



EFFECTS OF THE INSTITUTIONAL ENVIRONMENT ON THE MARITIME TRANSPORT DEVELOPMENT IN BULGARIA

P. Koralova–Nozharova^{1*}, Sh. Nozharov²

¹Department of Regional and Sector Economy, Economic Research Institute, Bulgarian Academy of Science, Sofia, Bulgaria

²Department of Economics, University of National and World Economy, Sofia, Bulgaria

ABSTRACT

In the last years, the national economies have been subject to sporadic lockdowns, introduction of recurrent regulations for mobility control, supply chain disruptions, liquidation of the economic activity of many sectors. These circumstances have also affected the normal functioning of the transport sector and especially the maritime transport. Dealing with the COVID-19 pandemic and the military conflict in Ukraine, the maritime operators should also meet the requirements of the European green deal, the European emissions trading scheme, digitalizing and maintaining the seafarers' employment in the sector. In the case of Bulgaria, these challenges are very difficult to overcome because of the institutional environment conditions, therefore, their evaluation is of great importance for the development of the subsector.

Key words: institutional environment; maritime transport; effectiveness.

INTRODUCTION

The economic functioning of many industries depends directly or indirectly on the provided transportation services by maritime transport operators. For this reason, the Coronavirus pandemic that has occurred in the last few years, forced most of the economic sectors to restructure their economic activities, including the maritime transport sector. Thus, for example, in the first half of 2020, the cargo turnover of maritime ports, as well as the transported cargoes by ship owners decreased by 3.8% in comparison with the same period of the previous year (1). The transported bulk cargoes (agricultural products, coals, ores) by sea, which counted approximately 43% of the total volumes carried (2), were interrupted because of the governments' restricting measures for docking and departure of vessels at maritime ports; observance of physical distance and quarantine period for the infected workers. These rules had a negative impact on

the transport workers, who directly engaged with the provision of transportation services by sea. Together with the consequences of the COVID-19 pandemic and the military conflict in Ukraine, the development of maritime transport must comply with the requirements for climate neutrality till 2050, set out in the package of measures of the European green deal and the Paris agreement for climate change for limiting the increase of mean global temperature to 1.5⁰ C. The use of alternative fuels (hydrogen, ammonia, e-fuels) for the power supply of maritime vessels is another challenge that the international, European, and national institutions, as well as transport companies, will need to cope with by 2030 and 2050.

In this regard, the purpose of the present paper is to evaluate the institutional environment in which the maritime transport of Bulgaria operates and as a result the existing problems and perspectives for development will be outlined. In accordance with the aforementioned purpose, in the research the following tasks were solved: a review of the European and national policies in the field of maritime transport is made; a comparative

*Correspondence to: *Petya Koralova – Nozharova, Department of Regional and Sector Economy, Economic Research Institute, Bulgarian Academy of Science, Sofia, Bulgaria, p.koralova@iki.bas.bg, 0885016560*

analysis by selected indicators (cargo turnover of maritime ports, level of transportation services digitalization, investment policy of the port operators) amongst member-states from the Baltic, Black Sea, and the Mediterranean region is made; conclusions are drawn and propositions are suggested.

Review of the scientific literature in the field of the institutional framework of maritime transport

The institutional environment for the management and functioning of maritime transport is an issue, which is still not examined in depth and this fact is proven by the small available number of scientific publications in this area. Interesting research in this field is contained in the article of Monios and Ng (3), who pay attention to the introduction of an institutional framework by the government, concerning the relative share of maritime transport in the total volume of greenhouse gas emissions. The authors' 'purpose is to a theoretical framework to be established with guidelines to the relative institutions in relation to the introduction of environmental policy for maritime transport management on the market-based mechanism'. They recommend national governments only to control the port activities which are related to the management of port terminals based on public-private partnerships. In the publication of Benamara, Hoffmann and Youssef (4), the focus is on the role of international, European, and national institutions in achieving sustainable development of maritime transport. The authors outline the problems that need to be solved by the national governments, concerning: the dependence of maritime transport on fossil fuels; the transport connectivity of maritime ports; the shipping waste management and treatment; the vessel recycling.

Already in 2009, Shinohara (5) raised the question of the fundamental paradigm shift of the priorities in maritime transport management and functioning worldwide, so as to achieve economies of scale, to attract more cargo flows to maritime transport, and to increase its energy efficiency. Similar conclusions are also made by a group of authors Ampah, Yusuf, Afrane, Jin and Liu (6), who examined the necessity of introducing a unified strategy for decarbonization of the maritime transport. According to them, the International maritime organization (IMO) needs to work in close cooperation with the shipping and port operators, as well as with the national

governments and scientific institutes in order to encourage the usage of alternative fuels (LNG, methanol, biodiesel, ammonia, hydrogen) by vessels and in the vicinity of ports, for optimization of the vessels speed, for technical changes in the vessels design, etc. The issue, concerning the energy dependence of the economic sectors on fossil fuels is also a main accent in the publication of Dimitrov, N. (7). According to the author's opinion, the introduction of appropriate government policy for energy supply, diversification of the energy mix, encouraging the energy consumption of alternative fuels, are main components of the entire process of achieving energy independence and economic growth of the separate economic sectors, including the transport sector.

As a result of the literature review made, no scientific publications were found to repeat the purpose and tasks of the current study. The identified articles could serve as a basis for expanding and deepening the analysis of the institutional environment of maritime transport in the case of a member-state with a transition economy, such as Bulgaria.

European policies and strategies in the field of maritime transport: overview and key findings

In connection with the requirements for establishment of European maritime space, as early as 2001, the European Commission introduced the concept of "motorways of the sea" (8). Thanks to these motorways of the sea, transport connections are established, which are environmentally friendly, energy-efficient, and cost-effective as an alternative to road transport carriages. In 2020, the European Commission published a report, listing the main priorities, according to which the development of these motorways of the sea to be financially supported (9). These priorities include the achievement of sustainable European maritime space, reliable transport connections amongst maritime ports and the hinterland, smart European maritime transport area. In the document, it is also stated that the future development of the motorways of the sea should be done towards: Firstly, construction of appropriate transport infrastructure for supply of alternative fuels in maritime transport; Secondly, the mass introduction and usage of digital technologies for improving the transshipment facilities productiveness, simplification of the administrative burden,

facilitating data exchange amongst stakeholders. The development of the motorways of the sea will definitely contribute to enhancing the importance of the Bulgarian maritime ports for achieving sustainable development of the national transport system, as well as to increasing the relative share of the short sea shipping at the expense of the road transport carriages.

As a result of the global coronavirus pandemic, as well as of the continuous efforts of the European institutions and national governments to mitigate the climate change consequences, EU has adopted a set of strategic documents and policies for the development of the European transport system. Thus, for example, Directorate General for Transport and Mobility has adopted the Strategic plan 2020-2024 (10). As a supplement to the document, the Directorate introduced at the end of 2020 the Sustainable and smart mobility strategy (11). This strategy clearly outlines the priorities for development of the transport sector of Europe till 2030, 2035 and 2050. In general, the actions that the national governments of the member-states must take, can be summarized in three aspects: *Firstly*, making efforts towards overcoming the transport sector dependency on fossil fuels through usage of alternative fuels such as hydrogen, LNG, renewable energy sources. *Secondly*, reorientation of freight and passenger carriages to environmentally friendly and energy efficient transport modes (increasing the relative share of passenger and freight carriages by railway, inland waterway transport and short sea shipping). *Thirdly*, internalization of the external costs of the transport sector on the “polluter pay” principle through introduction of polluting transport modes to the European emissions trading scheme, as well as adoption of amendments to the mechanisms of infrastructure charges taxation. In this regard, the Bulgarian government should make serious efforts in order to provide funding so as to support the process of decreasing the energy dependence of the maritime transport on fossil fuels. On the other hand, it will be imperative for the government to make serious amendments in the legislation, concerning the introduction and collection of infrastructure charges for maritime transport.

Achieving zero emissions of the vessels and port infrastructure in the maritime transport is also one of the priorities of the UN sustainable development goals (12). The maritime transport

KORALOVA – NOZHAROVA P., et al. is a key factor in the efficient implementation of 8 out of the 17 goals: good health and wellbeing; quality education; gender equality; clean water and sanitation; affordable and clean energy; industry, innovation, and infrastructure; life below water; climate action. In this regard, the IMO concept for establishment of a sustainable maritime transportation system was launched, whose main role is to engage the separate governments of countries in order to take measures for achieving sustainable shipping on an international scale (13). Moreover, the maritime transport contributes to the trade functioning worldwide and it maintains the productivity of other economic subsectors, such as shipbuilding, auxiliary maritime services, tourism, energy.

The issue, concerning the implementation of appropriate environmental policy for reducing the carbon footprint of the transport sector and of the maritime transport, is one of the main priorities of the EU plan for green transition – “Fit for 55” (14). This plan is a set of interconnected legislative intentions for achievement of balanced development of the European economy, regarding its competitiveness, carbon neutrality and fairness. The focus of “Fit for 55” is put over five initiatives: climate; energy and fuels; transport; construction industry; land use and forests. It also indicates the necessity of government policies implementation, through which to achieve balance amongst pricing methods, measures for business and households support for reaching zero emissions.

The use of renewable and low-carbon energy resources in the energy mix of maritime transport needs to be between 6% and 9% in 2030 and 86% and 88% in 2050, respectively (15). Till present, the maritime freight carriages rely entirely on fossil fuels, as the usage of LNG by vessels is hardly 3% of the energy mix. The contribution of the maritime transport for achieving climate neutral economy of EU is expressed in increasing the relative share of low-carbon fuel resources in its energy mix.

The implementation of such policies by the Bulgarian government will complicate the process of costs allocation in the state budget because the modernization of the maritime ports and fleet of vessels is a resource-intensive process, especially when the transport infrastructure is a state-owned asset and the

return on investments will bring to the necessary result after a long period of time.

The Fuel EU Maritime Directive contains a description of the mechanisms through which the external costs of maritime transportation activities could be internalized: either by implementing the market-based mechanism “cap and trade” which is the basis for functioning of the European Emissions Trading Scheme or, by introducing a tax burden, fixed on the external costs level (16). The directive also proposes the establishment of onshore power supply stations relying on clean fuels with low or zero carbon content. According to the provisions of the directive, till 31.08.2024 all shipping companies, whose vessels sail under the flag of an EU member-state should prepare monitoring reports for both energy consumption of ships and volume of greenhouse gas emissions. Based on these reports, each single ship will receive a certificate of compliance, valid for 18 months. To a certain extent, the Bulgarian Ports Infrastructure Company is ready to meet the requirements for construction of onshore power supply stations as financial resources for their funding will be provided through both the Operational Programme “Transport connectivity 2021-2027” and the National Recovery and Resilience Plan. On the other hand, the preparation of monitoring reports about the energy consumption of the Bulgarian fleet operators will lead to a significant increase of the sum of ship owners’ operation costs in order to achieve energy efficiency of the transportation services.

National regulations and strategies for the functioning of the maritime transport of Bulgaria

Now, the only up-to-date strategic document, in which measures for development of the maritime transport of the country are proposed, is the Integrated transport strategy for the period till 2030 (17). In the document, an extensive analysis of the indicators is made, characterizing the maritime freight carriages till 2015, and detailed technical information about the maritime ports of the country is presented. Key place in the analysis is devoted to the construction of intermodal terminals in the vicinity of the ports of Varna, Rousse and Burgas, through which it is intended to create an efficient transport link with the ports of Constanta (Romania), Istanbul (Turkey) and the capital Sofia.

In July 2022, the National action plan for development of intermodal transport in the Republic of Bulgaria till 2030 was adopted (18). In this plan, the technical status quo of the transport network of the country was studied, and the opportunities for carrying out intermodal transportation services with maritime, inland waterway, railway, and air transport were evaluated. This action plan has the purpose to contribute to the implementation of the priorities of both the European green deal and the Sustainable and smart mobility strategy. The plan, like the Integrated transport strategy, envisages implementation of projects related to the construction of intermodal terminals at the ports of Varna, Rousse and Burgas, which cover the transport infrastructure, located on the trans-European transport corridors of the core and comprehensive network. It is noteworthy that the proposed set of measures absolutely coincides with the recommendations for future development of the transport sector in the Integrated transport strategy till 2030, which was approved and adopted by the Ministry of transport and communication of the Republic of Bulgaria in 2017. This fact suggests that 5 years after enforcing the strategy, the effects of the actions proposed for development of both the national transport system and the separate transport modes have not been evaluated. Moreover, the same set of measures are also recommended as key priorities for the development of intermodal transportation services in the adopted National plan in 2022. Consequently, for a period of 5 years, no progress has been reported for the development of the national transport system and the received funding through the Operational programme “Transport and transport infrastructure 2014-2020” and the Connecting Europe Facility have either not been properly absorbed or have not been spent efficiently in order the desired result to be achieved.

Within the framework of the new programming period (2021-2027) the Operational programme “Transport connectivity 2021-2027” is scheduled to enter into force (19). Through this programme, it is planned to construct appropriate port facilities for provision of alternative fuels in the vicinity of the Bulgarian maritime ports with national importance. The maritime transport is mentioned in the list of recommendations for development of the intermodal transportation services and, in particular, for the “development of a sustainable, climate neutral, smart, safe and

reliable TEN-T network”. The construction of a new quay at the port of Varna is planned, as well as investments in the construction of infrastructure facilities for alternative fuels provision.

Another important document, which is directly related to the development of the maritime transport is the National Recovery and Resilience Plan of the Republic of Bulgaria, whose main purpose is to be implemented a set of national legislation amendments in all economic sectors of the country (20). Having in mind the essence of the planned reforms in the transport sector, the maritime transport is only mentioned in section “Transport strategic framework update”, indicating the necessity of developing the quality of the transport infrastructure and of increasing the relative share of the renewable energy resources in the energy mix of the sector.

The issue, concerning the increase of the renewable energy resources share in the energy mix of the transport sector, is included in the National framework for development of the

market with regards to the alternative fuels in the transport sector and deployment of the relevant infrastructure (21). In this framework, it is planned to construct onshore power supply stations, as well as facilities for LNG storage. In accordance with the regulations of this framework, it is imperative along the trans-European transport corridors, passing through the territory of the country, to deploy the LNG charging stations. There is also an idea for a hydrogen shipping line to be constructed amongst the ports of Constanta, Varna, Burgas and Istanbul in the Black Sea region.

In order to present a more complete picture of the status quo of the institutional environment and its impact on the development of the maritime transport in Bulgaria, a comparative analysis will be made, based on certain indicators (cargo turnover of ports, digitalization of the services provided and investment activities) characterizing the status quo of the maritime transport of Romania, Estonia, Greece and Bulgaria – member-states, located in the area of the Black Sea, Baltic Sea and the Mediterranean.

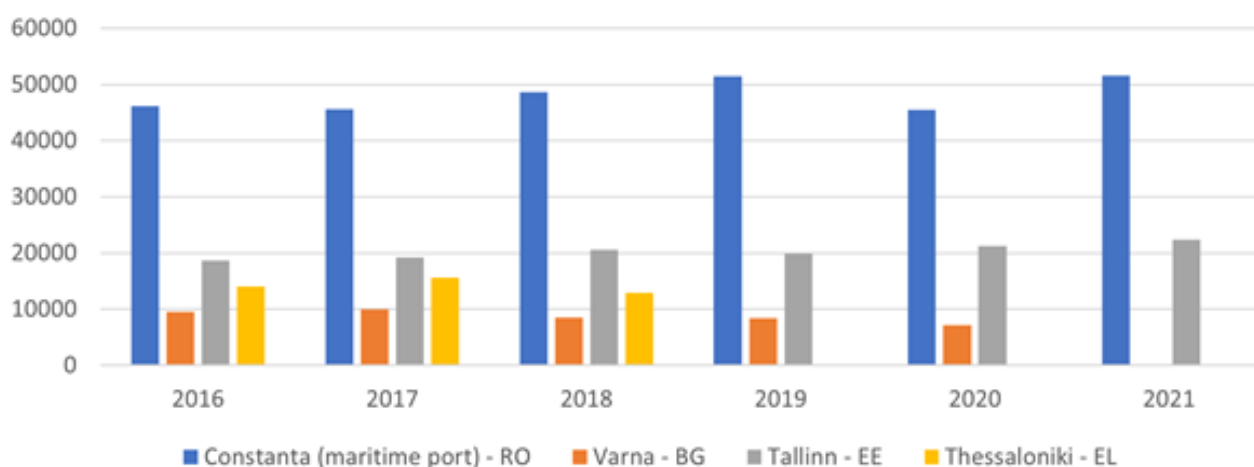


Figure 1. Cargo turnover of maritime ports, located in EU member states (thousand of tonnes)

Source: Annual reports of port of Thessaloniki, port of Constanta, port of Tallinn and port of Varna for the period 2016-2021 and conclusions of the authors

As can be seen in **Figure 1**, the largest volume of cargo turnover is realized by port of Constanta – approximately 48 million tons per annum. The cargos transshipped by the Bulgarian port of Varna are 6 times less, compared to those of port of Constanta – 8.7 million tons average per year. The ports of Tallinn and Thessaloniki have an annual cargo turnover of 20 million tons and 14 million tons, respectively. The observed trend is for increase of the cargo volumes of port of Constanta (c 3%) and port of Tallinn (12%) in 2021 compared to 2019, while in port of Varna a drop

of 15% is realized for the same period. What is typical for the ports of Tallinn, Constanta and Thessaloniki is that most of the port terminals for transshipment and storage of bulk, liquid, general, Ro-Ro cargos and containers are exploited on public-private partnerships, while in Bulgaria only 20% (22) of the port terminals are managed and exploited under concessions. On the other side, port of Tallinn is a key infrastructure site for liner shipping services and Ro-Ro carriages in the Baltic Sea region, and between the port of Constanta and the Black Sea ports, where from Middle east liner

container shipping services are carried. All these circumstances affect the opportunities of shipping companies and port authorities in

these member states to attract transit and liner cargo flows, as well as for the provision of intermodal transportation services.

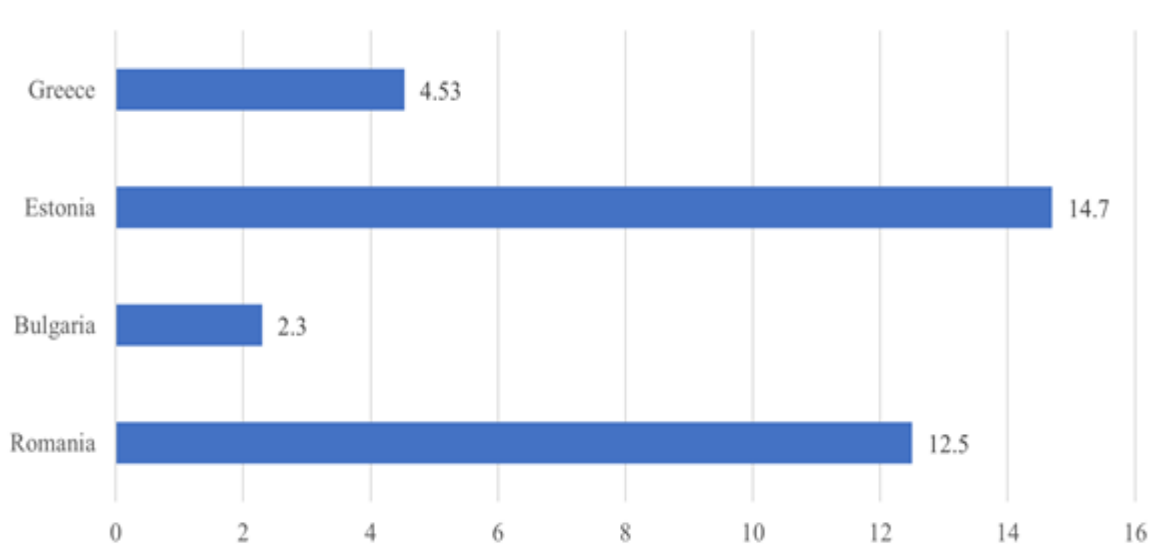


Figure 2 Investments in port infrastructure development for 2021 (mln. euro)

Source: Annual reports of port of Thessaloniki, port of Constanta, port of Tallinn and port of Varna for the period 2016-2021 and conclusions of the authors

The data in **Figure 2** show that most financial resources for development of the port infrastructure are allocated in Estonia – for 2021 their value for modernization of port of Tallinn is 14.7 million euro, which are entirely own funds of the port operator. At port of Constanta, for example, 12.5 million euro are earmarked for maintenance of the technical and economic status quo of the port terminals and 44% of these financial resources are own funds of the port operator, 42% of them are grants from the Connecting Europe Facility and 12% come from budget allocation. Most of these funds are intended for construction of onshore power supply stations for vessels, as well as for modernization of the transshipment facilities. Bulgaria ranks occupies the last place in the analyzed indicator and the allocated financial resources for development of the status quo of port of Varna are a little over 2 million Euro, 8.3% of which from own resources of the state port operator. Some of the reasons for this are: Firstly, the partnerships between public and private initiatives are not well developed. Secondly, the long administrative procedures for concession of the port terminals hinder its future development. Thirdly, the uncertain and unfavorable economic environment in the country, as well as the insecure political

conditions, related with recurrent government elections and unstable parliaments in Bulgaria in the last two years have impact on the investment decisions of foreign investors.

The process of digital technologies implementation in the separate economic sectors (including the maritime transport sector) is best developed in Estonia, as for 2021 the index has the value of 10.4 (**Figure 3**). On the second place is ranked Greece – 7.13, and on last place after Romania, ranks Bulgaria – 5.12. The deployment of information and communication technologies in the provision of both maritime freight carriages and transshipment and marine technical services at ports is essential for establishment of the so called “smart ports”. Moreover, the digitalization of the main activities at ports is important for the increase of both the productiveness of the transshipment facilities and for reducing the handling time of vessels and the administrative burden. In this regard, the national governments will need to allocate more financial resources from their budgets towards deployment of digital technologies to the port activities.

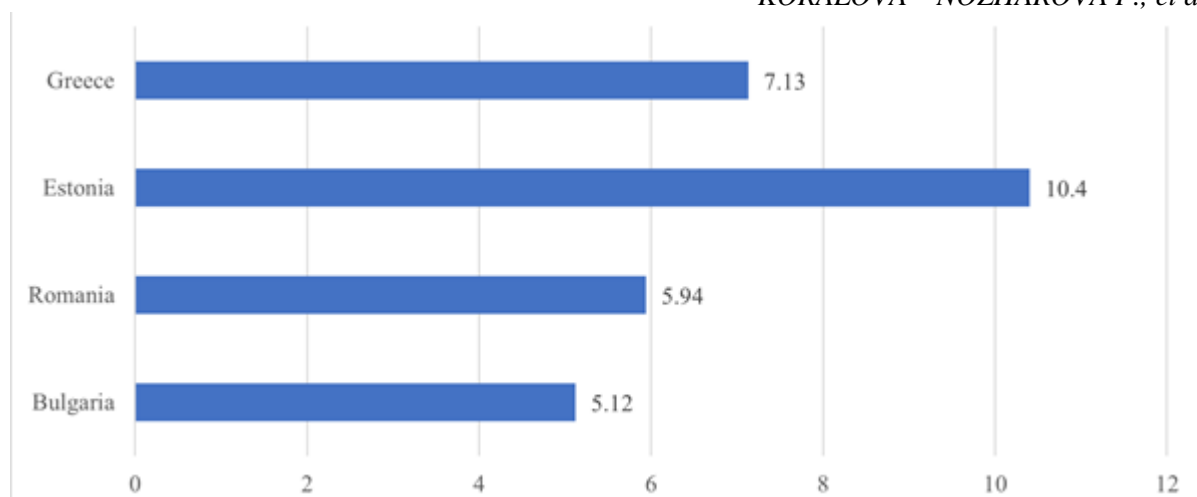


Figure 3. Index of integration of digital technologies by member-states for 2021

Source: DESI by components, European Commission, <https://digital-strategy.ec.europa.eu/en/policies/desi>

CONCLUSION

The assessment of the efficiency of the institutional environment for functioning and management of the maritime transport globally is an issue that is still a subject of discussions. Till that moment, there are disagreements amongst the International Maritime Organization and the EU institutions, regarding the pros and cons of the inclusion of maritime transport in the European Emissions Trading Scheme, the internalization of the external costs of the transport sector and the overall introduction of alternative fuels in passenger and freight carriages. This problem still remains unsolved in the member-states with transition economies, such as Bulgaria. Moreover, it deepens, as:

Firstly, the adopted strategic framework for development of the national transport system, including the maritime transport is not working properly, because in a period of 5 years, the national government implements policies for development of the sector, whose priorities repeat the propositions stated in previous strategic documents and do not evaluate the effects of their implementation.

Secondly, in most of the national regulations for functioning of the maritime transport till 2030 and 2050, concrete and clear measures for achieving the goals of the European green deal, “Fit for 55” and the UN sustainable development goals are missing.

Thirdly, the Bulgarian maritime ports have cargo turnover of 6 times lower than those of neighboring countries such as Romania. Hardly 20% of the Bulgarian port terminals are exploited under concessions, while ports in member-states such as Estonia, Romania and Greece are exploited through public-private partnerships. The benefits of applying public-private partnerships in the process of management and exploitation of port terminals is also confirmed by the sum of the investments spent for

modernization, digitalization, and energy efficiency of the terminals – in Bulgaria the sum of these investments is 6 times lower than those in Estonian ports, 5 times lower than those in Romanian ports and 2 times lower than in the ports of Greece.

In this regard, the adopted strategic documents and policies in Bulgaria, concerning the development of the maritime transport, should be periodically amended in relation with the implemented regulations and directives by IMO and EU institutions, bearing in mind that Bulgaria is a member of IMO since 1960 and an EU member-state since 2007. Obviously, not only the long bureaucratic procedures, but also the unfavorable political environment and frequent change of governments in Bulgaria, slows down the concession processes of port terminals, which fact leads to a decrease in the attractiveness of the maritime transport both for the national and foreign investors and consignors.

The adoption of an updated strategy for development of the port infrastructure of the country with a horizon of action till 2030 and 2050 is also imperative (the last implemented strategy was with time of action till 2015).

The government of the country needs to focus its efforts to actively participate in the Three seas Initiative and to take advantage of the opportunities it provides for exchange of good practices with member-states located in the Baltic, Adriatic and Black Sea region for management and development of port infrastructure (23).

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