

THE ROLE OF LOGISTICS IN THE IMPLEMENTATION OF THE INTERMODAL TRANSPORT STRATEGY IN ROMANIA. STRATEGIES FOR DOBROGEA REGION, TRANSPORT AND STORAGE OF LNG

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Abstract:

Dobrogea, the two counties, Constanta and Tulcea, can become a real "engine" of intermodal transport development in Romania. Most analyzes in this regard concerned only Constanta county and especially the port of Constanta, but the region's potential is much greater and must be analyzed carefully, and in this analysis should be made a number of conclusions and strategies that contribute to the development of logistics and intermodal transport. In this work it is analyzed the situation of liquefied natural gas.

Key words: *logistics, transport, gas, strategies, development.*

JEL Classification: E61, R11.

1. Introduction

In 2011, the Ministry of Transport and Infrastructure was established a "Working Group", which aimed to preparation and presentation intermodal transport strategy for a period of 8 years, until 2020 (MT 2010). The document prepared had a "New approach", which should "be based on three interconnected elements without which intermodal transport alone can't be effective" (MTI 2011). In the document were mentioned:

- Intermodal transport terminals.
- Logistics and transport logistics centers.
- Industrial platforms.

But there are no details regarding these items. The document recognizes that "Overall organization of national transport network transport matter for the Minister of Transport, the authority in the field. Freight Logistics, which is one of the drivers of European competitiveness focuses on the planning, organization, management, control and execution of freight transport operations in the supply chain" (MTI 2011). But the document is silent about how the logistics will become "an engine for European competitiveness". Further in the document drawn up by the "Working Group" refers to the fact that "an integrated transport policy must take into account that intermodal transport is an extension of the work of industrial production (production and distribution). This activity is based on efficient logistics chains to organize the transport of raw materials and finished products" (MTI 2011). Introduce integrated policies but are not likely to lead to achieving this. The document also refers to the internationally situation, that "the globalization of trade has resulted in the supply and distribution chains longer and more complex, which resulted in a significant increase in transport intensity across the planet". Do not show any detail, there are general ideas that just present a situation.

Further recognized the role of logistics involved in transporting, specific logistics services, involving certain costs, with a share of the final price of the finished product. The document appreciates at that time (2011) that "The current global logistics industry is estimated at about 5,400 billion or 13.8% of global GDP. On average, logistics costs represent 10-15% of the final cost of the finished product. According to estimates, the share of the logistics industry in Romania is 9.7% of GDP, which is approximately 50% lower than the average in Europe (around 14% of GDP)". The end of the document are

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made several findings and conclusions related to the fact that "the industrial sector (manufacturing, assembly) and the sector of logistics activities in Romania can benefit from the development of new logistics corridors in the Central and Eastern Europe because 70% of total containerized cargo coming to Europe originate in the east of the Suez Canal; only 10% of goods destined for Central and Eastern Europe region directly into the (remaining reach the Western Europe region detour); Central and Eastern European market offers a significant increase in sales and has a workforce of quality at relatively low cost". These findings remained only at this stage in the 2012-2016 period, has not changed anything, did not start any strategic project did not start anything that contributes to the economic development of Dobrogea region, Figure no 1.



Figure no 1. Dobrogea region, shaded area shown.

Source: google.map.

Declarative and strategic objectives, we are very well, that policy makers in the Ministry of Economy have established guidelines "*that will underpin the revision of Romania's energy strategy*" (ME 2010). These concerns: energy security, energy efficiency and environmental protection, increase competitiveness, encourage investment, helping consumers of energy, renewable energy, transformation Romania into a regional energy power pole.

The project envisaged by the Ministry of Economy, in the energy security, has the following aspects:

- Diversification of supply sources and routes.
- Limiting dependency on imported energy supply.
- Ensure security of critical energy infrastructure, including storage capacities, including nuclear facilities.
- Promoting investment to increase the capacity of electricity production.
- Promoting cross-border and regional projects to ensure access to energy resources diversification of raw materials, mainly oil and gas.
- Encouraging investment for the discovery of new hydrocarbon reserves.
- Increasing the replacement of existing reserves.
- Development of power equipment manufacturing industry.
- Promoting programs to increase the performance capabilities of underground storage of natural gas.

I believe that these ideas are valuable, but have not yet been put in real place, no have deadlines and responsibilities for their achievement.

2.Transport and storage of LNG

To understand the situation of Romania and especially the region Dobrogea is necessary, first of all, knowledge of the situation in Europe, transport and storage of LNG (LNG = liquefied natural gas).

a).LNG transport situation in Europe and the European Union's energy policy. Energy has been part of the beginning process of European integration. Treaty on the "European Coal and Steel Community" in 1951 and "Euratom Treaty" establishing a European Community of Atomic Energy in 1957, focused on the two most important energy sources, coal and nuclear energy (EU 2016). While economic development has led to an increased use of oil, gas and electricity. What brought maintain energy problems, leading to policy of the European Community. Hence resulted a number of policies related to the creation of the single European energy market. On completion of the Lisbon Treaty, in 2007, it was created a legal basis for energy.

The European Union has received a number of skills in the field of energy that have divided the Member States of the Union. Article 194 of the Treaty on European Union states that "in the context of the establishment and functioning of the internal market and against the need to preserve and improve the environment, Union policy on energy aims, in a spirit of solidarity between Member States should ensure the functioning of the energy market; ensure security of energy supply in the Union; promote energy efficiency and energy saving; development of new energy sources and renewable energy" (TEU 2007).

This article also states that "the necessary measures to achieve these three objectives (competitiveness, sustainability and security of energy supply), not affect the right of a Member State to determine the conditions for exploiting its energy resources, its choice different energy sources and the general structure of its energy supply". Since September 2011 the European Union internationalized energy policy, adopting the Communication on "Security of energy supply and international cooperation". Based on this communication, on 24 November 2011, the Energy Council conclusions were adopted. This external dimension of EU energy policy was "a natural extension of intra-EU coordination, the indispensable necessity to strengthen the EU's profile in relations with external partners".

With the discovery of new reserves of unconventional gas in various EU countries, it has started a process of evaluating the effects of exploitation of resources, the environment, human and natural habitats. As a result of those assessments on 22 January 2014, the European Commission launched Recommendation 2014/70 / EU on "Principles minimum exploration and production of hydrocarbons using hydraulic fracturing", which was accompanied by a Communication on "Exploration and production of hydrocarbons the use of hydraulic fracturing", (EUC 2014).

They were also organized a number of European Councils, with energy issues, several times: in February 2011, May 2013, March 2014, June 2014, October 2014, December 2014, March 2015. On February 25, 2015 Commission launched the Communication on "Energy Union" has been presented a "vision for the future of the European energy system and the steps necessary to achieve it".

The "Energy Union" is based on three objectives of the Union energy policy and focuses on five mutually reinforcing dimensions:

- Energy security, solidarity and trust.
- The internal energy market.
- Energy efficiency seen as a contribution to moderating energy demand.

- The decarbonisation of the economy.
- Research, innovation and competitiveness.

For this purpose aims: completing the internal energy market integration; strengthening the coordination of national policies; removing market barriers and energy isolation; lowering energy costs for consumers; upgrading infrastructure and attracting investments in the energy sector with a focus on innovative technologies and green energy production capacity. The action plan annexed to the framework strategy has a number of specific measures will be prepared and implemented in the future. The action plan will be monitored and reviewed regularly to respond to changing challenges and new elements appear. On 18 November 2015 the European Commission launched the first report on "State of the Union Energy" evaluating "its progress in building an Energy Union and stresses the areas which require further attention in the coming period". In this document were reviewed progresses since the publication of the Commission Communication on "Energy Union" and identified "key issues" that require specific policy attention in 2016. In the Communication presents the comparative Union, the five dimensions of "Energy Union". This was accompanied by the following official documents, (EUCo 2015):

- Revised roadmap of the Energy Union.
- Guidance on the implementation of plans on energy and climate change.
- Records of the country.
- The methodological approach of the framework strategy of the Union Energy and analysis of its key indicators.
- The list of projects of common interest.
- Proposal for a Regulation on "European statistics on the prices of gas and electricity".
- Reports of progress on climate action and respectively efficiency.
- Implementation Report's rate strategy for energy security.
- Trends in energy consumption for the period 2010-2015.
- Report on the implementation of the Directive on nuclear safety.
- Evaluation of emergency stocks in the oil sector in the EU.

The European Council meeting of 17-18 December 2015 EU leaders reviewed the progress made in implementing the strategy on "Energy Union" and set guidelines regarding the measures to be taken. In this regard the European Council requested the following:

- The rapid advance of the relevant legislative proposals in line with its previously stated guidance.
- Full implementation of the legislation on renewable energy, energy efficiency and other measures such as improving the opportunities for investment in order to meet the 2020 target.
- Develop an integrated strategy aimed at research, innovation and competitiveness.
- Early implementation of projects of common interest and optimal use of infrastructure for the benefit of a fully functional and interconnected and energy security, noting that any new infrastructure should respect fully the third energy package and other applicable EU legislation and objectives "Energy Union".

In 2016, the Commission continued to act in the "Roadmap" of Strategy Framework in the "Energy Union" as the launch of new legislative proposals and revising existing ones. In this regard, on 16 February 2016, the Commission adopted the package on energy security. The package aims to:

- The legislative proposal for revision of Regulation 994/2010 on "Security of supply of gas".

-The legislative proposal of revision of the Decision on "Transparency of intergovernmental agreements concluded by Member States with third countries on energy".

-E.U. strategy for the LNG and storage.

b).LNG transport and storage situation in Romania. Romania is directly interested in supporting strategy of the "Energy Union" and implementation actions. Therefore the makers of the Ministry of Energy, have the powers and tracking European Commission's legislative initiatives in this area. Ministry of Energy is the first public institution of state, who must be involved in the negotiation process at European level. Romania is important for cuddly "*energy security dimension of this strategy framework*" having regard to the fact that any new initiative to influence the paradigm of energy security in the EU Framework must be developed in close cooperation with the European Commission and each Member State must fulfill its obligations in the transposition and application of the law U.E.

Also, Romania is interested in the topic of the "Energy Union" to be "approached regularly at European Council level, to continue the dialogue with the Commission in the next stages of setup" Energy Union "and its associated governance system" (ME 2016). In this context Europe, Romania is interested in the project "AGRI" (acronym for "Azerbaijan-Georgia-Romania-Hungary"). This project can become in the coming years "an important tool for ensuring energy security of the European Union in the long term, which shall correspond to double diversifying both sources of supply as well as transit routes". The "AGRI" is the first LNG project to be developed in the Black Sea area, aimed at transporting natural gas from the Caspian region to Europe.

The aim of this project is to "provide an opportunity reliable supply and import diversification; to reduce dependence on a single supplier, through diversification of supply sources and channels of delivery", (ME 2010). This project aims to create a "southern gas corridor", designed as a direct link between Europe and the largest natural gas deposit in the world, from Azerbaijan. It was designed to have an important role in achieving the objectives of the European strategy to ensure competitiveness and security of gas supply. Interconnector Azerbaijan-Georgia-Romania-Hungary (AGRI) was conceived as "an integral part of the Southern Corridor, ensuring the shortest direct route for Caspian gas to the European market", (ME 2010).

In the project was conceived the Azerbaijan gas transportation through pipelines pine Georgia, where it must be liquefied and transferred to a port specialized terminal and after this will loaded corporate ships. Gas is transported by vessels on the Black Sea to a regasification terminal, which will be built on the shores of the Romanian Black Sea. Then gas will be pumped through the Romanian transport natural gas system to Hungary, via the Interconnector between Romania and Hungary, which will be conducted between Arad and Szeged and will then be transported to other European countries. It also envisages the transport on Danube-Black Sea Canal and then on the Danube to the Central European countries.

This will require the construction of several LNG river terminals, which will be connected with pipeline transport systems by rail or road tanker, to their final destinations. In this context, infrastructure in Romania is considered an "infrastructure component of U.E., which should have an important role: providing a European transport system safe". For our country this infrastructure should contribute to improving cross-border transport to offering viable solutions to the market. Romania has a special position in the international transport system in Central and Eastern Europe. There is the possibility of interconnection National Gas Transmission System, with West-European system and gas resources from the Caspian and Middle East.

But Romania is behind in achieving investment. It must therefore be prepared investment projects:

- Geological research for discovery of new reserves of oil and gas on land and on the Black Sea.

- Development of underground storage capacity for natural gas.

- Increasing transport capacity and safety in operation of transmission pipelines.

- Creation of new sea and river terminals.

- National Transmission System interconnects with their counterparts in neighboring countries.

- Rehabilitation of gas distribution.

- Increasing measures to prevent pollution and protect the environment.

Greater involvement can have a National Company "Maritime Ports Administration" from Constanta, who may decide to where they can be placed LNG terminal, (MPA 2016). In this regard they were held a series of discussions and negotiations with consulting firm, finally offered three possible technical variants terminal site. It took into account the technical achievement, safety conditions and operating the terminal, but had no regard for the conditions imposed logistics and multimodal transport, even if technically you can make connections to existing infrastructure. Another important aspect is that of obtaining financing from European funds, after feasibility study. Also have understood the situation of countries in the region, seeking to secure their energy as necessary and in particular natural gas. In this regard it should be considered especially in relation with Bulgaria, which in Russian is building an LNG terminal for 1,000 cubic meters. Building a terminal on the waterfront will lead to increased interest in natural gas for other countries from the Central and Eastern Europe.

3.Investment in the LNG port terminals

Arranging a port terminal, its equipment and its operation conditions must begin with ensuring operational safety and employment, protect personnel and the environment. LNG port terminals must be designed and then made in accordance with international regulations, quality standards and environmental protection, to allow an investment in this area. In this regard it should be avoided construction and operation of a port terminal in the port area crowded areas with traffic of ships and land intensively in passenger traffic areas. It must be complied with statutory safety clearances, between economic goals and port. Black Sea LNG terminals can be achieved in the next ports: Midia, figure 2.a, Constanta, figure 3.a (MPA 2016), and Mangalia, figure 4.a.



Figure no 2.a. "Midia" Port.



Figure no 2.b. The area proposed for the terminal.



Figure no 3.a. "Constanta" Port.



Figure no 3.b. The area proposed in Constanta-South.



Figure no 4.a. "Mangalia" commercial port.

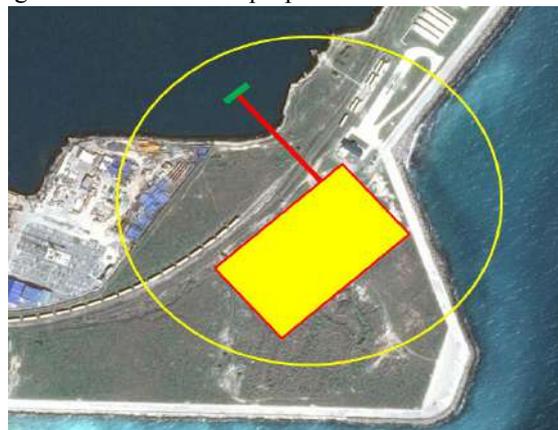


Figure no 4.b. The area proposed for the terminal.

Sources: author studies and google.map.

Following situation of the three Romanian ports as a point of view logistic analysis, you may notice the following advantages and disadvantages, table no 1. They can help decision makers understand the easier aspects of investing in terminals, the legal situation of possible places in the harbor area and especially areas with existing infrastructure connections.

Places where they can be placed terminals in three ports are: in the south part of Midia port, Figure no 2.b; in the Constanta port, Figure no 3.b: the first area to berth 68 of the "Oil Terminal" company, at the berth 85 and in the south of the port, near the Black Sea-Danube Canal; in the port of Mangalia, Figure no 4.b, in south-east area of the port.

TABLE NO 1. ROMANIAN PORTS SITUATION ANALYSIS ON THE POSSIBILITY OF BUILDING THE LNG TERMINAL.

PORTS	ADVANTAGES	WEAKNESSES	IMPLICATION ON THE DOBROGEA REGION
1. Midia	<ul style="list-style-type: none"> -Unused port areas. -The average depth for ships in port access. -Access to Midia-Navodari Canal - Gate White River Danube. -Electrified railway up to Constanta. -Relatively easy access to the motorway. 	<ul style="list-style-type: none"> -Small number of companies operating in the port. -Investing in terminal. -Dredging area surrounding the port. -Lack of Marketing study on potential customers. -Negative political influences. 	<ul style="list-style-type: none"> -Increasing the number of jobs for the city of Navodari. -Relatively high wages. -Increased revenues collected to the local budget Navodari.

PORTS	ADVANTAGES	WEAKNESSES	IMPLICATION ON THE DOBROGEA REGION
2. Constanta	<ul style="list-style-type: none"> -Large unused port area. -Great depths for large draft ships. -Direct access to the Danube-Black Sea Canal and the Danube River. Electrified railway, which starts right from the port. - Constanta-Bucharest motorway, ending in the southern port. -Specialized terminal for liquid petroleum products (Oil Terminal SA) (9). -The direct involvement of the National Company "Maritime Ports Administrator" Constanta, which can directly access European funds for investment. 	<ul style="list-style-type: none"> -Port areas assigned by long-term concession to private companies that do not have object of natural gas. -Port congestion. -Navigation hazards during maneuvers in port. -Investing in terminal. -Higher risks in case of explosion, in the proposed area at Oil Terminal berths. -Lack of Marketing study on potential customers. -Negative political influences. 	<ul style="list-style-type: none"> -Increasing the number of jobs. -Relatively high wages. -Increased local budget revenues collected from Constanta. -Constanta port entry on the list of ports that modern LNG terminal, which could attract new investment.
3. Mangalia	<ul style="list-style-type: none"> -Unused port areas. -The average depth for ships in port access. -Direct access to the electrified rail. -Access to European highway 87 and highway from Agigea. -Opportunity to broaden the sales market, the Dobrich region of Bulgaria, on the road or pipeline. -Ability to attract business companies from Bulgaria. 	<ul style="list-style-type: none"> -Small number of companies operating in the port. -Investing in terminal. -Dredging area surrounding the port. -Lack of Marketing study on potential customers. -Negative political influences. 	<ul style="list-style-type: none"> Increasing the number of jobs for the city of Mangalia, a city that has no industry outside the shipyard "Daewoo". Relatively high wages. Increased local budget revenues collected from Mangalia. Economic development of the south in the region easy access to gas to households and companies.

Source: author study.

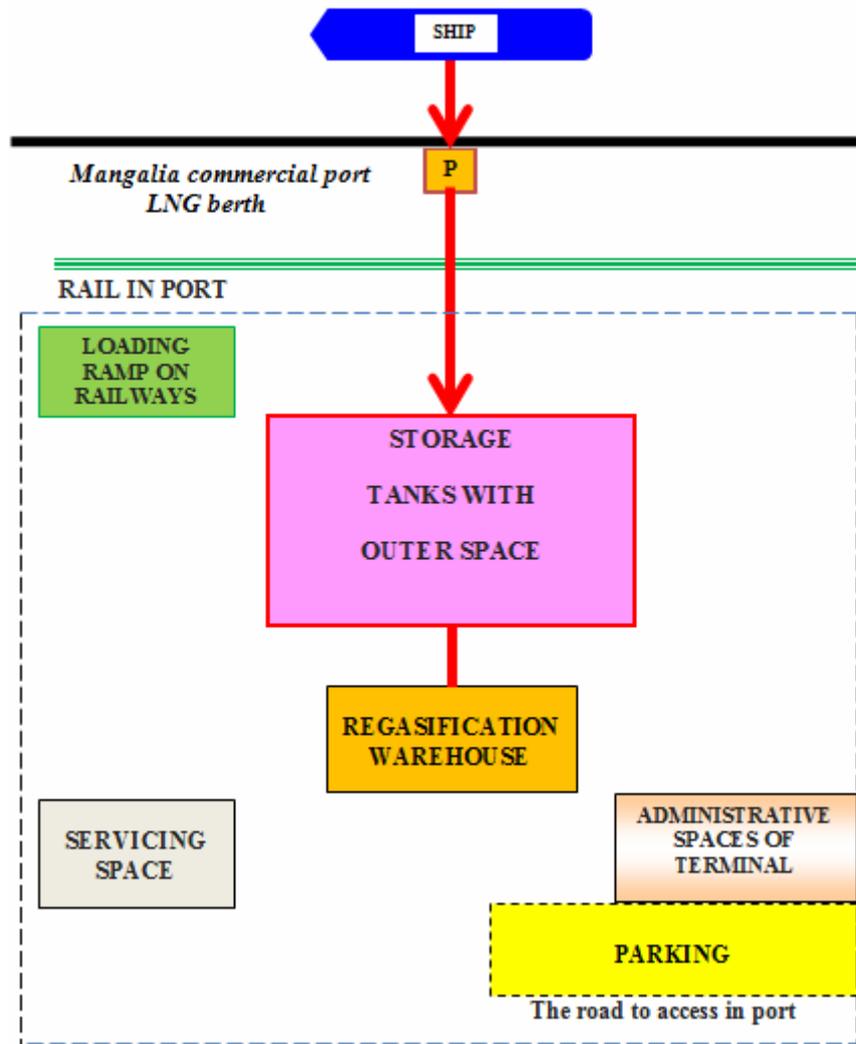


Figure no 5. Scheme of the LNG terminal.
Source: author study.

Scheme layout logistics facilities LNG terminal as a model for the commercial port Mangalia is shown in figure no 5. The establishment of the logistics of a specialized LNG berths, facilities and utilities are included the following:

- Moll ship mooring;
- Bridging facility download;
- Installation of pumps (P);
- Storage space for outdoor tanks;
- Storage regasification;
- Spaces for maintenance;
- Administrative spaces;
- Track access ramp;
- Parking and the road to access the port;
- Piping systems and plant protection;
- The ship.

In the LNG terminal is organized and conducted logistic flows following:

- Receiving Ship berth (mooring pier).
- Download Ship.
- Receiving port storage of goods by pipeline.
- Storage and storage of goods in containers.

- Charging railway tanks and tankers.
- The transfer of liquefied natural gas by pipeline.

Conclusions

Energy policy of a country and a region mainly depend on infrastructure development, economic competitiveness and market area. Logistics in overall performance has been neglected by policy makers in political and economic fields in Romania, major investments being made by foreign investors. But the foreign investors not interests in the development of regions or infrastructure, usually they want to find ready-made infrastructure and focus only on their economic objectives. What is right in terms of international business. Implementing a strategy of intermodal transport in our country must take into account the potential and economic resources of Dobrogea. Strategies for this region cannot be achieved only on the basis of which currently exist in this part of the country. Dobrogea must be seen as a real "engine" of the economy, the country's eastern gate. Investment in terminals, warehouses, transport in pipelines and LNG is an opportunity that should not be missed in the current stage of development of the country, in the current geopolitical context of the Black Sea.

For this region, which is among the last in the country, which was introduced for gas, pipeline transportation, population and industry is very important to achieve this LNG terminal. A cheap gas can stimulate household consumption for heating, eliminates the use of heavy fuel oils, which is much more polluting and most importantly, can help jump-start the industry in the two counties, Constanta and Tulcea. Another important area interested in cheap gas, it is agriculture and especially vegetable greenhouses, faced with the problem of heating greenhouses expensive agent. In order to achieve an LNG terminal, it is necessary to create a public-private partnership, which may be a formidable economic force in this area.

Need to be pursued and the European Commission's conclusions (ECA 2015), policy at Member State level, regional level and at the level U.E. related to the fact that "most Member States should adopt additional measures to target pace of development more ambitious and should strive to achieve national goals in energy efficiency for 2020", also "Member States should strengthen their cooperation (regional) security of electricity supply and the adequacy of production capacity", which would stimulate the development of natural gas power plants. Another important aspect is to create "the most favorable tax systems environment and growth", that solutions must be found tax incentives to those who make investments in the economy and environmental protection.

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