Bulgaria's Water Connectivity Challenges in the Light of Transport Routes and Water Scarcity

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Bulgaria's water-related connectivity is at the crossroads between outdated perceptions and inadequate infrastructure on the one hand side and new opportunities on the other arising from geopolitical shifts and emergence of new transport routes. In order to live up to the new challenges and benefit from the potential economic gains, the country has to redefine its waterborne connectivity over and through the Black Sea and the Danube and has to do it in a consistent, timely and realistic way. The window of opportunity is now due to most recent strategic approach to the Black Sea region of the European Union (EU), the momentum for the completion of Corridor 8 and for the development of the transportation axis between Romania, Bulgaria and Greece as well as in the light of the Middle Corridor.

Understandably enough, water scarcity is a topic that also touches upon water connectivity. In the narrow sense, it is directly linked to the low water levels that increasingly impact on navigation along the Bulgarian section of the Danube in summer months. In the broader sense, it is related to the provision of sufficient amount of water by rivers with sources in Bulgaria and lower courses on the territory of the neighbouring countries Greece and Türkiye. These rivers are unnavigable, however, their respective role is set to grow unproportionally due to their use for hydroelectric power generation and irrigation. This is particularly the case in the rivers' downstream areas in Greece and Türkiye that are exposed to a growing vulnerability steaming from the lack of other alternatives.

The multilayered and overarching nature of Bulgaria's water-related connectivity as a nexus between economic feasibility, geopolitical aspects and maintaining mutually beneficial neighbourly relations calls for an expert discussion and bold political decisions the current paper seeks to trigger and contribute to.

Connectivity as order of the day

If connection is the new currency in personal relationships, as some social scientists and thinkers argue, connectivity is among the newest avenues for cooperation between likely-minded countries. In fact, interstate transport and energy connections in Central and South East Europe (CSEE) are not a novelty, however, many projects in these fields gained traction in the last few years. While the annexation of Crimea by Russia in 2014 and China's infrastructure commitment in the region with regional transport connectivity projects in and after the 2010s sounded to European and local

decision-makers like an alarm clock from a distant or even muted cell phone, the outbreak of Russia's war of aggression against Ukraine in 2022 acted as noisy church bells warning of emergency. The sense of urgency acted as a trigger for accelerating energy and transport connectivity projects, many of which have been delayed or put on hold for different reasons over the last decades. Projects for enhancing connection between national electricity grids and for constructing gas transmission pipelines and interconnectors with reverse flow capability gained momentum. In parallel, the imperative of a military mobility and dual use transport infrastructure between EU and/or NATO member states paved the way for projects to take shape in a speedy manner.

Against this backdrop, connectivity is the new buzz word in South East Europe and in Bulgaria as well. It remains to be seen if and how the tailwind will be utilised in the water-related aspect of connectivity, that in the case of Bulgaria has two direct dimensions - the maritime one over and through the Black Sea and the river one related to the Danube.

Bulgaria's water connectivity over and through the Black Sea

With close to 17% of the total border length of Bulgaria, the Black Sea coastline, which is also the country's east border, provides access to international maritime routes and facilitates trade and transport with other Black Sea countries and beyond. In terms of maritime infrastructure, the two main ports are in Burgas and Varna (Table 1). The port in Burgas generally has higher utilization rates particularly due to its oil terminal and its role in energy transit. In recent years it also witnessed a growth in container traffic and other cargo segments due to constant upgrades and modernisation. In 2024 it benefited from EU funding under the Connecting Europe Facility for the construction of a new modern deep-water berth that allows for servicing container and general cargo vessels with up to 15 m draft. Located in the region of Burgas Bay, the port in Burgas is EU's deep-water port that is at the closest distance to the Bosphorus. It also plays a pivotal role as the primary maritime gateway to Sofia and Plovdiv, Bulgaria's major industrial cities and business hubs. The city of Burgas marks the endpoint of the Sofia–Plovdiv–Burgas railway line and is part of the Trans-European Transport Network (TEN-T). This explains the interest of the Three Seas Initiative Investment Fund that acquired a minority stake in the private operator of the Burgas port in 2022.

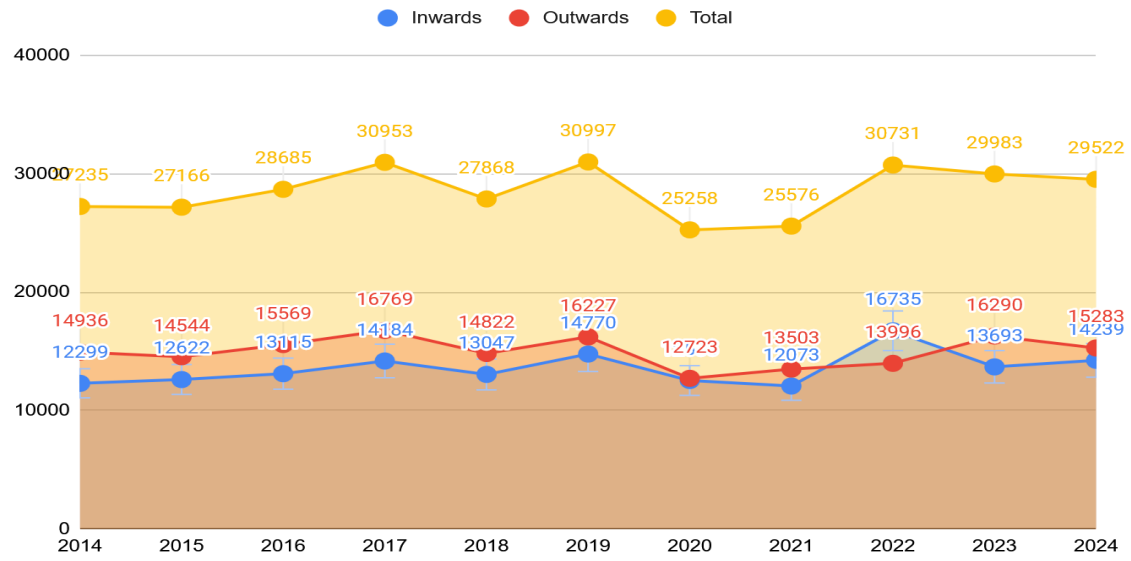
Table 1. Maritime Ports Infrastructure

Port type	Regional maritime administration		Total
	Burgas	Varna	
Ports for public transport with national importance	9	4	13
Ports for public transport with regional importance	7	3	10
Fishing ports	9	4	13
Yacht ports	7	7	14
Ports of special purpose	3	8	11
Total	35	26	61

Source: Maritime Administration Executive Agency

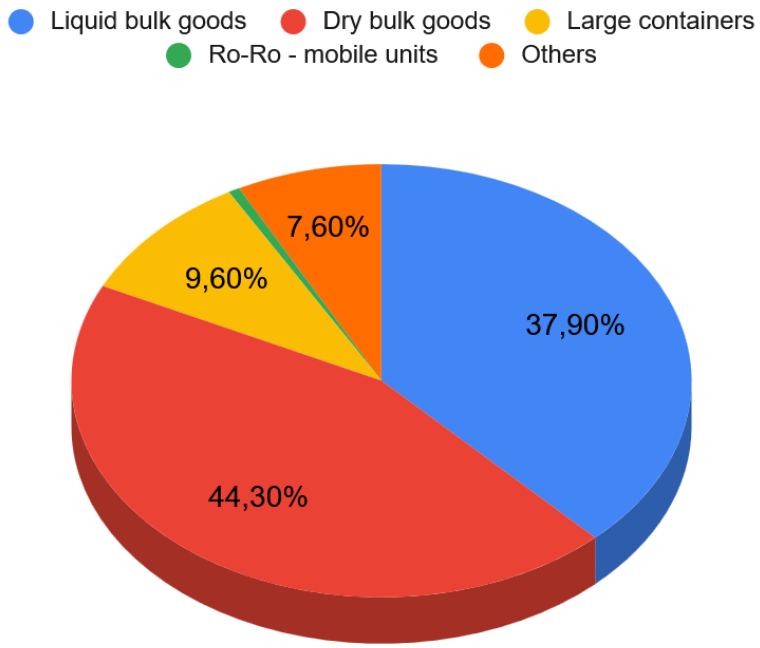
Bulgarian Black Sea ports play a comparatively more important role for outwards transportation of goods (Fig. 1). An exception in the last decade was 2022 when inwards transportation of goods exceeded the outgoing one, which could be considered a one-time effect resulting from the war in Ukraine. In terms of the type of cargo (Fig. 2), the main segments are the dry bulk goods (44.3%) and liquid bulk goods (37,9%), followed by the containers (9,6%). By type of goods handled in the main sea ports in 2023 (Fig. 3), products of agriculture, hunting, and forestry; fish and other fishing products took the leading share with almost 30%, second came coal and lignite; crude petroleum and natural gas (22%), while coke and refined petroleum products ranked third (11.5%). In fact, the last group was the best performer in 2014 but its share shrank at most over the last decade.

Fig. 1. Gross weight of goods handled in all sea ports, by direction (Thousand tonnes)



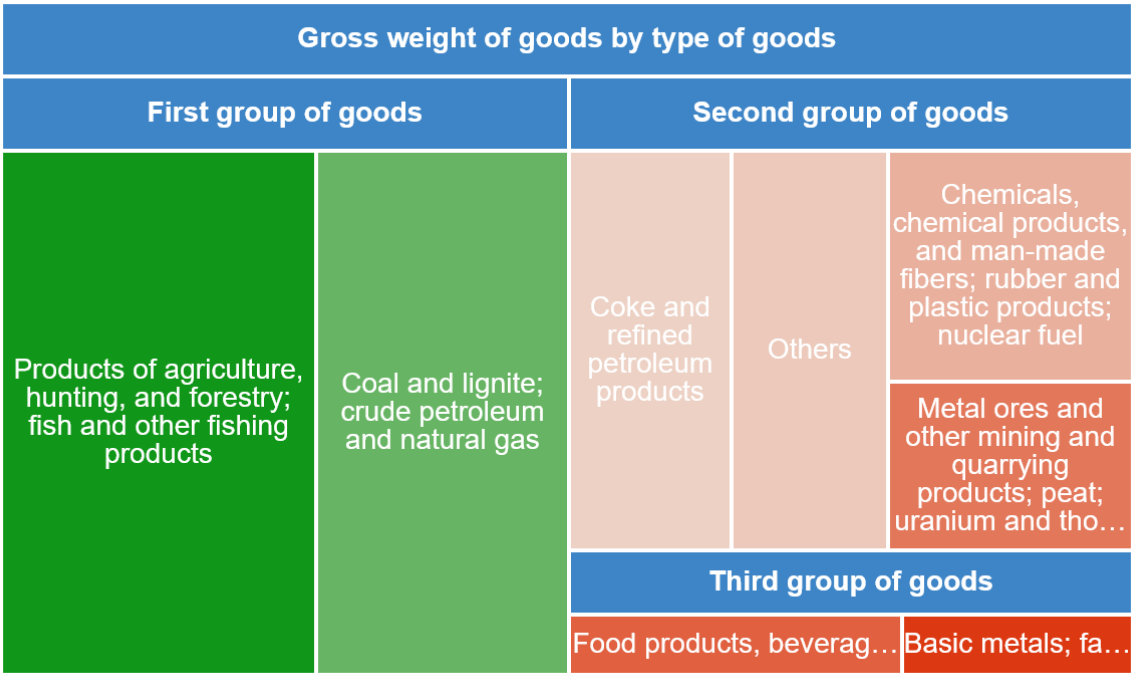
Source: National Statistical Institute, Bulgaria

Fig. 2. Gross weight of goods handled in main sea ports, by type of cargo, 2023 (Thousand tonnes)



Source: Eurostat

Fig. 3. Gross weight of goods handled in main sea ports, by type of goods, 2023 (Thousand tonnes)



Source: Eurostat

The main Bulgarian Black Sea ports face increased competition from another EU's port on the Black Sea – the one in Constanta, Romania (Table 2). Firstly, it has a deeper draft and is suitable for larger vessels. For instance, this is crucial for efficient and cost-effective bulk grain transport, as larger vessels can carry more cargo per shipment, reducing transportation costs per ton. Second, it has higher handling capacity and efficiency. Thirdly, Constanta has better rail and road connections to the hinterland, including to Central Europe and even to regions in Northern Bulgaria. For example, this is a significant factor for Bulgarian grain producers from North East Bulgaria to transport grain by land to Constanta instead of to Varna. Noteworthy is also the competition from other transport modes such as road transport, which is often faster and more flexible for certain types of cargo.

Table 2. Performance of maritime ports of Bulgaria and Romania, 2023

Indicator/Country	Bulgaria	Romania
Gross weight of goods handled in main ports, by type of cargo (Thousand tonnes)	29983	68654
Liquid bulk goods (Thousand tonnes)	11367	16576
Dry bulk goods (Thousand tonnes)	13283	41597
Large containers (Thousand tonnes)	2881	7393
Vessels arriving in the main ports (number of container ships)	422	1064
Volume of containers handled in main ports in thousand twenty-foot equivalent units (TEUs)	282	830
Passengers embarked and disembarked (Thousand passengers)	5	0

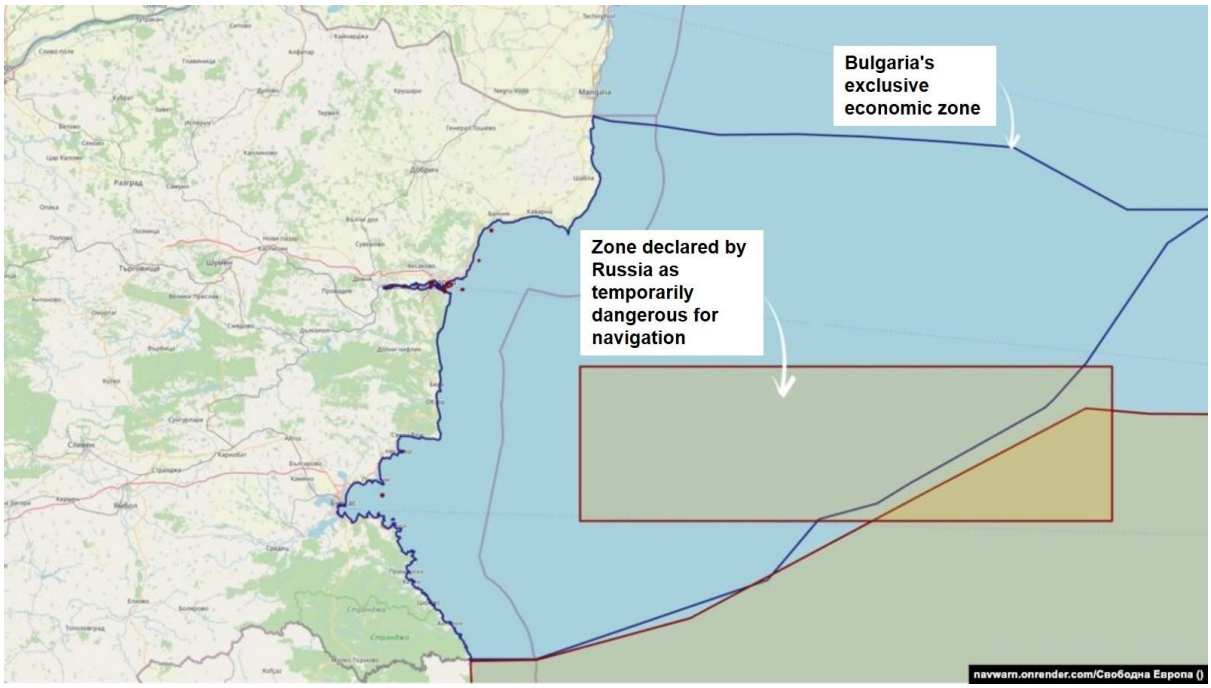
Source: Eurostat

In the present situation, maritime connectivity is negatively impacted by the overall security situation in the wider Sea region. As an immediate consequence of the war that Russia started in Ukraine, the costs of insuring merchant ships sailing to ports in the Black Sea increased significantly. War risk premiums, which are additional charges by insurers, surged, making it more expensive for ships to operate in the region. Worth mentioning in that respect is also the issue of drifting sea mines in the Black Sea, which have become a hazard since the start of the Russia-Ukraine war. This has been addressed through a trilateral agreement between Bulgaria, Romania and Türkiye that joined forces on mine countermeasures to ensure safer maritime navigation, particularly for vessels transporting goods like Ukrainian grain.

Constraints to the free maritime navigation result also from direct activities of Russia in the Black Sea as it was the case for three months in 2023. Back then the Russian navy held military exercises in Bulgaria's exclusive economic zone (red rectangle on

Fig. 4) declaring part of it temporarily dangerous for navigation due to live-fire exercises. This was considered a partial blockade by the Bulgarian authorities.

Fig. 4. Map of the area that Russia has declared temporarily dangerous for navigation due to live-fire exercises.



Source: Svobodna Evropa - Bulgaria, Radio Free Europe/Radio Liberty

It is beyond any doubt that the geopolitical factor will further impact navigation and maritime connectivity in the wider Black Sea region in general and the one of Bulgaria in general. This is to incentivise increased investments in Bulgaria (and Romania) in defense capabilities along with the new defence spending commitments in light of the European Union's strategic approach to the Black Sea region. Both countries are the only option for the EU to be more present in the region. According to the constraints imposed by the Montreux Convention Regarding the Regime of the Straits, signed in 1936. It regulates maritime traffic through the Bosporus and Dardanelles connecting the Black Sea to the Mediterranean by ensuring free passage for merchant vessels in peacetime while also placing restrictions on the transit of warships, particularly those not belonging to Black Sea littoral states. The convention is a major factor in the security of the Black Sea region and is still in effect today.

In parallel, being one of the EU countries on the Black Sea coast, Bulgaria will be eligible for funding and investments in upgrading its regional infrastructure, such as ports, railways and airports, which are to be capable of handling heavy military equipment. It remains to be seen if Bulgaria will position itself more decisively in the region and how it will benefit from the new momentum the Black Sea region is enjoying thanks to the new EU approach.

An immediate test for this could be the Bulgarian Chairmanship of the Organization of the Black Sea Economic Cooperation (BSEC) that Bulgaria assumed on a rotating basis in July 2025. During its six-month chairmanship under the motto “Collective Commitment in the Black Sea Region”, Bulgaria is committed to promoting regional cooperation and upholding the Organization’s economic principles, amid a complex geopolitical landscape and the ongoing challenges shaping the region’s future. With a focus on sustainability, cultural integration, and international partnerships, Bulgaria will work to enhance environmental protection, strengthen regional resilience, and foster collaboration within and beyond the Black Sea region. According to the official information by the Ministry of Foreign Affairs shows, there are four key areas, reflecting the vision of a prosperous and united Black Sea community, that are meant to guide the Chairmanship:

- Environmental protection and sustainable management of marine resources
- Cooperation in culture, education, and tourism
- Regional sustainability and crisis management
- Cooperation with the EU and other international and regional interlocutors

The explicit lack of the connectivity nexus in this list of of priority areas comes as surprise in the light of Bulgaria’s ambition to be an active part of the Trans-Caspian International Transport Route that starts from Southeast Asia and China, runs through Kazakhstan, the Caspian sea, Azerbaijan, Georgia and reaches the Black Sea shores of Ukraine, Romania, Bulgaria and Türkiye (Fig. 5). Since Russia’s war on Ukraine this route, also called the Middle Corridor, has risen as the new main mainland vector of Eurasian connectivity much at the expense of the Northern Corridor (from China through Kazakhstan and Russia and Belarus to Europe).

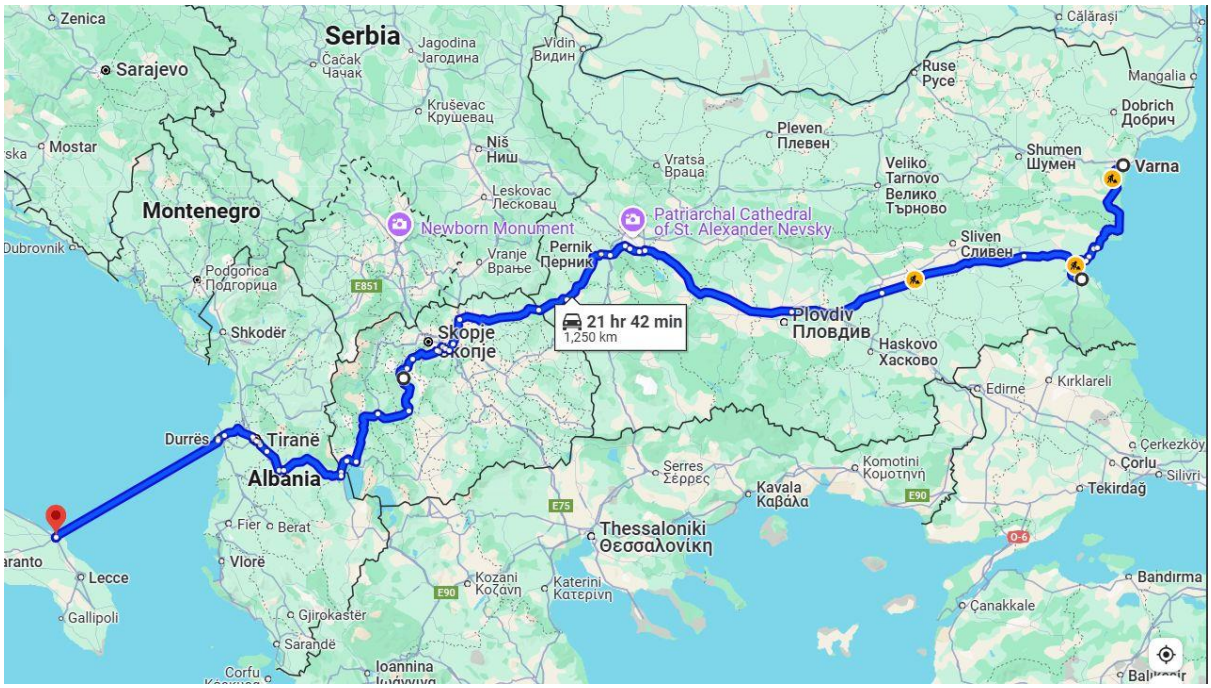
Fig. 5. The route of the Middle Corridor as of July 2025

Source: International Association "Trans-Caspian International Transport Route"

Initially, the Middle Corridor included only Constanta in Romania as part of the EU territory. It took Bulgaria and the private multi-cargo operator of the port of Burgas efforts to include the port as an associate member of the "Trans-Caspian International Transport Route" Association in 2023. In late 2024 the port of Burgas announced the arrival of a test vessel with containers from China to europe via the middle corridor to burgas that came as a block train service passing through Kazakhstan with multiple transshipments along the way

An **important enhancer of Bulgaria's water connectivity through the Black Sea is Corridor VIII** - the only one multi-modal transport system between the Black and Adriatic Sea, which is meant to stretch from the coastal cities of Varna and Burgas in Bulgaria over Sofia, Skopje and Tirana to Durrës in Albania and then to Bari in Italy (Fig. 6). The pending railway on both sides of the border between Bulgaria and North Macedonia (as well as a major railway tunnel to be constructed along the route) and the underdeveloped road connectivity between the two countries continue to burden freight and passenger transportation in this part of South East Europe. Expectations for overcoming this connectivity bottleneck are largely bound to the prospects for a membership of North Macedonia in the European Union and the growing significance of military mobility in the context of both countries' NATO membership.

Fig. 6. Corridor VIII



Source: Google Maps

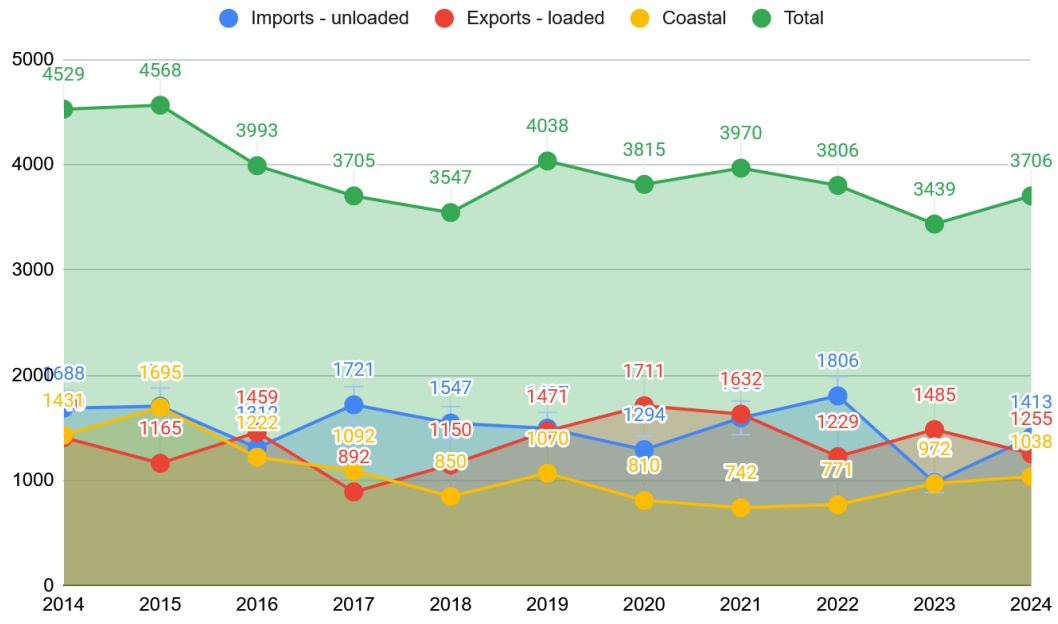
Bulgaria's water connectivity over and through the Danube

The Danube covers 77% of the total length of the northern border of Bulgaria to Romania. In this way, Bulgaria's connectivity via the Danube river is two fold - the pure water-related one and the one over the river through bridges and ferries.

The direct waterborne connectivity is directly linked to the navigation and the river ports and their combined importance for transportation of goods and passengers. In terms of navigation, these 470km of a river border are in general entirely navigable with occasional and partial constraints that are not excluded due to low water level in late summer. What is more, the Danube is a navigable artery between the Danube Delta in south-eastern Romania and south-western Ukraine and the Rhine delta (at Rotterdam in the Netherlands) through the Rhine–Main–Danube Canal that was completed in Bavaria in 1992.

In terms of volume of transported goods, river ports in Bulgaria are by far less important compared to the sea ones. The total weight of the cargo handled at maritime harbours in 2024 was app. 8 times the total weight of the cargo that was processed at the Danube ports. In 2014 the ratio was 6:1 in favour of sea transport, which comes to prove the weakening performance of the river ports over the last decade (Fig. 7). Unlike the maritime ports, however, exports and imports switched their respective pole positions several times in 2014-2020 resembling the quick shifts of trends in river transportation.

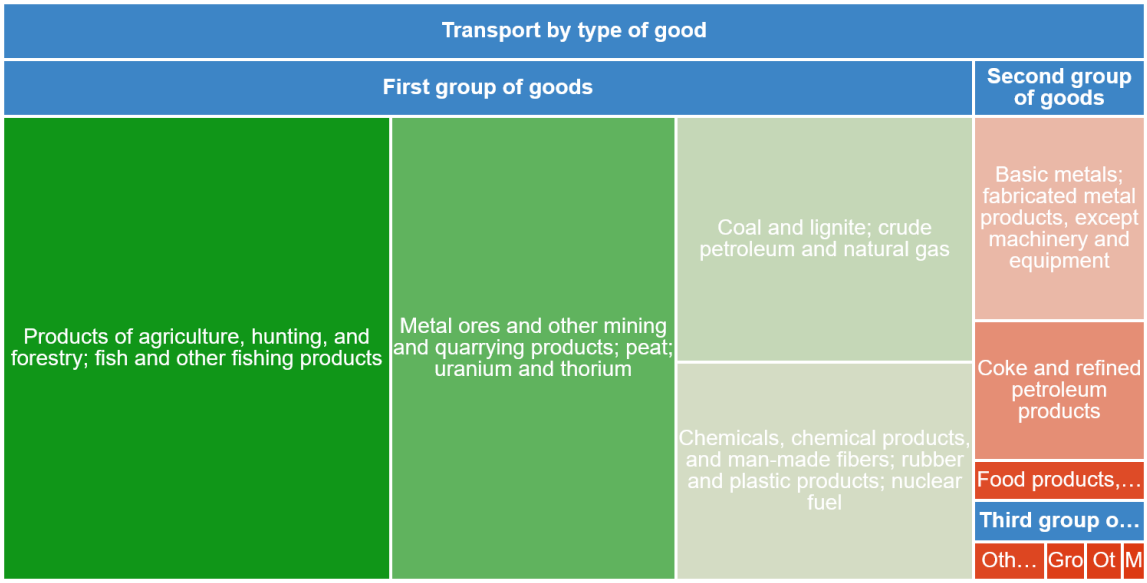
Fig. 7. Gross weight of goods handled in all river ports, by direction (Thousand tonnes)



Source: National Statistical Institute, Bulgaria

When the type of cargo is considered, volumes of liquid bulk and dry bulk goods handled at the river ports varied over the last decade with a clear dominance of the dry bulk goods as of 2023 according to the latest Eurostat data. By type of freights handled in the main river ports in 2023 (Fig. 8), the four leading groups of goods account for 85% of all river transport. Agricultural products ranked first with 35% and metal ores and other mining and quarrying products came second with 25% of all goods transported at the Bulgarian Danube ports.

Fig. 8. Transport by type of goods in main river ports, 2023 (Thousand tonnes)



Source: Eurostat

The breakdown of river port infrastructure confirms the leading role of the port of Ruse - the largest Bulgarian port on the Danube. Located in the northeastern part of Bulgaria, it handles a variety of cargo, including general cargo, bulk cargo (grain, coal, ores), liquid cargo (oil products), and containers, has specialized terminals for different cargo types and is connected to the national road and rail network. Port of Lom is primarily focused on handling bulk cargo, especially grain and other agricultural products. The port of Vidin in the northwestern part of the country handles various types of cargo, including general cargo, bulk cargo, and liquid cargo.

The way ahead of the waterborne connectivity through the Danube goes hand in hand with improving navigability and infrastructure. Since low water levels is typical for many rivers in Europe in recent years, there are measures and projects that come to address these transportation bottlenecks. In the case of the Danube section between Bulgaria and Romania these are the Fast Danube 1 and Fast Danube 2 projects. Efforts in this field, however, should go beyond the lifecycle of a single project since places of sediment buildup change relatively quickly and this necessitates constant deployment

of dredging equipment, experienced manpower and navigation support along the entire river.

The next challenge is the infrastructure - both in and around river ports as well as the one in the hinterland via road and rail. In this regard, the development of modern intermodal terminals is crucial for seamless transfer of cargo between different modes of transport. The recent experience with the intermodal terminal in Ruse that dropped from the Bulgarian Recovery and Resilience Plan exemplified the complexity in construction of such projects despite their importance. Other than that, the inadequate infrastructure behind the Danube ports should be also addressed with a priority. It is striking that there is not a motorway connection to Ruse and Vidin. Thus, the existing Danube ports in both cities have not a speedy and modern road connection to the country's road network. The ongoing construction works of the Veliko Turnovo-Ruse motorway as well as of the express way to Vidin are a good step forward in addressing this transport bottleneck. The experience with similar projects, though, shows considerable delays and construction costs that significantly exceed allocated budgets. In terms of railways upgrade, Northern Bulgaria remains underfunded. The focus in the last decade has been placed on the upgrade and modernisation of the railway route from Sofia via Plovdiv with branches to Burgas and Istanbul. What is more, the limited progress in building tunnels under the Balkan mountain range is another factor that literally tears off Bulgarian Danube ports from the industrial centers in Southern Bulgaria. Thus, Danube ports are expected to be further on underutilized unless a major shift in planning and implementation of strategic infrastructure projects is done.

When Bulgaria's connectivity via the Danube is considered, road and railway connections over the river come into the spotlight as well. For historical reasons the Danube played the role of a natural dividing line between both countries resulting in limited options for seamless passenger and freight transportation. At present, the river border of 470km between Bulgaria and Romania is currently serviced by two (road and railway) bridges that connect both countries: Danube bridge 1/'Friendship Bridge' (between Ruse and Giurgiu, built in 1954) and Danube bridge 2/'New Europe' (between Vidin and Calafat, built in 2013). The number of bridges, let alone their capacity, seems far from being enough given the present day's necessities for an enhanced connectivity between two neighbouring EU and NATO member states. In 2024 alone, customs authorities at the Danube bridge 1 processed on average 2635 trucks every day or 961 915 trucks in total.

The full-fledged Schengen membership of both countries, which is effective as of January 1, 2025, is expected to additionally facilitate cross-border transport and lead to growing workload of the existing transportation routes and capacities. This additionally fuels the discussions about the construction of further Danube bridges

between Bulgaria and Romania - something Bulgaria insists on. Potential locations according to the Bulgarian plans are Ruse, Oryahovo, Nikopol, Svishtov and Silistra.

Most advanced is the process regarding the construction of a third bridge over the Danube, connecting most probably Ruse and Giurgiu. Currently, under way is a two-year feasibility study with EU funding (Connecting Europe Facility, Military Mobility component). It has to determine the exact location of the new bridge, the type of construction, for road transport only or for road and railway), as well as the cost of construction. The European Commission approved the launch of the study in early 2024, however, Romania delayed it for two factors that are often mentioned off the record. Bucharest considered a priority that Bulgaria signs a joint project to deepen the Danube by EUR 250mln. Furthermore, road transportation routes to Central Europe seem to be more important for Bucharest than investing in connectivity to the South. As a result, the pace of pre-construction is considered slow so far - something that the Bulgarian side accuses the Romanian one unofficially. In fact, the pace of construction of the third bridge depends entirely on Bucharest since in contrast to the Danube bridge 2 when Bulgaria was responsible for all construction procedures. Based on the experience back then and considering the tendering procedures, realistically the new bridge between Bulgaria and Romania could be operational not before 2035.

The importance of improving connectivity between both countries over the Danube goes beyond their borders and resonates with the overall connectivity in the wider region, including the transport connections to Greece and Türkiye to the South, Ukraine and Moldova to the East and last but not least to Slovakia and again Ukraine to the North. Thus, the interest in upgrading regional transport connectivity over the Danube gains momentum. October 2023 saw a trilateral meeting on prime-minister level, between Bulgaria, Greece and Romania in Varna (Bulgaria) with a focus on a project for a corridor from Thessaloniki via Kavala, Alexandroupolis (Greece), Burgas and Varna (Bulgaria) to Constanta (Romania) and a possible extension to the Republic of Moldova. The objective is to establish a modern infrastructure for transport, communication and energy along the route, which will boost economic and political ties between the countries involved. The high-level meeting was followed by several ministerial and working group discussions on bilateral and/or trilateral basis.

Most recently, in June 2025 the European Commissioner for Sustainable Transport and Tourism hosted the ministers of transport of the three countries in Brussels for a meeting dedicated to the development of three strategic transport corridors between Bulgaria, Greece, and Romania. The discussions evolved around a draft memorandum of cooperation between the three countries, which is to serve as the foundation for implementing projects under the European Transport Corridor 'Baltic Sea – Black Sea – Aegean Sea'. The next step would be a roadmap and a clear action

plan with specific projects that are to be funded within the upcoming multiannual financial framework of the EU 2028-2034 and other complementary financial sources and formats such as public-private partnerships. According to the official statement of the Bulgarian Ministry of transport, the priority projects on the Bulgarian territory include three directions – between Kulata (border to Greece) and Vidin (border to Romania), between Svilengrad (border to Greece and Türkiye) and Ruse (border to Romania), and the Black Sea motorway between Varna and Burgas. Bulgaria will propose that the memorandum also includes new bridge locations across the Danube River.

It is beyond any doubt that this transport axis bears significant potential for economic growth in each of the three countries, as well as for improved mobility and accelerated regional development. Eventually, it will boost connectivity between the Baltic, Black, and Aegean Seas, enhancing trade links with neighboring states and Central Europe, improving the region's supply chains and international trade routes. Therefore, it is essential that decision-makers in the three countries seize the opportunity of an accelerated focus on cross-border connectivity and make good use of the funding that will be made available for building/upgrading transport infrastructure in view of the military mobility aspect in the EU and NATO.

Bulgaria’s water connectivity in the light of water scarcity

Water scarcity has a limited direct link to the water connectivity of Bulgaria to its neighbours, however, the way it is addressed could impact bilateral or multilateral relations with Greece and/or Türkiye and hence the progress of mutual projects in other domains. The majority of rivers in Southern Bulgaria belong to the Aegean catchment basin which covers 43% of the country's territory. These rivers are also among the biggest in Bulgaria (Table 3). Rivers that originate in Bulgaria and flow into the Aegean Sea after passing over the territory of the neighbouring countries include Arda and Tundzha (Tunca in Turkish) that flow into the Martisa river (Evros in Greek and Meriç in Turkish) as well as Struma (Strymonas in Greek) and Mesta (Nestos in Greek) (Fig. 9).

Fig. 9. Map of main rivers in Bulgaria

Legend: The red line shows the border between the Black Sea catchment basin and the Aegean one

Source: Wikipedia

Table 3. The biggest rivers in Bulgaria (data refers to the Bulgarian territory only)

	River	Length (km)	Catchment area (sqm)	Mouth
1	Martisa	321	21084	Aegean sea
2	Struma	290	10797	Aegean Sea
3	Iskar	368	8640	Danube
4	Tundzha	368	7884	Martisa
5	Arda	241	5201	Martisa
6	Mesta	126	2767	Aegean Sea

Source: Geoznanie

What made headlines in Bulgarian and Greek media in late 2024 and the first half of 2025 is the case with the Arda river and the strong political and economic connotation resulting from the management of its water resources. July 9, 2024 saw the end of a 60-year agreement between both countries on the management and use of the Arda river waters. The agreement from 1964 was part of WWII reparations agreement and in line with its provisions Bulgaria provided Greece with 186mln cubic meters of water from May to September each year while Greece had to build a facility similar to a dam to collect water from the Arda River on its territory. This facility has however never been built, which makes Greece continuously dependent on the accumulation, storage, and regulated supply of water volumes by Bulgaria.

The 290-km-long river is a tributary of the Maritsa river and flows into it close to the Turkish town of Edrine right after the Greek-Turkish border and from where it forms the border between Greece and Türkiye almost with no interruptions till its mouth in the Aegean Sea. On Bulgarian territory the river stretches over almost 230km and it accommodates three hydroelectric and irrigation dams/reservoirs (Kardzhali, Studen Kladenets and Ivaylovgrad). On the Greek territory its importance for irrigation is beyond significant both directly (along the Greek section of 60km) and indirectly (after the flow in Marista along the stream to the mouth).

In Bulgaria, the end of the agreement coincided with a prolonged political turbulence taking the shape of seven parliamentary elections within three years. In Greece, the lack of new agreement amid political unpredictability in Bulgaria vocalized the concerns of many Greek farmers from North-Eastern Greece about the availability of an adequate water supply, which resulted in tractor blockades. At the same time, nationalist parties in Bulgaria accused the government of giving away a valuable national resource against inadequate gains. However, since their main public discussions in this period were directed against the Euro adoption in Bulgaria on January 1, 2026 the Arda issue did not gain considerable attention beyond hearings at the National Assembly and sporadic articles in the media. In fact, parliamentary hearings in February 2025 on the negotiation process and its status provided important information on Bulgaria's position. They included statements by the Prime Minister as well as by the Minister of Agriculture and Food and the Minister of Environment and Water. According to the disclosed information, nearly a year before the expiry date of the agreement Bulgaria's government set up an interinstitutional working group under the leadership of the Ministry of Environment and Water. It had to develop a position for a new long-term agreement with Greece. The initial idea was to bind the provision of water by Bulgaria to compensatory payment by Greece. Later on, a more comprehensive approach was initiated that took into consideration the interests of other economic sectors. Thus, because of the new expanded approach, a new interinstitutional working group was established under the stewardship of the Ministry of Finance. As a result, a draft agreement was prepared that suggested an extension of the outgoing agreement for another 60 years. It

included provision of 10% of the water of the Ivaylovgrad dam for irrigation in Greece and the following three commitments:

- payments by Greece if the water of Arda is used outside the time zones that are best and most profitable for the energy generation and electricity system in Bulgaria;
- access by Bulgaria for a period of 60 years to the Alexandroupolis at thea Aegean Sea and the corresponding economic zone;
- construction of a motorway from Alexandroupolis to Ruse, located at the Danube as well as a speed railway connection between Alexandroupolis and the Kapitan Andreev border crossing and from there to Northern Bulgaria and through the towns of Silistra to Romania.

The parliamentary hearing made clear that after the expiry of the agreement in July 2024 the Bulgarian National Electric Company signed a temporary compensation agreement with the Eastern Macedonia and Thrace region in Greece. Bulgaria continued to supply water to Greece until 30 September. It was also agreed that in return Bulgawa received compensatory electricity supplies during the winter period amounting to 49 megawatts of power.

In early May 2025 both countries concluded the negotiations with an agreement on the use of the Arda River waters that was reportedly signed by the Ministries of Foreign Affairs of Bulgaria and Greece. The Ministry of Foreign Affairs of Bulgaria did not disclose the exact contents of the agreement but its main provisions could be obtained from the information system of the Council of Ministers in Bulgaria. It says that on April 30, 2025 the Council of Ministers adopted a decision on approving a draft Joint Declaration between the Government of the Republic of Bulgaria and the Government of the Republic of Greece on the use of the waters of the Arda River:

> *'The two countries confirm that the Republic of Bulgaria's commitment to supply Greece with regulated water from the Arda River for the irrigation of land on Greek territory, as regulated in Article 3, paragraph (b) of the Agreement on the Settlement of Outstanding Financial Issues and the Development of Economic Cooperation between the People's Republic of Bulgaria and the Kingdom of Greece, drawn up in Sofia and signed in Athens on 9 July 1964 [hereinafter referred to as the '1964 Agreement'], as well as in Protocol No 2 thereto, is fulfilled as of 9 July 2024.*
>
> *The Government of the Republic of Greece declares its intention to commence, within a reasonable period of time, the relevant activities for the modernisation of the existing and/or construction of new equaliser(s), thereby ensuring the irrigation needs of Greek territory, with a view to achieving independence in the 'accumulation, storage and regulated supply of water*

volumes' flowing along the Arda River on the territory of the Republic of Greece.

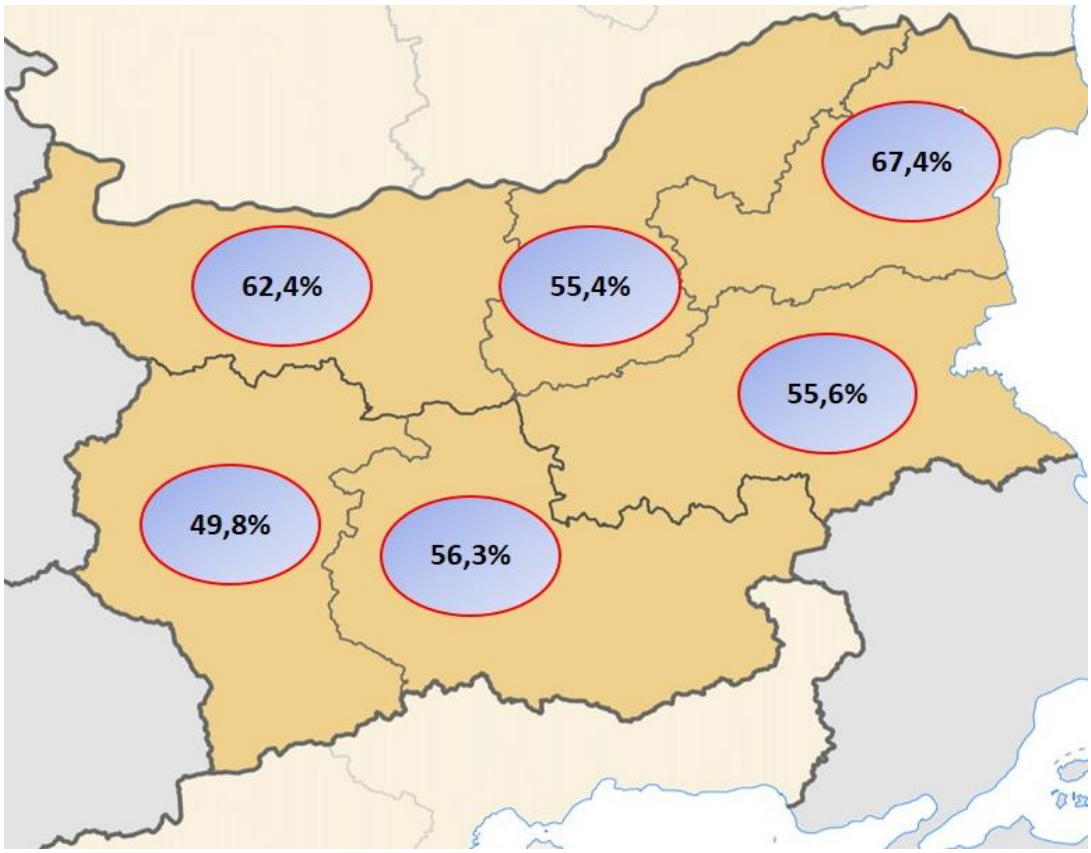
The Government of the Republic of Bulgaria declares its intention to provide the service of 'accumulation, storage and regulated supply of water volumes' from the Arda River through the 'Arda' cascade system, necessary for the irrigation of land on Greek territory, until the modernisation/construction of new equaliser(s) on Greek territory within 5 (five) years of the signing of this Declaration. After this period, the Participants declare their intention to review the provisions of this Joint Declaration.

The Government of the Republic of Greece declares that it will take the necessary steps to ensure the reimbursement of the relevant costs for the service provided by Bulgaria for the 'accumulation, storage and regulated supply of water volumes' from the Arda River.'

This agreement was considered a success for the so-called hydro-diplomacy of Greece but the negotiation stakes will increase with its expiration in 2030. There is another agreement between Bulgaria and Greece that expires in 2030/2031 - the one on the amount of water flowing into Greek territory from the Mesta/Nestos river that was reached in 1995. It says that Greece could use 29% of the capacity of the river. According to experts in Bulgaria, this volume is significantly overutilized through the Thesauros and Platanovrisi dams in the Greek section of the river while Bulgaria has not constructed any hydroelectric and irrigation along the river,

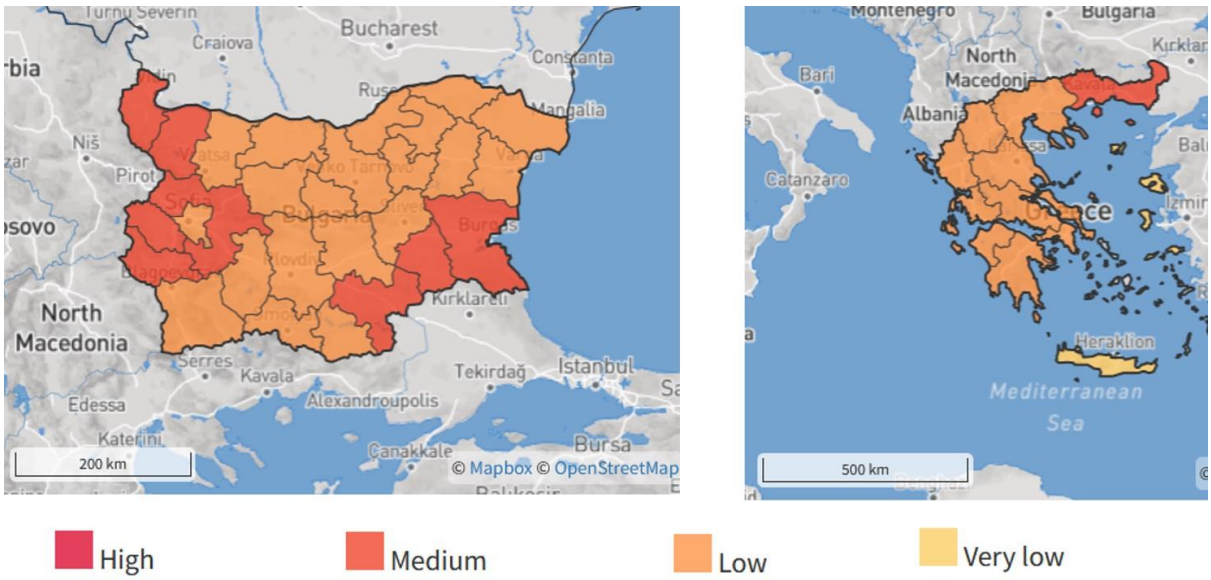
Against this backdrop, each summer an increasing number of settlements across the whole territory of Bulgaria face water use restrictions, while thousands of people are under water rationing. The two main causes are drought and the deteriorated condition of the water supply infrastructure, which results in significant water loss. In 2023 it is estimated at 56,6% on average for Bulgaria with differentiated performance across statistical regions (Fig. 11). In parallel, water scarcity in both South East Bulgaria and North East Greece is increasingly gaining public and scientific attention. For instance, the hazard of water scarcity, measured as a combination of water availability and water demand, is classified as medium in these parts meaning that there is up to a 20% chance droughts will occur in the coming 10 years (Fig. 12).

Fig. 11. Average water loss in Bulgaria by statistical region (NUT 2)



Source: Own calculations based on National Statistical Institute, Bulgaria

Fig. 12. Water scarcity hazard in Bulgaria and Greece



Source: ThinkHazard! developed by the Global Facility for Disaster Reduction and Recovery (GFDRR)

To conclude, the water scarcity issue and the way water resources are managed in Bulgaria bear a significant political capital. It is likely to be exploited domestically in the coming years. The way the Bulgarian governments tackle it is to have an impact on the relations with Greece - an important neighbour and ally within the European Union and NATO. For Greece as a downstream country this means that the water management policy of Bulgaria as an upstream country can directly affect the economic development of energy security of its Eastern Macedonia and Thrace region. The membership of both countries in the EU should be an important precondition for finding mutually beneficial solutions. The legal basis for that is the Water Framework Directive that regulates the integrated water management in transboundary catchments and emphasizes on the need for an effective inter-state cooperation, establishment of common principles and coordination of actions concerning transboundary water issues.

Bulgaria's water connectivity - (recommendations for) the way ahead

Bulgaria's water-related connectivity proves to be a multidimensional and horizontal topic that goes beyond the term of office of a single government. What is more, as the paper shows, this type of connectivity has immediate waterborne aspects related to Bulgaria's location on the Black Sea coast and along the Danube as well as indirect water-related features that encompass the management of transboundary water resources. Based on this, the recommendations for the way ahead for Bulgaria's water connectivity could be summarized in the following three sections:

- Bulgaria's water connectivity over and through the Black Sea:
    - Investments in their modernisation and upgrade of the main Bulgarian Black Sea ports should be considered not solely on economic efficiency but in the light of improving regional transportation resilience as a response to external events that could include environmental shocks or foreign malign interference. EU's and NATO's investments should not be concentrated in a certain location, but rather geographically dispersed among more than one country and/or among several regions. Thus, Bulgaria should advocate for alternative routes and solutions, hence, for greater levels of complementarity, interchangeability and interoperability – features that are to pay off their increased initial costs in the event of any emergency in the future.
    - Bulgaria should position itself more decisively in the Black Sea region and in order to benefit from the new momentum and the new EU approach towards the Black sea.
    - Bulgaria should play a more active role in regional cooperation formats such as BSEC and send coherent messages when connectivity is concerned in order to streamline its involvement in platforms such as the Middle Corridor.

    - Enhancing Bulgaria's water connectivity through the Black Sea is essential also for the completion of Corridor VIII where the country needs 'quick gains' in order to speed up the construction process and demonstrate firm commitments to its foreign partners.
- Bulgaria's water connectivity over and through the Danube:
    - Improving navigability along the Danube as well as modernisation and upgrade of port and hinterland infrastructure should go hand in hand.
    - Bulgaria should address the importance of improving road and rail connectivity over the Danube as an important connectivity enhancer in the wider region - from Greece and Türkiye to the South, to Ukraine and Moldova to the East and last but not least to Slovakia and again Ukraine to the North.
    - It is essential that decision-makers seize the opportunity of an accelerated focus on cross-border connectivity in order to make good use of the funding that will be made available for building/upgrading transport infrastructure in view of the military mobility aspect in the EU and NATO.
- Bulgaria's water connectivity in the light of water scarcity:
    - Addressing domestic water management deficiencies should be prioritized for the sake of improving living standards of the local population but also for the sake of good neighbourly relations in times of constantly increasing global uncertainty.
    - Transparency and public involvement in resolving transboundary water issues could prevent counterproductive nationalistic anti-European rhetoric and pave the way for mutually beneficial agreements.

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