general. Lack of political stability and administrative capacity also translated into a slowdown in the implementation work on several important energy and transport investments and to the questioning of key aspects of the plan, namely on decarbonization of the energy sector. The second payment request has been delayed and is now planned for September 2023. However, there is a significant risk that several milestones and targets related to key reforms

will not be fulfilled at the time of submission. Work on the addendum of the plan and REPowerEU chapter should be accelerated, while maintaining focus on implementation. It is still unclear when this work can be finalised due to the political situation.

Bulgaria received its first payment under the Recovery and Resilience Facility (RRF) on 16 December 2022. On 31 August 2022, it submitted a request to the Commission for the disbursement of EUR 1.37 billion under the RRF. The request was based on the achievement of the 22 milestones and targets linked to the first instalment. These milestones cover reforms in the areas of education, smart industry, climate neutrality, digital connectivity, sustainable transport and road safety, justice, anti-money laundering, social inclusion, healthcare, and the audit and control system linked to the RRF.

Some of the completed milestones ought to help implement the plan by providing a suitable information and administrative environment. Bulgaria has set up an information system for monitoring and managing the implementation of the plan. A management and control system has been approved and covers the ministries and bodies responsible for carrying out controls on the implementation of the plan, as well as specific measures to combat fraud, corruption, double funding, conflicts of interest and arrangements for reporting and correcting serious irregularities. To ensure appropriate administrative capacity, a workload analysis was carried out for the National Funds Directorate, the Central Coordination Unit and the Executive Agency 'Audit of EU Funds', and relevant recommendations were implemented. Bulgaria also completed one target on updating video guides on all business processes of the RRP information system.

Initial steps have been taken to support the green transition. They include reforms in the area of decarbonisation and sustainable transport, but delays are piling up and risk hampering further progress. For the green transition, the first milestone achieved was the establishment of the Green Energy Transition Commission. It aims to prepare scenarios and recommendations for a roadmap to climate neutrality, but its work has been delayed. As a first step towards more sustainable transport, Bulgaria put in place a national plan to develop combined transport by 2030 for cleaner transport and signed contracts to extend the Sofia metro in order to provide clean, rapid and efficient public transport.

There has been progress on flagship measures linked to the digital transition in the first payment request. This includes a reduction in the fees for spectrum use in an effort to encourage faster deployment of 5G networks in the country, as well as legislative changes that support a favourable investment environment to boost the deployment of very high capacity networks throughout the country. The government has also awarded contracts for developing, building and optimising the TETRA digital system and radio relay network managed by the Ministry of Interior.

This first payment request covers reforms of the education system at all levels. This includes pre-school, primary and secondary school and higher education. In particular, Bulgaria amended the Pre-school and School Education Act and related secondary legislation. This included making pre-school education mandatory from the age of four, amending the Higher Education Act to introduce a revised accreditation system for higher education institutions, and adopting the National Map of Higher Education to support a more balanced higher education offer across the country.

Bulgaria also took first steps towards strengthening social cohesion and modernising mental healthcare services. Measures include legislation to gradually raise the minimum income and expand its coverage in 2022-2024, together with legislation that regulates minimum quality standards for the

provision of social services. In the area of healthcare, Bulgaria adopted the National Strategy for the Mental Health of Citizens of the Republic of Bulgaria 2021-2030 and an action plan, which aims to address the key problems of its psychiatric care system.

Bulgaria has also made progress on improving the justice system and business environment. This was done by completing the first steps of key reforms that aim to ensure accessible, effective and predictable justice, strengthen the anti-money laundering framework and improve the quality of the legislative process. In addition, the entry into force of the new Industrial Parks Act created a consolidated regulatory framework to stimulate industrial investment and production in industrial parks.

Although the first payment request was approved, there have been some delays in implementation. The second payment request was scheduled for Q1-2023 but has not yet been submitted. Milestones and targets linked to the second and third payment requests are facing considerable delays. This is also due to the lack of a functioning parliament and political instability, where a fifth round of parliamentary elections in 2 years took place on 2 April 2023. The two payment requests include 112 milestones and targets, with indicative due dates between Q3-2022 and Q2-2023. They cover reforms and investments that are expected to contribute to the green and digital transition and boost economic, institutional and social resilience.

The most notable delays are in the areas of transport, business environment and decarbonisation. For example, the Parliament has not yet adopted a resolution to approve a roadmap on climate neutrality, based on the report and recommendations of the independent Energy Transition Commission. There are also delays in rule of law reforms related to anti-corruption and public procurement. Relevant legislative amendments to improve criminal proceedings, introduce a mechanism for the accountability and criminal liability of the Prosecutor General, set up a new financially and politically independent anti-corruption body as well as

improve the public procurement framework have not been adopted.

Complementarity with other EU funds will play an important role in improving the reach and efficacy of the reforms and investments under the RRP. To reap the benefits of potential synergies between the measures in the RRP and additional complementary initiatives funded via other EU instruments and national resources, implementation of the different measures needs to be properly coordinated. So far, in addition to the RRP, the Commission has adopted the Partnership Agreement with Bulgaria. This lays down the cohesion policy investment strategy for 2021-2027 that will implement key EU and national priorities such as the green and digital transition, support to the most vulnerable people across the territory and a more inclusive labour market. However, Bulgaria still needs to make progress on the implementation of the Just Transition Fund, which provides support to the regions most affected by the coal phase-out, reaping the benefits of the green transition throughout the country. The absorption of a considerable amount of EU funds available to Bulgaria will be a key challenge (see Further priorities ahead).

Key deliverables under the RRP in 2023-2024

- Reducing emissions from the energy sector and entry into force of legislation that introduces a coal phase-out calendar and a CO₂ emissions cap for lignite and coal-fired power plants
- Signing contracts to make the building stock more energy efficient and establishing the National Decarbonisation Fund
- Integrating sustainable urban mobility into territorial strategies and development planning
- Law on promoting electric vehicles and progress report on the implementation of the new road safety action plan
- Publication of the market assessment for the public rail transport service, underpinning the scope of the new public service contract
- Measures to strengthen the insolvency and restructuring framework
- Amendments to the Biodiversity Act
- 100 000 additional people and 100 municipality centres with access to very high capacity networks
- 1 200 providers of services of general interest with access to 1 Gbps access points
- Measures to strengthen the anti-money laundering framework
- Registry reform to unlock the potential of e-government
- Digital reform of the Bulgarian construction sector
- Publication of the lists of projects approved for funding for technological modernisation and for the acquisition and integration of digital technologies
- Measures on the governance of state-owned enterprises
- Measures to improve criminal proceedings, the accountability of the Prosecutor General, the quality of institutions and setting up a new anti-corruption body
- Measures to improve competition in public procurement as well as improve and intensify controls and related sanctions
- Signature of contracts to develop the e-platform for adult learning and to construct or renovate educational infrastructure
- Finalisation of the minimum wage reform and the National Map of Social Services
- Signature of contracts to construct or renovate healthcare facilities
- Amendments to relevant legislation and establishment of a national fund to address shortages and promote a more balanced distribution of healthcare professionals across the country

FURTHER PRIORITIES AHEAD

Beyond the challenges tackled in its RRP, Bulgaria faces additional ones. Although the RRP contains a comprehensive and ambitious set of reforms and investments, it does not address high out-of-pocket payments for healthcare services. More attention could be given to the provision of employment services better targeted to individual needs, particularly for vulnerable groups. Several aspects of Bulgaria's RRP help improve regional disparities, but some challenges for overall cohesion remain. In addition, delays in RRP implementation, along with increased uncertainty due to Russia's invasion of Ukraine, pose challenges for the required transformation of the energy sector. It will also be key to properly implementing several key reforms envisaged in the area of rule of law to create a better business environment. Addressing these challenges will also help make further progress in achieving the Sustainable Development Goals (SDGs) where Bulgaria has room for improvement, namely SDG 4 (Quality education), SDG 12 (Responsible consumption and production) and SDG 16 (Peace, justice and strong institutions).

Bulgaria is lagging behind on the green transition

Bulgaria remains the most carbon-intensive economy in the EU. Greenhouse gas intensity is more than four times higher than the EU average. The share of fossil fuels in Bulgaria's energy mix was 63% in 2021, with nuclear representing 22% and renewables 15% (lower than the EU renewables average of 19%). Nonetheless, the country managed to reduce gas demand by 23.9% between August 2022 and January 2023, which is above the EU average. To continue this trend, Bulgaria should take advantage of the REPowerEU plan and scale up energy-related measures that further

strengthen the decarbonisation objectives, in particular (i) identification of go-to areas for a faster deployment of the renewable energy sources, including for offshore wind; (ii) creation of energy communities; (iii) monitoring of greenhouse gas and industrial emissions from installations; and (iv) investments in training in the building renovations and renewables sectors. Decarbonisation is an essential part of ensuring the security of supply, in parallel with continuing actions to diversify away from Russian fossil fuels and focusing on reducing demand.

Decarbonisation of the energy sector, in line with the European Green Deal and REPowerEU objectives, remains a pressing challenge. Coal and lignite electricity generation in Bulgaria grew in the past year, resulting in high profits due to increased electricity exports and high electricity prices. However, adopting a clear roadmap to climate neutrality would allow Bulgaria to kick-start the decarbonisation process and the just and fair transition in affected regions. It would also enable it to make full use of available EU funds, along with private investments. Furthermore, the Commission referred Bulgaria to the Court of Justice of the European Union in January 2023. It requested that the Court impose financial sanctions on Bulgaria in accordance with Article 260(3) Treaty on the Functioning of the European Union for failing to incorporate the EU Renewable Energy Directive into national law. This highlights the urgency for action. Bulgaria will need to greatly strengthen its renewable energy target in the updated national energy and climate plan to reflect the more ambitious EU climate and energy targets proposed by the Commission in July 2021 under the 'Fit for 55' package (designed to cut the bloc's emissions by 55% in 2030) and in May 2022 under the REPowerEU plan.

Bulgaria would benefit from significantly accelerating investments that support the green transition of its economy. Faster deployment of a much larger capacity of renewable energy, coupled with energy storage to balance the system, would help make energy prices more affordable for consumers. It would also enable the country to phase out coal and lignite at the latest by 2038, as envisaged in the RRP. It would be crucial to complement such investments by deploying energy-efficient measures in industry and public and private buildings, investing in modernising and smartening the grids, and making rapid and large-scale investments in energy storage. Furthermore, accelerating the transition towards sustainable mobility is a key aspect that contributes to Bulgaria's shift to a greener economy. This can be accomplished by reforms and investments that complement those in the RRP, for example by boosting investments in railways, particularly in the development of the Trans-European Transport Network, improving multimodality in both national and urban transport networks and promoting electric mobility, including the deployment of charging stations. Taking these steps will help bring about a modal shift and decarbonise the transport sector.

Grid-scale renewable projects continue to face delays due to complex and lengthy administrative procedures. While the RRP includes the deployment of 3.5 GW of renewables, with 1.4 GW collocated with storage, the envisaged reforms on simplified permitting face significant delays and their implementation has not started. Another investment from the RRP that is stalling is the national infrastructure of grid-scale electricity storage located near renewable generating capacity. Once implemented, it will contribute to system balancing and grid congestion management, which is necessary to integrate higher shares of electricity generated from renewable energy. In this regard, full and swift implementation of EU legislation in the area of renewable energy, including Council Regulation (EU) 2022/257, Directive (EU) 2018/2001 and its forthcoming amendments, would facilitate and speed up permitting and grid connection procedures for renewables.

Constraints to the development of grid capacity and to further upgrades are a significant bottleneck to scaling up renewables. While the RRP includes upgrading the transmission grid to integrate new generation capacities from renewable sources of at least 4.5 GW, significant improvements to the existing grid are needed as well as the deployment of energy storage facilities to ensure that additional grid-scale renewable capacity can be integrated swiftly without creating system balancing issues. There are delays in deploying both large-scale and small-scale renewables due to the limited availability of grid capacity. Priority should be given to modernising and upgrading transmission and distribution.

More and swifter energy efficiency renovations of public and private buildings can help reduce energy demand and fossil fuel use. The RRP includes several measures on energy efficiency covering over 5 million square meters of total gross floor area, with the related calls for applications ongoing. However, higher primary and final energy consumption in 2021 compared to 2019 reveals a worrying trend that could jeopardise the achievement of the 2030 energy efficiency targets unless further action is taken. Bulgaria is one of only two Member States that missed the 2020 energy efficiency targets on both primary and final energy consumption, while also underachieving on the energy savings obligation under Article 7 of the Energy Efficiency Directive. Broader ranging measures (e.g. for single-family homes) and more ambitious measures that also include financial instruments are therefore required to meet the higher energy efficiency target under the Fit for 55 package.

Promoting new future-proof solutions in district heating could lead to significant energy savings and reduced dependency on gas and other fossil fuels. The RRP envisages the deployment of a 10 MW pilot project on combined heat and power from geothermal sources as well as seismic mapping of the geothermal potential across the country. However, Bulgaria lacks a plan to decarbonise district heating and has failed to make progress in identifying new sustainable

solutions (e.g. centralised heat pump, solar heating systems, secondary heat sources), while this aspect remains even more relevant. First, the district heating systems in major cities such as the capital Sofia and the second-biggest city Plovdiv are based on natural gas and are responsible for around 30% of natural gas consumption in Bulgaria. Second, heating and cooling are major sources of emissions in the effort sharing sector where Bulgaria needs to take additional measures to achieve its Fit for 55 target. Third, district heating is linked with energy poverty. A dedicated working group was created under the Council of Ministers to elaborate a proposal for the definition of energy poverty in the national legislation but so far no definition has been legislated, as required by commitments in the RRP. The share of the Bulgarian population unable to keep their homes adequately warm is the highest in the EU, although some improvements have been made since 2015.

Labour and skill shortages in several green sectors have increased in recent years, creating bottlenecks in the transition to a net-zero economy. In 2022, labour shortages were reported for a number of occupations that required specific skills or knowledge for the green transition⁽⁵⁾. In addition, a recent report from Eurofound identified labour shortages linked to the green transition in several sectors, especially in manufacturing and tourism⁽⁶⁾. Upskilling and reskilling for the green transition, including for people most affected, are essential policy levers to accelerate the transition to net zero and ensure fairness (see Annex 8).

Bulgaria appears to be particularly vulnerable to suffer from economic

losses after floods⁽⁷⁾. The current protection gap for floods in Bulgaria suggests that the insurance coverage remains low compared to the projected risk, and this could result in losses to be covered by the public sector, thereby potentially posing a risk to public finances. Between 1980 and 2020, only around 2%⁽⁸⁾ of disaster losses were insured in Bulgaria.

Healthcare services still not available to everyone

Key indicators point to the ineffectiveness and lack of resilience of the health system. Life expectancy in Bulgaria continues to be the lowest in the EU. Its health system is characterised by limited and unequal access to healthcare services across the country, which is exacerbated by shortages of healthcare professionals, especially nurses. In addition, healthcare spending is low overall and mostly concentrated in inpatient care (hospitals), with little focus on outpatient care and prevention.

Bulgaria has taken steps to address some of these structural challenges. Some measures to address these challenges are funded by the Recovery and Resilience Facility. They include setting up outpatient care units with a focus on remote areas with no healthcare facilities within a reasonable distance, measures to address shortages of healthcare professionals and their geographical distribution, as well as improving

⁽⁵⁾ [European Labour Authority \(2023\), EURES Report on labour shortages and surpluses 2022](#). Skills and knowledge requirements are based on the ESCO (European Skills Competences and Occupations) taxonomy of skills for the green transition (for occupations at ISCO 4-digit level of which there are 436 in total). Examples are identified based on their ESCO 'greenness' score and relevant sectors.

⁽⁶⁾ [Tackling labour shortages in EU Member States | Eurofound \(europa.eu\)](#)

⁽⁷⁾ The climate protection gap refers to the share of non-insured economic losses caused by climate-related disasters. This indicator is based on the modelling of the current risk from floods, wildfires, and windstorms as well as earthquakes, and the estimation of the current insurance penetration. The indicator does not provide information on the split private/public cost of climate related disasters. A score of 0 means no protection gap, while a score of 4 corresponds to a very high gap. EIOPA considers that a score below 3 is not a relevant protection gap but that countries with a score of 2.5 need to be monitored ([EIOPA, 2022](#)).

⁽⁸⁾ [Disaster Risk Financing: Limiting the Fiscal Cost of Climate-Related Disasters \(Radu, 2022\)](#)

the provision of telemedicine services and the establishment of an air ambulance system.

However, access to health services is still out of reach for a significant share of the population. Despite some improvements in access to the National Health Insurance Fund, the country's health system relies heavily on out-of-pocket payments. They represent 36% of total healthcare spending in Bulgaria, which is the highest in the EU (see Annex 16). High out-of-pocket payments are a major obstacle to accessing health services, particularly for low-income households. The share of households impoverished after out-of-pocket payments (8%) and the share of households with catastrophic health spending (19%) are high compared to other EU countries⁽⁹⁾. In addition, 15% of the population is uninsured, with access to only a few publicly financed health services⁽¹⁰⁾. The insurance gap is even higher among vulnerable groups, including Roma, where 53% of the population is uninsured⁽¹¹⁾.

Challenges persist in the areas of labour market and social inclusion

Despite improvements, structural challenges remain, particularly for vulnerable groups. This includes groups such as children, people with disabilities, Roma, young people and those living in rural and remote areas. These challenges are linked to the labour market, social inclusion and the take-up of education and training.

The recent positive labour market trend has not spread equally across all groups in society. In particular, the employment rate of the low-skilled remains below the EU average. Similarly, young people aged 15-29 not in education, employment or training (NEET) and Roma still face substantial

difficulties in accessing the labour market. The share of NEETs also remains relatively high, particularly among Roma.

Low educational outcomes pose bottlenecks to productivity and potential growth. The share of adults with at least basic digital skills lags badly behind the EU average together with adult participation in learning, where Bulgaria has set an ambitious national target for 2030. While decreasing in recent years, the rate of early school leavers remains a challenge and is especially high for Roma and people in less developed, rural and remote areas. Participation in early education and care remains low and is significantly below the EU average (18.7% vs 36.2% in 2021). In addition, almost half of young Bulgarians lack basic skills in reading, mathematics or science, in the face of growing teacher shortages. Teachers in Bulgaria are also some of the oldest in the EU (see Annex 15). The employment rate of recent graduates from vocational education and training (VET) remains a challenge. Important VET measures were adopted recently, including with the support of EU funding, especially dual VET (work-based learning), although it is too early to see results (see Annex 14). In addition, quality and equity in education, particularly for Roma and in rural areas, remains a challenge.

Levels of poverty and income inequality are particularly high among children, people with disabilities, Roma and those living in rural and remote areas. In 2021, the income of the richest 20% of the population was 7.5 times higher than that of the poorest 20%, well above the EU average of 5 times higher. The share of children in poverty or social exclusion stood at 33% and for people with disabilities at 45.3%, both among the highest in the EU. Poverty and social exclusion also greatly affect people living in rural areas (42.5% vs 22.5% in the EU) and almost four-fifths of all Roma (78.7%)⁽¹²⁾. Bulgaria is partly addressing these social challenges with increased funding from the European Social Fund Plus (of which EUR 135 million has been allocated to tackle

⁽⁹⁾ [World Health Organization, 2022](#)

⁽¹⁰⁾ [World Health Organization, 2022](#)

⁽¹¹⁾ [Roma in 10 European Countries – Main results | European Union Agency for Fundamental Rights \(europa.eu\)](#)

⁽¹²⁾ National Statistics Institute (2022), Poverty and Social Inclusion Indicators in 2021.

child poverty). This will ultimately contribute to achieving the 2030 national target on reducing (child) poverty.

Against this background and a declining working age population, labour shortages are increasing.

This highlights the need to further promote labour market activation and remove barriers to the employment of underrepresented groups. Spending on active labour market policies in Bulgaria is among the lowest in the EU and is largely dependent on external funding. Slow adaptation to the needs of the business environment also means worsening skills shortages. According to a business survey of the National Employment Agency, businesses will need more than 200 000 workers and specialists in 2023 across a range of sectors. Despite a relatively low job vacancy rate overall (0.9% on average in the first three quarters of 2022, compared to 3% for the EU), it is difficult to fill certain vacancies in real estate, education, healthcare and social work ⁽¹³⁾. In 2022, labour shortages were reported as a factor constraining production in industry (for 34.9% of firms) and construction (for 39.5% of firms) ⁽¹⁴⁾.

Regional indicators point to wide disparities across regions

Bulgaria faces significant disparities both between and within its regions. Despite the fact that some of the least developed regions such as Severozapaden (North-West) and Severen tsentralen (North-Central) registered high growth rates in 2011-2020, economic activity remains highly concentrated in the capital region, which generates 51% of national GDP. Economic disparities between urban and rural areas are among the highest. While Bulgaria's GDP per capita was 55% of the EU average in 2020, the capital region was at 92%, while all other regions ranged from 36% to 42%. Addressing root causes such as differences in labour productivity, employment,

demographic trends, infrastructure, research and innovation performance and access to funding and investment opportunities could unlock the economic potential of less developed regions and help reverse the rapid decline in the population. Moreover, rail and road density are far below the EU average, with northern regions lagging behind.

Employment and productivity at regional level contribute to strong regional disparities.

In 2021, the unemployment rate was as low as 3.5% in the capital region and as high as 11% in the least developed region (Severozapaden). Nominal labour productivity per hour worked reaches only 53.4% of the 2021 EU level (in purchasing power standards). Although significant regional disparities remain, less developed regions are catching up with higher productivity growth. Investments in the regional research and innovation system, industrial development and human capital (investing in improving people's skills) are important to boost competitiveness and innovation and create a stable environment for businesses.

Challenges related to the green transition vary significantly across regions.

The coal regions are particularly affected by the stuttering green transition. In the Stara Zagora region in particular, emissions from fossil fuels are 2.5 times higher than the EU average, caused by the concentration of several coal-fired power plants and the country's largest coal mine located in the Yuzhen tsentralen (South-Central) region. As a result, the socio-economic impacts on coal regions in achieving their targets under the European Green Deal are greater. In this context, the territorial just transition plans are particularly important to support and properly address the vulnerability of identified districts, including Stara Zagora, Kyustendil and Pernik. Bulgaria has access to sizeable EU funds but there are delay risks

Implementation of the EU financed programmes will be challenging in 2023.

Price increases in energy and construction sectors coupled with political uncertainty make it very difficult to complete investment projects. The financial support available to Bulgaria through EU funds up to 2027 exceeds

⁽¹³⁾ National Employment Agency (2022), *Employer Labour Needs Survey, W2/2022*.

⁽¹⁴⁾ [Business and consumer surveys \(europa.eu\)](https://ec.europa.eu/eurostat/tgm/table.do?tab=table&init=1&language=en&plugin=1)

EUR 16 billion. The 2021-2027 EU cohesion policy funds are set to support investments up to EUR 10.8 billion in Bulgaria. In particular, under the policy objective *Greener Europe*, EUR 2 billion is expected to assist the green transition as well as climate change mitigation and adaptation, risk prevention and sustainable urban mobility. In 2023-2027, Bulgaria will also benefit from EUR 5.6 billion from the common agricultural policy to support rural areas and social, environmental, economically sustainable and innovative agriculture. This will contribute to the European Green Deal and ensure long-term food security.

All 10 programmes under the 2021-2027 cohesion policy have now been adopted, with the exception of the Just Transition Fund. The implementation of the measures described in the territorial just transition plans will be financed by the 'Development of Regions' programme. The remaining Just Transition Fund allocation for Bulgaria corresponds to EUR 1.2 billion to lessen the socio-economic impacts of the green transition in the most vulnerable regions. Bulgaria's failure to programme the Just Transition Fund has resulted in a loss of almost EUR 100 million from its overall allocation in 2022. The country now risks losing an additional EUR 826 million in 2023. The main issue is the lack of clear evidence of a transition process, in particular for the Stara Zagora region.

KEY FINDINGS

Bulgaria's RRP includes measures to address a series of structural challenges, but delays put the plan at risk.

- There are considerable delays with measures to speed up the deployment of renewable energy, cut greenhouse gas emissions and define energy poverty. The Green Energy Transition Commission, for preparing scenarios and recommendations for a roadmap to climate neutrality, was put in place, but its work has stalled. Investments in sustainable transport are also lagging, despite the adoption of the national plan for the development of combined transport by 2030 and progress on extending the Sofia metro.
- Bulgaria has taken steps to promote the accelerated deployment of 5G networks and high capacity networks.
- Legislative reforms were adopted to increase quality of legislative process, help create a more accessible and effective justice system and improve the regulatory framework for anti-money laundering and industrial investment. It is necessary to swiftly adopt and implement important rule-of-law reforms on anti-corruption and public procurement.
- Progress has been made in making pre-school education mandatory from 4 years of age, alongside the adoption of strategic documents and legislation in higher education, social services and mental health.
- Legislation to gradually increase the minimum income and expand its coverage over 2022-2024 has been amended. This is a step to achieving a broader reform by end of 2023.

Bulgaria should significantly improve the governance structure and administrative capacity to allow for a swift and steady implementation of its recovery and resilience

plan, and swiftly finalise the REPowerEU chapter with a view to rapidly starting its implementation.

Beyond the reforms and investments in the RRP, Bulgaria would benefit from:

- Further reducing overall reliance on fossil fuels by accelerating the deployment of a much larger capacity of renewable energy sources and increasing investments in electricity infrastructure and storage;
- Stepping up energy efficiency renovations and deployment of renewable solutions for space heating, and promoting new future-proof solutions in district heating to reduce air pollution and fossil fuel use in buildings;
- Developing decarbonisation measures to be included in the REPowerEU chapter;
- Boosting investment in the transport sector through the development of railway infrastructure (namely by complementing the core Trans-European Transport Network), improving multimodality in national, regional and urban transport networks, and promoting electric mobility, to curb the greenhouse gas emissions from the domestic transport sector;
- Further improving access to healthcare services, in particular by addressing the high share of out-of-pocket payments;
- Further strengthening active inclusion by integrating employment and social services and providing active labour market policies in order to narrow regional disparities and tackle the challenges of vulnerable groups, including Roma and people with disabilities;
- Promoting green skills needed for the green transition;
- Removing obstacles to the swift deployment and implementation of investments funded by all EU instruments.

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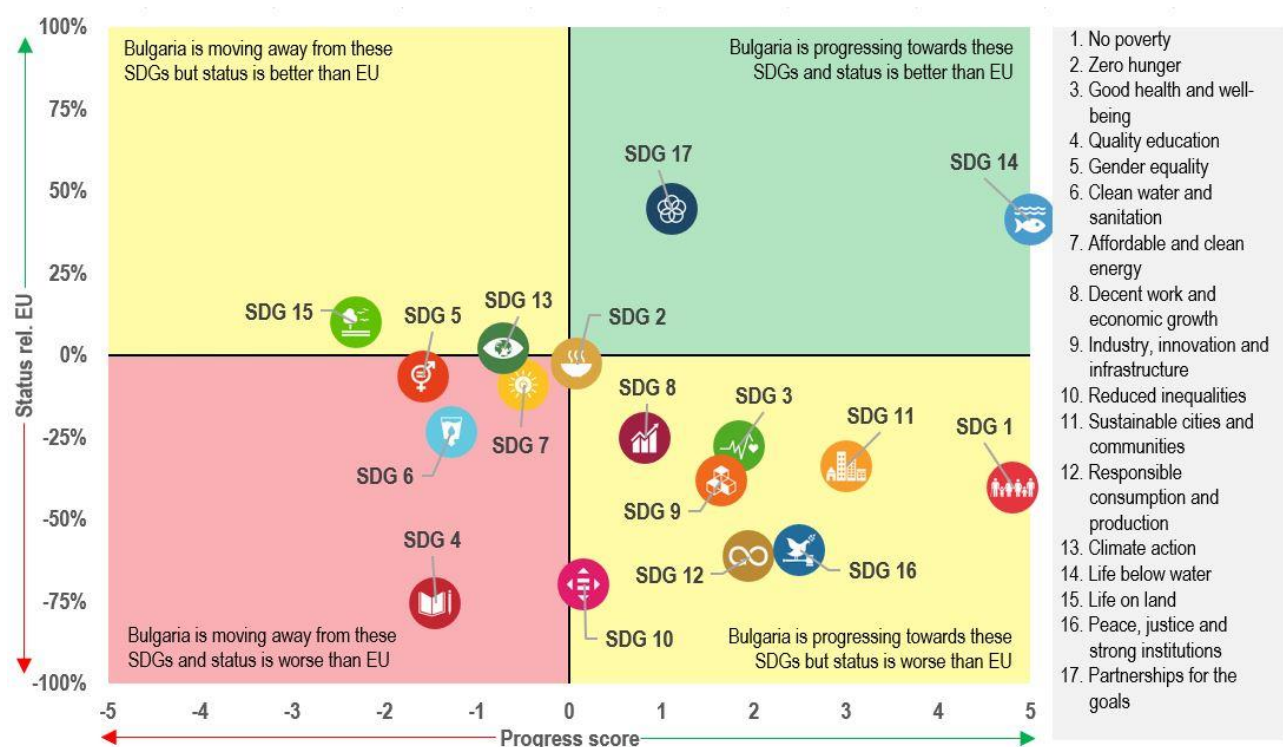


This Annex assesses Bulgaria’s progress on the Sustainable Development Goals (SDGs) along the four dimensions of competitive sustainability. The 17 SDGs and their related indicators provide a policy framework under the UN’s 2030 Agenda for Sustainable Development. The aim is to end all forms of poverty, fight inequalities and tackle climate change and the environmental crisis, while ensuring that no one is left behind. The EU and its Member States are committed to this historic global framework agreement and to playing an active role in maximising progress on the SDGs. The graph below is based on the EU SDG indicator set developed to monitor progress on the SDGs in an EU context.

While Bulgaria performs well on indicators related to environmental sustainability (SDG 14), it is improving on others (SDGs 9, 11, 12). However, it is moving away from SDGs 6, 7, 13 and 15. Bulgaria outperforms the EU

average indicators on SDG 14 (Life below water), in particular on the share of marine waters affected by eutrophication (0.00% of the Exclusive Economic Zone in 2022, 0.51% in the EU). In addition, despite performing above the EU average on SDG 15 (Life on land), Bulgaria shows negative tendencies, in particular on land degradation and status of ecosystems. Bulgaria has made some progress on sustainable industry (SDG 9) and the green economy (SDG 12), in particular on gross value added in environmental goods and services sector (from 1.6% of GDP in 2016 to 2.8% in 2019, 2.3% in the EU in 2019), and on sustainable infrastructure (SDG 9). In addition, Bulgaria has made significant progress on quality of life in cities and communities indicators (SDG 11), such as the severe housing deprivation rate (8.6% of the population in 2020 compared to 11.4% in 2015) and the population reporting crime, violence or vandalism in their area (19.1% in 2020 compared to 26.3% in 2015). Nevertheless, it remains below the EU average. Water quality (SDG 6) and climate mitigation indicators (SDG 13) are

Graph A1.1: Progress towards the SDGs in Bulgaria in the last 5 years



For detailed datasets on the various SDGs, see the annual Eurostat report ‘Sustainable development in the European Union’; for details on extensive country-specific data on the short-term progress of Member States: [Key findings – Sustainable development indicators – Eurostat \(europa.eu\)](#). The status of each SDG in a country is the aggregation of all indicators for the specific goal compared to the EU average. A high status does not mean that a country is close to reaching a specific SDG, but signals that it is doing better than the EU on average. The progress score is an absolute measure based on the indicator trends over the past 5 years. The calculation does not take into account any target values as most EU policy targets are only valid for the aggregate EU level. Depending on data availability for each goal, not all 17 SDGs are shown for each country.

Source: Eurostat, latest update of early April 2023, except for the EU Labour Force Survey (LFS) indicators released on 27 April 2023. Data mainly refer to 2016-2021 or 2017-2022.

moving away from SDGs, in particular on the share of renewable energy in gross final energy consumption (from 18.8% in 2016 to 17.02% in 2021). Waste generation and management (SDG 12) remains a challenge for Bulgaria as the generation of waste indicator and the circular material use rate are significantly below the EU average. Bulgaria's recovery and resilience plan (RRP) includes measures to address some of the energy and climate-related challenges, namely developing a framework to phase out coal, deploying renewable energy projects and constructing and modernising waste water treatment plants.

While Bulgaria underperforms on SDG indicators related to *fairness*, it is improving on several of them (SDGs 1, 3, 8), while moving away on quality education (SDG 4).

Bulgaria is significantly improving on all SDG 1 indicators (No poverty), such as people at risk of poverty or social exclusion (31.7% in 2021 compared to 41% in 2016) and the severe material and social deprivation rate (19.1% in 2021 compared to 33.5% in 2016). In addition, Bulgaria has also improved on access to healthcare (SDG 3; 1% of those aged 16 or over with self-reported unmet needs for medical care in 2021 compared to 2.8% in 2016) and on the share of the population unable to keep their home adequately warm (SDG 7; 23.7% of the population in 2021 compared to 39.2% in 2016). On SDG 8 (Decent work and economic growth), the share of working poor is making progress towards the EU average (10.0% in 2021 compared to 11.4% in 2016, 8.9% in the EU). Moreover, the percentage of young people aged 15-29 not in education, employment or training (SDG 8) has fallen (17.6% in 2021 compared to 22.4% in 2016) but remains high and above the EU average (13.1% in 2021). On the negative side, Bulgaria is moving away from SDGs on Gender equality (SDG 5). In particular, the gender employment gap (8.4% of those aged 20-64 in 2021 compared to 6.8% in 2016) and positions held by women in senior management. Moreover, Bulgaria is also moving away from SDGs on basic education and adult learning indicators (SDG 4), mainly on the share of low achieving 15-year-olds in reading (47.1% in 2018 compared to 41.5% in 2015) and on adult participation in learning in the past 4 weeks (1.8% of those aged 25-64 in 2021 compared to 2.2% in 2016). The Bulgarian RRP includes measures to address some of these challenges. In particular, measures in the plan aim at improving the quality

and effectiveness of the education and training systems, strengthening the provision and availability of health services and supporting social inclusion and the reduction of poverty.

While Bulgaria is improving in R&D, sustainable industry and employment indicators related to *productivity* (SDGs 8 and 9), challenges remain on digital skills (SDG 4).

Despite some improvements on the productivity indicators, the country ranks below the EU average on all of them. Bulgaria has made some progress on R&D and innovation indicators, in particular on gross domestic expenditure on R&D (SDG 9; 0.81% of GDP in 2021 compared to 0.77% in 2016) and on patent applications to the European Patent Office (6 per million inhabitants in 2021 compared to 3 per million inhabitants in 2016). In addition, Bulgaria has made significant progress on the share of households with a high-speed internet connection (SDG 9; 84.7% of households in 2021 compared to 38.2% in 2016) and on some sustainable economic growth indicators, such as the real GDP per capita (EUR 6 950 per capita in 2021 compared to EUR 5 910 in 2016). On the negative side, challenges remain on digital skills. As such, the country ranks below the EU average on the share of adults with at least basic digital skills (31.2% of those aged 16 to 74 compared to 53.9% in the EU in 2021). The Bulgarian RRP includes significant measures aimed at improving innovation, such as the adoption of a Research and Innovation Act and the establishment of the Innovation Board.

While it performs well on SDG 17, Bulgaria is improving on SDG indicators related to *macroeconomic stability* (SDGs 8 and 16), but still needs to catch up compared to the EU.

Bulgaria outperforms the EU on several Partnerships for the goals indicators (SDG 17). The country has improved on SDG 8 (Decent work and economic growth) and on SDG 16 (Peace, justice and strong institutions), in particular on the employment rate (73.2% of the population aged 20-64 compared to 67.0% in 2016), the long-term unemployment rate (2.6% of the active population in 2021 compared to 5.0% in 2016) and general government total expenditure on law courts (EUR 63.80 per capita in 2020 compared to EUR 42.30 in 2015). Nevertheless, the indicators remain below the EU average.

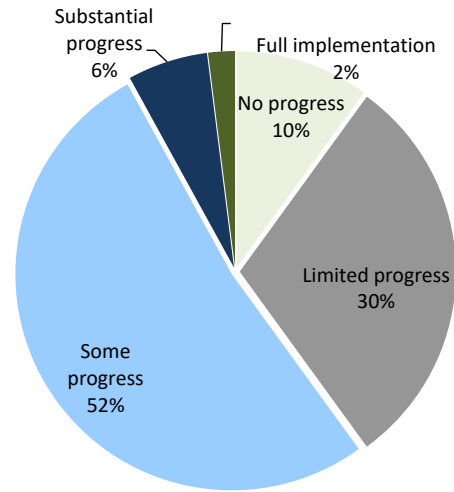
As the SDGs form an overarching framework, any links to relevant SDGs are either explained or depicted with icons in the other Annexes.



ANNEX 2: PROGRESS IN THE IMPLEMENTATION OF COUNTRY-SPECIFIC RECOMMENDATIONS

The Commission has assessed the 2019-2022 country-specific recommendations (CSRs) ⁽¹⁵⁾ addressed to Bulgaria as part of the European Semester. These recommendations concern a wide range of policy areas that are related to 14 of the 17 Sustainable Development Goals (see Annexes 1 and 3). The assessment considers the policy action taken by Bulgaria to date ⁽¹⁶⁾ and the commitments in its recovery and resilience plan (RRP) ⁽¹⁷⁾. At this stage of RRP implementation, 60% of the CSRs focusing on structural issues from 2019-2022 have recorded at least 'some progress', while 30% recorded 'limited progress' (see Graph A2.1). As the RRP is implemented further, considerable progress in addressing structural CSRs is expected in the years to come.

Graph A2.1: **Bulgaria's progress on the 2019-2022 CSRs (2023 European Semester)**



Source: European Commission

⁽¹⁵⁾ 2022 CSRs: [EUR-Lex - C:2022:334:TOC - EN - EUR-Lex \(europa.eu\)](#)
2021 CSRs: [EUR-Lex - C:2021:304:TOC - EN - EUR-Lex \(europa.eu\)](#)
2020 CSRs: [EUR-Lex - 32020H0826\(02\) - EN - EUR-Lex \(europa.eu\)](#)
2019 CSRs: [EUR-Lex - 32019H0905\(02\) - EN - EUR-Lex \(europa.eu\)](#)

⁽¹⁶⁾ Including policy action reported in the national reform programme and in Recovery and Resilience Facility (RRF) reporting (twice a year reporting on progress in implementing milestones and targets and resulting from the payment requests assessment).

⁽¹⁷⁾ Member States were asked to effectively address all or a significant subset of the relevant country-specific recommendations issued by the Council in 2019 and 2020 in their RRP. The CSR assessment presented here considers the degree of implementation of the measures included in the RRP and of those carried out outside of the RRP at the time of assessment. Measures laid down in the Annex of the adopted Council Implementing Decision on approving the assessment of the RRP, which are not yet adopted or implemented but considered credibly announced, in line with the CSR assessment methodology, warrant 'limited progress'. Once implemented, these measures can lead to 'some/substantial progress or full implementation', depending on their relevance.

Table A2.1: Summary table on 2019-2022 CSRs

Bulgaria	Assessment in May 2023*	RRP coverage of CSRs until 2026	Relevant SDGs
2019 CSR 1	Some progress		
<i>Improve tax collection through targeted measures in areas such as fuel and labour taxes.</i>	Some Progress		SDG 8, 16
<i>Upgrade the State-owned enterprise corporate governance by adopting and putting into effect the forthcoming legislation.</i>	Some Progress	Relevant RRP measures planned as of 2022 and 2023	SDG 9
2019 CSR 2	Some progress		
<i>Ensure the stability of the banking sector by reinforcing supervision</i>	Substantial Progress		SDG 8
<i>, promoting adequate valuation of assets, including bank collateral</i>	Some Progress		SDG 8
<i>, and promoting a functioning secondary market for non-performing loans.</i>	Some Progress		SDG 8
<i>Ensure effective supervision and the enforcement of the AML framework.</i>	Some Progress	Relevant RRP measures being implemented as of 2021	SDG 8
<i>Strengthen the non-banking financial sector by effectively enforcing risk-based supervision</i>	Substantial Progress		SDG 8
<i>, the recently adopted valuation guidelines</i>	Some Progress		SDG 8
<i>and group-level supervision.</i>	Some Progress		SDG 8
<i>Implement the forthcoming roadmap tackling the gaps identified in the insolvency framework.</i>	Some Progress	Relevant RRP measures planned as of 2023	SDG 8
<i>Foster the stability of the car insurance sector by addressing market challenges and remaining structural weaknesses.</i>	Some Progress		SDG 8
2019 CSR 3	Limited progress		
<i>Focus investment-related economic policy on research and innovation</i>	Limited Progress	Relevant RRP measures being implemented as of 2022 and planned as of 2023	SDG 9, 10, 11
<i>, transport, in particular on its sustainability</i>	Some Progress	Relevant RRP measures being implemented as of 2020 and planned as of 2023	SDG 10, 11
<i>, water, waste and energy infrastructure and energy efficiency, taking into account regional disparities,</i>	Limited Progress	Relevant RRP measures being implemented as of 2022 and planned as of 2023	SDG 6, 7, 9, 10, 11, 12, 13
<i>and improving the business environment.</i>	Some Progress	Relevant RRP measures being implemented as of 2022 and planned for 2023,2025,2026	SDG 8, 9
2019 CSR 4	Limited progress		
<i>Strengthen employability by reinforcing skills, including digital skills.</i>	Limited Progress	Relevant RRP measures being implemented as of 2020 and planned for 2023,2024,2026	SDG 4, 8
<i>Improve the quality, labour market relevance, and inclusiveness of education and training, in particular for Roma and other disadvantaged groups.</i>	Limited Progress	Relevant RRP measures being implemented as of 2022 and planned as of 2025	SDG 4, 8, 10
<i>Address social inclusion through improved access to integrated employment and social services</i>	Limited Progress	Relevant RRP measures being implemented as of 2022 and planned as of 2023	SDG 1, 2, 10
<i>and more effective minimum income support.</i>	Some Progress	Relevant RRP measures being implemented as of 2022 and planned for 2023,2024,2025,2026	SDG 1, 2, 10
<i>Improve access to health services, including by reducing out-of-pocket payments and addressing shortages of health professionals.</i>	Limited Progress	Relevant RRP measures being implemented as of 2022 and planned for 2023,2026	SDG 3
2020 CSR 1	Some progress		
<i>In line with the general escape clause, take all necessary measures to effectively address the pandemic, sustain the economy and support the ensuing recovery. When economic conditions allow, pursue fiscal policies aimed at achieving prudent medium-term fiscal positions and ensuring debt sustainability, while enhancing investment.</i>	Not relevant anymore	Not applicable	SDG 8, 16
<i>Mobilise adequate financial resources to strengthen the resilience, accessibility and capacity of the health system, and ensure a balanced geographical distribution of health workers.</i>	Some Progress	Relevant RRP measures being implemented as of 2022 and planned for 2023,2026	SDG 3
2020 CSR 2	Limited progress		
<i>Ensure adequate social protection and essential services for all</i>	Limited Progress	Relevant RRP measures being implemented as of 2022 and planned as of 2023	SDG 1, 2, 10
<i>and strengthen active labour market policies.</i>	Limited Progress	Relevant RRP measures being implemented as of 2020 and planned for 2022,2023,2024,2026	SDG 8
<i>Improve access to distance working</i>	Limited Progress	Relevant RRP measures planned as of 2023	SDG 8
<i>and promote digital skills</i>	Some Progress	Relevant RRP measures being implemented as of 2020 and planned for 2022,2023,2024,2026	SDG 4

(Continued on the next page)

Table (continued)

and equal access to education.	Limited Progress	Relevant RRP measures being implemented as of 2020 and planned for 2022,2023,2024,2026	SDG 4, 8, 10
Address the shortcomings in the adequacy of the minimum income scheme.	Some Progress	Relevant RRP measures being implemented as of 2022 and planned for 2023,2024,2025,2026	SDG 1, 2, 10
2020 CSR 3	Some progress		
Streamline and accelerate the procedures to provide effective support to small and medium-sized enterprises and self-employed,	Substantial Progress	Relevant RRP measures being implemented as of 2022	SDG 8, 9
also ensuring their continued access to finance and flexible payment arrangements.	Some Progress	Relevant RRP measures being implemented as of 2022 and planned as of 2023	SDG 8, 9
Front-load mature public investment projects	Limited Progress		SDG 8, 16
and promote private investment to foster the economic recovery.	Some Progress	Relevant RRP measures being implemented as of 2022 and planned as of 2023	SDG 8, 9
Focus investment on the green and digital transition, in particular on clean and efficient production and use of energy and resources,	Some Progress	Relevant RRP measures being implemented as of 2022 and planned as of 2023	SDG 6, 7, 9, 12, 13, 15
environmental infrastructure	Limited Progress	Relevant RRP measures planned as of 2023-2026	SDG 7, 9, 13
and sustainable transport, contributing to a progressive decarbonisation of the economy, including in the coal regions.	Limited Progress	Relevant RRP measures being implemented as of 2022 and planned as of 2023	SDG 10, 11
2020 CSR 4	Some progress		
Minimise administrative burden to companies by improving the effectiveness of public administration	Some Progress	Relevant RRP measures being implemented as of 2022 and planned as of 2023, 2024, 2026	SDG 16
and reinforcing digital government.	Limited Progress	Relevant RRP measures being implemented as of 2022 and planned as of 2023-2026	SDG 9, 16
Ensure an effective functioning of the insolvency framework.	Some Progress	Relevant RRP measures planned as of 2022, 2023, 2024 ,2025, 2026	SDG 8
Step up the efforts to ensure adequate risk assessment, mitigation, effective supervision and enforcement of the anti-money laundering framework.	Some Progress	Relevant RRP measures being implemented as of 2021	SDG 8, 16
2021 CSR 1	Some progress		
In 2022, pursue a supportive fiscal stance, including the impulse provided by the Recovery and Resilience Facility, and preserve nationally financed investment. Keep the growth of nationally financed current expenditure under control.	Full Implementation	Not applicable	SDG 8, 16
When economic conditions allow, pursue a fiscal policy aimed at achieving prudent medium-term fiscal positions and ensuring fiscal sustainability in the medium term.	No Progress	Not applicable	SDG 8, 16
At the same time, enhance investment to boost growth potential. Pay particular attention to the composition of public finances, on both the revenue and expenditure sides of the budget, and to the quality of budgetary measures in order to ensure a sustainable and inclusive recovery. Prioritise sustainable and growth-enhancing investment, in particular investment supporting the green and digital transition.	Some Progress	Not applicable	SDG 8, 16
Give priority to fiscal structural reforms that will help provide financing for public policy priorities and contribute to the long-term sustainability of public finances, including, where relevant, by strengthening the coverage, adequacy and sustainability of health and social protection systems for all.	Limited Progress	Not applicable	SDG 8, 16
2022 CSR 1	Limited progress		
In 2023, ensure that the growth of nationally financed primary current expenditure is in line with an overall neutral policy stance, taking into account continued temporary and targeted support to households and firms most vulnerable to energy price hikes and to people fleeing Ukraine. Stand ready to adjust current spending to the evolving situation.	No progress	Not applicable	SDG 8, 16
Expand public investment for the green and digital transitions, and for energy security taking into account the REPowerEU initiative, including by making use of the Recovery and Resilience Facility and other Union funds.	Some progress	Not applicable	SDG 8, 16
For the period beyond 2023, pursue a fiscal policy aimed at achieving prudent medium-term fiscal positions.	No progress	Not applicable	SDG 8, 16

(Continued on the next page)

Table (continued)

2022 CSR 2			
<i>Proceed with the implementation of its recovery and resilience plan, in line with the milestones and targets included in the Council Implementing Decision of 4 May 2022.</i>	RRP implementation is monitored by assessing RRP payment requests and analysing reports published twice a year on the achievement of the milestones and targets. These are to be reflected in the country reports.		
<i>Submit the 2021-2027 cohesion policy programming documents with a view to finalising the negotiations with the Commission and subsequently starting their implementation.</i>	Progress on the cohesion policy programming documents is monitored under the EU cohesion policy.		
2022 CSR 3	Limited progress		
<i>Reduce overall reliance on fossil fuels and fossil fuel imports</i>	No Progress	Relevant RRP measures planned as of 2022-2026	SDG 7, 9, 13
<i>by accelerating the development of renewables,</i>	Some Progress	Relevant RRP measures planned as of 2022-2026	SDG 7, 9, 13
<i>and diversify gas supply sources and routes by increasing interconnections with neighbouring countries.</i>	Some Progress	Relevant RRP measures planned as of 2022-2026	SDG 7, 9, 13
<i>Step up efforts to reduce energy demand by increasing energy efficiency in industry and in private and public building stock.</i>	Some Progress	Relevant RRP measures planned as of 2022-2026	SDG 7
<i>Promote new sustainable solutions in centralised district heating.</i>	No Progress	Relevant RRP measures planned as of 2022-2026	SDG 7

Note:* See footnote ⁽¹⁷⁾.

** RRP measures included in this table contribute to the implementation of CSRs. Nevertheless, additional measures outside the RRP are necessary to fully implement CSRs and address their underlying challenges. Measures indicated as 'being implemented' are only those included in the RRF payment requests submitted and positively assessed by the European Commission.

Source: European Commission



The Recovery and Resilience Facility (RRF) is the centrepiece of the EU's efforts to help it recover from the COVID-19 pandemic, speed up the twin transition and strengthen resilience against future shocks. The RRF also contributes to implementation of the SDGs and helps to address the Country Specific Recommendations (see Annex 2). Bulgaria submitted its current recovery and resilience plan (RRP) on 15 October 2021. The Commission's positive assessment on 7 April 2022 and Council's approval on 5 May 2022 paved the way for disbursing EUR 6.3 billion in grants under the RRF over the 2021-2026 period.

Since the entry into force of the RRF Regulation and the assessment of the national recovery and resilience plans, geopolitical and economic developments have caused major disruptions across the EU. In order to effectively address these disruptions, the (adjusted) RRF Regulation allows Member States to amend their recovery and resilience plan for a variety of reasons. In line with article 11(2) of the RRF, the maximum financial contribution for Bulgaria was moreover updated on 30 June 2022 to an amount of EUR 5.7 billion in grants. No revision was submitted at the time of publication of this country report yet.

the RRF as a whole, in a transparent manner. The graphs in this Annex show the current state of play of the milestones and targets to be reached by Bulgaria and subsequently assessed as satisfactorily fulfilled by the Commission.

EUR 1.37 billion has so far been disbursed to Bulgaria under the RRF. Bulgaria's first payment request was positively assessed by the Commission, taking into account the opinion of the Economic and Financial Committee, leading to EUR 1.37 billion being disbursed in financial support on 16 December 2022. The related 22 milestones cover important first steps in reforms and investments towards decarbonising the energy sector, promoting large-scale deployment of digital infrastructure, reforming the judicial system, strengthening the anti-money laundering framework, digitalising the public sector, strengthening the adequacy and coverage of the minimum income scheme. Measures to ensure that the audit and control system for the implementation of the RRF is up to standard were also included.

Table A3.1: Key elements of the Bulgaria's RRP

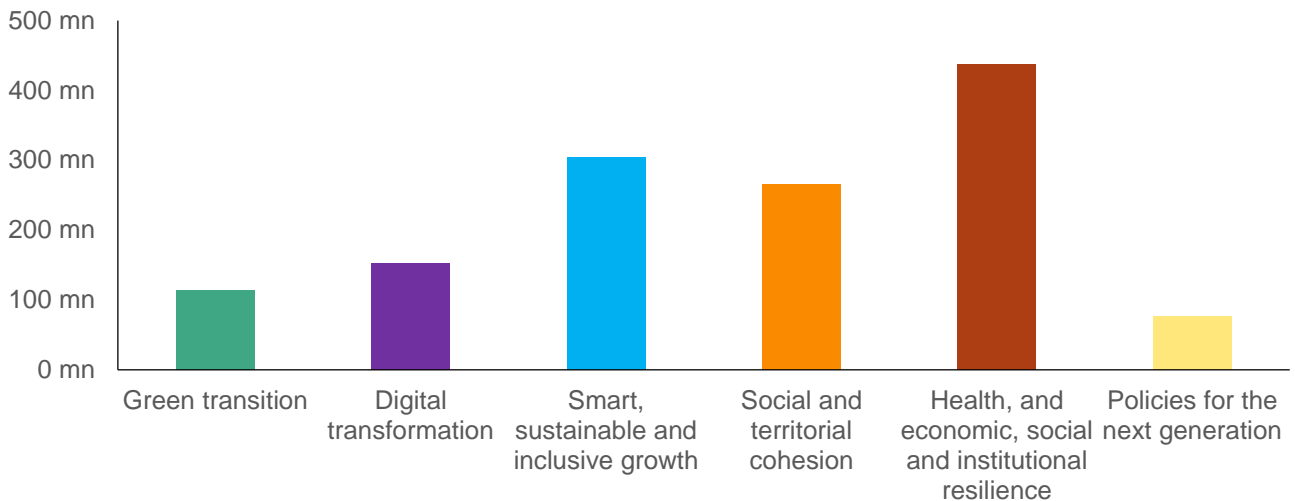
	Current RRP
Scope	Initial plan
CID adoption date	5 May 2022
Total allocation	EUR 6.3 billion in grants (9.2% of 2021 GDP)
Investments and reforms	49 investments and 53 reforms
Total number of milestones and targets	346

Source: RRF Scoreboard

Bulgaria's progress in implementing its plan is published in the Recovery and Resilience Scoreboard ⁽¹⁸⁾. The Scoreboard also gives an overview of the progress made in implementing

⁽¹⁸⁾ https://ec.europa.eu/economy_finance/recovery-and-resilience-scoreboard/country_overview.html

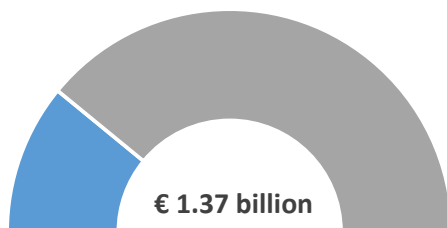
Graph A3.1: **Disbursements per pillar**



Note: Each disbursement reflects progress in the implementation of the RRF, across the six policy pillars. This graph displays how disbursements under the RRF (excluding pre-financing) relate to the pillars. The amounts were calculated by linking the milestones and targets covered by a given disbursement to the pillar tagging (primary and secondary) of their respective measures.

Source: RRF Scoreboard

Graph A3.2: **Total grants disbursed under the RRF**

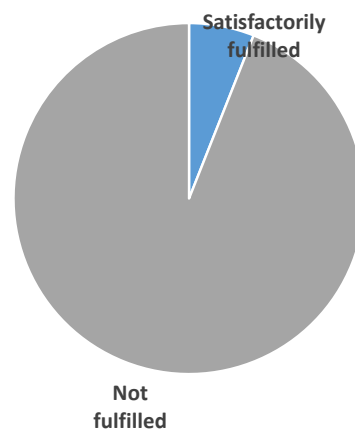


Note: This graph displays the amount of grants disbursed so far under the RRF. Grants are non-repayable financial contributions. The total amount of grants given to each Member State is determined by an allocation key and the total estimated cost of the respective RRP.

Source: RRF Scoreboard

https://ec.europa.eu/economy_finance/recovery-and-resilience-scoreboard/country_overview.html

Graph A3.3: **Fulfilment status of milestones and targets**



This graph displays the share of satisfactorily fulfilled milestones and targets. A milestone or target is satisfactorily fulfilled once a Member State has provided evidence to the Commission that it has reached the milestone or target and the Commission has assessed it positively in an implementing decision.

Source: RRF Scoreboard

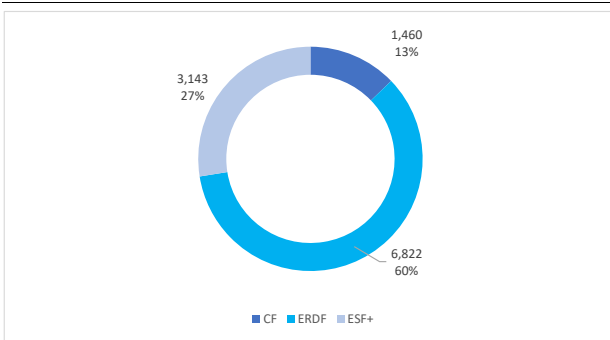
https://ec.europa.eu/economy_finance/recovery-and-resilience-scoreboard/country_overview.html



ANNEX 4: OTHER EU INSTRUMENTS FOR RECOVERY AND GROWTH

The EU budget of over EUR 1.2 trillion for 2021-2027 is geared towards implementing the EU's main priorities. Cohesion policy investment amounts to EUR 392 billion across the EU and represents almost a third of the overall EU budget, including around EUR 48 billion invested in line with REPowerEU objectives.

Graph A4.1: Cohesion policy funds 2021-2027 in Bulgaria: budget by fund



(1) million EUR in current prices, % of total; (total amount including EU and national co-financing)

Source: European Commission, Cohesion Open Data

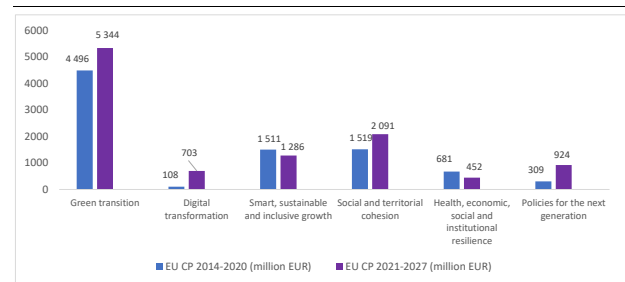
In 2021-2027, in Bulgaria, cohesion policy funds⁽¹⁹⁾ will invest EUR 5.3 billion in the green transition and EUR 0.7 billion in the digital transformation as part of the country's total allocation of EUR 11 billion. In particular, the European Regional Development Fund (ERDF) will boost investment in research and innovation (R&I), competitiveness, digitalisation and energy and resource efficiency. It will support around 10 000 companies in total and trigger at least an additional EUR 1.1 billion in private investment. SMEs lie at the heart of ERDF support to businesses, and selection procedures will be in line with Bulgaria's smart specialisation strategy by region. Investment in the energy efficiency of buildings is expected to benefit some 3 800 homes and 180 000 square meters of public buildings in urban and rural areas. At the same time, the finalisation of the Just Transition Fund (JTF) programming could help Bulgaria support sustainable energy solutions, training and education, and diversify the local economy in the affected coal regions. This will help alleviate the socio-economic impacts of Bulgaria's commitment to phase out the use of coal by 2038 at latest. The

⁽¹⁹⁾ European Regional Development Fund (ERDF), Cohesion Fund (CF), European Social Fund+ (ESF+), Just Transition Fund (JTF) excluding Interreg programmes. Total amount including national and EU contributions. Data source: [Cohesion Open Data](#).

European Social Fund Plus (ESF+) allocates EUR 315 million to youth employment support and EUR 630 million to social inclusion measures, of which EUR 136 million will tackle child poverty. EUR 787 million will be dedicated to improving educational outcomes and creating a more inclusive and high-quality education system.

Of the investments mentioned above, EUR 639 million will be invested in line with REPowerEU objectives. This is on top of the EUR 533 million dedicated to REPowerEU under the 2014-2020 budget. EUR 499 million (2021-2027) and EUR 195 million (2014-2020) is for improving energy efficiency; EUR 112 million (2021-2027) and EUR 339 million (2014-2020) is for renewable energy and low-carbon R&I; and EUR 28 million (2021-2027) is for smart energy systems.

Graph A4.2: Synergies between cohesion policy funds and the RRF with its six pillars in Bulgaria



(1) million EUR in current prices (total amount, including EU and national co-financing)

Source: European Commission

In 2014-2020, cohesion policy funds made EUR 7.9 billion available to Bulgaria⁽²⁰⁾. Including national financing, the total investment amounts to EUR 9.2 billion - around 2.5% of GDP for 2014-2020.

Bulgaria continues to benefit from cohesion policy flexibility to support economic recovery, step up convergence and provide vital support to regions following the COVID-19 pandemic. The Recovery Assistance for Cohesion and the Territories of Europe instrument (REACT-EU)⁽²¹⁾ under NextGenerationEU provides EUR 576 million on top of the 2014-2020

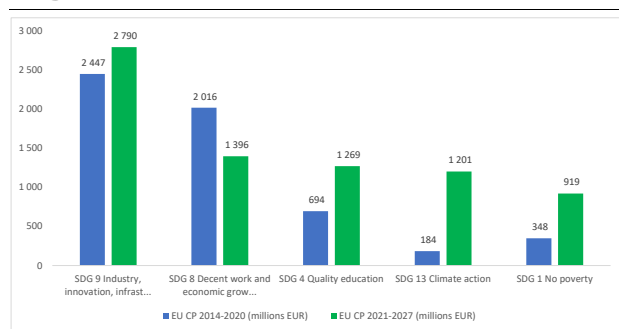
⁽²⁰⁾ Cohesion policy funds include the ERDF, CF, ESF and the Youth Employment Initiative (YEI). ETC programmes are excluded here. According to the 'N+3 rule', the funds committed for 2014-2020 must be spent by 2023. REACT-EU is included in all figures. The total amount includes EU and national co-financing. Data source: [Cohesion Open Data](#).

⁽²¹⁾ REACT-EU allocation on [Cohesion Open Data](#).

cohesion policy allocation for Bulgaria. Of this, the Bulgarian authorities used EUR 164.3 million to further support working capital and energy efficiency in more than 4 500 SMEs. With SAFE (Supporting Affordable Energy), the 2014-2020 cohesion policy funds may also be mobilised by Bulgaria to support vulnerable households, jobs and companies particularly affected by high energy prices.

In addition, Cohesion’s Action for Refugees in Europe (CARE) supports Bulgaria and its regions in providing emergency assistance to people fleeing from Russia’s invasion of Ukraine with a total budget of EUR 75.1 million.

Graph A4.3: **Cohesion policy funds contribution to the SDGs in 2014-2020 and 2021-2027 in Bulgaria**



(1) 5 largest contributions to SDGs in million (EUR) current prices

Source: European Commission

In both 2014-2020 and 2021-2027, cohesion policy funds have contributed substantially to the Sustainable Development Goals’ (SDGs). These funds support 11 of the 17 SDGs, notably SDG 9 ‘industry, innovation and infrastructure’ and SDG 8 ‘decent work and economic growth’ ⁽²²⁾.

Other EU funds make significant resources available for Bulgaria. The common agricultural policy (CAP) made EUR 9.8 billion available in 2014-2022, and will continue to support Bulgaria with EUR 5.6 billion in 2023-2027. The two CAP Funds (European Agricultural Guarantee Fund and European Agricultural Fund for Rural Development), contribute to the European Green Deal while ensuring long-term food security. They promote social, environmental and economic

⁽²²⁾ Other EU funds contribute to the implementation of the SDGs. In 2014-2022, this includes both the European Agricultural Fund for Rural Development (EARD) and the European Maritime and Fisheries Fund (EMFF).

sustainability and innovation in agriculture and rural areas, in coordination with other EU Funds. The European Maritime and Fisheries Fund made EUR 81 million available to Bulgaria in 2014-2020 and the European Maritime, Fisheries and Aquaculture Fund will make available EUR 85 million in 2021-2027.

Bulgaria also benefits from other EU programmes, notably the Connecting Europe Facility, which under CEF 2 (2021-2027) has so far allocated EU funding of EUR 273 million to three specific projects on strategic transport networks. Similarly, Horizon Europe has so far allocated more than EUR 39.8 million to Bulgarian R&I actors, while in the previous programming period, Horizon 2020 earmarked EUR 162 billion. The Public Sector Loan Facility set up under the Just Transition Mechanism makes EUR 98 million of grant support from the Commission available for projects in 2021-2027, which will be combined with EIB loans to support investments by public sector entities in just transition regions.

Bulgaria received support under the European instrument for temporary support to mitigate unemployment risks in an emergency (SURE) to finance short-time work schemes to mitigate the impact of COVID-19. The Council granted financial assistance to Bulgaria of EUR 971 million in loans, which supported around 10% of workers and 6% of firms in 2020, and around 5% of workers and 3% of firms in 2021.

The Technical Support Instrument (TSI) supports Bulgaria in designing and implementing growth-enhancing reforms, including the implementation of its recovery and resilience plan (RRP). Bulgaria has received significant support since 2016. Examples ⁽²³⁾ include: (i) strengthening the governance of state-owned enterprises; (ii) drafting the territorial just transition plan; (iii) mitigating money laundering and terrorism financing risks; and (iv) identifying the most suitable reforms and investments for decreasing its dependency on fossil fuels from Russia in line with the REPowerEU plan.

⁽²³⁾ Country factsheets on reform support are available [here](#).



This Annex illustrates Bulgaria’s relative resilience capacities and vulnerabilities using the Commission’s resilience dashboards (RDB) (24). Comprising a set of 124 quantitative indicators, the RDB provide broad indications of Member States’ ability to make progress across four interrelated dimensions: social and economic, green, digital, and geopolitical. The indicators show vulnerabilities (25) and capacities (26) that can become increasingly relevant, both to navigate ongoing transitions and to cope with potential future shocks. To this end, the RDB help to identify areas that need further efforts to build stronger and more resilient economies and societies. They are summarised in Table A5.1 as synthetic resilience indices, which illustrate the overall relative situation for each of the four dimensions and their underlying areas for Bulgaria and the EU-27 (27).

According to the set of resilience indicators under the RDB, Bulgaria generally displays a similar but slightly higher level of vulnerabilities compared to the EU average. Bulgaria shows medium-high vulnerabilities in the social and economic and the digital dimensions of the RDB, medium vulnerabilities in the geopolitical dimension and medium-low vulnerabilities in the green dimension. Compared to the EU average, Bulgaria has higher vulnerabilities in areas such as ‘inequalities and the social impact of the transitions’ (especially due to its high AROPE and income quintile share ratio) and most areas of the digital dimension (mainly due to limited access of individuals and businesses to digital public services and lack of cloud services). It shows lower vulnerabilities compared to the EU average in relation to ‘climate change mitigation and

adaptation’ (28), ‘sustainable use of resources’ and ‘cybersecurity’.

Table A5.1: Resilience indices summarising the situation across RDB dimensions and areas

Dimension/Area	Vulnerabilities		Capacities	
	BG	EU-27	BG	EU-27
Social and economic	Medium-high	Medium	Medium-high	Medium-low
Inequalities and social impact of the transitions	High	Medium	High	Medium-low
Health, education and work	Medium-high	Medium	Medium-high	Medium-low
Economic & financial stability and sustainability	Medium	Medium	Medium-high	Medium-low
Green	Medium-low	Medium	Medium-high	Medium-low
Climate change mitigation & adaptation	Medium-low	Medium	Medium-high	Medium-low
Sustainable use of resources	Medium-low	Medium	Medium-high	Medium-low
Ecosystems, biodiversity, sustainable agriculture	Medium	Medium	Medium-high	Medium-low
Digital	Medium-high	Medium	Medium-high	Medium-low
Digital for personal space	Medium-high	Medium	Medium-high	Medium-low
Digital for industry	High	Medium	Medium-high	Medium-low
Digital for public space	High	Medium	High	Medium-low
Cybersecurity	Medium-low	Medium	High	Medium-low
Geopolitical	Medium	Medium	Medium	Medium
Raw material and energy supply	Medium	Medium	Medium	Medium
Value chains and trade	Medium	Not available	Medium	Medium-high
Financial globalisation	Medium	Medium-low	Medium	Medium-low
Security and demography	Medium	Medium	Medium-high	Medium-low

Vulnerabilities Index

- High
- Medium-high
- Medium
- Medium-low
- Low
- Not available

Capacities Index

- High
- Medium-high
- Medium
- Medium-low
- Low
- Not available

(1) Data are for 2021, and EU-27 refers to the value for the EU as a whole. Data underlying EU-27 vulnerabilities in the area ‘value chains and trade’ are not available as they comprise partner concentration measures that are not comparable with Member States’ level values.

Source: JRC Resilience Dashboards – European Commission

Compared to the EU average, Bulgaria shows an overall lower level of capacities across all RDB indicators. It has overall medium-low resilience capacities in the social and economic, the green and the digital dimensions, but shows medium capacities in the geopolitical dimension. While Bulgaria shows stronger capacities relative to the EU in the ‘value chains and trade’ area, there is room for improving capacities in all areas of the social and economic, the green and the digital dimensions (29), but also regarding ‘financial globalisation’ and ‘security and demography’.

(24) For details see https://ec.europa.eu/info/strategy/strategic-planning/strategic-foresight/2020-strategic-foresight-report/resilience-dashboards_en; see also 2020 Strategic Foresight Report (COM(2020) 493).

(25) Vulnerabilities describe features that can exacerbate the negative impact of crises and transitions, or obstacles that may hinder the achievement of long-term strategic goals.

(26) Capacities refer to enablers or abilities to cope with crises and structural changes and to manage the transitions.

(27) This Annex is linked to Annex 1 on SDGs, Annex 6 on the green deal, Annex 8 on the fair transition to climate neutrality, Annex 9 on resource productivity, efficiency and circularity, Annex 10 on the digital transition and Annex 14 on the European pillar of social rights.

(28) For example, when looking at the per capita CO2 emissions from road transport and GHG emissions.

(29) For example, with respect to the impact of social transfers (other than pensions) on poverty reduction, resource productivity and circular material use rate, but also when it comes to the digital skills for adults and young people.

Bulgaria’s green transition requires significant action on several aspects, notably the energy intensity of its economy, its heavy dependence on coal, and its relative lack of long-term climate commitments. Implementation of the European Green Deal is underway in Bulgaria; this Annex provides a snapshot of the key areas involved ⁽³⁰⁾.

Bulgaria has not yet defined all the climate policy measures it needs to reach its 2030 climate target for the effort sharing sectors ⁽³¹⁾. Data for 2021 on greenhouse gas emissions in these sectors are expected to show the country generated less than its annual emission allocations ⁽³²⁾. Current policies in Bulgaria are projected to keep the increase of these emissions contained at 11% relative to 2005 levels in 2030. The additional measures tabled would contain them at an increase of 6%. This still too high to comply with the effort sharing target even before the target was made more ambitious to meet the EU’s 55% objective, let alone Bulgaria’s new target to reduce emissions by 10% ⁽³³⁾. In its recovery and resilience plan (RRP), Bulgaria has allocated 58.9 % of its Recovery and

⁽³⁰⁾ The overview in this Annex is complemented by the information provided in Annex 7 on energy security and affordability, Annex 8 on the fair transition to climate neutrality and environmental sustainability, Annex 9 on resource productivity, efficiency and circularity, Annex 11 on innovation, and Annex 19 on taxation.

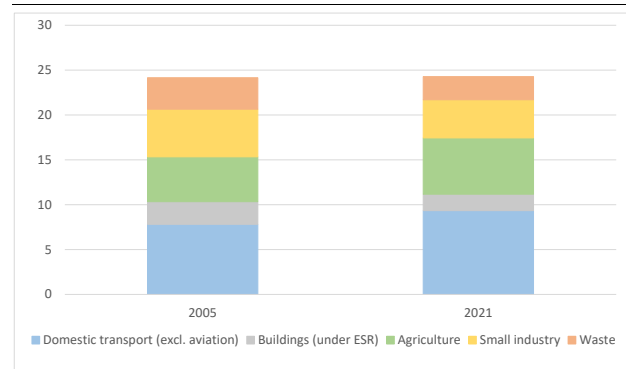
⁽³¹⁾ Member States’ greenhouse gas emission targets for 2030 (‘effort sharing targets’) were increased by Regulation (EU) 2023/857 (the Effort Sharing Regulation) amending Regulation (EU) 2018/842, aligning the action in the concerned sectors with the objective to reach EU-level, economy-wide greenhouse gas emission reductions of at least 55% relative to 1990 levels. The Regulation sets national targets for sectors outside the current EU Emissions Trading System, notably: buildings (heating and cooling), road transport, agriculture, waste, and small industry. Emissions covered by the EU ETS and the Effort Sharing Regulation are complemented by net removals in the land use sector, regulated by Regulation (EU) 2018/841 (the Land Use, Land Use Change and Forestry (LULUCF) Regulation) amended by Regulation (EU) 2023/839.

⁽³²⁾ Bulgaria’s annual emission allocations for 2021 were some 27.1 Mt CO₂eq, and its approximated 2021 emissions were at 25.5 Mt. See European Commission, *Accelerating the transition to climate neutrality for Europe’s security and prosperity: EU Climate Action Progress Report 2022*, SWD(2022)343).

⁽³³⁾ See the information on the distance to the 2030 climate policy target in Table A6.1. Existing and additional measures as at 15 March 2021.

Resilience Facility grants to key reforms and investments to attain climate objectives ⁽³⁴⁾. Bulgaria’s RRP includes binding targets for reducing carbon-dioxide emissions in its power sector by 40% by 2025 ⁽³⁵⁾.

Graph A6.1: Thematic – greenhouse gas emissions from the effort sharing sectors in Mt CO₂eq, 2005-2021



Source: European Environmental Agency.

Bulgaria is not on track to meet its 2030 net carbon removals target for its land use sector. Bulgaria’s forests achieve a major share of net carbon removals through land use. For 2030, Bulgaria’s land use, land-use change and forestry (LULUCF) target implies to remove 9 718 kt CO₂eq (see Table A6.1) ⁽³⁶⁾. However, net removals do not reach this level and have fallen in recent years.

Fossil fuels still play a major role in Bulgaria’s energy mix. In 2021, coal accounted for 26% of Bulgaria’s energy mix, and natural gas for 14%, while 15% came from renewable sources (see Graph A6.2). Bulgaria’s electricity mix is dominated by nuclear (35%) and coal (36%). Renewables come in third, with 22% in 2021.

⁽³⁴⁾ For example, investments and reforms are ongoing to develop the sustainable potential for the energy transition, low-emission mobility, and electricity generation. Few measures have been completed, including legislative reforms on renewable capacity and energy efficiency.

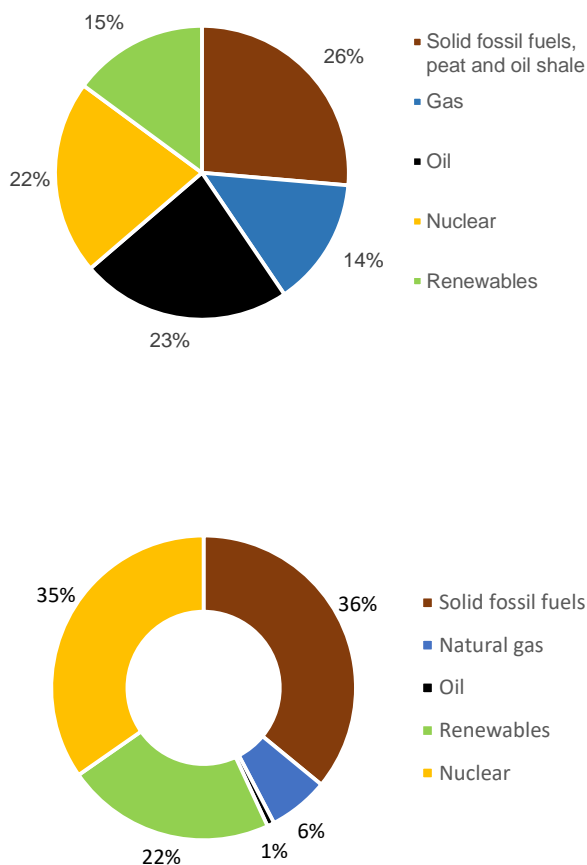
⁽³⁵⁾ Updating the plan is mandated by Regulation (EU) 2018/1999 (the Governance Regulation). The measures in Bulgaria’s RRP will need to be reflected in the country’s updated national energy and climate plan at the end of 2023, together with additional measures needed to meet the strengthened Fit for 55 ambition. See Annex 8 for further aspects of the just transition.

⁽³⁶⁾ This value is indicative and will be updated in 2025 (as mandated by Regulation (EU) 2023/839).



According to the national energy and climate plan in 2030, the share of renewable energy in Bulgaria's energy mix should increase to 27.09% of gross final energy consumption. Bulgaria will need to substantially strengthen its renewable energy target in the updated NECP, to reflect the more ambitious EU climate and energy targets in the Fit for 55 Package and in the REPowerEU Plan. Bulgaria has yet to commit to phasing out coal; however, such a commitment is included as a reform under the RRP.

Graph A6.2: **Energy mix (top) and Electricity mix (bottom), 2021**



The energy mix is based on gross inland consumption, and excludes heat and electricity. The share of renewables includes biofuels and non-renewable waste.

Source: Eurostat

Renewable energy plays a key role in decarbonising Bulgaria's energy system. A large share of the investments in the RRP are targeted at i) tripling power generation from renewables (adding 3.5 GW additional capacity), ii) accelerating deployment of alternative energy

sources, such as green hydrogen, geothermal and biogas, and iii) building up large electricity storage capacities. Expanding renewable energy and other low-carbon sources such as geothermal, particularly for power generation, will also reduce import dependency and contribute to decarbonisation.

Planned actions call for swift implementation and further acceleration of energy efficiency. Bulgaria's NECP targets for primary and final energy consumption (PEC and FEC) were considered as low and very low ambition respectively in the 2020 Commission assessment. Based on the energy consumption trajectory for 2018-2021, Bulgaria is not expected to be on track to meet its 2030 targets for PEC and for FEC, as these were notified in its NECP.⁽³⁷⁾ Similar to renewables, Bulgaria will also need to strengthen both targets in the upcoming update to the NECP, also in light of more ambitious EU targets in the REPowerEU plan and Fit for 55 Package. Bulgaria has not achieved the energy savings obligation target under the Energy Efficiency Directive. Together with reforms aimed at tackling barriers to energy efficiency investments and reducing the administrative burden linked to renovation, the Bulgarian RRP envisages over EUR 1 billion of investments in energy efficiency measures intended for public and private building stock with the ambition of achieving savings of at least 30% in primary energy demand.

The transition to sustainable transport remains a significant challenge, and air pollution continues to be a major concern. In 2020, road transport accounted for 92% of all transport emissions in Bulgaria, and 24% of the country's greenhouse gas emissions overall, a 28% increase since 2005⁽³⁸⁾. The uptake of zero-emission passenger cars is low, as is the density of public electric charging points; both are only slowly improving⁽³⁹⁾. Delays in the progress of the Bulgarian section of the Trans-European Transport

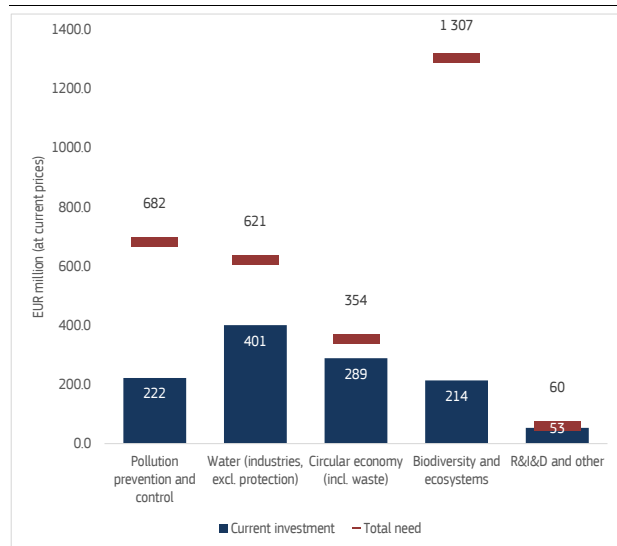
⁽³⁷⁾ After the conclusion of the negotiations for a recast EED, the ambition of both the EU and national targets as well as of the national measures for energy efficiency to meet these targets is expected to increase.

⁽³⁸⁾ EU transport in figures – Statistical Pocketbook 2022.

⁽³⁹⁾ The number of public charging points increased from 18 in 2015 to 531 in 2021, but the density of public charging points is among the lowest in the EU (0.6 per 100 km² of land area, far below the average of 13.5).

Network, especially in its rail infrastructure, inhibit multimodality and limit the potential to improve efficiency and sustainability in transport⁽⁴⁰⁾. Moreover, Bulgaria is among the worst-performing Member States on pollution-related deaths, number of years of life lost due to air pollution, and exposure of urban population to micro-particles⁽⁴¹⁾. Besides, further measures are urgently needed to reduce ammonia emissions⁽⁴²⁾. Bulgaria's RRP aims to address some of these issues via targeted measures on sustainable urban mobility, deploying alternative fuels infrastructure, rail development and digitalisation, allocating EUR 666 million to decarbonising transport.

Graph A6.3: Thematic – environmental investment needs and current investment, p.a. 2014-2020



Source: European Commission.

Bulgaria would benefit from investing more in meeting environmental objectives and taking more action to protect biodiversity and prevent and control pollution⁽⁴³⁾. Between

⁽⁴⁰⁾ Transport connectivity programme for Bulgaria for 2021-2027.

⁽⁴¹⁾ The latest available annual estimates (for 2020) by the European Environment Agency point to over 12 600 premature deaths attributable to fine particulate matter (PM), nitrogen oxide, and other air pollutants.

⁽⁴²⁾ Ammonia emissions are mostly produced by agriculture and are a main precursor to the formation of particulate matter. Bulgaria does not comply with its commitments on ammonia under the National Emission Reduction Commitments Directive and is not expected to be compliant even by 2025 (information as of August 2021).

⁽⁴³⁾ Environmental objectives include pollution prevention and control, water management and industries, circular economy and waste, biodiversity and ecosystems (European Commission, 2022, Environmental Implementation Review, [country report Bulgaria](#))

2014 and 2020, environmental investment needs were estimated to be at least EUR 3 billion while investment stood at about EUR 1.2 billion. This left a gap of at least EUR 1.8 billion overall (see Graph A6.3)⁽⁴⁴⁾. The investment gap for biodiversity and ecosystems was the most significant (EUR 1 093 million – 59% of the overall investment gap). Bulgaria also has the potential to rely more on environmental taxes to promote waste reduction and further internalise the costs of air pollution⁽⁴⁵⁾ (see Annex 19).

Bulgaria is particularly vulnerable to climate change-related extreme events (droughts, heat waves, heavy rainfall, and floods). Such events are projected to increase in frequency and intensity. The most vulnerable sectors are agriculture and the urban environment, followed by energy, tourism, transport, and health⁽⁴⁶⁾. Mortality and morbidity are also projected to rise significantly⁽⁴⁷⁾. Bulgaria's national adaptation strategy and action plan have specific sectoral approaches. The underlying risk and vulnerability assessments date back to 2014, which warrant an update. Bulgaria's RRP and common agricultural policy strategic plan envisage investments in adaptive capacities in agriculture, and measures for urban environments and water management. Bulgaria has a pronounced gap in insurance protection for different risk categories, in particular for floods, which could pose a risk to public finances if the insurance penetration rate remains low⁽⁴⁸⁾.

Bulgaria provides fossil fuel and other environmentally harmful subsidies that could be considered for reform, while ensuring food and energy security and mitigating social effects. Fossil fuel subsidies in Bulgaria accounted for EUR 592 million in 2020, a 78% increase since 2015,

⁽⁴⁴⁾ When also accounting for needs estimated at EU level only (e.g., water protection, higher circularity, biodiversity strategy).

⁽⁴⁵⁾ European Commission, 2021, Green taxation and other economic instruments – Internalising environmental costs to make the polluter pay, [Ensuring that polluters pay \(europa.eu\)](#)

⁽⁴⁶⁾ European Environment Agency, [Climate adapt website - Bulgaria](#)

⁽⁴⁷⁾ According to the [6th IPCC climate adaptation report](#), it is expected that extreme weather events will disrupt water supplies impacting morbidity, mortality and mental health.

⁽⁴⁸⁾ [European Insurance and Occupational Pensions Authority \(EIOPA\) dashboard on insurance protection gap for natural catastrophes](#).

which puts low-carbon alternatives to a disadvantage. Environmentally harmful subsidies have been identified, via an initial assessment, in the agriculture, forestry and fishing, electricity, gas, steam and air conditioning, transportation and storage and mining and quarrying sectors. Examples of such subsidies include the reduced VAT rate for fertilisers and pesticides or the excise tax exemption on the use of natural gas ⁽⁴⁹⁾. A mapping of all environmentally harmful subsidies by Bulgaria would help prioritise candidates for reform.

⁽⁴⁹⁾ Fossil fuel figures in EUR of 2021 from the 2022 State of the Energy Union report. Initial assessment of environmentally harmful subsidies done by the Commission in [the 2022 toolbox for reforming environmentally harmful subsidies in Europe](#), using OECD definitions, and based on the following datasets: OECD Agriculture Policy Monitoring and Evaluations; OECD Policy Instruments for the Environment (PINE) Database; OECD Statistical Database for Fossil Fuels Support; IMF country-level energy subsidy estimates. [Annex 4](#) of the toolbox contains detailed examples of subsidies on the candidates for reform.

Table A6.1: Indicators tracking progress on the European Green Deal from a macroeconomic perspective

								'Fit for 55'			
		2005	2017	2018	2019	2020	2021	2030 target/value	Distance WEM	Distance WAM	
Progress to policy targets	Greenhouse gas emission reductions in effort sharing sectors ⁽¹⁾	Mt CO ₂ eq; %; pp	22.12	20%	19%	17%	16%	-	-10	-21	-16
	Net carbon removals from LULUCF ⁽²⁾	kt CO ₂ eq	-16,460	-9,426	-9,564	-9,366	-9,406	-9,144	-9718	n/a	n/a
								National contribution to 2030 EU target			
			2005	2017	2018	2019	2020	2021			
Progress to policy targets	Share of energy from renewable sources in gross final consumption	%	9%	19%	21%	22%	23%	17%	27.0		
	Energy efficiency: primary energy consumption ⁽³⁾	Mtoe	19.2	18.3	18.4	18.2	17.2	18.6	17.5		
	Energy efficiency: final energy consumption ⁽³⁾	Mtoe	10.1	9.9	9.9	9.8	9.5	10.3	10.3		
		BULGARIA						EU			
Fiscal and financial indicators	Environmental taxes (% of GDP)	% of GDP	2.98	2.80	2.62	2.99	3.03	2.78	2.4	2.2	2.2
	Environmental taxes (% of total taxation) ⁽⁴⁾	% of taxation	10.20	9.38	8.81	9.85	9.89	9.06	5.9	5.6	5.5
	Government expenditure on environmental protection	% of total exp.	1.90	1.93	1.89	1.90	1.75	1.90	1.7	1.6	1.6
	Investment in environmental protection ⁽⁵⁾	% of GDP	0.6	0.4	0.5	0.4	-	-	0.4	0.4	0.4
	Fossil fuel subsidies ⁽⁶⁾	EUR2021bn	0.5	0.5	0.5	0.6	0.6	-	53.0	50.0	-
Climate protection gap ⁽⁷⁾	score 1-4					2.0	2.0			1.5	
Climate	Net greenhouse gas emissions	1990 = 100	57.0	61.0	58.0	56.0	52.0	55.0	76.0	69.0	72.0
	Greenhouse gas emission intensity of the economy	kg/EUR 10	1.44	1.45	1.33	1.25	1.20	-	0.31	0.30	0.26
	Energy intensity of the economy	kgoe/EUR 10	0.43	0.43	0.42	0.40	0.40	-	0.11	0.11	-
Energy	Final energy consumption (FEC)	2015=100	101.7	104.3	104.5	103.7	100.5	108.3	102.9	94.6	101.1
	FEC in residential building sector	2015=100	102.7	105.7	101.7	98.6	108.6	109.6	101.3	101.3	106.8
	FEC in services building sector	2015=100	107.3	108.2	114.1	117.5	100.1	120.6	100.1	94.3	100.7
Pollution	Smog-precursor emission intensity (to GDP) ⁽⁸⁾	tonne/EUR 10	3.83	3.53	3.25	2.96	2.87	-	0.93	0.86	-
	Years of life lost due to air pollution by PM2.5	per 100,000 inh.	2027.1	1961.4	1836.0	1523.9	1553.6	-	581.6	544.5	-
	Years of life lost due to air pollution by NO ₂	per 100,000 inh.	281.1	291.4	287.7	280.1	245.3	-	309.6	218.8	-
	Nitrates in ground water	mg NO ₃ /litre	32.8	29.7	29.8	29.5	30.5	-	21.0	20.8	-
Biodiversity	Land protected areas	% of total	34.3	40.5	-	41.0	41.0	41.0	26.2	26.4	26.4
	Marine protected areas	% of total	8.1	-	-	8.1	-	8.0	10.7	-	12.1
	Organic farming	% of total utilised area	3.2	2.7	2.6	2.3	2.3	1.7	8.5	9.1	-
Mobility	Share of zero-emission vehicles ⁽⁹⁾	% in new registration	0.2	0.4	0.5	1.2	2.2	3.1	5.4	8.9	10.7
	Number of AC/DC recharging points (AFIR categorisation)		-	-	-	195	664	955	188626	330028	432518
	Share of electrified railways	%	71.2	71.2	71.2	71.2	71.2	71.3	56.6	n/a	56.6
	Hours of congestion per commuting driver per year		34.1	35.8	36.2	37.3	n/a	n/a	28.7	n/a	n/a

Sources: (1) Historical and projected emissions, as well as Member States' climate policy targets and 2005 base year emissions under the Effort Sharing Decision (for 2020) are measured in global warming potential (GWP) values from the 4th Assessment Report (AR4) of the Intergovernmental Panel on Climate Change (IPCC). Member States' climate policy targets and 2005 base year emissions under the Effort Sharing Regulation (for 2030) are in GWP values from the 5th Assessment Report (AR5). The table above shows the base year emissions 2005 under the Effort Sharing Decision, using AR4 GWP values. Emissions for 2017-2021 are expressed in percentage change from 2005 base year emissions, with AR4 GWP values. 2021 data are preliminary. The table shows the 2030 target under Regulation (EU) 2023/857 that aligns it with the EU's 55% objective, in percentage change from 2005 base year emissions (AR5 GWP). Distance to target is the gap between Member States' 2030 target (with AR5 GWP values) and projected emissions with existing measures (WEM) and with additional measures (WAM) (with AR4 GWP values), in percentage change from the 2005 base year emissions. Due to the difference in global warming potential values, the distance to target is only illustrative. The measures included reflect the state of play as of 15 March 2021.

(2) Net removals are expressed in negative figures, net emissions in positive figures. Reported data are from the 2023 greenhouse gas inventory submission. 2030 value of net greenhouse gas removals as in Regulation (EU) 2023/839 amending Regulation (EU) 2018/841 (LULUCF Regulation) – Annex IIa, kilotons of CO₂ equivalent, based on 2020 submissions.

(3) Renewable energy and energy efficiency targets and national contributions are in line with the methodology established under Regulation (EU) 2018/1999 (Governance Regulation).

(4) Percentage of total revenue from taxes and social contributions (excluding imputed social contributions). Revenue from the EU Emissions Trading System is included in environmental tax revenue.

(5) Expenditure on gross fixed capital formation for the production of environmental protection services (abatement and prevention of pollution) covering government, industry, and specialised providers.

(6) European Commission, Study on energy subsidies and other government interventions in the European Union, 2022 edition.

(7) The climate protection gap refers to the share of non-insured economic losses caused by climate-related disasters. This indicator is based on modelling of the current risk from floods, wildfires and windstorms as well as earthquakes, and an estimation of the current insurance penetration rate. The indicator does not provide information on the split between the private/public costs of climate-related disasters. A score of 0 means no protection gap, while a score of 4 corresponds to a very high gap (EIOPA, 2022).

(8) Sulphur oxides (SO₂ equivalent), ammonia, particulates < 10 µm, nitrogen oxides in total economy (divided by GDP).

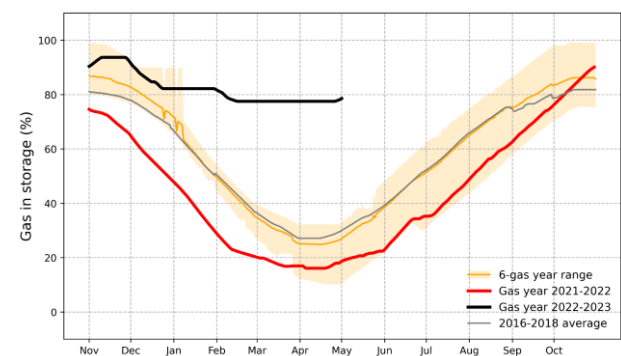
(9) Battery electric vehicles (BEV) and fuel cell electric vehicles (FCEV).

Following Russia’s invasion of Ukraine, Bulgaria diversified its gas suppliers, however it continues to depend heavily on fossil fuels. From a country highly dependent on Russian gas, Bulgaria had its gas supplies from Russia cut and now receives gas via a pipeline from Azerbaijan and the remainder via liquefied natural gas (LNG). As an economy still highly dependent on fossil fuels, even though the share of natural gas in the energy mix is limited, the impact of global price developments was significant in the country. This Annex⁽⁵⁰⁾ sets out actions carried out by Bulgaria to achieve the REPowerEU objectives, including through the implementation of its recovery and resilience plan, in order to improve energy security and affordability while accelerating the clean energy transition, and contributing to enhancing the EU’s competitiveness in the clean energy sector⁽⁵¹⁾.

Bulgaria showed a high level of security of gas supply in the face of challenging circumstances, in particular its gas supplies being cut after the national company Bulgargaz refused to pay Gazprom in roubles. Its natural gas infrastructure contributes to the security of supply of south-eastern Europe. Bulgaria fulfilled its gas storage obligations last winter, reaching 91.53% by 1 November 2022 (more than 10 percentage points above its legal obligation), and ended the heating season with a filling gas storage at 77.54% by 15 April⁽⁵²⁾. Bulgaria operates one underground storage facility with a total capacity of 0.59 billion cubic metres (bcm), representing around 23 % of its total yearly demand. Gazprom, the main single gas supplier to the national incumbent Bulgargaz, stopped

supplying gas in April 2022. Given the lack of immediate alternatives of gas supplies, this abrupt cut-off was substituted by short-term contracts for LNG deliveries via the Revythousa LNG terminal in Greece. The gas interconnector between Greece and Bulgaria (IGB) started operations in October 2022. This enabled Bulgaria to receive the full volumes of contracted supplies from Azerbaijan (1 bcm/year, covering roughly 30% of domestic consumption). On 1 February 2023, Bulgaria and Serbia announced the start of construction works on the natural gas pipeline connecting Bulgaria and Serbia in Kostinbrod, with a capacity of 1.8 bcm/year expected to be operational by mid-2023.

Graph A7.1: **Underground gas storage levels in Bulgaria**



Source: JRC calculation based on AGSI+ Transparency Platform, 2022 (Last update 2 May 2023)

The nuclear fuel diversification process is well advanced. The two operating VVER-1000 nuclear reactors are dependent on a Russian fuel supply, with fuel in stock for a minimum of 1 year. Bulgaria has recently signed a contract with Westinghouse Sweden for an alternative supply of nuclear fuel for Kozloduy Unit 5, which should be in use as of mid-2024. Another recent contract with Framatome envisages delivery of Russian-designed fuel by TVEL to Unit 6 as of 2025. This is manufactured in the EU based on a joint venture between Framatome and TVEL.

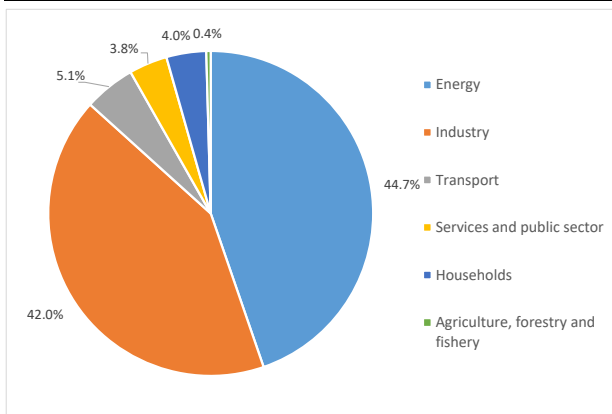
Electricity security in Bulgaria does not rely on natural gas. Bulgaria is a net electricity exporter (around 7.5 TWh on average per year between 2010 and 2020, of which 3.4 TWh in 2020, the lowest level since 2010). Net exports increased to 8.8 TWh in 2021. Over the period August 2022 – March 2023, 22% of gas consumption has been saved in Bulgaria compared to the previous 5-years average.

⁽⁵⁰⁾ It is complemented by Annex 6 as the European Green Deal focuses on the clean energy transition, by Annex 8 on the actions taken to mitigate energy poverty and protect the most vulnerable ones, by Annex 9 as the transition to a circular economy will unlock significant energy and resource savings, further strengthening energy security and affordability, and by Annex 12 on industry and single market complementing ongoing efforts under the European Green Deal and REPowerEU.

⁽⁵¹⁾ In line with the Green Deal Industrial Plan COM(2023) 62 final, and the proposed Net-Zero Industry Act COM(2023) 161 final

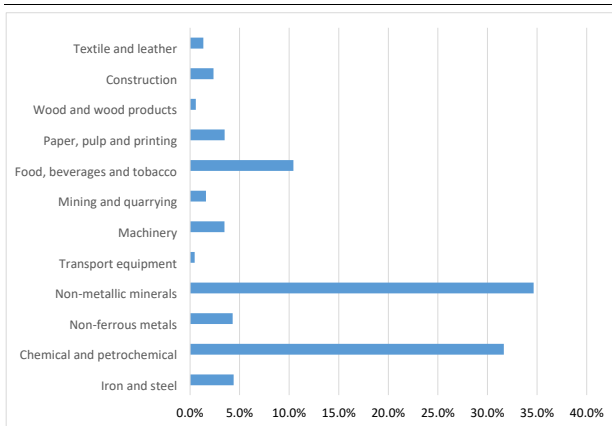
⁽⁵²⁾ Regulation of the European Parliament and of the Council amending Regulations (EU) 2017/1938 and (EC) No 715/2009 with regard to gas storage and Implementing Regulation (EU) 2022/2301 of 23 November 2022 setting the filling trajectory with intermediary targets for 2023 for each Member State with underground gas storage facilities on its territory and directly interconnected to its market area.

Graph A7.2: Gas consumption in Bulgaria, 2021



Source: Eurostat

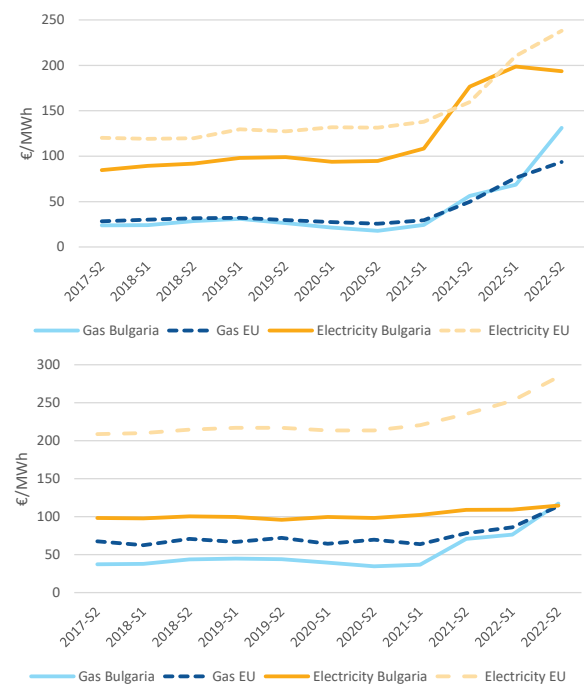
Graph A7.3: Gas consumption per industry, in thousands of terajoules – 2021



Source: Eurostat

Bulgaria is upgrading its grid infrastructure, but further infrastructure investments are needed to accommodate a higher share of renewable electricity. As part of its recovery and resilience plan, Bulgaria will carry out investments to digitalise the electricity transmission grid to increase the integration of new renewable energy sources with capacity of 4 500 MW and the interconnection with the neighbouring Member states by 2 500 MW. In addition, Bulgaria plans massive investment in energy storage to ease the integration of renewable energy sources. The electricity cross-border interconnection level of 23.51% in 2022 is still significantly above the interconnection target of 10% for 2020 and 15% for 2030. Progress on Projects of Common Interest, including the Bulgaria–Serbia gas pipeline and expansion of the Chiren gas storage facility (with completion and commissioning dates in 2024-2025), is important to significantly increase interconnection levels with neighbouring countries and contribute to the security of gas supplies to Bulgaria and the region.

Graph A7.4: Bulgaria's retail energy prices for industry (top) and households (bottom)



- (1) On electricity, the band consumption is DC for households and ID for industry
- (2) On gas, the band consumption is D2 for households and I4 for industry

Source: Eurostat

Despite the mechanisms introduced by Bulgaria to mitigate soaring energy prices for non-household consumers, the impact is severe. Regulated tariffs are used in Bulgaria to charge households for electricity and district heating. These tariffs were changed once in 2022, with an increase of 3% for electricity and 39% for district heating, showing minor price increase compared to the EU⁽⁵³⁾. Nevertheless, an estimated share of almost 23.7% of the population is at risk of energy poverty⁽⁵⁴⁾. However, the surge in energy prices has had a considerable impact on Bulgarian industry, which accounted for two-thirds of gas consumption in the country in 2021 (see Graph A7.2). Sectors involving fertilisers, metals, chemicals and glass are highly exposed to energy shocks and are experiencing growing pressure to either raise their prices to safeguard margins or reduce production due to the high share of energy consumption.

⁽⁵³⁾ Annex 8 looks at the impact of soaring energy prices on the most vulnerable households.

⁽⁵⁴⁾ The Energy Poverty Advisory Hub – [National indicators \(europa.eu\)](https://nationalindicators.europa.eu)

Bulgaria has huge potential to transform its energy system and decarbonise the economy, which is currently the most carbon intensive in the EU. Bulgaria's installed capacity of renewable energy reached a total of 5 205 MW in 2022, increasing by 14.8% compared to 2021⁽⁵⁵⁾. Most of this growth was in solar (+52.8% in 2022), following the trend of the last decade (1 948 MW in 2022 against 25 MW in 2010). The recovery and resilience plan includes measures on permitting procedures for renewable energy sources to shorten the deadlines for administration and system operators, as well as define go-to areas. In January 2023, the Bulgarian Parliament adopted legislative amendments that simplify and streamline the process of setting up small-scale rooftop solar installations by excluding the need for construction permits. There is still potential to further explore key sectors to meet the country's renewables penetration and decarbonisation targets, for example in heating and cooling and in buildings.

Bulgaria is also continuing its programme on renovating and promoting energy efficiency measures in private and public buildings (e.g. subsidies for households to install solar panels or solar boilers with approximately 10 000 households to benefit from the measure). However, the share of Bulgarian households below poverty and social exclusion threshold that cannot properly warm their homes is the highest at EU level, about 43% in 2021. Energy renovation can deliver a structural answer to this issue. Single-family buildings which represent the biggest part of the residential building stock are insufficiently addressed. Development of one stop shops and wider promotion campaigns will facilitate and enhance energy renovation in the country. Furthermore, financial schemes for energy renovation are not sufficiently developed in order to support the transition to more market-based renovations. Additional training and education activities related to energy renovation and renewable energy integration in buildings are needed in order to trigger job creation and secure a proper implementation of measures, while avoiding lock-in effects due to improper execution of works⁽⁵⁶⁾. Bulgaria is carrying out a very low

number of checks on products covered by ecodesign and energy labelling. This generates serious concerns with respect to the level playing field among economic operators and uncertainty as to the compliance levels of the concerned products, and therefore possible missed energy and CO₂ savings⁽⁵⁷⁾.

Bulgaria has not yet tapped into potential consumer empowerment, whether individually as prosumers or jointly through energy communities or energy sharing arrangements. Consumer empowerment can help achieve public acceptance of the energy transition, mobilise private capital investment in renewables, bring about flexibility, as well as ensure consumer access to low-cost renewables. The growth of individual and collective consumer action is expected as a result of an improved regulatory framework (Renewable Energy Act), which is envisaged in the national recovery and resilience plan.

Bulgaria could benefit from supporting research and innovation with a focus on manufacturing low-carbon technologies and components. The number of patent families in Energy Union priorities per million of inhabitants is the lowest among all Member States and has shown no progress in the last decade. The potential for producing clean energy technologies, such as solar power equipment, in particular in areas with a high concentration of experts (coal regions and industrial zones) needs to be explored. Private R&I investments in the EU Energy Priorities⁽⁵⁸⁾ remain low (3.1 M EUR in 2019 compared to 6.5 M EUR in 2018). Bulgaria is listed as one of the EU emerging innovators according to the European innovation Scoreboard 2022, with a mixed performance on climate change related indicators, with GHG emissions intensity of energy consumption above the EU average⁽⁵⁹⁾. The Cleantech Bulgaria⁽⁶⁰⁾ - partner of the EIT Climate-KIC, EIT InnoEnergy and EIT manufacturing - aims at increasing the potential for innovation and sustainable economic growth in the fields of clean technologies, bio-technology

⁽⁵⁵⁾ IRENA, Renewable capacity statistics 2023

⁽⁵⁶⁾ After the conclusion of the negotiations for a recast Energy Efficiency Directive, the ambition of both the EU and national targets as well as of the national measures for energy efficiency to meet these targets is expected to increase.

⁽⁵⁷⁾ The internet-supported information and communication system for the pan-European market surveillance

⁽⁵⁸⁾ Renewables, smart systems, efficient systems, sustainable transport, carbon capture, utilisation and storage, and nuclear safety, COM(2015) 80 final (Energy Union Package).

⁽⁵⁹⁾ https://ec.europa.eu/assets/rtd/eis/2022/ec_rtd_eis-country-profile-bg.pdf

⁽⁶⁰⁾ <https://cleantech.bg/en/about-us/>

and environmental innovation, to foster the development of the Bulgarian innovation ecosystem. Regarding the labour market, despite 2021 was a difficult year, and the skill shortages currently experienced in the market will likely increase, the green transition and the measures included in the National Recovery and Resilience Plan will also trigger a demand for new skills in the labour market⁽⁶¹⁾. In 2021, out of the 22.3 thousand jobs in the Renewable Energy Sector in Bulgaria, the Solid Biomass sector ranked first with 9.7 thousand jobs, followed by Hydropower (5.5 thousand jobs) and liquid biofuels (2.4 thousand jobs).

⁽⁶¹⁾ [Labour market information: Bulgaria \(europa.eu\)](https://europa.eu/eurostat/tgm/table.do?tab=table&init=1&language=en&plugin=1)

Table A7.1: Key Energy Indicators

		BULGARIA				EU			
		2018	2019	2020	2021	2018	2019	2020	2021
ENERGY DEPENDENCE	Import Dependency [%]	36%	38%	38%	36%	58%	61%	57%	56%
	of Solid fossil fuels	10%	7%	9%	10%	44%	44%	36%	37%
	of Oil and petroleum products	96%	103%	98%	97%	95%	97%	97%	92%
	of Natural Gas	99%	100%	96%	96%	83%	90%	84%	83%
	Dependency from Russian Fossil Fuels [%]								
	of Hard Coal	79%	100%	85%	88%	40%	44%	49%	47%
	of Crude Oil	64%	63%	0%	0%	30%	27%	26%	25%
of Natural Gas	100%	79%	75%	80%	40%	40%	38%	41%	
		2015	2016	2017	2018	2019	2020	2021	2022
ELECTRICITY	Gross Electricity Production (GWh)	49227	45279	45613	46838	44277	40754	47568	-
	Combustible Fuels	24840	22088	23633	22606	21573	17827	23079	-
	Nuclear	15383	15776	15545	16125	16555	16626	16487	-
	Hydro	6147	4568	3493	5423	3383	3320	5067	-
	Wind	1452	1425	1504	1318	1317	1477	1434	-
	Solar	1382	1388	1403	1343	1417	1469	1467	-
	Geothermal	0	0	0	0	0	0	0	-
	Other Sources	23	34	34	22	31	36	35	-
	Net Imports of Electricity (GWh)	-10575	-6372	-5480	-7807	-5810	-3408	-8778	-
	As a % of electricity available for final consumption	-36%	-21%	-17%	-25%	-19%	-11%	-28%	-
Electricity Interconnection (%)	-	-	7.10%	9.31%	9.20%	11.30%	14.68%	23.51%	
		2015	2016	2017	2018	2019	2020	2021	2022*
DIVERSIFICATION OF GAS SUPPLIES	Gas Consumption (in bcm)	3	3.1	3.2	3	2.9	3	3.4	2.7
	Gas Imports - by type (in bcm)	3.0	3.1	3.3	3.1	2.9	2.9	3.3	n.a.
	Gas imports - pipeline	3.0	3.1	3.3	3.1	2.9	2.9	3.3	n.a.
	Gas imports - LNG	0.0	0.0	0.0	0.0	0.0	0.0	0.0	n.a.
	Gas Imports - by main source supplier (in bcm) (1)								
	Russia	3.0	3.1	3.3	3.1	2.3	2.2	2.6	n.a.
	Greece	0.0	0.0	0.0	0.0	0.6	0.6	0.4	n.a.
	Azerbaijan	0.0	0.0	0.0	0.0	0.0	0.0	0.3	n.a.
	Romania	0.0	0.0	0.0	0.0	0.0	0.1	0.0	n.a.
			2019	2020	2021	2022			
DIVERSIFICATION OF GAS SUPPLIES	LNG Terminals								
	Number of LNG Terminals (2)	0	0	0	0				
	LNG Storage capacity (m3 LNG)	0	0	0	0				
	Underground Storage								
Number of storage facilities	1	1	1	1					
Operational Storage Capacity (bcm)	0.6	0.6	0.6	0.6					
		2019	2020	2021	2022				
CLEAN ENERGY	VC investments in climate tech start-ups and scale-ups (EUR Mln)	n.a.	n.a.	n.a.	n.a.				
	as a % of total VC investments in Bulgaria	n.a.	n.a.	n.a.	n.a.				
	Research & Innovation spending in Energy Union R&I priorities								
	Public R&I (EUR mln)	n.a.	n.a.	n.a.	n.a.				
	Public R&I (% GDP)	n.a.	n.a.	n.a.	n.a.				
	Private R&I (EUR mln)	3.1	n.a.	n.a.	n.a.				
Private R&I (% GDP)	0.01%	n.a.	n.a.	n.a.					

(1) The ranking of the main suppliers is based on the latest available figures (for 2021)

(2) FSRU included

Source: Eurostat, Gas Infrastructure Europe (Storage and LNG Transparency Platform), JRC SETIS (2022), JRC elaboration based on PitchBook data (06/2022)

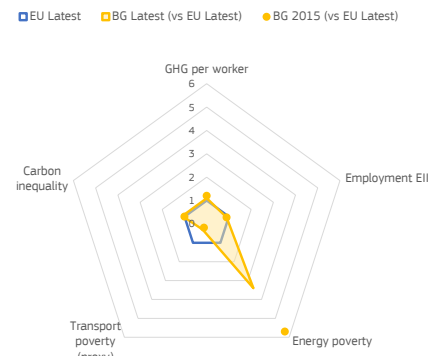
This Annex monitors Bulgaria's progress in ensuring a fair transition towards climate neutrality and environmental sustainability, notably for workers and households in vulnerable situations. The provision of upskilling and reskilling relevant for the green transition will contribute to the effective implementation of REPowerEU and the Council Recommendation.⁽⁶²⁾ Bulgaria's recovery and resilience plan (RRP) envisages reforms and investment for a fair green transition, complemented by measures under the European Social Fund Plus (ESF+) (see Annex 4).

The green economy is on a growing trend in Bulgaria. The greenhouse gas (GHG) emissions per person employed declined from 16.9 tonnes in 2015 to 15 in 2021 and are slightly above the EU average of 13.7 tonnes (see Table A8.1). Bulgaria's energy-intensive industries (EII) represent 2.7% of total employment in 2020, compared to 3.0% in the EU. Total employment in the environmental goods and services sector (EGSS) increased from 38 150 in 2015 to 50 115 in 2018 (by 33%). In 2019, there were 82 000 workers in EGSS, which represented 2.3% of total employment, in line with the EU average (2.2%).⁽⁶³⁾ Employment in mining and quarrying declined by 17.3% between 2015 and 2018. In 2020, 20 500 people were employed in that sector.⁽⁶⁴⁾ (see Annex 9).

Upskilling and reskilling are key for smooth labour market transitions and promoting jobs in transforming sectors. In Bulgaria, 50% of citizens believe they do not have the necessary skills to contribute to the green transition, which is well above the EU average of 38%.⁽⁶⁵⁾ 28.8% of all surveyed industrial employers reported labour shortages in December 2022.⁽⁶⁶⁾ The ESF+ makes available EUR 152 million for measures promoting green skills and jobs (see Annex 14). In Bulgaria,

an ESF+ project called 'Student Practices' helped over 44 000 university students improve their professional skills by facilitating practical training and internships, including in fields relevant for the green transition.

Graph A8.1: Fair transition challenges in Bulgaria



Source: Eurostat, EMPL-JRC GD-AMEDI/AMEDI+ projects and World Inequality Database (see Table A8.1).

Energy poverty indicators improved, but Bulgaria still faces significant challenges and rising energy prices may worsen the situation. The share of the population unable to keep their homes adequately warm declined from 39.2% in 2015 to 23.7% in 2021, remaining well above the EU average (6.9% in 2021)⁽⁶⁷⁾. All income groups are affected, with 42.6% of those below the at-risk-of-poverty threshold and 22.6% of lower-middle-income households (in deciles 4-5) in 2021 (EU: 8.2%). Before the energy price hikes, 64.4% of the total population and 87.5% of the (expenditure-based) at-risk-of-poverty (AROP) population spent above 10% of their household budgets on electricity, gas, and other fuels, well above the EU average (26.9% and 48.2%, respectively).⁽⁶⁸⁾ Bulgaria is working on an official definition of energy poverty, which will be tied to the provision of targeted support to identified vulnerable households.

The increased energy prices in 2021-2023 negatively affect households' budgets. As a result of price changes during August 2021 to January 2023 period relative to the 18 months

⁽⁶²⁾ Council Recommendation of 16 June 2022 on ensuring a fair transition towards climate neutrality (2022/C 243/04) covers employment, skills, tax/benefit and social protection systems, essential services, and housing.

⁽⁶³⁾ Eurostat, online code [[env_ac_egss1](https://ec.europa.eu/eurostat/web/products-datasets/product?code=nama_10_a64)]. Some of the increase between 2018 and 2019 may be attributable to a methodological change in calculating EGSS employment.

⁽⁶⁴⁾ Eurostat, online code [https://ec.europa.eu/eurostat/web/products-datasets/product?code=nama_10_a64].

⁽⁶⁵⁾ Special Eurobarometer 527. Fairness perceptions of the green transition, May – June 2022.

⁽⁶⁶⁾ National Statistical Institute, [Monitoring Business Tendencies in the Industrial Sector](#), December 2022.

⁽⁶⁷⁾ Energy poverty is a multi-dimensional concept. The indicator used focuses on an outcome of energy poverty. Further indicators are available at the [Energy Poverty Advisory Hub](#).

⁽⁶⁸⁾ Products defined according to the European Classification of Individual Consumption according to Purpose (ECOICOP): CPO45.



Table A8.1: Key indicators for a fair transition in Bulgaria

Indicator	Description	BG 2015	BG Latest	EU Latest
GHG per worker	Greenhouse gas emissions per worker - CO2 equivalent tonnes	16.9	15 (2021)	13.7 (2021)
Employment EII	Employment share in energy-intensive industries, including mining and quarrying (NACE B), chemicals (C20), minerals (C23), metals (C24), automotive (C29) - %	2.7	2.7 (2020)	3 (2020)
Energy poverty	Share of the total population living in a household unable to keep its home adequately warm - %	39.2	23.7 (2021)	6.9 (2021)
Transport poverty (proxy)	Estimated share of the AROP population that spends over 6% of expenditure on fuels for personal transport - %	9.1	12.2 (2023)	37.1 (2023)
Carbon inequality	Average emissions per capita of top 10% of emitters vs bottom 50% of emitters	5.2	5.7 (2020)	5 (2020)

Source: Eurostat (env_ac_ainah_r2, nama_10_a64_e, ilc_mdcs01), EU Labour Force Survey (break in time series in 2021), EMPL-JRC GD-AMEDI/AMEDI+ projects and World Inequality Database (WID).

prior (cf. Annex 7), in the absence of policy support and behavioural responses, the share of individuals living in households which spend more than 10% of their budget on energy would have increased by 7.3 percentage points (pps) for the whole population, below the EU average (16.4 pps), and by 2.0 pps for the (expenditure-based) AROP population (EU average: 19.1 pps).⁽⁶⁹⁾ Among the (expenditure-based) AROP population, the share of individuals living in households with budget shares for private transport fuels above 6% would have increased by 3.2 pps (vs 5.3 pps in the EU) to 12.2% in January 2023 due to the increase in transport fuel prices. The RRP includes a specific investment of more than EUR 600 million to support the renovation of the residential building stock, aiming to improve energy efficiency and thereby tackle energy poverty.

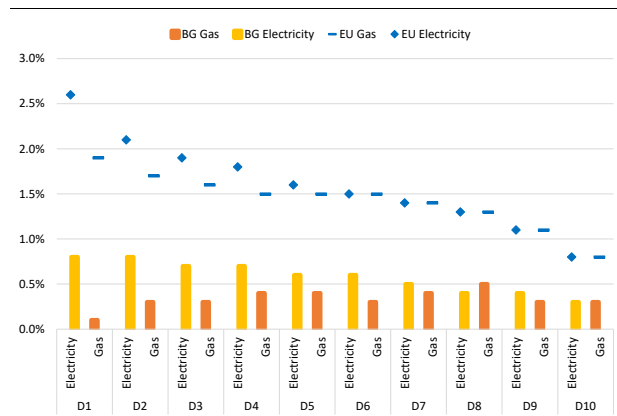
Residential energy price increases are estimated to have regressive impacts.

Expenditure shares of low- and lower-middle-income groups would have increased the most for electricity, in contrast to gas, for which expenditure increases relatively more in mid- and high-income groups, as shown in Graph A8.2. Conversely, the impact of transport fuel price increases would be progressive in Bulgaria, affecting particularly the higher-income households, which spent over 7% of their yearly income on transport-related costs (NSI, 2021).

Access to public transport displays an urban-rural divide. Bulgarian citizens perceive public transport to be relatively available (53% vs 55% in the EU), affordable (53% vs 54% in the EU) and of rather good quality (53% vs 60% in the EU). However, rural areas in Bulgaria perform below the EU average on these perceptions, while urban and suburban areas outperform the EU average. The average carbon footprint of the top 10% of emitters among the population in Bulgaria is 5.7

times higher than that of the bottom 50%, while the EU average is 5.0 times higher (see Table A8.1). In Bulgaria, the average levels of air pollution in 2020 stood above the EU average (17 vs 11.2 µg/m PM2.5), with all regions exposed to critical levels of air pollution⁽⁷⁰⁾, leading to significant health impacts, in particular on vulnerable groups, and 10 630 premature deaths annually⁽⁷¹⁾.

Graph A8.2: Distributional impacts of energy prices due to rising energy expenditure (2021-2023)



Mean change of energy expenditure as a percentage (%) of total expenditure per income decile (D) due to observed price changes (August 2021 - January 2023) relative to the 18 months prior, excl. policy support and behavioural responses. Source: EMPL-JRC GD-AMEDI/AMEDI+ projects, based on Household Budget Survey 2015 and Eurostat inflation data for CP0451 and CP0452.

⁽⁶⁹⁾ [EMPL-JRC GD-AMEDI/AMEDI+](#); see details in the related technical brief.

⁽⁷⁰⁾ Two times higher than the recommendations in the WHO Air Quality Guidelines

⁽⁷¹⁾ [EEA- Air Quality Health Risk Assessment](#)

The circular economy transition is key to delivering on the EU’s climate and environmental goals and provides large socio-economic benefits. The circularity transition of industry, the built environment and agri-food can generate significant environmental improvements (see Annex 6), as they rank among the most resource-intensive systems.

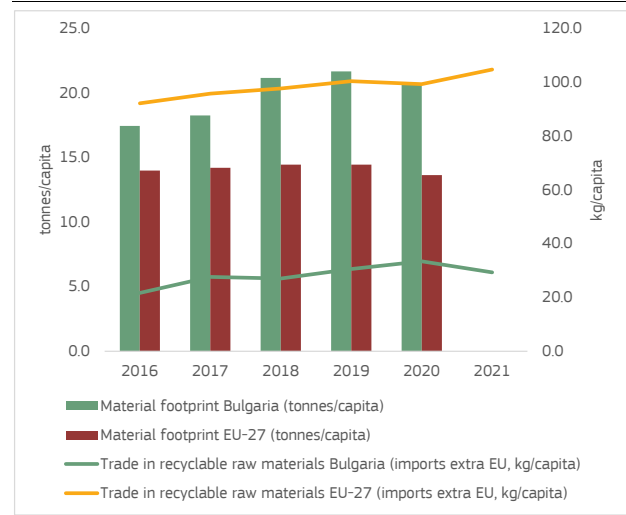
Bulgaria’s circular economy transition is insufficient and needs accelerating to meet the EU’s circular economy goals. The EU’s 2020 circular economy action plan (CEAP) aims to double the circular material use rate between 2020 and 2030. Bulgaria’s use of circular materials fluctuated, reaching 4.9% in 2021 and showing a steady decline in secondary material usage in recent years. The rate is well below the EU 2020 average of 11.7%. The CEAP also aims to significantly decrease the EU’s material footprint. Bulgaria’s material footprint is above the EU average, with a tendency to increase the gap further (see graph A9.1). Fatal accidents in waste management and materials recovery are above the EU average in Bulgaria ⁽⁷²⁾.

Bulgaria recently undertook initial steps to develop an overarching circular economy policy programme. A 2021–2027 strategy and action plan for transition to a circular economy in Bulgaria was adopted in October 2022. The Strategy is focused on three strategic objectives: 1) Green and competitive economy; 2) Less waste, more resources; and 3) Economy for the benefit of consumers. The action plan consists of short-term, mid-term and long-term measures. Some of the short-term measures such as drafting and adoption of sectoral legal acts to cover single-use plastics, the recycling of packaging waste and green procurement have been already done. Bulgaria adopted in 2021 and amended in 2022 Ordinance on reducing the impact of certain plastic products on the environment focused on single-use plastics and the recycling of packaging waste.

Bulgaria has yet to adopt a strategic approach to the circular economy transition. The large amounts of resources used and waste generated and the rather low share of secondary

raw materials indicate that Bulgaria is only at the start of the transition to a circular economy. With EUR 0.33 generated per kg of material consumed in 2021 (Eurostat), resource productivity in Bulgaria is below the EU average of EUR 2.09 per kg. Bulgaria is the biggest producer of hazardous waste in the EU, with 1202 kg/capita in 2020.

Graph A9.1: Trend in material use



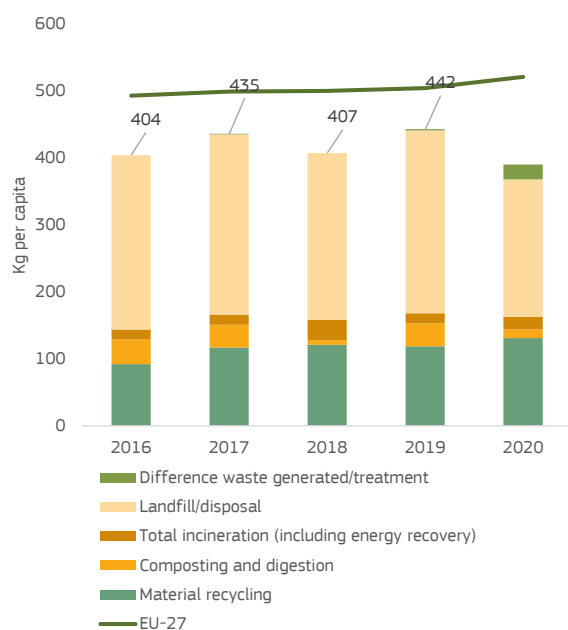
Source: Eurostat

Bulgaria’s treatment of municipal waste needs to be considerably improved. Despite having one of the lowest levels of generation of municipal waste, Bulgaria remains one of the Member States with the highest landfilling rates and lowest recycling performance. Yet, Bulgaria did not meet the 2020 recycling target for municipal waste and is assessed to be at high risk of not meeting the 2025 recycling targets for municipal and packaging waste (Eurostat, 2020). In 2020 landfilling represented 61.7% of the waste generated (compared to the EU average of 23%). On construction and demolition waste, Bulgaria has the “Program for meeting the targets for recycling and recovery of construction waste and waste from demolition of buildings”, which is a part of the National Waste Management Plan 2021–2028. The Strategy and Action Plan for Transition to the Circular Economy, 2022 plans to implement 21 measures aimed at sustainable plastic waste management, product design, innovation in production processes, and upgrading the separate waste collection systems.

⁽⁷²⁾ Eurostat [HSW_N2_02] for NACE Rev. 2 sector E38; 16.04 fatal accidents p. 100 000 employed in 2018–2020 vs 3.4 for all sectors in BG; 6.33 in the EU-27 for sector E38



Graph A9.2: Treatment of municipal waste



Source: Eurostat

The built environment continues to exacerbate the depletion of resources, despite recent improvements. Bulgaria plans to improve the energy performance of at least 5% of total gross floor area of heated and cooled state-owned buildings. The 2020-2050 strategy for renovation of national building stock suggests Bulgaria will renovate 60% of residential buildings and 17% of non-residential buildings by 2050.

The agri-food system has yet to design out food waste. The low composting and digesting rate are considered key reasons for low biowaste recycling rates. Regarding biowaste, Bulgaria does not have enough capacity for separate collection and adequate treatment of about 0.8 million tonnes. The country has legally binding national compost quality standards and quality management system for compost produced from separately collected biowaste, which are regulated by the Ordinance on separate collection of biowaste and treatment of biodegradable waste.

There remains a financing gap in the circular economy, including waste management. Additional investments will be required to address growing needs. The financing gap was estimated at EUR 65 million per year between 2014 and 2020. Over this period, investment needs were estimated to be at least EUR 354 million per year, while investment baselines were EUR 289 million per year (see Annex 6). Investment areas such as eco-design, repair, reuse and remanufacturing as well as the uptake of new business models will be necessary to reach the EU's circular economy objectives. Additional investments are necessary in improving separate waste collection and treatment infrastructure to divert waste from landfilling and incineration with focus on plastic and biowaste.

Table A9.1: Overall and systemic indicators on circularity

AREA	2016	2017	2018	2019	2020	2021	EU-27	Latest year EU-27
Overall state of the circular economy								
Material footprint (tonnes/capita)	17.5	18.3	21.2	21.7	20.7	-	13.7	2020
YoY growth in persons employed in the circular economy (%) ¹	2.3	-2.3	0.6	1.2	-	-	2.9	2019
Water exploitation index plus (WEI+) (%)	1.5	1.8	1.4	1.6	-	-	3.6	2019
Industry								
Resource productivity (purchasing power standard (PPS) per kilogram)	0.7	0.7	0.8	0.8	0.8	0.8	2.3	2021
Circular material use rate (%) ²	4.4	3.5	2.5	2.3	5.9	4.9	11.7	2021
Recycling rate (% of municipal waste)	31.8	34.6	31.5	34.6	35.2	-	49.6	2021
Built environment								
Recovery rate from construction and demolition waste (%) ³	90.0	-	24.0	-	96.0	-	89.0	2020
Soil sealing index (base year = 2006) ⁴	104.5	-	106.9	-	-	-	108.3	2018
Agri-food								
Food waste (kg per capita) ⁵	-	-	-	-	86.0	-	131.0	2020
Composting and digestion (kg per capita)	37.0	34.0	7.0	34.0	13.0	-	100.0	2021

(1) Persons employed in the circular economy only tracks direct jobs in selected sub-sectors of NACE codes E, C, G and S; (2) the circular material use rate measures the share of material recovered and fed back into the economy in overall material use, including composting and digestion; (3) the recovery rate of construction and demolition waste includes waste which is prepared for reuse, recycled or subject to material recovery, including through backfilling operations; (4) soil sealing: 2016 column refers to 2015 data; (5) food waste includes primary production, processing and manufacturing, retail and distribution, restaurants and food services, and households.

Source: Eurostat, European Environment Agency

Digital transformation is key to ensuring a resilient and competitive economy. In line with the Digital Decade Policy Programme, and in particular with the targets in that Programme for digital transformation by 2030, this Annex describes Bulgaria's performance on digital skills, digital infrastructure/connectivity and the digitalisation of businesses and public services. Where relevant, it makes reference to progress on implementing the Recovery and Resilience Plan (RRP). Bulgaria allocates 26% of its total RRP budget to digital (EUR 1.6 billion) ⁽⁷³⁾.

The Digital Decade Policy Programme sets out a pathway for Europe's successful digital transformation by 2030. The Programme provides a framework for assessing the EU's and Member States' digital transformation, notably via the Digital Economy and Society Index (DESI). It also provides a way for the EU and its Member States to work together, including via multi-country projects, to accelerate progress towards the Digital Decade digital targets and general objectives ⁽⁷⁴⁾. More generally, several aspects of digital transformation are particularly relevant in the current context. In 2023, the European Year of Skills, building the appropriate skillset to make full use of the opportunities that digital transformation offers is a priority. A digitally skilled population increases the development and adoption of digital technologies and leads to productivity gains ⁽⁷⁵⁾. Digital technologies, infrastructure and tools all play a role in the fundamental transformation needed to adapt the energy system to the current structural challenges ⁽⁷⁶⁾.

Bulgaria scores low in relation to digital skills. Only about a third of Bulgaria's population has basic digital skills, the lowest in the EU. The percentage of ICT specialists is also one of the

lowest in the EU, although the proportion of female ICT specialists is the highest. The country has already implemented some RRP measures to target digital skills including higher education reform to promote specialised ICT training in secondary education.

Bulgaria has a mixed performance on digital infrastructure/connectivity. The country is well above the EU average in its coverage by fixed very high capacity (VHCN) networks but is below the EU average on mobile broadband coverage and the assignment of 5G spectrum (63% vs 68%). In addition, Bulgaria performs below the EU average on overall 5G coverage as well as 5G coverage on the 3.4-3.8 GHz spectrum band which is essential for enabling advanced applications requiring large spectrum bandwidth. In accordance with its RRP, Bulgaria has already implemented measures to improve its connectivity, for example a reform to reduce the spectrum fees.

Bulgaria scores very low on the digitalisation of businesses. One key challenge is the adoption of digital technology in enterprises (mainly SMEs), where the percentage is one of the lowest in the EU. The adoption of advanced technologies (such as big data, cloud computing services and artificial intelligence) is also very low.

Bulgaria has a very low level of performance in relation to the digitalisation of public services. It scores far below the EU average for digital public services for citizens (60 vs 77), but near the EU average for businesses (81 vs 84). The percentage of e-government users has also stagnated in recent years, at 32% compared to the EU average of 74%. The country has one electronic identification (eID) scheme, which has been notified under the eIDAS Regulation.

⁽⁷³⁾ The share of financial allocations that contribute to digital objectives has been calculated using Annex VII of the RRF Regulation.

⁽⁷⁴⁾ The Digital Decade targets as measured by DESI indicators and complementary data sources are integrated to the extent currently available and/or considered particularly relevant in the MS-specific context.

⁽⁷⁵⁾ See for example OECD (2019): OECD Economic Outlook, Digitalisation and productivity: A story of complementarities, [OECD Economic Outlook, Volume 2019 Issue 1 | OECD iLibrary \(oecd-ilibrary.org\)](https://www.oecd-ilibrary.org/publications/oecd-economic-outlook-volume-2019-issue-1).

⁽⁷⁶⁾ The need and possible actions for a digitalisation of the energy system are laid out in the Communication 'Digitalisation the energy system – EU action plan' (COM(2022)552).

Table A10.1: Key Digital Decade targets monitored by DESI indicators

	Bulgaria			EU	Digital Decade target by 2030 (EU)
	DESI 2021	DESI 2022	DESI 2023	DESI 2023	
Digital skills					
At least basic digital skills	NA	31%	31%	54%	80%
% individuals		2021	2021	2021	2030
ICT specialists ⁽¹⁾	3.3%	3.5%	3.5%	4.5%	20 million
% individuals in employment aged 15-74	2020	2021	2021	2021	2030
Digital infrastructure/connectivity					
Fixed Very High Capacity Network (VHCN) coverage	75%	81%	86%	73%	100%
% households	2020	2021	2022	2022	2030
Fibre to the Premises (FTTP) coverage ⁽²⁾	75%	81%	86%	56%	-
% households	2020	2021	2022	2022	2030
Overall 5G coverage	0%	40%	67%	81%	100%
% populated areas	2020	2021	2022	2022	2030
5G coverage on the 3.4-3.8 GHz spectrum band	NA	NA	37%	41%	-
% populated areas			2022	2022	2030
Digitalisation of businesses					
SMEs with at least a basic level of digital intensity	NA	NA	47%	69%	90%
% SMEs			2022	2022	2030
Big data ⁽³⁾	6%	6%	6%	14%	75%
% enterprises	2020	2020	2020	2020	2030
Cloud ⁽³⁾	NA	10%	10%	34%	75%
% enterprises		2021	2021	2021	2030
Artificial Intelligence ⁽³⁾	NA	3%	3%	8%	75%
% enterprises		2021	2021	2021	2030
Digitalisation of public services					
Digital public services for citizens	NA	59	60	77	100
Score (0 to 100)		2021	2022	2022	2030
Digital public services for businesses	NA	76	81	84	100
Score (0 to 100)		2021	2022	2022	2030
Access to e-health records	NA	NA	NA	71	100
Score (0 to 100)			2023	2023	2030

(1) The 20 million target represents about 10% of total employment.

(2) The Fibre to the Premises coverage indicator is included separately as its evaluation will also be monitored separately and taken into consideration when interpreting VHCN coverage data in the Digital Decade.

(3) At least 75 % of Union enterprises have taken up one or more of the following, in line with their business operations: (i) cloud computing services; (ii) big data; (iii) artificial intelligence.

Source: Digital Economy and Society Index

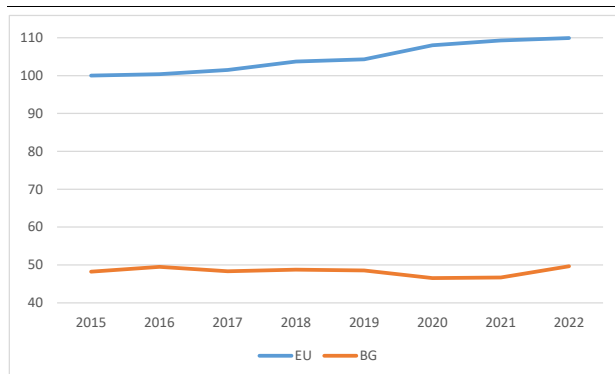


This Annex provides a general overview of the performance of Bulgaria's research and innovation system, which is essential for delivering the twin green and digital transition.

Bulgaria is still an 'emerging innovation performer'; the gap between its performance and the EU average continues to widen.

According to the 2022 edition of the European Innovation Scoreboard⁽⁷⁷⁾, while the country's innovation performance has slightly improved compared to 2021, it is still well below the EU average (45.2% of the EU performance) and the gap between Bulgaria and the EU average is growing. The performance increase in 2022 (3.0 percentage points) is due to small and medium-sized enterprises' (SMEs') improved performance with business process innovations and innovative SMEs collaborating with others.

Graph A11.1: Innovation performance 2015-2022



Source: European Innovation Scoreboard, 2022

Public and private R&D investments remain critically low. R&D intensity⁽⁷⁸⁾ was 0.77% in 2021, a decrease from 2020 and still far from the European average (2.26%)⁽⁷⁹⁾. While R&D investment has been slowly increasing in recent years, in 2021 both public expenditure on R&D (0.26% of GDP) and business enterprise expenditure on R&D (0.51% of GDP) decreased, with both indicators remaining significantly below the EU averages of 0.76% and 1.49% respectively. Due to the low level of public R&D investment in

the public science base, Bulgaria's scientific and technological potential continues to remain largely untapped. To overcome this key challenge, Bulgaria has introduced targeted investments in its recovery and resilience plan (RRP), aimed at stimulating public and private investment in research and innovation (R&I), optimising and enhancing the transfer of research results and technologies. In addition, the investments also support innovative SMEs. Finally, the introduction of a network of higher education institutions under the RRP is expected to help speed up the development of distinguished research universities into fully-fledged participants in the research and innovation ecosystem. Notwithstanding, sustained budget commitments for R&D funding would be needed for Bulgaria to achieve its goal of 2% R&D intensity by 2025⁽⁸⁰⁾.

The public research system's weak performance, resulting notably from the fragmentation of research capabilities, is a major bottleneck.

The Bulgarian research system continues to produce research outputs of low quality, as evidenced by the share of the country's scientific publications among the top 10% most cited scientific publications worldwide (2.7% in 2019), which remains the lowest in the EU. The low level of international co-publications as a percentage of the total number of publications (40% in 2021 compared to 55.4% as EU average) also reflects the weak internationalisation of the Bulgarian research system. This weak performance is mainly the result of a high degree of fragmentation in the research system and the absence of critical mass. Bulgaria continues to have a fragmented research system, comprising 91 public research organisations⁽⁸¹⁾ (PROs) and a higher education system comprising 51 higher education institutions (HEIs)⁽⁸²⁾. This limits the capacity for focus and for generating new knowledge and innovation. In addition, the separation between HEIs and PROs hampers the transition from basic research to the market and the setting-up of an effective funding system based on performance.

⁽⁷⁷⁾ 2022 European Innovation Scoreboard, Country profile: Bulgaria https://ec.europa.eu/assets/rtd/eis/2022/ec_rtd_eis-country-profile-bg.pdf. The EIS provides a comparative analysis of innovation performance in EU countries, including the relative strengths and weaknesses of their national innovation systems (also compared to the EU average).

⁽⁷⁸⁾ Defined as gross domestic expenditure on R&D as a percentage of GDP

⁽⁷⁹⁾ European benchmark target for R&D intensity: 3%.

⁽⁸⁰⁾

<https://www.strategy.bg/StrategicDocuments/View.aspx?lang=bg-BG&id=1231>

⁽⁸¹⁾ <https://documents.worldbank.org/en/publication/documents-reports/documentdetail/501911605783029938/enhancing-the-contribution-of-bulgaria-s-public-research-to-innovation-a-survey-based-diagnostic>

⁽⁸²⁾ <https://openknowledge.worldbank.org/handle/10986/34790>

Limited academia-business linkages continue to be a serious obstacle to the commercialisation of research results.

Science-business cooperation, as reflected in the share of public-private scientific co-publications, remains at the low end of the scale, 5.1% compared to the EU average of 7.1%. The business investment in public R&D is persistently low (0.028% in 2019 compared to an EU average of 0.054%), which suggests that Bulgarian businesses are not inclined to look to public research institutions for knowledge for their innovation activities. A further factor in the weak impact of research is low patent activity, with 0.5 patent applications per billion of GDP compared to an EU average of 3.5.

population is low, at 2.6 compared to an EU average of 4%. In addition, the share of new graduates in science & engineering per thousand population aged 25-34 is showing a worrying downward trend - 8% in 2020, down from 11.4% in 2010, and below the EU average of 16%. This suggests that Bulgaria is at risk of a skills shortage, which could further hinder its ability to mobilise its R&I system to meet the challenges of the twin transition.

The lack of a critical mass in human capital continues to be a drag on Bulgaria's research and innovation capabilities. The number of public sector researchers per thousand of active

Table A11.1: **Key innovation indicators**

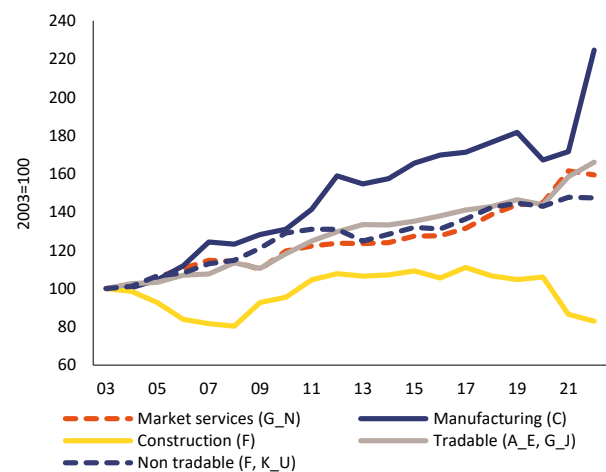
Bulgaria	2010	2015	2019	2020	2021	EU average (1)
Key indicators						
R&D Intensity (GERD as % of GDP)	0.56	0.95	0.83	0.85	0.77	2.26
Public expenditure on R&D as % of GDP	0.28	0.25	0.27	0.27	0.26	0.76
Business enterprise expenditure on R&D (BERD) as % of GDP	0.28	0.70	0.56	0.57	0.51	1.49
Quality of the R&I system						
Scientific publications of the country within the top 10% most cited publications worldwide as % of total publications of the country	3.1	2.5	2.7	:	:	9.8
Patent Cooperation Treaty patent applications per billion GDP (in PPS)	0.4	0.6	0.5	:	:	3.3
Academia-business cooperation						
Public-private scientific co-publications as % of total publications	4.2	5.8	4.9	4.3	5.1	7.1
Public expenditure on R&D financed by business enterprise (national) as % of GDP	0.016	0.017	0.028	:	:	0.054
Human capital and skills availability						
New graduates in science & engineering per thousand pop. aged 25-34	11.4	11.4	9.0	8.0	:	16.0
Public support for business enterprise expenditure on R&D (BERD)						
Total public sector support for BERD as % of GDP	:	0.025	0.018	:	:	0.194
Business enterprise expenditure on R&D (BERD) financed by the public sector (national and abroad) as % of GDP	:	0.025	0.018	0.16	:	0.104
Green innovation						
Share of environment-related patents in total patent applications filed under the Patent Cooperation Treaty (%)	10.2	28.7	12.9	:	:	13.3
Finance for innovation and economic renewal						
Venture capital (market statistics) as % of GDP	0.015	0.011	0.009	0.010	0.020	0.074
Employment in fast-growing enterprises in 50% most innovative sectors	6.2	6.6	6.6	:	:	5.5

(1) EU average for the latest available year or the year with the highest number of country data

Source: Eurostat, OECD, DG JRC, Science-Metrix (Scopus database and EPO's Patent Statistical database), Invest Europe

Bulgaria’s unstable and uncertain political situation as well as the energy crisis impose challenges for firms’ productivity potential and competitiveness. Private investment, especially in non-residential construction, machinery, and equipment, has been falling since 2021, partly due to heightened political uncertainty and infrastructure needs. Despite this, overall real labour productivity shows a stable increasing since 2012, which is driven mainly by the manufacturing sector (see Graph A12.1). However, according to Eurostat nominal labour productivity per hour worked only reaches 53.4% of the 2022 EU level (in purchasing power standards). At the same time, labour shortages, especially in services, but also inflation indexation of some nominal wages put upward pressure on wages and unit labour costs. The country experienced among the highest increases in unit labour costs within the last five years in the EU.

Graph A12.1: Labour productivity per person by sector



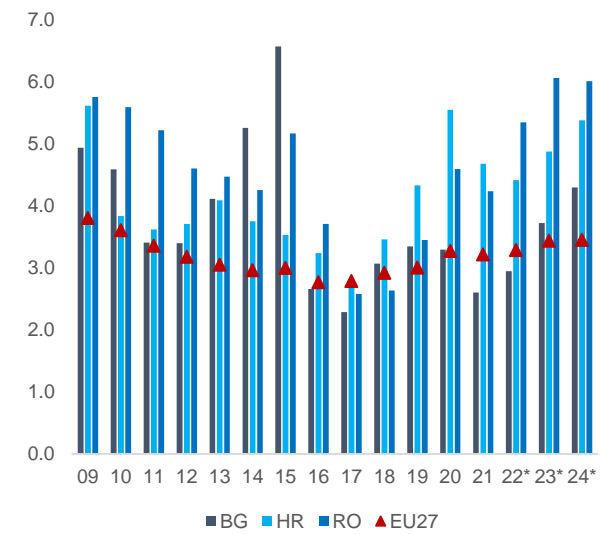
Source: European Commission.

Public investment shows a weak trend. This could be partially explained by delays in implementing infrastructure projects due to political uncertainty. Although growth in public investment is on average higher than the EU average over the last five years (1.2% vs. 0.5% of GDP), it is largely driven by EU funding. There is a considerable gap when comparing government investment with peer countries such as Romania and Croatia (see Graph A12.2) According to the IMF Public Investment Management Assessment (PIMA) ⁽⁸³⁾, there is a considerable efficiency gap,

⁽⁸³⁾ Hallaert, J.J. and Primus, K. (2022), “Strengthening Public Expenditure efficiency: Investment and Social Spending in Bulgaria,” IMF WP/22/100.

especially in project planning, procurement and follow-up audits.

Graph A12.2: Government investment



(*) Forecast

Source: European Commission.

While high energy prices increase production costs for Bulgarian firms, lignite production became profitable for a short period. The annual average of producer prices in industry increased considerably in 2022 (37.8% vs. 15.3% in 2021) – annual prices for energy goods soared i.e. by 135% in September 2022. Combined with considerable material and labour shortages, these price developments weigh heavily on the production capacities of Bulgarian firms. Global supply chain disruptions, also due to the war in Ukraine, and expectations of further price increases, have led to the accumulation and stockpiling of raw materials, commodities and finished products, and therefore partially explain the elevated contribution of inventories to annual GDP growth, especially in the first half of 2022. In contrast, due to the high energy prices and oil/gas supply difficulties, Bulgaria’s polluting lignite power plants were becoming profitable temporarily and a possible way of securing energy supply. This, however, counteracts the incentive of investing in renewable energy sources and reducing the country’s relatively high greenhouse gas emissions. (see Annex 6)

Bulgarian firms are increasingly concerned about the uncertain economic environment and shortage of labour force. According to the short-term business indicators published by the European Commission and the Bulgarian National

Statistical Institute, shortage of (skilled) labour and uncertain economic development were among the most cited factors hampering economic activities and are significant barriers to productivity growth. The availability of skilled staff represents a long-term barrier to investment for 88% of firms in the EIB investment survey.⁽⁸⁴⁾ Finding skilled staff and experienced managers as well as finding customers are the main problems for Bulgarian SMEs - respectively 23% and 16% of SMEs report these specific difficulties according to the SAFE survey⁽⁸⁵⁾.

Regarding trade in goods, Bulgaria is relatively well integrated into the single market but trade integration for services, as well as transposition and correct implementation of EU rules are lagging behind. After Bulgarian goods and services trade with EU countries reached about 61.9% of Bulgaria's overall trade in 2020, it declined to a share of 57.9 in 2022. Germany, Italy, and Romania are the main EU export partners. Bulgaria could increase its export market share in food products, base metals and stone, cement, ceramic, and glass products. Only 18% (13%) of Bulgaria's total EU exports (imports) are in services (mainly travel & transport services) and trade integration for services is, with a share of 6% low, compared to the EU average of 14.5%. In terms of implementing EU law, Bulgaria's transposition deficit (percentage of all directives not transposed into national law) reached its highest ever reported level of 2.2% (1.6% in 2020). Additionally, the conformity deficit (percentage of all directives transposed incorrectly), has also increased in the last three years, reaching 2.1%, which is Bulgaria's highest deficit ever and the third highest among Member States.

Administrative burdens prevail in the areas of business regulation, restrictiveness of regulated professions, and permitting for installing renewable energy sources (RES). Business regulations and administrative barriers are hampering 49% of firms in long-term investment (EIB 2022), while 9% of SMEs cite "regulation" as one of the most urgent problems (SAFE 2022). 53% out of surveyed investors⁽⁸⁶⁾

are furthermore not confident that their investments are being protected by law and courts in Bulgaria. Half of them give as one of the reasons for their concerns 'unpredictable, non-transparent administrative conduct, and difficulty to challenge administrative decisions in court'.

Regulatory restrictiveness in Bulgaria is higher than the EU average for a number of regulated professions, especially lawyers, architects, civil engineers and tourist guides.

This impedes their competitiveness and integration into the single market.⁽⁸⁷⁾ Lawyers in Bulgaria are subject to specific requirements, incompatibility rules and multidisciplinary restrictions, as well as bans on commercial communication. This could affect the potential of this sector to innovate and roll out digital solutions and new business models.

Another area of administrative burden concerns permitting for renewable energy sources (RES).

According to the interim report "RES Simplify"⁽⁸⁸⁾, several areas of improvement were identified, among them process-related issues, third party/stakeholder issues and grid issues. As a follow-up, the SMET initiative (single market enforcement taskforce) aims to remove process-related barriers, in order to increase the installed renewables capacity for electricity, which is below the EU average (see table A12.1). However, all identified obstacles presented by SMET were considered to be not relevant by the Bulgarian national authorities.

The Bulgarian public procurement system remains a concern, despite some progress and efforts in reforming the regulatory framework.

The current level of public procurement competitiveness remains low, which is shown by several indicators. The rate of single bids is 34%, meaning that for one third of tenders, only one offer was submitted. Additionally, one fourth of all procedures are unsuccessful, since no offer was submitted and 23% of the contracts were awarded without competition, i.e. on the

⁽⁸⁴⁾ EIB Investment Survey 2022: European Union overview.

⁽⁸⁵⁾ European Commission (2022). Survey on access to finance for enterprises (SAFE), Analytical Report 2022.

⁽⁸⁶⁾ EU Justice Scoreboard.

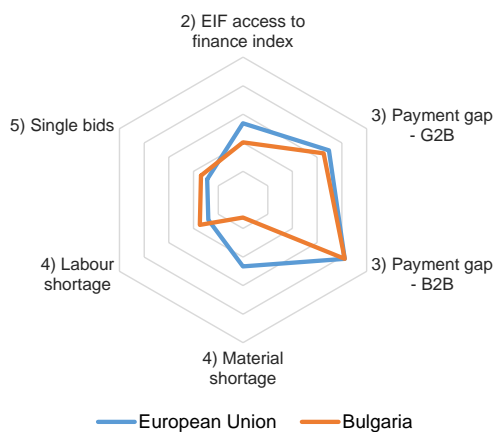
⁽⁸⁷⁾ European Commission (2021). [Communication on updating the reform recommendations for regulation in professional services](#), COM(2021)385. 9/7/2021

⁽⁸⁸⁾ European Commission, Directorate-General for Energy, Tallat-Kelpšaitė, J., Brückmann, R., Banasiak, J., et al. (2022) Technical support for renewables policy development and implementation : simplification of permission and administrative procedures for renewables installations (RES simplify): interim report. Publications Office of the European Union.

basis of a negotiated procedure without publication. In general, Bulgarian public procurement law remains complex and relatively unstable.

While late payments concern a lower number of Bulgarian SMEs than the EU average, most firms worry about the impact of regulation and the general economic development on their and their customers' payments. A decreasing number of Bulgarian SMEs reported late payments as problematic (25% in 2022 vs. 33% in 2021), which is much less than 43% on average in the EU ⁽⁸⁹⁾. However, firms consider regulation (66%), rising inflation (62%) and supply chain disruptions (58%) to be the main barriers to their customers paying their debt on time. For 74% and 64% of firms, credit losses and customer bankruptcy respectively are problematic. ⁽⁹⁰⁾ The increasing number of business bankruptcies, driven mainly by bankruptcy declarations in the wholesale and retail trade sectors ⁽⁹¹⁾, point to an emerging problem.

Graph A12.3: **Business environment and productivity drivers**



Source: 1) % of GDP, 2021 Eurostat;
 2) composite indicator, 2021 European Investment Fund access to finance index;
 3) average payment delay in number of days, 2022 Intrum;
 4) % of firms in manufacturing facing constraints, 2022 European Commission business consumer survey;
 5) proportion of contracts awarded with a single bidder, 2022 Single Market Scoreboard.

⁽⁸⁹⁾ SAFE Survey (2022).

⁽⁹⁰⁾ INTRUM (2022). European Payment Report.

⁽⁹¹⁾ Eurostat (2022). [STS_RB_Q].

Table A12.1: Industry and the Single Market

	POLICY AREA	INDICATOR NAME	2018	2019	2020	2021	2022	EU27 average (*)
HEADLINE INDICATORS	Economic Structure	Net private investment, level of private capital stock, net of depreciation, % GDP ⁽¹⁾	4.6	4.5	4.6	3	1.1	3.7
		Net public investment, level of public capital stock, net of depreciation, % GDP ⁽¹⁾	0.4	0.8	0.6	0.1	1	0.4
		Real labour productivity per person in industry (% yoy) ⁽²⁾	-0.8	0.1	-5.4	4.7	15	1.4
	Cost competitiveness	Nominal unit labour cost in industry (% yoy) ⁽²⁾	9	5.9	13.1	5	14.5	2.9
RESILIENCE	Shortages	Materials shortage (industry), firms facing constraints, % ⁽³⁾	5	3	4	7	12	47
		Labour shortage using survey data (industry), firms facing constraints, % ⁽³⁾	44	42	30	30	35	28
		Vacancy rate (business economy) ⁽⁴⁾	0.7	0.7	0.6	0.7	0.8	3.1
	Strategic dependencies	Concentration in selected raw materials, Import concentration index based on a basket of critical raw materials ⁽⁵⁾	0.16	0.15	0.15	0.15	0.15	0.18
		Installed renewables electricity capacity, % of total electricity produced ⁽⁶⁾	46	46.3	47.8	48.5	n.a.	50.9
SINGLE MARKET	Single Market integration	EU trade integration, % ⁽⁷⁾	39.5	37.7	34.2	37.9	39.4	45.8
	Restrictions	EEA Services Trade Restrictiveness Index ⁽⁸⁾	n.a.	n.a.	n.a.	n.a.	n.a.	0.05
	Public procurement	Single bids, % of total contractors ⁽⁹⁾	23	27	26	32	34	29
BUSINESS ENVIRONMENT - SMEs	Investment obstacles	Impact of regulation on long-term investment, % of firms reporting business regulation as major obstacle ⁽¹⁰⁾	27.9	28.1	20.6	24.9	25.4	29.6
	Business demography	Bankruptcies, Index (2015=100) ⁽¹¹⁾	118	129.3	107.9	116	131.9	86.8
		Business registrations, Index (2015=100) ⁽¹¹⁾	100.3	93.6	70.6	79.7	80.3	121.2
	Late payments	Payment gap - corporates B2B, difference in days between offered and actual payment ⁽¹²⁾	-4	0	17	15	14	13
		Payment gap - public sector, difference in days between offered and actual payment ⁽¹²⁾	0	4	22	10	15	15
		Share of SMEs experiencing late payments in past 6 months, % ⁽¹³⁾	n.a.	34.5	30.3	32.4	25.1	43
	Access to finance	EIF Access to finance index - Loan, Composite: SME external financing over last 6 months, index values between 0 and 1 ⁽¹⁴⁾	0.27	0.34	0.38	0.4	n.a.	0.46
EIF Access to finance index - Equity, Composite: VC/GDP, IPO/GDP, SMEs using equity, index values between 0 and 1 ⁽¹⁴⁾		0.1	0.05	0.06	0.05	n.a.	0.23	

(*) last available year

Source: (1) AMECO, (2) Eurostat: NAMA_10_LP_A21, (3) ECFIN BCS, (4) Eurostat: jvs_a_rate_r2, (5) COMEXT, (6) Eurostat: nrg_inf_epc, (7) Eurostat: BOP_C6_A, (8) OECD, (9) Single Market Scoreboard, (10) EIB survey, (11) Eurostat: sts_rb_a, (12) Intrum, (13) SAFE Survey, (14) EIF SME Access to Finance Index.

This Annex outlines the performance of Bulgaria’s public administration, which is essential for providing services and carrying out reforms. Overall administrative effectiveness remains significantly below the EU average ⁽⁹²⁾. The short political cycles in recent years have hindered the design and implementation of reforms, including measures for administrative simplification, digitalisation and the upskilling of civil servants.

Bulgaria is making slow progress with the digital transformation of its administration. Although this is a main area of reform and investment, Bulgaria performs below the EU average on all e-government indicators (Table A13.1 and Annex 10). Under the Bulgarian recovery and resilience plan, legislative amendments have been drafted for the digitalisation of the real estate register. To further facilitate the digital exchange of information and improve security in the administration, the government has proposed amendments to the E-Government Act. It is planned to bundle key services for citizens and business into ten life events.

Policymaking and implementation remain weak, although regulatory governance scores are around the EU average. The main challenges are limited coordination and a lack of policy coherence ⁽⁹³⁾. Changes in the institutional set-up, the establishment of professional networks, and other measures, are aimed at addressing weaknesses in the performance of impact assessments and ex post evaluations. The transparency of public consultations by Parliament is unsatisfactory, despite changes to the rules of procedure. This negatively affects the quality of legislation, especially given the steep increase in the number of legislative initiatives ⁽⁹⁴⁾. Further measures under the recovery and resilience plan are intended to improve strategic planning.

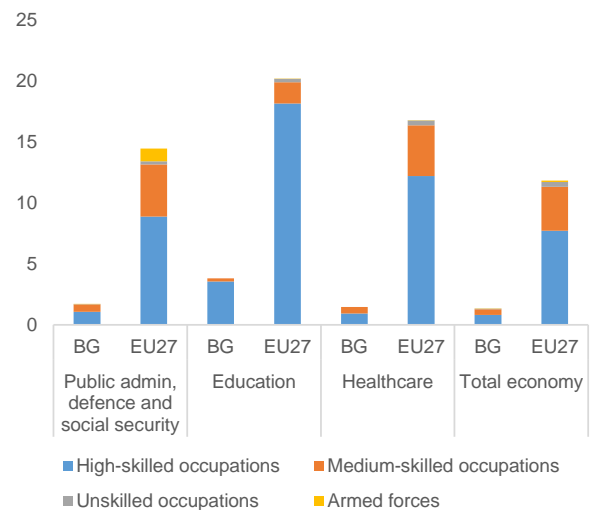
⁽⁹²⁾ Worldwide Governance Indicators, 2021 data (<http://info.worldbank.org/governance/wgi/>).

⁽⁹³⁾ OECD (2022), "Centre of government scan of Bulgaria: Strengthening strategic decision-making at the centre of government", OECD Public Governance Policy Papers, No. 19, OECD Publishing, Paris, <https://doi.org/10.1787/464a42b5-en>.

⁽⁹⁴⁾ Национален център за парламентарни изследвания (2023), Изследване на законодателната дейност на 48-то Народно събрание. Available at: <https://www.parliament.bg/bg/ncpi>

The quality of the justice system faces several challenges. The digitalisation of justice is lagging behind. Investments under the recovery and resilience plan are ongoing and the possibility to apply online for legal aid has been introduced. A new law on legal assistance was also introduced, which extends the range of people who would be eligible to receive legal aid. The administrative courts remain among the most efficient in the EU (125 days on average to resolve cases at first instance, 61 days for second instance and 103 days for third instance). However, the lack of data on the length of litigious and non-litigious civil and commercial cases (in first and second instance courts) means it is not possible to properly evaluate the overall efficiency of the judicial system. Concerns about judicial independence persist ⁽⁹⁵⁾.

Graph A13.1: **Bulgaria. Participation rate of 25-64 year-olds in adult learning (%) by sector and occupation**



(1) 2022 data

Source: European Commission, based on the Labour Force Survey

There are difficulties with ensuring sufficient capacity and skills. The share of employees with higher education in the public administration (57.5%) is above the EU average (52%). However, there is a visible gap in the participation of civil servants in adult learning: 2.2% in Bulgaria vs the EU average of 16.9% (Graph A13.1). The ratio of 25-49 to 50-64 years olds dropped visibly in 2022 (Table A13.1). While national staff surveys

⁽⁹⁵⁾ For a more detailed analysis of the performance of the justice system in Bulgaria, see the 2023 [EU Justice Scoreboard](#) (forthcoming) and the country chapter for Bulgaria in the 2023 [Rule of Law Report](#) (forthcoming).

Table A13.1: **Public administration indicators**

BG Indicator (¹)	2017	2018	2019	2020	2021	2022	EU-27(²)
E-government and open government data							
1 Share of individuals who used the internet within the last year to interact with public authorities (%)	31.4	33.0	36.0	36.3	34.0	n/a	64.8
2 E-government benchmark overall score (³)	n/a	n/a	n/a	59.8	61.4	62.6	72.9
3 Open data and portal maturity index	n/a	0.7	0.6	0.8	0.8	0.8	0.8
Educational attainment level, adult learning, gender parity and ageing							
4 Share of public administration employees with tertiary education (levels 5-8, %)	55.3	55.0	55.8	55.6	56.3 (b)	57.5	52.0
5 Participation rate of public administration employees in adult learning (%)	1.7 (u)	1.8 (u)	1.8 (u)	1.7 (u)	1.7 (bu)	2.2 (u)	16.9
6 Gender parity in senior civil service positions (⁴)	0.4	3.4	8.2	8.8	19.0	11.0	11.0
7 Ratio of 25-49 to 50-64 year olds in NACE sector O	2.3	1.8	1.9	2.0	1.9 (b)	1.6	1.5
Public financial management							
8 Medium term budgetary framework index	0.7	0.7	0.7	0.7	0.7	n/a	0.7
9 Strength of fiscal rules index	2.7	2.7	2.7	2.8	2.8	n/a	1.5
Evidence-based policy making							
10 Regulatory governance	1.75	n/a	n/a	n/a	1.83	n/a	1.7

(¹) High values denote a good performance, except for indicator # 6. (²) 2022 value. If not available, the 2021 value is shown.

(³) Measures the user centricity (including for cross border services) and transparency of digital public services as well as the existence of key enablers for the provision of those services. (⁴) Defined as the absolute value of the difference between the percentage of men and women in senior civil service positions.

Flags: (b) break in time series; (d) definition differs; (u) low reliability.

Source: ICT use survey, Eurostat (# 1); E-government benchmark report (# 2); Open data maturity report (# 3); Labour Force Survey, Eurostat (# 4, 5, 7), European Institute for Gender Equality (# 6); Fiscal Governance Database (# 8, 9); OECD Indicators of Regulatory Policy and Governance (# 10).

demonstrate that civil servants are highly motivated (⁹⁶), the number of unfilled vacancies indicates low attractiveness of the public administration as an employer. To address the staff shortage, the government has introduced an internship programme for young professionals. Gender parity in senior positions is high but shows a declining trend.

(⁹⁶) Institute of Public Administration, 2022, ENGAGEMENT BAROMETER: Fourth national survey on the attitudes of civil servants. Available at: https://www.ipa.government.bg/sites/default/files/barometerengagement_2022_en.pdf

ANNEX 14: EMPLOYMENT, SKILLS AND SOCIAL POLICY CHALLENGES IN LIGHT OF THE EUROPEAN PILLAR OF SOCIAL RIGHTS

The European Pillar of Social Rights is the compass for upward convergence towards better working and living conditions in the EU. This Annex provides an overview of Bulgaria’s progress in implementing the Pillar’s 20 principles and EU headline and national targets for 2030 on employment, skills and poverty reduction.

Table A14.1: Social Scoreboard for Bulgaria

Policy area	Headline indicator	
Equal opportunities and access to the labour market	Early leavers from education and training (% of population aged 18-24, 2022)	10.5
	Share of individuals who have basic or above basic overall digital skills (% of population aged 16-74, 2021)	31.18
	Youth NEET rate (% of population aged 15-29, 2022)	15.1
	Gender employment gap (percentage points, 2022)	7.7
	Income quintile ratio (S80/S20, 2021)	7.45
Dynamic labour markets and fair working conditions	Employment rate (% of population aged 20-64, 2022)	75.7
	Unemployment rate (% of active population aged 15-74, 2022)	4.3
	Long term unemployment (% of active population aged 15-74, 2022)	2.3
	GDHI per capita growth (2008=100, 2021)	
Social protection and inclusion	At risk of poverty or social exclusion rate (% of total population, 2021)	31.7
	At risk of poverty or social exclusion rate for children (% of population aged 0-17, 2021)	33
	Impact of social transfers (other than pensions) on poverty reduction (% reduction of AROP, 2021)	29.84
	Disability employment gap (percentage points, 2021)	22.1
	Housing cost overburden (% of total population, 2021)	11.6
	Children aged less than 3 years in formal childcare (% of population under 3-years-old, 2021)	18.7
	Self-reported unmet need for medical care (% of population 16+, 2021)	1

Update of 27 April 2023. Members States are classified on the Social Scoreboard according to a statistical methodology agreed with the EMCO and SPC Committees. It looks jointly at levels and changes of the indicators in comparison with the respective EU averages and classifies Member States in seven categories. For methodological details, please consult the Joint Employment Report 2023. Due to changes in the definition of the individuals' level of digital skills in 2021, exceptionally only levels are used in the assessment of this indicator; NEET: neither in employment nor in education and training; GDHI: gross disposable household income.

Source: Eurostat

Bulgaria’s labour market performed strongly in 2022, but challenges remain for young people not in employment, education or training (NEET), low-skilled people and the Roma. While economic growth slowed down in 2022, the employment rate rose from 73.4% in Q3 2021 to 76.7% in Q4 2022, 1.9 percentage points (pps) above the EU average and 2.8 pps higher than in Q4 2019. The employment rate of

persons with disabilities also continued its upward trend, reducing the gap with persons without disabilities from 33 pps in 2020 to 22.1 pps in 2021, slightly below the EU average (23.1 pps). However, the employment rate (20-64 age group) for low-skilled people (ISCED 0-2) stood at 50.2% in 2022, below the EU average (57.2%), and is 39.7 pps lower than the rate for high-skilled people (89.9% for ISCED 5-8). The unemployment rate fell to a historic low of 4.3% in 2022. At the same time, the share of young people (aged 15-29) NEET remained high (15.1% in 2022 vs 11.7% in the EU). Only 47% of the Roma population was engaged in any form of paid work in 2021⁽⁹⁷⁾. There are still major regional disparities with a 15.0 pps employment gap in 2022 between the north-west and south-west regions (see Annex 17).

Negative demographic trends are a major challenge for Bulgaria and risk further aggravating labour shortages. The working-age population (15-64 years old) decreased by 958 501 (19.1%) between 2011 and 2021⁽⁹⁸⁾. The inactive population stood at 21.0% in 2022, slightly above the EU average (20.6%). The combination of strong and steady adverse demographics and high inactivity rates for some groups highlight the need for public employment and social services to support the activation and employability of vulnerable and underrepresented groups. The overall job vacancy rate is relatively low in Bulgaria (0.8% vs 2.9% in the EU in Q4-2022). However, many employers report difficulties in finding suitable employees, especially in the construction, education, and health sectors; in 2023, there is an estimated total need of 200 000 additional workers⁽⁹⁹⁾. With the support of the European Social Fund Plus (ESF+) and the Recovery and Resilience Facility (RRF), Bulgaria adopted measures to promote activation, employability, upskilling and reskilling to progress on its national employment rate target of 79% by 2030.

⁽⁹⁷⁾ European Union Agency for Fundamental Rights (2022), Roma Survey 2021. Publications Office of the European Union.

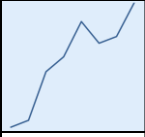

⁽⁹⁸⁾ Source: 2021 Census statistics. <https://census2021.bg>.

⁽⁹⁹⁾ National Employment Agency (2022), Employer Labour Needs Survey (W2/2022).



Low levels of basic and digital skills and low participation of adults in learning create bottlenecks to employability and growth. In 2022, adult participation in learning (25–64 age group) over the past 4 weeks was significantly lower than the EU average (1.7% vs 11.9%). In addition, 31% of the Bulgarian population reported having at least basic digital skills in 2021, well below the EU average of 54%. Bulgaria earmarked funding from the ESF+ and the RRF to, among others, create a platform for adult learning and provide training for digital skills to at least 661 000 people. Although the 2022 national employment plan increased the budget for all labour market measures, the focus remains on direct job creation (84%) and still falls short on training (4%). The integration of people fleeing the war in Ukraine can contribute to overcoming labour and skills shortages in Bulgaria. Further efforts to close the skills gap and develop a well-educated workforce are expected to help reach the national skills target of 35.4% by 2030.

Table A14.2: **Situation of Bulgaria on 2030 employment, skills and poverty reduction targets**

Indicators	Latest data	Trend (2015-2022)	National target by 2030	EU target by 2030
Employment (%)	75.7 (2022)		79	78
Adult learning ¹ (%)	11.8 (2016)		35.4	60
Poverty reduction ² (thousands)	-118 (2021)		-787	-15 000

Base values are 2019 for employment rate, 2016 for adult participation in learning, and the reference year for AROPE is 2019. Latest values are 2021 for employment rate (annual), 2016 for adult participation, and 2021 for AROPE. AROPE reduction does not include population projections.

Source: Eurostat

Despite improvements, challenges remain in ensuring access to quality and inclusive education, particularly for Roma. There has been some progress, but the provision of quality early childhood education and care remains low for 0–3-year-olds (18.7% vs 36.6% in the EU in 2021). The employment rate of recent vocational education and training (VET) graduates (64.8% in 2022) is still well below the EU average (79.7%). The Bulgarian recovery and resilience plan (RRP) is tackling some of these challenges through the creation of STEM centres in schools across the

country. The ESF+ also provides comprehensive support to address school segregation, boost dual VET and pilot dual education in higher education.

Despite improvements, Bulgaria still faces high levels of poverty and income inequality, notably among vulnerable groups. In 2021, the income of the richest 20% of the population was 7.5 times more than the poorest 20% (vs 5.0 in the EU). The share of people at risk of poverty or social exclusion (AROPE) stood at 31.7% in 2021, the second highest in the EU, peaking at 78.7% for the Roma. The AROPE rate for children was very high at 33% in 2021 (24.4% in the EU) and at 77% AROP for Roma children)⁽¹⁰⁰⁾. Implementing the national action plan on the child guarantee will be instrumental in supporting vulnerable children and households. Poverty has a strong regional dimension – the at-risk-of-poverty rate in rural areas in 2021 was 42.5%. 11.6% of the population in Bulgaria experienced housing cost overburden in 2021 (8.3% in the EU). In 2021, 23.7% of the population was unable to keep their homes adequately warm, 16.8 pps above the EU average (see Annex 8). Tackling these challenges will contribute to reaching the national target of 787 000 fewer people in AROPE by 2030.

Bulgaria is strengthening its social protection system, but there is still limited access to social and health services. The ongoing reform of the minimum income scheme is expected to strengthen social protection, tying up the minimum support to 30% of the most recent at-risk-of-poverty threshold in 2025. Bulgaria recorded a significant increase (of 9.4 pps) of the impact of social transfers (other than pensions) in reducing poverty (29.8% in 2021), though it is still well below the EU average (37.0%). The long-term care system has one of the lowest coverage rates in the EU. The healthcare system suffers from staff shortages, especially nurses⁽¹⁰¹⁾. The RRP for Bulgaria includes investments to strengthen the provision of long-term care and develop at least 300 outpatient medical units in areas facing shortages of health professionals. The ESF+ also supports measures to stimulate labour mobility, skills development, and specialisation of healthcare professionals.

⁽¹⁰⁰⁾European Union Agency for Fundamental Rights (2022).

⁽¹⁰¹⁾Institute for Market Economy (2022), Social Services for Support of Elderly People.

This Annex outlines the main challenges for Bulgaria's education and training system in light of the EU-level targets and other contextual indicators under the European Education Area strategic framework, based on the 2022 Education and Training Monitor.

Increasing quality and equity in school education remains a major challenge.

Underachievement in basic skills, as measured by PISA ⁽¹⁰²⁾ (47.1% in reading, 44.4% in mathematics and 46.5% in sciences), is twice as high as the European averages. There has been no substantial progress over time. The rates of low achievement in basic skills are particularly high among students from disadvantaged backgrounds, suggesting that socio-economic factors greatly affect educational outcomes. The percentage of disadvantaged pupils underachieving in all three tested subjects in PISA is the highest in the EU (52.3%), pointing to a severe form of underachievement. The gap between students from advantaged and disadvantaged backgrounds is also among the highest (see Graph A15.1), (38.3 pps, against the EU average of 19.3 pps). During 2022, Bulgaria welcomed more than 50,000 displaced children from the Ukraine and offered language support and e-education services to those enrolled. However, only a small fraction of children receiving temporary protection attend local schools, including due to their family's preference to follow Ukrainian education.

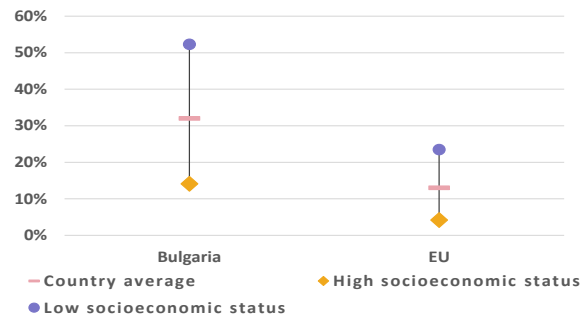
Segregation remains a major obstacle for accessing quality education. PISA data further show that students with similar socio-economic status and performance levels tend to be concentrated in the same schools. 64% of Roma ⁽¹⁰³⁾ children aged 6-14 attend schools or kindergartens where all or most of their schoolmates are Roma ⁽¹⁰⁴⁾. This proportion is even higher compared with 2016, when it was 58%. At the same time, only 86.2% of Roma children aged 7-15 attend formal education, compared with 94.6% of the total population (ibid.).

⁽¹⁰²⁾2018 OECD Programme for International Student Assessment

⁽¹⁰³⁾According to Council of Europe estimations, Roma represent about 10% of Bulgaria's population

⁽¹⁰⁴⁾Fundamental Rights Agency, 2022, Headline indicators for the EU Roma strategic framework for equality, inclusion and participation for 2020–2030.

Graph A15.1: The share of underachievers in reading, maths and science (combined) by socio-economic status, PISA 2018



Source: OECD (PISA 2018).

The teacher population is one of the oldest in the EU and teacher shortages are emerging.

About half of schoolteachers are aged 50 or over. To improve the attractiveness of the profession, increasing salaries has been a priority. Teacher shortages exist particularly in certain subjects (e.g. STEM-related, English) and in rural areas, where the concentration of students from disadvantaged backgrounds is higher. Meanwhile, teachers with higher levels of education or experience, tend to be concentrated in urban areas, where the workforce is also to a lesser extent aged ⁽¹⁰⁵⁾. The number of students in teacher training programmes is increasing, but around 40% of graduates in pedagogy programmes and 65% of subject-specific pedagogy programmes do not become teachers after graduation (ibid). A high percentage of young teachers leave the profession after the first year of teaching. The take-up of teacher training programmes in mathematics, ICT and natural sciences is insufficient to meet demand. The need to upgrade teachers' skills remains high.

Early school leaving decreased. In 2022, the rate of early leavers from education and training (18-24y) decreased by 1.7 pps to 10.5%, but remains above the EU-level target (9%) and EU average (9.6%). It is particularly high for the Roma and in rural areas (19.1%).

Participation in early childhood education and care (ECEC) is improving but remains low. Increasing access to quality ECEC has been a long-standing priority in Bulgaria. In 2020, the participation rate improved slightly for children between the age of 3 and the starting age of compulsory primary education. However, at 80.1%,

⁽¹⁰⁵⁾World Bank Group, 2020, [Bulgaria Teaching Workforce. Policy Note and Recommendations](#).

Table A15.1: **EU-level targets and other contextual indicators under the European Education Area strategic framework**

Indicator	Target	2015		2022		
		Bulgaria	EU27	Bulgaria	EU27	
¹ Participation in early childhood education (age 3+)	96%	84.8%	91.9%	80.1% ²⁰²⁰	93.0% ²⁰²⁰	
² Low achieving 15-year-olds in:	Reading < 15%	41.5%	20.0%	47.1% ²⁰¹⁸	22.5% ²⁰¹⁸	
	Mathematics < 15%	42.1%	22.3%	44.4% ²⁰¹⁸	22.9% ²⁰¹⁸	
	Science < 15%	37.9%	21.1%	46.5% ²⁰¹⁸	22.3% ²⁰¹⁸	
Early leavers from education and training (age 18-24)	³ Total < 9%	13.4%	11.0%	10.5%	9.6%	
	³ By gender	Men	13.3%	12.5%	9.3%	11.1%
		Women	13.4%	9.4%	11.7%	8.0%
	⁴ By degree of urbanisation	Cities	3.6%	9.6%	5.7%	8.6%
		Rural areas	29.4%	12.2%	19.1%	10.0%
	⁵ By country of birth	Native	13.5%	10.0%	10.5%	8.3%
		EU-born	: ^u	20.7%	: ^u	20.3%
Non EU-born		: ^u	23.4%	: ^u	22.1%	
⁶ Equity indicator (percentage points)		: ^u	: ^u	38.3 ²⁰¹⁸	19.3 ²⁰¹⁸	
⁷ Exposure of VET graduates to work based learning	Total ≥ 60% (2025)	: ^u	: ^u	: ^u	60.1%	
Tertiary educational attainment (age 25-34)	⁸ Total 45%	31.8%	36.5%	33.8%	42.0%	
	⁸ By gender	Men	24.6%	31.2%	27.7%	36.5%
		Women	39.6%	41.8%	40.3%	47.6%
	⁹ By degree of urbanisation	Cities	45.7%	46.2%	47.1%	52.2%
		Rural areas	10.4%	26.9%	14.0%	30.2%
	¹⁰ By country of birth	Native	31.8%	37.7%	33.7%	43.0%
		EU-born	: ^u	32.7%	: ^u	39.5%
Non EU-born		: ^u	27.0%	: ^u	35.7%	
¹¹ Share of school teachers (ISCED 1-3) who are 50 years or over		47.7%	38.3%	49.4% ²⁰²⁰	39.2% ²⁰²⁰	

Source: (1,3,4,5,7,8,9,10,11) = Eurostat; 2 = OECD (PISA); 6 = European Commission (Joint Research Centre). Notes: Data is not yet available for the remaining EU-level targets under the European Education Area strategic framework, covering underachievement in digital skills and participation of adults in learning. The equity indicator shows the gap in the share of underachievement in reading, mathematics and science (combined) among 15-year-olds between the lowest and highest quarters of socio-economic status.

the enrolment rate remains low (EU average: 93%). Although ECEC capacities are broadly sufficient across the country, they remain insufficient in the capital and large urban areas. Participation rates are lower for disadvantaged groups, including Roma (58%, compared with 80% in the general population).

Digitalisation in education and training is underway, but digital skills are low. Only 52% of Bulgarians aged 16-19 have at least basic digital skills⁽¹⁰⁶⁾, one of the lowest rates in the EU (average 69%). The pandemic exposed the challenges in digital education, but at the same time accelerated reforms and investments, including with support under the Recovery and Resilience Facility. For example, STEM (science, technology, engineering and maths) laboratories⁽¹⁰⁷⁾, including high-tech classrooms, will be installed in schools.

Tertiary educational attainment is low. Only 33.8% of Bulgarians aged 25-34 held a university degree in 2022, compared with an average of 42% in the EU. The percentage of STEM graduates is one of the lowest in the EU.

Despite efforts, the labour market relevance of education and training is insufficient.

Overall, only about half of higher education graduates work in positions requiring higher education. The higher education map showed a number of imbalances between demand for and supply of educational services at national and regional level and graduates' labour market outcomes. Efforts to improve quality continue with the implementation of the Strategy for Higher Education (2022-2030). Several measures have been taken to modernise vocational education and training (VET), but its alignment with the labour market could be further improved (see Annex 14). Bulgaria continues to have one of the lowest participation rates in adult learning in the EU (1.8% in 2021, significantly below the average of 10.8%), particularly among low-skilled adults.

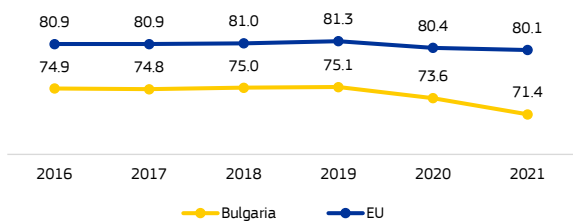
⁽¹⁰⁶⁾Digital Economy and Society Index (DESI) 2021, [Bulgaria](#).

⁽¹⁰⁷⁾These are specially designed and equipped learning spaces with a focus on digital skills and STEM.

A healthy population and an effective, accessible and resilient health system are prerequisites for a sustainable economy and society. This Annex provides a snapshot of population health and the health system in Bulgaria.

Life expectancy in Bulgaria continues to be the lowest in the EU. It has seen a sharp decline after 2019. This decline is mostly due to COVID-19-related deaths, the number of which significantly increased in 2021.⁽¹⁰⁸⁾ In 2020, the leading causes of death were diseases of the circulatory systems followed by cancer and COVID-19. The treatable mortality rate per 100 000 population of 213 (2020) is well above the EU average of 92 (2020). Cancer mortality per 100 000 population in Bulgaria amounts to 245 (2020), slightly above the EU average of 242 (2020).

Graph A16.1: Life expectancy at birth, years

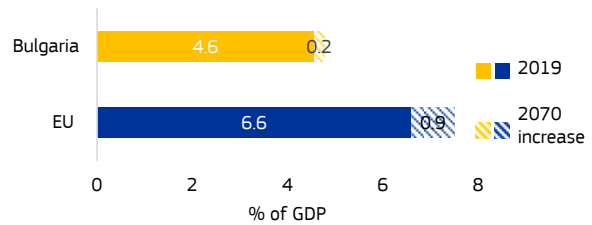


Source: Eurostat

Health spending relative to GDP in Bulgaria was 8.5%, well below the EU average of 10.9% (2020). Health spending per capita has grown faster than in the EU overall for the past decade, with a particularly large increase of 19.9% between 2019 and 2020, the highest in the EU in that timeframe. However, with a per capita spending of EUR 1 478 (in purchasing power standards) in 2020, Bulgaria was still amongst the lowest spending countries in the EU, below half the EU average of EUR 3 269. A particular challenge for Bulgaria is the high share of out-of-pocket payments of 36% (2020), the highest in the EU. Correspondingly, the public share of health expenditure was 63.1% (2020), well below the EU average of 81.2% (2020). Bulgaria also ranks among the countries with the highest share of households experiencing catastrophic health

spending. Public spending on health is projected to increase by 0.2 percentage points (pps) of GDP by 2070 (compared to 0.9 pps for the EU overall).

Graph A16.2: Projected increase in public expenditure on healthcare over 2019-2070



AWG reference scenario

Source: European Commission / EPC (2021)

Spending on inpatient care made up the largest share of health expenditure in Bulgaria (38% in 2020). Together with a particularly high number of acute care beds, this points towards a highly hospital-centred care model. Correspondingly, Bulgaria ranks amongst the countries with the lowest share of spending on outpatient care. Spending on medical goods (mainly pharmaceuticals) in outpatient settings in Bulgaria represents over a third of health expenditure, amongst the highest in the EU. The consumption of antibacterials (daily defined dose per 1 000 inhabitants per day) was 22.4 (2021), well above the EU average of 14.5 (2021). This raises public health concerns about antimicrobial resistance.

Spending on prevention in Bulgaria amounted to 2.8% of total healthcare spending in 2020, compared to 3.4% for the EU overall. In absolute numbers, spending on prevention in Bulgaria increased by 14% between 2019 and 2020 (compared to a 26% increase for the EU overall). Across the EU, this increase was primarily driven by spending on disease detection, surveillance, control and response programmes as part of the public health response to COVID-19. Between 2019 and 2020, a remarkable proportional increase in reported spending was noted in Bulgaria for epidemiological surveillance and risk and disease control programmes.

⁽¹⁰⁸⁾Based on data provided directly by Member States to ECDC under the European Surveillance System (data current as of 13 April 2023).

Table A16.1: **Key health indicators**

	2017	2018	2019	2020	2021	EU average (latest year)
Treatable mortality per 100 000 population (mortality avoidable through optimal quality healthcare)	191.8	188.2	189.0	213.0	NA	91.7 (2020)
Cancer mortality per 100 000 population	232.4	232.5	242.2	245.3	NA	242.2 (2020)
Current expenditure on health, % GDP	7.5	7.3	7.1	8.5	NA	10.9 (2020)
Public share of health expenditure, % of current health expenditure	56.4	59.1	60.6	63.1	NA	81.2 (2020)
Spending on prevention, % of current health expenditure	2.8	2.8	3.0	2.8	NA	3.4 (2020)
Acute care beds per 100 000 population	617	624	641	658	NA	387.4 (2019)
Doctors per 1 000 population *	4.2	4.2	4.2	4.3	NA	3.9 (2020)
Nurses per 1 000 population *	4.4	4.4	4.4	4.2	NA	8.3 (2020)
Consumption of antibacterials for systemic use in the community, daily defined dose per 1 000 inhabitants per day (total consumption for CY and CY) **	18.9	19.5	19.1	20.7	22.4	14.5 (2021)

Note: The EU average is weighted for all indicators, except for (*) and (**), for which the EU simple average is used. The simple average for (*) uses data for 2020 or most recent year if former not available. Doctors' density data refer to practising doctors in all countries except EL, PT (licensed to practice) and SK (professionally active). Nurses' density data refer to practising nurses in all countries except FR, PT, SK (professionally active) and EL (nurses working in hospitals only).

Source: Eurostat database; except: ** ECDC

The Bulgarian health system faces shortages

of nurses. The number of doctors per 1 000 population was 4.3 (2020), above the EU average of 3.9 (2020). The number of practising dentists in Bulgaria was 1.1 (2020), amongst the highest in the EU. However, the number of nurses was 4.2 (2020), compared to the EU average of 8.3 (2020). The low number of nurses is also reflected in the lowest nurse-to-physician ratio in the EU. While the ratio of nurses to doctors in the EU was 2.2 (2020), it was only 1.0 (2020) in Bulgaria. Furthermore, reported Labour Force Survey numbers on employment in healthcare decreased recently.

Through its recovery and resilience plan (RRP), Bulgaria plans to invest EUR 372 million (5.9% of the RRP's total value) in healthcare.

Pending investments include the modernisation of hospitals and medical facilities providing paediatric, oncological or psychiatric care. The RRP's health component also includes constructing outpatient care units, setting up an air ambulance system, and addressing shortages of healthcare professionals, including their unbalanced geographical distribution.

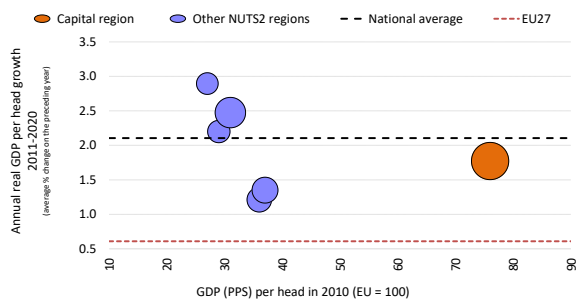
The reforms contained in the RRP's health component include an update of the strategic framework for the health sector.

Bulgaria adopted a national strategy on mental health for 2021-2030 and a related action plan, which aims to address the key problems of the psychiatric care system in the country. Furthermore, the RRP envisages an update of several other strategies, including the national cancer plan and the national paediatric strategy. Bulgaria is also preparing an update of its regulatory framework for e-health.

This Annex showcases the economic and social regional dynamics in Bulgaria, providing an update of the situation of economic, social and territorial cohesion in and among the Bulgarian regions versus EU averages and the main regional economic recovery challenges.

Regional disparities in GDP per capita remain very high in Bulgaria despite a perceived convergence towards the EU average. (graph 17.1). Although highest growth rates during 2011-2020 are found in some of the least developed regions, like in Severozopaden (2.9% per annum) and Severen Tsentralen (2.2%), in 2020 regional disparities remain at the same level as in the previous decade. They are characterised in terms of GDP and labour productivity, demographics, education and training employment, infrastructure, competitiveness and R&I performance, all typically exacerbated in the Northern parts of the country (table A.17.1). GDP per capita varied between 92% of the EU average in the capital region to between 35-40% of the EU average in all other regions. Economic activity is highly concentrated in the capital region which generates 51% of the national GDP, despite being home to just 18,9 % of the population.

Graph A17.1: GDP per head (2010) and GDP growth (2011-2020), Bulgaria (NUTS-3 regions)

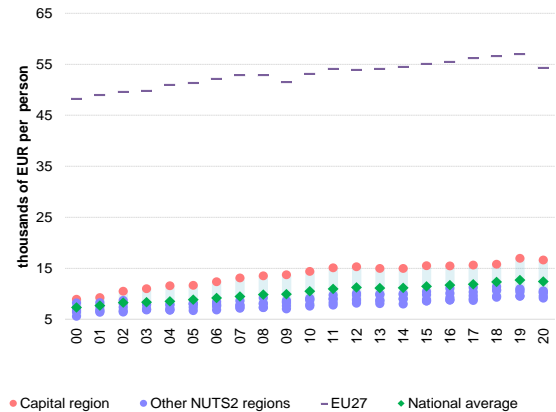


Source: Eurostat, DG REGIO elaboration

Labour productivity has steadily increased in Bulgaria but it is lagging behind the EU and significant regional disparities persist (graph 17.2). In 2021 Bulgaria has the lowest labour productivity in the EU (measured as gross value added PPS per person employed), equal to around 52% of the EU average. Labour productivity is the highest in the capital region, (almost twice as high as in Yuzhen tsentralen, the least productive region). However, the productivity growth (measured as gross value added in constant 2015 prices per person employed) of 1.5% in the capital region has been below the national average.

Severoztochen region (1.2%) showed the lowest growth.

Graph A17.2: Labour productivity (real GVA per worker), EU-27, Bulgaria (NUTS 2 regions), 2000-2020



Source: Eurostat, DG REGIO elaboration

Bulgaria was severely affected by the COVID-19 pandemic. At country level, average mortality in 2020 and 2021 was 29% higher than the average during 2015-2019. Bulgaria also had the highest excess mortality in the EU. At regional level, excess mortality was particularly high in Yuzhen Tsentralen (+31%) and the capital region (+30%).

The socio-economic consequences of the pandemic have been asymmetrically felt. In contrast to the upward trend during 2015-2019, the employment rate dropped in 2020 in all regions. In 2021, employment (partly) recovered in some regions; while it continued to decrease in Severen Tsentralen (-2.2% pp), Yuzhen Tsentralen (-1.2 pp) and Yugoittochen (-0.9 pp). Unemployment rates went up in 2020 for all regions, and continued to increase in 2021 in most regions. Only in the capital region the unemployment rate showed a significant recovery (Graph 17.3).

Bulgaria and some of its less developed regions rapidly lose its population. Between 2011 and 2020, the population of Bulgaria decreased by almost 6.3%. In some regions, the loss of population is extremely high. In Severozapaden population shrank by 16%, about a quarter of which was linked to net migration. In Severen Tsentralen the decrease was 12%, one fifth of which caused by net migration. Rural areas are most affected by this trend as their population



Table A17.1: Selected indicators at regional level - Bulgaria

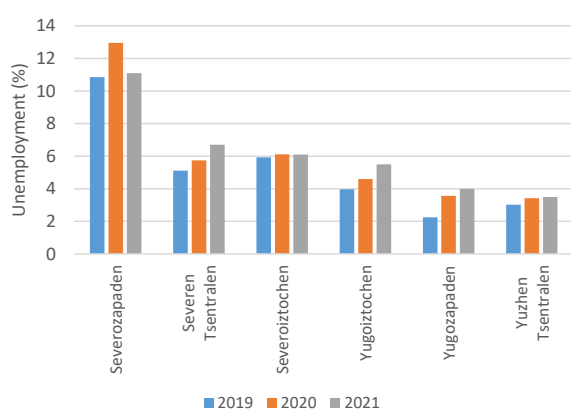
NUTS 2 Region	GDP per head (PPS)	Productivity (GVA (PPS) per person employed)	Population growth	Life expectancy at birth	Infant mortality rate	Unemployment rate	Population with high educational attainment	R&D expenditure	Transport performance by car	Motorway density	Regional Competitiveness Index
	EU27=100, 2021	EU27=100, 2021	Total % change, 2011-2020	Years, 2020	% of infants, 2020	% of active population, 2021	% of population aged 30-34, 2021	% of GDP, 2019 (*) ref year: 2020	% Pop. within 1h30 travel/within 120 km radius, 2018	km/km ² 2020	Range 0-100, 2022
European Union	100	100	2.0	79.7	3.3	7.0	42.0	2*	82.0	0.0273	100.0
Bulgaria	57	52	-6.3	73.6	5.1	5.3	32.7	0.80	56.9	0.0074	65.9
Severozapaden	39	44	-16.4	72.1	5.9	11.1	22.1	0.40	29.4	0.0009	49.0
Severen tsentralen	39	39	-12.0	72.8	6.1	6.7	29.6	0.30	37.1	0.0000	62.4
Severoiztochen	43	43	-4.7	73.5	4.7	6.1	27.6	0.50	46.9	0.0066	58.9
Yugoiztochen	45	45	-5.5	73.3	7.7	5.5	20.8	0.40	56.5	0.0116	53.4
Yugozapaden	96	70	-2.3	74.5	2.9	3.5	46.6	1.20	71.4	0.0141	85.4
Yuzhen tsentralen	38	37	-5.3	73.9	6.0	4.0	24.2	0.50	67.7	0.0088	61.6

Source: EUROSTAT, EDGAR database

decreased by 18.6% between 2011 and 2020. In contrast, the capital region's population decreased by only 2.3% due to natural population change, but was compensated by an increase in net migration (1.9%).

In Bulgaria, health issues are contributing to the poor demographic situation. The country's overall life expectancy is about six years lower than the EU average, and this gap is slightly wider in Northern regions. Additionally, the infant mortality rate in Bulgaria is higher than the EU average, with the lowest rates recorded in the capital region.

Graph A17.3: Unemployment in Bulgarian regions, 2019-2021



Source: Eurostat, DG REGIO elaboration

Overall the unemployment rate in Bulgaria is lower than in the EU but there are wide regional variations. In 2021, the unemployment rate was 5.3 % in Bulgaria (7.0% in the EU), but as low as 3.5% in the capital region and as high as 11% in the least developed region of Severozapaden, where the employment rate was also particularly low (65% against the national average of 73%). The unemployment rate in rural

areas amounts to 8.8%. **Employment in high-technology sectors and R&D expenditure are also much lower in some of the less developed regions.** In Yugoiztochen and Severoiztochen only 1.2% and 1.4% of the workers are employed in high-technology sectors. R&D expenditure is as low as 0.3% of GDP in all regions except the capital region where it is more than twice as high (0.8%), but still well below the EU average (2.07 %).

The rail density and road infrastructure are far below the EU average. Also in terms of railway and motorway infrastructure, the Northern regions lag behind the Southern ones. In 2020, the Northern regions hosted only 112 km of motorways out of the total of 806 km in the country.

All Bulgarian regions rank below the EU average in terms of competitiveness. The regional competitiveness index value is highest in the capital Yugozapaden region (85.4 % of EU average). The lowest value is found in Severozapaden (49 % of EU average).

In some Bulgarian regions, less than 25% of the population aged 30-34 has a tertiary degree. These are Yugoiztochen (20.8%), Severozapaden (22.1%) and Yuzhen Tsentralen (24.2%). By contrast, in the capital region the share (46.4%) is higher than the EU average.

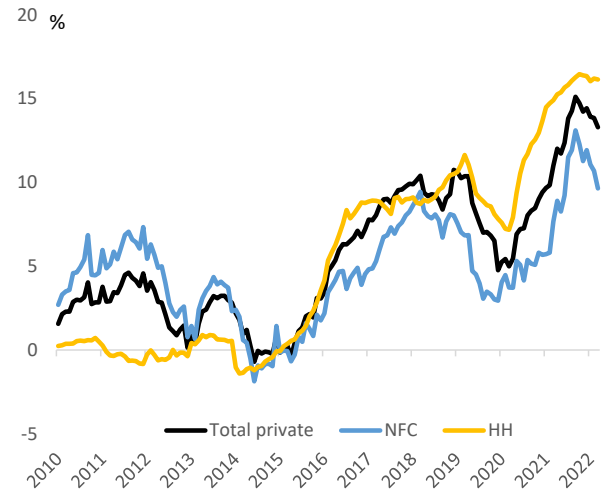
The ICT uptake is low in Bulgaria. In 2020, only 27% of the population used internet for interaction with public authorities against 56% on average in the EU. The capital region has the highest share (36%) while in Severozapaden and Yugoiztochen the shares are as low as 17% and 18%, respectively.

Bulgaria has a comparatively small financial sector, with banks acting as the main financial intermediaries. The ratio of total assets to GDP is close to 100%, while the top five lenders hold 67.2% of total banking-sector assets. Bulgaria’s banking sector is dominated by subsidiaries and branches of euro-area banks. Domestic banks accounted for 27.8% of total assets in 2022, slightly higher than pre-pandemic. The number of bank branches relative to the population is higher than the EU average, reflecting both the limited digital skills among certain population groups and contained labour costs. At the same time, Bulgaria’s FinTech sector has been growing rapidly. The digital payments sector is by far the largest contributor to this rapid growth, followed by alternative credit, data analytics, and digital-asset exchange. The market-funding ratio has declined further in recent years to a relatively low level in 2021 (Table A18.1). This is because companies’ access to non-bank funding, especially the use of listed shares and debt securities, remains very limited, while loans remain the dominant source of funding. No green bond issuances have been undertaken so far in Bulgaria, and sustainable-finance initiatives are mainly supported by public policies and investment funds.

Overall, the banking sector remains resilient, highly profitable and well capitalised. The system-wide capital-adequacy ratio was 20.9% in the third quarter of 2022, above the EU average. Following the pronounced decline in 2020, the profitability of banks in Bulgaria strongly rebounded, with return on equity of 8.8% at the end of 2021 and 10.6% in the third quarter of 2022. The cost-to-income-ratio, at 45.1% in 2022, remained close to pre-pandemic levels. The loan-to-deposit ratio has declined since the onset of the pandemic, driven by strong deposit growth. Non-performing loans (NPLs) remain relatively high, but have been steadily decreasing, including during the pandemic. The overall NPL ratio has been on a downward trend across individual banks and lending segments in recent years due to loan write-offs and sales. However, the NPL ratio was still at 4.2% in the third quarter of 2022 – well above the EU average (1.8%) – as the pace of NPL reduction in Bulgaria has been slower than in many other EU Member States. NPLs to non-financial corporations have also fallen in recent years, but still stood at 6.7% of total loans and advances in 2022 (compared with 7.6% at the end

of 2021) and were even higher for domestically owned banks. In 2022, the share of (stage 2) loans that have deteriorated significantly in credit quality under the International Financial Reporting Standard (IFRS) 9 indicates increased credit risk.

Graph A18.1: Evolution of credit activity



Source: ECB.

The second-round effects of higher energy prices and interest rates are likely to weigh on asset quality. For the banking sector, higher energy prices and interest rates are likely to affect the debt-repayment capacity of borrowers, in particular more vulnerable and indebted borrowers and borrowers active in more energy-intensive sectors. The sharp increase in energy prices, possible disruptions in energy supply, deterioration in economic sentiment and potential indirect effects of the slowdown in economic activity in Bulgaria’s main trading partners may affect the real economy and deteriorate the debt-servicing ability of borrowers. In addition, the clearly pronounced trend towards a shift in the interest-rate cycle could weigh on borrowers by increasing the cost of servicing loan obligations. As in other countries, the unexpectedly high inflation is likely to generate significant losses for Bulgarian insurers’ non-life business. The losses can stem from several factors, including: (i) a significant increase in the currently underestimated technical provisions on past claims, especially for long-tail business; (ii) a significant increase in the loss ratio of future claims if insurers find it difficult to correctly price future inflation in their premiums in a timely manner; and (iii) lower underwriting volumes as inflation might reduce saving capacity and purchasing power among policyholders.

Table A18.1: **Financial Soundness Indicators**

	2017	2018	2019	2020	2021	2022
Total assets of the banking sector (% of GDP)	101,5	101,6	100,0	107,7	101,3	99,6
Share (total assets) of the five largest banks (%)	56,5	59,7	62,5	67,1	67,2	-
Share (total assets) of domestic credit institutions (%)¹	23,6	22,1	22,3	22,8	28,4	27,8
NFC credit growth (year-on-year % change)	4,8	8,6	7,6	4,0	5,7	11,1
HH credit growth (year-on-year % change)	8,9	9,1	10,6	7,6	14,5	16,0
Financial soundness indicators:¹						
- non-performing loans (% of total loans)	10,2	7,7	6,5	5,9	4,8	4,2
- capital adequacy ratio (%)	21,8	20,6	19,5	23,1	22,9	20,9
- return on equity (%) ²	10,2	11,8	11,2	4,9	8,8	10,6
Cost-to-income ratio (%)¹	45,1	45,3	46,8	47,2	45,0	45,1
Loan-to-deposit ratio (%)¹	72,6	75,5	78,0	69,7	68,8	70,2
Central bank liquidity as % of liabilities	0,0	0,0	-	0,0	0,0	0,0
Private sector debt (% of GDP)	98,6	94,9	90,7	92,5	84,4	-
Long-term interest rate spread versus Bund (basis points)	128,5	49,6	68,2	76,4	56,3	39,0
Market funding ratio (%)	17,1	15,5	15,4	13,7	12,3	-
Green bonds issued to all bonds (%)	-	-	-	-	-	-
	1-3	4-10	11-17	18-24	25-27	
	Colours indicate performance ranking among 27 EU Member State					

(1) Last data: Q3-2022.

(2) Data is annualized.

Source: ECB, Eurostat, S&P Global Capital IQ Pro.

Lending activity strengthened in 2021 and increased even further in 2022.

In 2022, more new loans were granted to households than to non-financial corporations. By the end of 2022, year-on-year growth in lending to non-financial corporations was 11.1%, below the peak reached in August 2022, while lending to households continued to grow strongly at 16.0% year-on-year. The factors driving banks' credit supply include an increase in deposits and a stable liquidity position of credit institutions in Bulgaria. Household demand for loans for most of 2022 was supported by still-moderate interest rates. For non-financial corporations, the elevated credit growth in 2022 was mostly due to the need for working capital and the need to accumulate inventory amid rising production costs. Most recently, in the first months of 2023 lending growth started moderating, notably to non-financial corporations. From a longer-term perspective, the cost of lending to non-financial corporations has been declining (to just below 3% at the end of 2021), but started increasing toward the end of 2022, in line with the shift in the global interest-rate cycle.

The booming housing market and strong growth in mortgage lending have triggered a policy response.

Eurostat's House Price Index for Bulgaria has increased by around 54% since 2015, and house-price growth accelerated further during the pandemic. At the same time, annual growth in mortgage loans has accelerated significantly in

recent years in Bulgaria, peaking at 18.7% year-on-year in June 2022. This growth, and the risks ensuing from the anticipated change in the interest-rate cycle, prompted the Bulgarian National Bank to increase the countercyclical capital buffer (CCyB) from 0.5% to 1% from October 2022, to 1.5% from January 2023, and to 2.0% from 1 October 2023.

Bulgaria has taken steps to strengthen the anti-money laundering (AML/CFT) framework but more remains to be done.

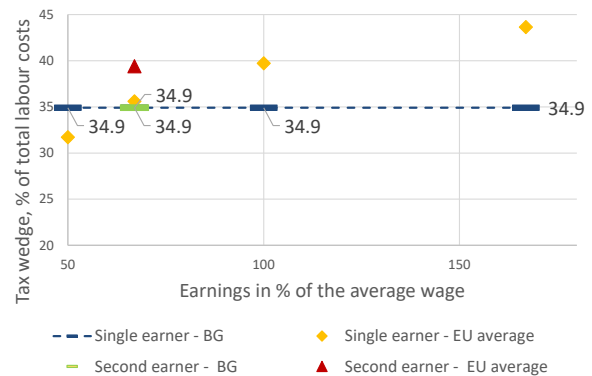
Bulgaria has taken action to improve the AML/CFT supervisory framework and work is ongoing on the update of the national risk assessment of money laundering and terrorist financing and the sectorial risk assessments of the non-profit organisations' sector; the sectorial assessments of the risks relating to virtual assets and the investor citizenship scheme has been concluded. Steps are being taken to enhance the analytical capacity of the Financial Intelligence Unit to make better use of suspicious transaction reports and increase the use of financial intelligence. Bulgaria underwent an assessment of the effectiveness of its AML/CFT framework against international standards which resulted in recommended actions to be addressed. A draft law aiming to fully transpose the provisions of the 5th Anti-money Laundering Directive was submitted to the National Assembly but was ultimately not adopted.

This Annex provides an indicator-based overview of Bulgaria’s tax system. It includes information on the tax structure (the types of tax that Bulgaria derives most of its revenue from), the tax burden on workers, and the progressivity and redistributive effect of the tax system. It also provides information on tax collection and compliance.

Bulgaria’s tax revenue is relatively low in relation to its GDP, with the highest contribution coming from consumption taxation. The low tax environment with respect to direct taxes is beneficial for economic activity as it encourages investment and labour supply. Table A19.1 shows that Bulgaria’s tax revenue as a percentage of GDP was considerably below the EU aggregate in 2021 and almost the same as in 2020. The share of consumption taxes as a proportion of total tax revenue was significantly above the EU aggregate (45.8% compared with 27.5%), but revenue from labour taxes was significantly below the EU aggregate, as a share of both GDP and total taxation (see Table A19.1 and Graph A19.2). Environmental taxes represented 9% of total taxation in 2021, the highest rate in the EU-27. This was mostly due to energy taxes, reflecting the application of the ‘polluter pays’ principle (For more on policies related to environmental sustainability, see Annex 6). Revenue from property taxes was relatively low as

a percentage both of GDP and of total tax revenue. There is therefore room to increase them to address potential fiscal sustainability challenges. However, there are no significant policy reforms in the pipeline with respect to taxation. The only mentionable initiative is the public consultation on a law proposing amendments and supplements to the Tax and Social Insurance Procedure Code.

Graph A19.1: Tax wedge for single and second earners as a % of total labour costs, 2022



Second earner tax wedge assumes first earner at 100% of the average wage and no children. For the methodology of the tax wedge for second earners see OECD (2016) “Taxing Wages 2014-2015”.

Source: European Commission

Bulgaria has a flat-rate tax system, which is not progressive, unlike the EU average. Bulgaria has a flat-rate tax system with one of the

Table A19.1: Taxation indicators

	Bulgaria				EU-27						
	2010	2019	2020	2021	2020	2019	2020	2021	2022		
Tax structure	Total taxes (including compulsory actual social contributions) (% of GDP)	25.4	30.3	30.5	30.7	37.9	39.9	40.0	40.6		
	Labour taxes (as % of GDP)	8.4	11.1	11.5	11.1	20.0	20.7	21.3	20.9		
	Consumption taxes (as % of GDP)	13.4	14.3	14.0	14.1	10.8	11.1	10.7	11.2		
	Capital taxes (as % of GDP)	3.6	5.0	5.0	5.6	7.1	8.1	8.0	8.5		
	Total property taxes (as % of GDP)	0.5	0.8	0.7	0.8	1.9	2.2	2.2	2.2		
	Recurrent taxes on immovable property (as % of GDP)	0.3	0.3	0.3	0.3	1.1	1.2	1.2	1.1		
Progressivity & fairness	Environmental taxes as % of GDP	2.7	3.0	3.0	2.8	2.4	2.4	2.2	2.2		
	Tax wedge at 50% of average wage (Single person) (*)	32.5	34.9	34.9	34.9	34.9	33.9	32.3	31.9	32.1	31.7
	Tax wedge at 100% of average wage (Single person) (*)	32.5	34.9	34.9	34.9	34.9	41.0	40.1	39.9	39.6	39.7
	Corporate income tax - effective average tax rates (1) (*)		9.1	9.1	9.1		19.5	19.4	19.1		
Tax administration & compliance	Difference in Gini coefficient before and after taxes and cash social transfers (pensions excluded from social transfers) (2) (*)	3.6	3.8	4.1	4.7	8.6	7.7	8.1	7.8		
	Outstanding tax arrears: total year-end tax debt (including debt considered not collectable) / total revenue (in %) (*)		20.2	100.8			31.6	40.7			
	VAT Gap (% of VAT total tax liability, VTTL)		9.7	6.3			11.0	9.1			

(1) Forward-looking effective tax rate (OECD).

(2) A higher value indicates a stronger redistributive impact of taxation.

(*) EU-27 simple average

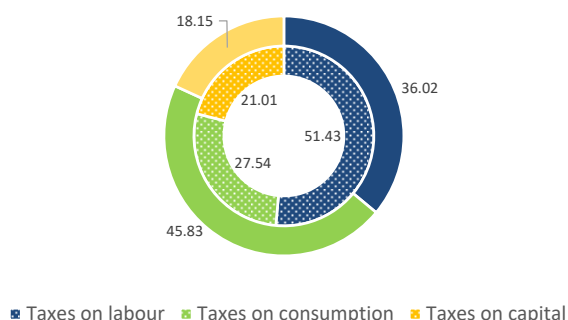
For more data on tax revenues as well as the methodology applied, see European Commission, Directorate-General for Taxation and Customs Union, *Taxation trends in the European Union: data for the EU Member States, Iceland, Norway and United Kingdom: 2021 edition*, Publications Office of the European Union, 2021, <https://data.europa.eu/doi/10.2778/843047> and the *Data on Taxation* webpage data https://ec.europa.eu/taxation_customs/taxation-1/economic-analysis-taxation/data-taxation_en.

For more details on the VAT gap, see European Commission, Directorate-General for Taxation and Customs Union, *VAT gap in the EU: report 2022*, Publications Office of the European Union, 2022, <https://data.europa.eu/doi/10.2778/109823>

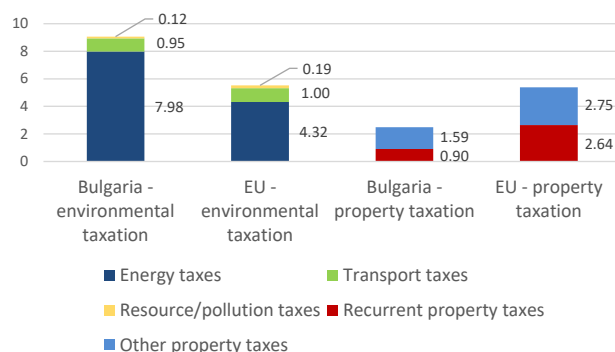
Source: European Commission, OECD

Graph A19.2: Tax revenue from different tax types as % of total taxation revenue

Tax revenue shares in 2021, Bulgaria (outer ring) and EU (inner ring)



Environmental and property taxation as % of total tax revenue, Bulgaria and EU



Source: European Commission

lowest personal income tax rate in the EU (only 10%). Unlike some Member States with a flat income tax rate, there is no basic tax allowance, further limiting the progressivity of the tax system.⁽¹⁰⁹⁾ As a result, the tax wedge is relatively high for low-income earners and comparatively low for high-income earners (Graph A19.1). This may reduce labour demand for low-skilled workers. The lack of progressivity of the tax system contributes also to the low ability of the tax and benefit system to redistribute income. The tax and benefit system reduces the Gini-coefficient (measure for income inequality) in 2021 only by 4.7 pps, which is well below the EU average of 7.8 pps (see Table A19.1). Simulations based on the EUROMOD model suggest that an annual basic tax allowance of EUR 2 800 for low incomes financed by an increase in the statutory tax rate could reduce relative poverty by around 0.6 percentage point and inequality by 0.8 Gini points.⁽¹¹⁰⁾

There remain challenges as regards the efficiency of tax administration. Tax compliance has improved as reflected by the decrease in the VAT gap (the gap between revenues actually collected and the theoretical tax liability), which decreased by 3.4 pps to 6.3% between 2019 and 2020. The observed

improvement in VAT compliance should be interpreted with caution, however, given that the estimate relies on adjusted data from 2014. Overall, there is still considerable room for improvement as concerns the efficiency of the tax administration. Bulgaria is lagging behind other Member States in terms of the degree to which tax returns are pre-filled, which may be considered as an indicator for the compliance costs taxpayers face.⁽¹¹¹⁾ The electronic filing rates for personal income tax returns have improved but are still low compared with other Member States. Bulgaria's Recovery and Resilience Plan (RRP) does not include tax reforms, despite several existing CSRs (CSR2018, CSR2019 and CSR2020) on taxation. However, there are some related measures that may enhance the digitalisation of public administration.

⁽¹⁰⁹⁾The maximum monthly social security contribution is BGN 3 400 (€ 1 739) meaning that the marginal tax rate is regressive and then the tax wedge is relatively high for low-income earners. However, income tax base of employees can be deducted by BGN 6 000 (€ 3 069) annually per child, up to BGN 12 000 for two children and BGN 18 000 for three children. The tax relief for disabled children is BGN 12 000.

⁽¹¹⁰⁾Barrios, S. et al. (2020), "Progressive Tax Reforms in Flat Tax Countries", Eastern European Economics, Vol. 58/2, pp. 83-107.

⁽¹¹¹⁾Source: [TaxTech - Forum on Tax Administration \(oecd.org\)](https://www.oecd.org/tax/TaxTech-Forum-on-Tax-Administration/), Table DM2.



ANNEX 20: TABLE WITH ECONOMIC AND FINANCIAL INDICATORS

Table A20.1: Key economic and financial indicators

	2004-07	2008-12	2013-19	2020	2021	2022	forecast	
							2023	2024
Real GDP (y-o-y)	6.8	1.4	2.3	-4.0	7.6	3.4	1.5	2.4
Potential growth (y-o-y)	5.9	1.8	2.3	2.2	2.3	2.2	2.6	2.1
Private consumption (y-o-y)	9.2	1.4	2.1	-0.6	8.8	4.8	3.6	1.5
Public consumption (y-o-y)	2.5	-0.3	2.3	8.3	0.4	6.5	3.9	4.0
Gross fixed capital formation (y-o-y)	16.5	-4.2	1.8	0.6	-8.3	-4.3	2.2	3.3
Exports of goods and services (y-o-y)	15.0	2.9	5.6	-10.4	11.0	8.3	2.6	3.2
Imports of goods and services (y-o-y)	19.7	-1.1	5.4	-4.3	10.9	10.5	2.9	2.8
Contribution to GDP growth:								
Domestic demand (y-o-y)	10.5	-0.3	2.0	1.2	3.6	3.3	3.2	2.2
Inventories (y-o-y)	0.7	-0.7	0.2	-1.1	3.8	1.3	-1.5	0.0
Net exports (y-o-y)	-4.5	2.2	0.2	-4.0	0.2	-1.2	-0.2	0.3
Contribution to potential GDP growth:								
Total Labour (hours) (y-o-y)	1.8	-1.0	0.1	-0.4	-0.3	-0.1	0.4	-0.1
Capital accumulation (y-o-y)	2.0	1.7	0.8	0.8	0.5	0.3	0.4	0.4
Total factor productivity (y-o-y)	2.1	1.1	1.4	1.8	2.1	2.0	1.9	1.8
Output gap	1.4	0.8	-0.5	-4.7	0.3	1.4	0.4	0.7
Unemployment rate	11.1	10.3	9.1	6.1	5.3	4.3	4.3	4.0
GDP deflator (y-o-y)	7.5	4.0	3.1	4.3	7.1	15.1	10.4	3.9
Harmonised index of consumer prices (HICP, y-o-y)	6.8	4.6	0.4	1.2	2.8	13.0	9.4	4.2
HICP excluding energy and unprocessed food (y-o-y)	6.5	4.4	0.5	2.0	1.9	10.4	10.9	5.3
Nominal compensation per employee (y-o-y)	8.6	9.8	7.5	7.2	11.3	18.4	13.5	9.1
Labour productivity (real, hours worked, y-o-y)	3.5	3.2	1.9	0.8	6.5	2.1	1.2	2.1
Unit labour costs (ULC, whole economy, y-o-y)	4.7	6.6	5.5	9.0	3.6	16.0	12.2	6.8
Real unit labour costs (y-o-y)	-2.6	2.5	2.3	4.5	-3.3	0.8	1.6	2.8
Real effective exchange rate (ULC, y-o-y)	2.8	4.5	4.3	4.5	3.7	12.2	6.2	3.2
Real effective exchange rate (HICP, y-o-y)	3.9	2.1	0.0	2.2	1.1	3.4	.	.
Net savings rate of households (net saving as percentage of net disposable income)	-11.9	-2.6	-1.2	.	.	.	.	.
Private credit flow, consolidated (% of GDP)	28.0	8.4	2.6	3.6	4.4	.	.	.
Private sector debt, consolidated (% of GDP)	86.7	134.7	107.4	92.5	84.4	.	.	.
of which household debt, consolidated (% of GDP)	18.0	27.9	23.6	24.3	23.8	.	.	.
of which non-financial corporate debt, consolidated (% of GDP)	68.7	106.8	83.9	68.3	60.6	.	.	.
Gross non-performing debt (% of total debt instruments and total loans and advances) (1)	3.3	14.7	11.2	5.1	4.0	.	.	.
Corporations, net lending (+) or net borrowing (-) (% of GDP)	-8.1	-0.6	7.0	.	.	.	.	.
Corporations, gross operating surplus (% of GDP)	27.0	28.6	29.8	.	.	.	.	.
Households, net lending (+) or net borrowing (-) (% of GDP)	-7.8	-2.7	-0.9	.	.	.	.	.
Deflated house price index (y-o-y)	24.8	-6.5	2.4	5.2	2.5	-2.4	.	.
Residential investment (% of GDP)	3.9	3.4	2.2	2.9	2.8	2.5	.	.
Current account balance (% of GDP), balance of payments	-14.6	-6.5	1.7	0.0	-1.9	-0.7	-0.2	0.0
Trade balance (% of GDP), balance of payments	-15.4	-6.7	2.1	2.0	1.7	0.5	.	.
Terms of trade of goods and services (y-o-y)	2.8	1.2	1.3	5.0	-0.8	0.5	1.7	-0.1
Capital account balance (% of GDP)	0.2	1.1	1.7	1.4	0.7	0.9	.	.
Net international investment position (% of GDP)	-51.2	-88.5	-52.0	-25.6	-18.5	-12.5	.	.
NENDI - NIIP excluding non-defaultable instruments (% of GDP) (2)	.	.	25.6	47.7	47.5	45.8	.	.
IIP liabilities excluding non-defaultable instruments (% of GDP) (2)	.	.	51.3	41.0	39.1	35.8	.	.
Export performance vs. advanced countries (% change over 5 years)	57.4	24.8	12.1	16.3	17.3	.	.	.
Export market share, goods and services (y-o-y)	6.3	-0.2	3.1	-0.7	5.0	4.2	0.0	-0.6
Net FDI flows (% of GDP)	-18.5	-6.1	-2.1	-4.5	-1.8	-2.4	.	.
General government balance (% of GDP)	1.5	-1.8	-0.3	-3.8	-3.9	-2.8	-4.8	-4.8
Structural budget balance (% of GDP)	.	.	0.3	-2.4	-4.0	-3.2	-5.0	-5.0
General government gross debt (% of GDP)	24.9	14.7	23.7	24.5	23.9	22.9	25.0	28.1

(1) Domestic banking groups and stand-alone banks, EU and non-EU foreign-controlled subsidiaries and EU and non-EU foreign-controlled branches.

(2) Net international investment position (NIIP) excluding direct investment and portfolio equity shares.

Source: Eurostat and ECB as of 2 May 2023, where available; European Commission for forecast figures (Spring forecast 2023).

This Annex assesses fiscal sustainability risks for Bulgaria over the short, medium and long term. It follows the same multi-dimensional approach as the European Commission's 2022 Debt Sustainability Monitor, updated based on the Commission's 2023 spring forecast.

1 - Short-term risks to fiscal sustainability are low overall. The Commission's early-detection indicator (S0) does not signal major short-term fiscal risks (Table A21.2).⁽¹¹²⁾ Gross financing needs are expected to remain limited at 6.3% of GDP in the short term (i.e. over 2023-2024), although slightly increasing compared with the recent peak in 2020 (Table A21.1). Financial markets' perceptions of sovereign risk are positive, as confirmed by the ratings of the main agencies.

2 - Medium-term risks to fiscal sustainability are medium overall.

The DSA for Bulgaria shows that, under the baseline, government debt ratio, is projected to strongly increase over the medium term going just above the 60% of GDP reference value in 2033 (Graph A21.2)⁽¹¹³⁾.⁽¹¹⁴⁾ The assumed structural primary balance (a deficit of 4.4% of GDP) contributes to these developments. It appears particularly low compared with past fiscal performance, indicating that the country has

ample room for corrective action.⁽¹¹⁵⁾ At the same time, the baseline projections up to 2033 benefit from a favourable snowball effect with real GDP growth at around 1.6% over 2025-2033. Government gross financing needs are expected to increase over the projection period, reaching 9.0% of GDP in 2033, significantly above the level forecast for 2024 (Table A21.1).

The baseline projections are stress tested against four alternative scenarios to assess the impact of changes in key assumptions (Graph 1). For Bulgaria, reverting to historical fiscal trajectories under the 'historical structural primary balance (SPB)' scenario would lead to a significantly lower government debt ratio. If the SPB gradually converged to a deficit of 0.3% of GDP (its historical 15-year average), the projected debt-to-GDP ratio would be close to 28 pps. lower compared to the baseline in 2033. A permanent worsening of the macro-financial conditions, as reflected under the 'adverse interest-growth rate differential' scenario (i.e. 1 pp. higher than the baseline) would result in a higher government debt-to-GDP ratio by 3.5 pps. of GDP by 2033, as compared with the baseline. A temporary worsening of financial conditions, as reflected in the 'financial stress' scenario (i.e. temporarily increase of interest rates by 1 pp.), would lead to a broadly similar public debt-to-GDP ratio by 2033 compared with the baseline. The 'lower structural primary balance (SPB)' scenario (i.e. SPB level permanently reduced by half of the cumulative forecast change), would lead to a significantly higher government debt-to-GDP ratio by 2033 (+7.3 pps. of GDP) compared with the baseline.

⁽¹¹²⁾The S0 is a composite indicator of short-term risk of fiscal stress. It is based on a wide range of macro-financial and fiscal variables that have proven to perform well in the past in detecting situations of upcoming fiscal stress.

⁽¹¹³⁾The assumptions underlying the Commission's 'no-fiscal policy change' baseline notably comprise: (i) a structural primary deficit, before ageing costs, of 4.4% of GDP as of 2024; (ii) inflation converging linearly towards the 10-year forward inflation-linked swap rate 10 years ahead (which refers to the 10-year inflation expectations 10 years from now); (iii) the nominal short- and long-term interest rates on new and rolled over debt converging linearly from current values to market-based forward nominal rates by T+10 (as for all Member States); (iv) real GDP growth rates from the Commission 2023 spring forecast until 2024, followed by EPC/OGWG 'T+10 methodology projections between T+3 and T+10, i.e. for 2025-2033 (on average 1.6%); (v) ageing costs in line with the 2021 Ageing Report (European Commission, Institutional Paper 148, May 2021). For information on the methodology, see the 2022 Debt Sustainability Monitor (European Commission, Institutional Paper 199, April 2023).

⁽¹¹⁴⁾Table 1 shows the baseline debt projections and its breakdown into the primary balance, the snowball effect (the combined impact of interest payments and nominal GDP growth on the debt dynamics) and the stock-flow adjustment.

⁽¹¹⁵⁾The Commission projections take into account the draft 2023 budget and medium-term fiscal framework (2023-2026) tabled to Parliament by the caretaker government with delay, on 28 April 2023. These plans present only a baseline no-policy-change scenario without consolidating fiscal policy measures as the caretaker government did not propose policies beyond its mandate. Such measures can be, however, put forward and adopted by Parliament with impact already as of 2023.

Additionally, stochastic debt projections indicate medium risk (Graph 2).⁽¹¹⁶⁾ These stochastic simulations point to 97% probability of the debt ratio in 2027 being greater than in 2022, entailing medium risk. In addition, such shocks point to significant uncertainty (i.e., the difference between the 10th and 90th debt distribution percentiles) surrounding the government debt baseline projections.

3 - Long-term risks to fiscal sustainability are medium overall.⁽¹¹⁷⁾

The S2 sustainability gap indicator (at 5.9 pps. of GDP) points to medium risk, suggesting that Bulgaria would need to significantly improve its structural primary balance to ensure debt stabilisation over the long term. This result is underpinned by an unfavourable initial budgetary position (4.6 pps. of GDP) and the projected increase of ageing costs, mainly stemming from pension spending (0.8 pp. of GDP) over the long term (Table A21.1).

Combined with debt vulnerabilities, as highlighted by the S1 indicator, overall long-term risks are assessed as medium. Indeed, the S1 sustainability gap indicator signals that a significant consolidation effort of 4.7 pps. of GDP would be needed to reduce debt to 60% of GDP by 2070. This result is mainly driven by the unfavourable initial budgetary position (contribution by 4.3 pps. of GDP) and, to a lower extent, to the contribution of ageing costs (1 pp. of

GDP) (Table A21.2), while the debt requirement provides a negative contribution of 0.7 pp. of GDP thanks to Bulgaria's low debt-to-GDP ratio.

Finally, several additional risk factors need to be considered in the assessment. On the one hand, risk-increasing factors are related to the recent increase of interest rates, Bulgaria's negative net international investment position, the shares of government debt in foreign currency and of government debt held by non-residents, and to contingent liability risks related to liabilities of government control entities classified outside the general government. On the other-hand, risk-mitigating factors include the lengthening of debt maturity in recent years and relatively stable financing sources (with a diversified and large investor base). Government deficit could also turn out lower, should the major political parties in the Bulgarian parliament materialise their commitment for fiscal consolidation already as of 2023. In addition, the structural reforms under the NGEU/RRF, if fully implemented, could have a further positive impact on GDP growth in the coming years, and therefore help to mitigate debt sustainability risks.

⁽¹¹⁶⁾These projections show the impact on debt of 2000 different shocks affecting the government's primary balance, economic growth, interest rates and exchange rates. The cone covers 80% of all simulated debt paths, therefore excluding tail events

⁽¹¹⁷⁾The S2 fiscal sustainability gap indicator measures the permanent fiscal effort (SPB adjustment) in 2024 that would be required to stabilise public debt over the long term. It is complemented by the S1 fiscal sustainability gap indicator, which measures the permanent fiscal effort required in 2024 to bring the debt-to-GDP ratio to 60% in the long term (by 2070). For both the S1 and S2 indicators, the risk assessment depends on the amount of fiscal consolidation needed: 'high risk' if the required effort exceeds 6 pps. of GDP, 'medium risk' if it lies between 2 pps. and 6 pps. of GDP, and 'low risk' if the effort is negative or below 2 pps. of GDP. The overall long-term risk classification brings together the risk categories derived from S1 and S2. S1 may notch up the risk category derived from S2 when it signals a higher risk than S2. See the 2022 Debt Sustainability Monitor for further details.

Table A21.1: Debt sustainability analysis - Bulgaria

Table 1. Baseline debt projections	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
Gross debt ratio (% of GDP)	24.5	23.9	22.9	25.0	28.1	31.6	35.2	38.8	42.3	45.9	49.5	53.2	56.9	60.6
Changes in the ratio	4.5	-0.6	-1.1	2.1	3.0	3.5	3.6	3.6	3.6	3.6	3.6	3.7	3.7	3.7
of which														
Primary deficit	3.3	3.4	2.3	4.3	4.2	4.3	4.4	4.4	4.5	4.5	4.5	4.5	4.5	4.5
Snowball effect	0.5	-2.8	-3.4	-1.9	-0.9	-0.8	-0.8	-0.8	-0.9	-0.9	-0.9	-0.8	-0.8	-0.8
Stock-flow adjustments	0.8	-1.2	0.0	-0.2	-0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Gross financing needs (% of GDP)	5.5	3.2	4.4	6.3	6.4	7.0	7.3	7.7	7.9	8.1	8.3	8.5	8.7	9.0

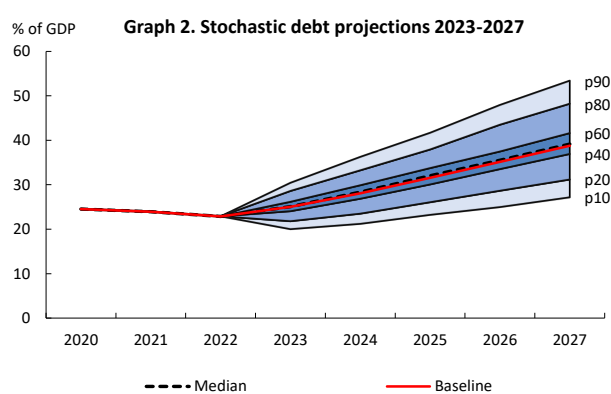
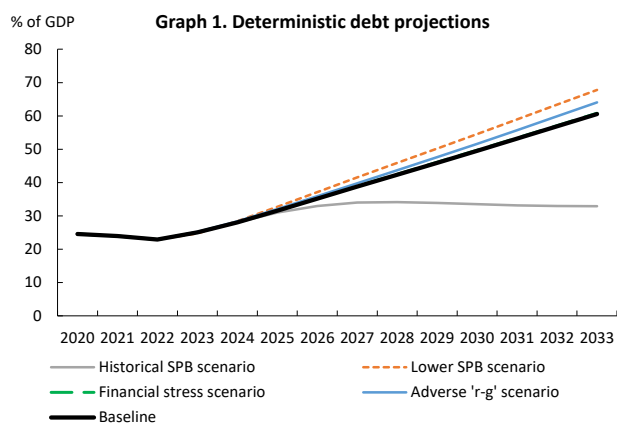


Table 2. Breakdown of the S1 and S2 sustainability gap indicators

	S1	S2
Overall index (pps. of GDP)	4.7	5.9
of which		
Initial budgetary position	4.3	4.6
Debt requirement	-0.7	
Ageing costs	1.0	1.4
of which		
Pensions	0.5	0.8
Health care	0.2	0.2
Long-term care	0.1	0.1
Others	0.2	0.3

Source: Commission services.

Table A21.2: Heat map of fiscal sustainability risks - Bulgaria

Short term	Medium term - Debt sustainability analysis (DSA)						Long term				
	Overall (S0)	Overall	Deterministic scenarios					Stochastic projections	S2	S1	Overall (S1 + S2)
			Baseline	Historical SPB	Lower SPB	Adverse 'r-g'	Financial stress				
		Overall	MEDIUM	LOW	MEDIUM	MEDIUM	MEDIUM				
		Debt level (2033), % GDP	60.6	32.9	67.8	64.1	60.8				
		Debt peak year	2033	2028	2033	2033	2033				
		Fiscal consolidation space	100%	89%	100%	100%	100%				
		Probability of debt ratio exceeding in 2027 its 2022 level					97%				
		Difference between 90th and 10th percentiles (pps. GDP)					26.2				
LOW	MEDIUM	Overall	MEDIUM	LOW	MEDIUM	MEDIUM	MEDIUM	MEDIUM	MEDIUM	MEDIUM	

(1) Debt level in 2033. Green: below 60% of GDP. Yellow: between 60% and 90%. Red: above 90%. (2) The debt peak year indicates whether debt is projected to increase overall over the next decade. Green: debt peaks early. Yellow: peak towards the middle of the projection period. Red: late peak. (3) Fiscal consolidation space measures the share of past fiscal positions in the country that were more stringent than the one assumed in the baseline. Green: high value, i.e. the assumed fiscal position is plausible by historical standards and leaves room for corrective measures if needed. Yellow: intermediate. Red: low. (4) Probability of debt ratio exceeding in 2027 its 2022 level. Green: low probability. Yellow: intermediate. Red: high (also reflecting the initial debt level). (5) the difference between the 90th and 10th percentiles measures uncertainty, based on the debt distribution under 2000 different shocks. Green, yellow and red cells indicate increasing uncertainty.

Source: European Commission (for further details on the Commission's multidimensional approach, see the 2022 Debt Sustainability Monitor)

Source: Commission services.