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## **THE IMPACT OF MANAGEMENT STRUCTURES AND DECISION-MAKING MODELS OF ‘GREEN’ LOGISTICS TERMINALS ON THEIR PERFORMANCE**

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The scope of the paper is to investigate the way the management structures and respective decision making models are applied in international transport and logistics terminals that are parts of Pan-European transport corridors and TEN-T [4,7], leading to success stories and best practices to be used in similar projects in the future. The aim is to bring out the strengths and weaknesses, as well as the opportunities and threats of each model applied in order to come up with a map of guidelines on the setting up of management structures in transport and logistics terminals, which are the part of wider transport corridors. According to the above, the purpose of the paper is to deal with the green concept in transport and logistics terminals, presenting their administrative, operational and business profile.

**Keywords:** transport and logistics terminals and corridors, management structure, SWOT analysis, decision making framework, guidelines

### **1. Introduction**

Within this paper, the management structure and decision making models of three green logistics terminals are investigated. The selected terminals are the ports of Helsinki (Finland), Constanta (Romania) and Thessaloniki (Greece). The three port terminals are analysed as per their potential of becoming integrated interconnection nodal points in a green surface transportation network. The analysis of those terminals’ attributes has been further elaborated in the frame of CLOSER project from 2010 to 2012 [3, 8]. Apart from the presentation of each terminal’s attributes and characteristics, the paper incorporates a profound analysis of their management structure focusing also on the decision making process applied in each case. The relationships, interactions and degree of collaboration amongst the stakeholder groups involved in the terminal’s operation, as well as their roles, obligations, jurisdictions and communication channels are discriminated, in order to identify their contribution to the terminals’ operational, business and financial development.

In addition, based on the available statistical data, it is examined how these models have helped in the ports’ spatial development, the increase of the port terminals’ throughput, the upgrading level of the provided services and the optimisation of ports’ performance through the years. Also it is examined whether those decision making models have influenced the port’s role in the supply chain and what has been the impact on their operation during the last decades. Finally, based on the above analysis, an integrated decision making framework concerning ports is suggested, incorporating guidelines of which method and policy to adopt and what to take care of or completely avoid in similar cases.

Except for the introductory one, the paper is structured in five chapters. Firstly, a generic presentation of the port terminals and their operational and business characteristics is attempted. Their role in the supply chain is also investigated. The Third Chapter is dedicated on the terminals’ management structure and decision making models. Within the Fourth Chapter the impact of those structures and models on ports’ profile is analysed, also examining whether each case has been a success story as a result of a specific management structure. Any concluding remark is stressed in the Fifth Chapter of this paper where a brief list of guidelines is made available as a contribution to every attempt made in the future towards the establishment of the management structure of transport and logistics terminals.

## 2. Presentation of the Port Terminals and Their Operational, Economic and Business Characteristics

### 2.1 The Port of Helsinki, Finland

Vuosaari Harbour (main freight terminal of port of Helsinki) is located 15 kilometres east from the city of Helsinki, in Uusimaa region (wider Helsinki area), one of the most important areas in terms of business and commercial activities in the country. Approximately 80% of Finnish international trade is transported by sea. As such, all Finnish ports are integral parts of the international logistics network [3]. The main domestic flows of goods are directed from south to north.

The freight volumes in Vuosaari Harbour the year 2012 were over 400000 TEU and as there are 10 container cranes in the harbour, the average TEU lifted per year and per crane is approximately 40000 TEU. The energy consumption of Vuosaari Harbour Centre in the year 2011 was 17 265 MWh, of which operators used 68,5 %, Vuosaari Harbour 28,5 % and the remaining 3 % was sold [3].

An indicator that reflects the operational throughput of the freight terminal of Helsinki port is total cargo traffic. Figure 1 represents the traffic variations over time since the establishment of Vuosaari Harbour in late 2008. Following the high capacity of 2008 (before the construction and operation of Vuosaari Harbour the main freight terminal of port of Helsinki was located within the urban area of the capital city), there was a slight decrease of volumes in 2009 and then a smooth increase between years 2009-2012 despite the global economic recession.



Figure 1. Total traffic in million tons for years 2008-2012 (Dark blue: coastal traffic, blue: foreign bulk, light blue: unitised imports, green: unitised exports). [6]

Regarding both the passenger and freight terminals of Helsinki Port, the economic indicators are presented on Figure 2. The turnover of the enterprise after facing a hard drop in 2009 (comparing with the 2008 output), was levelled off scoring positive results. The operational surplus of turnover seems to be securely positive after being affected by the impacts of economic crisis. As 15% of total revenues of the port return to city as income, it is very crucial that the port operations should deliver positive economic impact. Finally, pertaining to the values of indicator 'return on invested capital', they range between + 0% and 10% from 2008 to 2012.

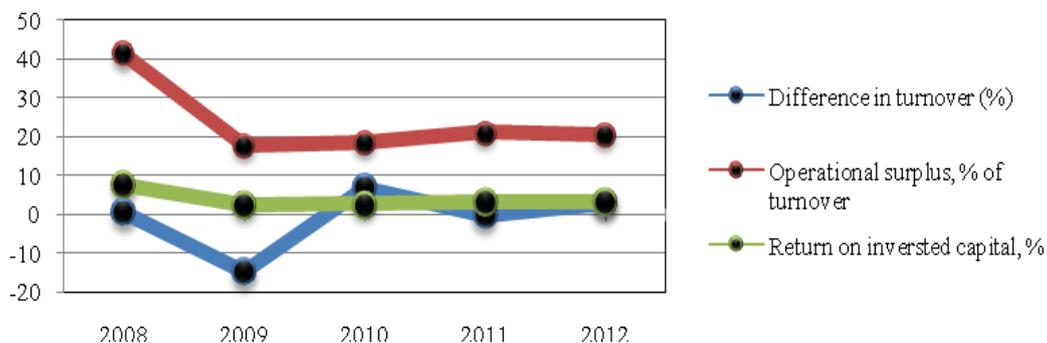


Figure 2. Temporal variations of certain economic indicators of Port of Helsinki. [6]

Figure 3 represents the time variations of the amount of cargo that was forwarded through the freight terminal of the port of Helsinki along the years 2008-2012. The trend that is captured is the same with other indicators that show a significant drop in the year 2009 and a recovery between years 2010-2012, with around 400000 TEUs handled. As far as trucks and trailers are concerned, the picture that is represented is the same as the containers one: the hard drop of the year 2009 is followed by a respective recovery. After 2010, the total volume of trucks and trailers in pieces remain at the same level for years 2011 and 2012.

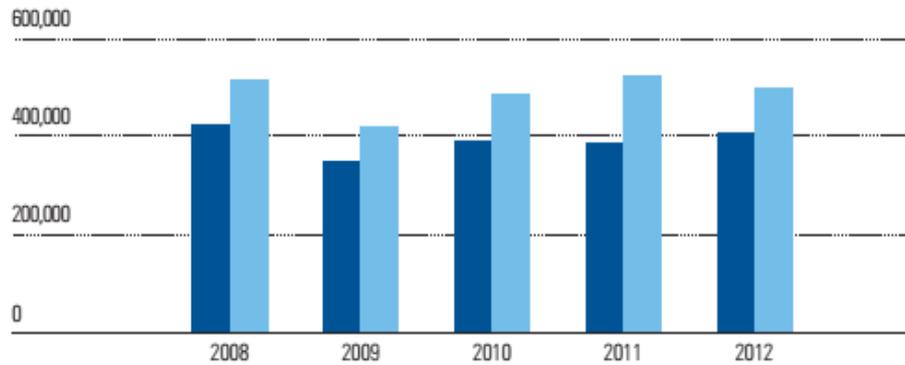


Figure 3. Container (dark blue) and truck/trailer (light blue) volumes in TEUs and pcs (pieces) [6]

## 2.2 The Port of Thessaloniki, Greece

Thessaloniki Port is located in the northern area of Greece. It constitutes one of the main transport gates during cargo exchange between Greece and the rest of Europe. In addition, it serves and facilitates flows channelling from Far East to Central Europe and vice versa. The freight terminal has two different cargo terminals: the container terminal and the conventional cargo terminal. The container traffic plays the most important role in the port's throughput. The annual TEUs' flows from 2000 to 2012 are represented on Figure 4. A slight increase between years 2008-2011 is highlighted indicating a constant trend of increase. Data of 2011 and 2012 also reflect the continuous growth in TEU transit, namely 295870 TEUs for 2011 and 317751 for 2012. After a growth trend between years 2002-2007, there has been a hard drop in 2008 followed by a smooth increase in the years of economic crisis. Furthermore, ThPA SA net profit has been increased by 222% in 2010 comparing to 2009 economic profile, by 40% between the years 2010-2011 and another 50% by the end of 2012 [13].

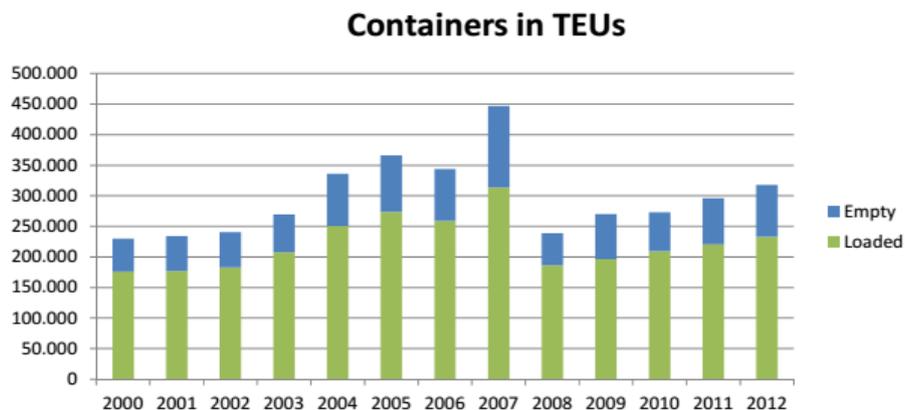


Figure 4. Evolution of TEU flows in time (2000-2012) [13].

The conventional cargo is accommodated in the Terrestrial Zone of Thessaloniki Port in an area extending on a total surface of approximately 1000000 m<sup>2</sup> with quay length of 4000 m and depth up to 12 m.

The storage area for the conventional cargo engages 85000 m<sup>2</sup> of warehouses. The sheds cover an area of 12000 m<sup>2</sup>, while outdoor storage areas are 500000 m<sup>2</sup>.

According to the operational outcomes of ThPA SA, the 46,7% of total TEU flows represent exports from Greece to several other countries. The total amount of TEUs for 2011 is 295870 and the ones corresponding to exports directly for international transport is 138213 (46.7% of total). Also, the 42,4% reflect imports of cargo (125360 out of 295870) and about 10,8% is associated with freight transit (31681 out of 295870 [3].

In the conventional cargo traffic statistics (Fig. 5) a seamless rate of growth is depicted until 2007, while from 2007 to 2009 a sharp drop was indicated probably as a result of the worse global economic climate. The recession of 2007-2009 is followed by a smooth recovery until 2012.

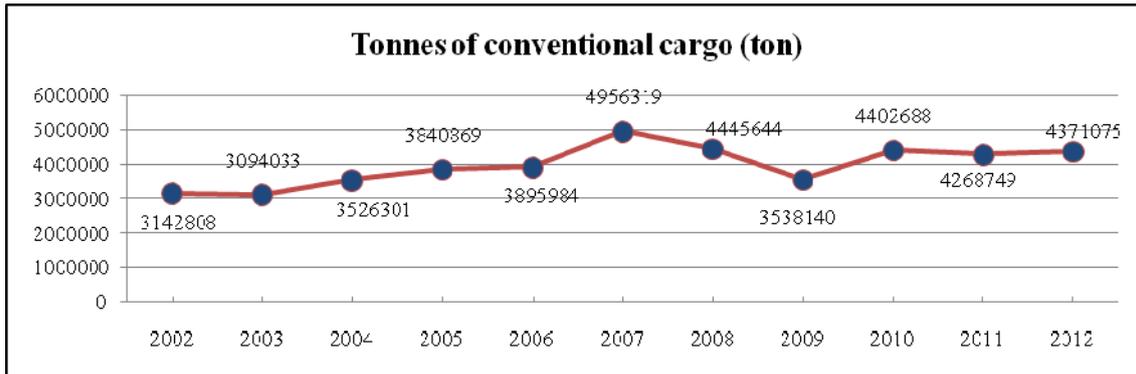


Figure 5. Conventional cargo volume in tones (2000-2012) [14]

In addition, the passenger flows (Fig. 6) do not imply positive perspectives because a continuous decrease is spotted in the passenger traffic volume since 2008 and on. The reasons for this could be the economic hardship and also the special focus that might be set on the freight services of Port of Thessaloniki.

With respect to economic profile of ThPA SA, in the context of Figure 7 the annual turnover of the enterprise is presented, where it seems that after the boost that is appeared in year 2007 and the reasonable decrease of the years 2008 and 2009, a slight increase is identified indicating, in turn, the growth perspectives of ThPA SA.

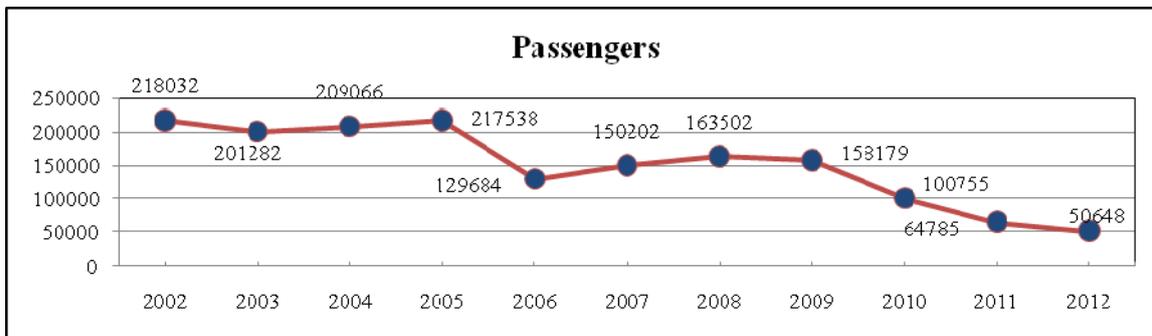


Figure 6. Evolution of passenger flows over time (2000-2012). [14].

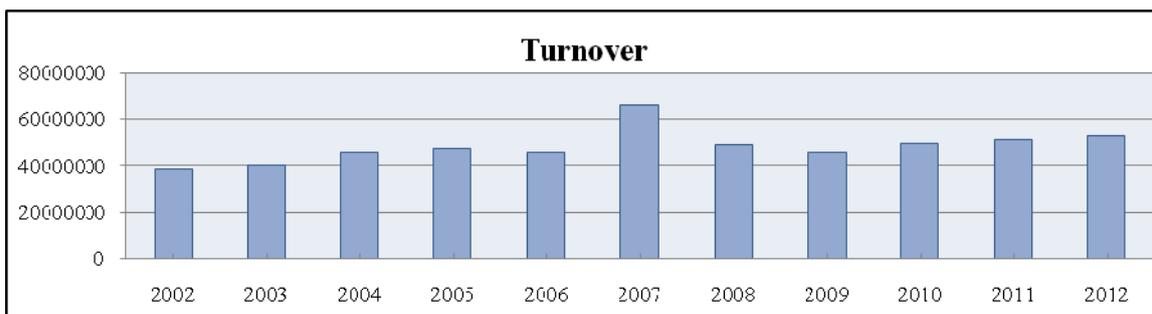


Figure 7. Annual turnover of ThPA SA (2002-2012) [14].

### 2.3 The Port of Constantza, Romania

The port terminal of Constantza is a special logistics area, part of the Romanian maritime port system, including a logistics centre, mainly originated towards freight transactions with European and Asian countries. It constitutes a freight (99% of total workload) and passenger maritime and river port cluster located at the eastern part of Romania, by the Black Sea. The maritime and river ports are connected through the “Danube – Black Sea Canal”, which represents one of the main strengths of Constantza Port as important cargo volumes are carried through the Danube river at low cost in comparison with road and rail competitive routes [15].

The port’s handling capacity reaches the 100 million tons/year, as 4 years after the recession of 2008-2009, there was an increase of almost 17% in the total annual traffic. In particular, according to the port’s statistics, in 2012, the total annual freight traffic reached the 50,5 millions of tons (Fig. 8).

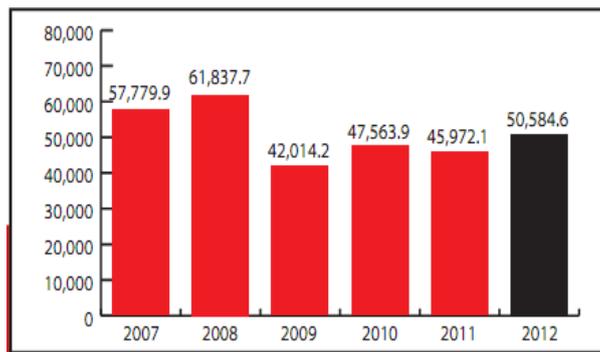


Figure 8. Constantza Port’s total annual freight traffic (in thousands of tons) [15]

During the same year, the imports and exports reached the 15,227 and 16,261 millions of tons, respectively, while the transit flows were estimated at 15,044 millions of tons (see Fig. 9).

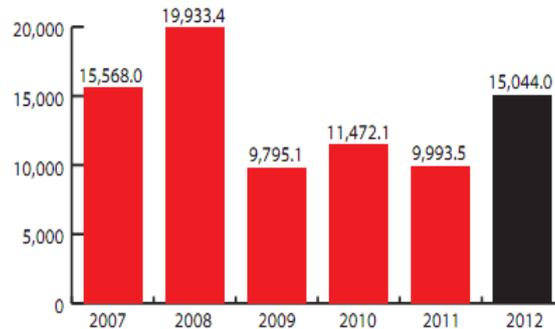


Figure 9. Constantza Port’s transit annual flows (in thousand tons) [15]

As far as the container traffic is concerned, the total container units serviced at annual basis in 2012 reached the 423081 (684000 TEUs), producing a total cargo load of almost 6,7 millions of tons (see Fig.10 a and b.).

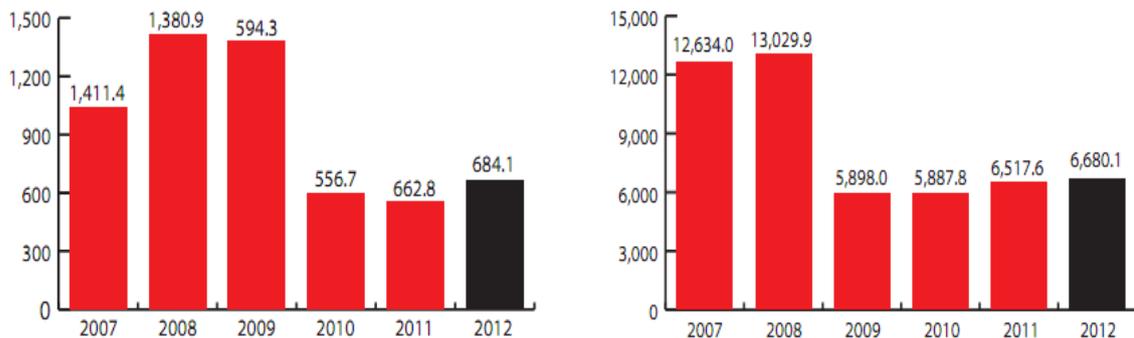


Figure 10 a and b. Constantza Port’s total annual TEUs (in thousands of units) and respective cargo load (in million tons)

As a result, it seems that the volume of cargo has an increasing trend during the last decade. This ascending scaling was temporarily reversed during the first years of the economical recession, but it seems that a recovery of the lost traffic flows is established during the last couple of years [15].

### **3. Management Structure and Decision Making Models of Port Terminals**

#### **3.1 The case of the Port of Helsinki**

In Finland, there is great competition between logistics service providers led by national policy towards this sector. The Finnish state allows health competitive actions by assigning logistics services to municipal or regional authorities that are free to develop and invest on their infrastructure without upper guidance or further constraints. Each administrative region follows its own initiatives. Moreover, logistics centres create jobs and increase tax revenue of surrounding areas while enhancing the image of the municipality [5]. The national guidance is provided only in case of designing and planning level of a more efficient infrastructure location.

Port of Helsinki is owned by the municipality of Helsinki. The municipality of Helsinki has set the Board of Municipal Enterprises, an instrument that manages several municipal-owned companies. The Board also manages and is responsible for port's operations. The management body is also in charge of planning and investment initiatives that regard port area. Sometimes, investments are initiated by other private operators in agreement with main port authority.

Approximately 15% of total revenues of the port return to the city as income. Vuosaari Harbour operates under the landlord ownership and management principle [9]. The Port of Helsinki manages the infrastructure and the rest land area and leases it to private operators [3]. Operators (shippers, LSPs, freight forwarders, etc.) own the port superstructure and sign bilateral agreements (contracts) with the management authority (Port of Helsinki). Usually, there are logistics services providers, warehousing, stevedoring and freight forwarders, etc.

Private operators manage for the superstructure components, such as cranes, terminals, machinery, cargo-handling equipment and information systems. The Finnish state (national authorities) is responsible for the customs clearance of goods transported and checking of passengers' documents, a task undertaken by border guards. Finally, the corresponding ministry is also responsible for monitoring the legal compliance of operations. The Finnish state launches national projects of road and rail infrastructure outside the port area facilitating interconnections.

All involved stakeholders share mutual interests and views regarding the port future evolution. In order to foster these targets, communication channels are developed with common procedures followed with different cooperation bodies: operational level meetings with other port operators (operational level), meetings in (higher) executive level and a cooperation forum organized between actors [3].

#### **3.2 The case of Thessaloniki Port**

ThPA SA is the decision-making and executive body of the Port of Thessaloniki. ThPA SA belongs approximately by 75% to the Hellenic Republic Asset Development Fund, and by 25% to rest shareholders (private sector). However, a strong advisory board was shaped, the Port Development Council (a non-legally recognized, without managerial and decision-making but important advisory role) is developed through multilateral agreements of common interest between stakeholders under the 'win-win' strategy and towards the growth of Thessaloniki's Port. This council is assembled by almost fifteen members. The stakeholders group consists of ThPA SA management board, regional and local authorities, trade and logistics associations, transport operators, customs brokers, etc [3].

External and cooperating stakeholders (private sector, businesses) are collaborating with ThPA SA under the umbrella of bilateral contracts and formal agreements. Land and infrastructure of port area is owned by the Greek state (national government) and it is managed by ThPA SA Private companies have signed agreements with ThPA SA to use and exploit equipment and infrastructure under the framework of private agreements [3].

The internal organizational structure of ThPA SA consists of the following levels: in the upper level there is a board of directors which is the highest management board. There are also auditing schemes which perform auditing to processes and activities launched by the authority. Management council is the executive management board of the body. Furthermore, there are some common horizontal

departments such as legal affairs office, public relations, social responsibility and strategic planning, marketing and sales department.

The stakeholders involved in port operations are: European Union, national government, local and regional authorities (municipality of Thessaloniki), terminal manager and operator (ThPA SA), freight forwarders, transport and logistics operators, rail operators (O.S.E.), stevedores and customs officers. Moreover, as the national government is holding a significant part of ThPA SA shares, decision-making of ThPA SA is dependent on political expediency of each national government [3].

### **3.3 The case of Constantza Port**

Since 1998, the Port of Constantza constitutes a joint stock company, under a PPP management scheme. This implies that both public organizations or bodies and private companies take part in the decision making. Especially concerning the corridor development concept, the private initiative is fundamental, always taking into consideration the EU transport policy and actions on international intermodal corridor development. As per the ownership status, it is public-private and is owned by the Romanian State which is responsible both for the configuration of the regulatory and operational framework. The management of the port and its respective operations is undertaken from the National Company Maritime Port Authority S.A. of Constantza and the Romanian Naval Authority, under the supervision of the Romanian Ministry of Transport and Infrastructure (MTI). The management structure has been created by the government and includes all the groups of stakeholders involved in the administration and operation of the port, including authorities, private companies and infrastructure and equipment providers. Those entities have had a significant contribution in the establishment of the port through the years and still play a fundamental role [15].

According to the adopted "landlord port" business model, the port authority is responsible for the building of platforms, piers, quays and wharves which are either rent or leased by the terminal operators (e.g. stevedoring companies). According to the management structure, the port authority (NCMPA), being subordinated to the MTI, has the prevailing role in the decision making concerning operational and business planning, while also being in charge of policy making and marketing strategies. Those stakeholders participating in the port's management structure consist of terminal operators, owners and users, information, infrastructure and equipment providers (e.g. railway organizations, information system administrator and truck operators), transport and stevedoring companies and also local authorities and civilians. The European Union plays an exceptional role, especially involving in investment and funding issues emerging through the implementation of respective RTD projects [8, 15].

Towards the achievement of a sustainable development and a win-win situation for all, any coordination and collaboration issues based on the established cooperation and procedural framework, as well as any agreements, partnerships and negotiations amongst stakeholders, according to everybody's role, tasks, jurisdiction and duties, are identified within the Master Plan of 2001-2002. It has been created by the MTI and the NCMPA, based on the mutual agreement, approval and respect from the part of all the stakeholder groups, also participating in the management structure. According to the management structure, all the stakeholder groups participate in the decision making concerning all the geo-economic development issues. The Master Plan includes all aspects associated with policy making, economic and market development, geographical expandability and infrastructure renovation and upgrading. Finally, as per the international stakeholder coordination, this is arranged through the contracting of respective intergovernmental agreements, MoUs and partnerships according to the international legal and institutional framework.

## **4. Impact of Management Structure on Port's Role in the Supply Chain**

Port governance is a process that incorporates several pillars: first of all, the management structure, which is associated with governmental regulation and policies in line with Port Authority strategy. The strategy includes objectives, decisions and plans that Port Authority has set towards the terminal's growth. Finally, it is also the environment (political, economic) in which the port operates. The output of these actions constitutes port operations efficiency and effectiveness [16].

In this section, through the correlation of management structure objectives with successful port performance an investigation for success stories is attempted. The concept is to provide evidence that the economic development and the increased operational performance of the terminals is owed to the respective management strategies and handling from the part of the terminals' operators.

#### **4.1 The case of the Port of Helsinki**

Vuosaari freight terminal started operations in late 2008. However, before 2008, the freight terminal was located within the city of Helsinki. The management structure of the terminal is dictated by the municipality law of Finland which stipulates that ports are driven to the municipalities of the cities where they are located. This policy will ensure competition neutrality [3]. This generic policy set by the Finnish state leads to higher and more neutral competition between port terminals of the country. Each municipality manages their ‘corresponding’ port autonomously, setting goals for each enterprise under a common national port policy. This acts as a leverage of the private interest leading to more economically and operationally sustainable approaches to entrepreneurship.

As indicated by the respective figures above, the economic outcome of the port’s operations is positive and secured by against the impacts of economic downturn. Investments, although reduced, are still made, and the operational outcome is positive feeding the city’s economy, as 15% of total income is channelled to the municipality as a revenue stream. Despite crisis repercussions, cargo traffic is slightly ascending during the last five years, as indicated on Figure 3. This outcome is promising, given that the most intense impacts of crisis have been incurred on international trade. The market share of Freight Port of Helsinki is over 50% within the national context, whereas in the passenger sector it goes beyond 75% [13]. Also, in spite of the deep crisis impacts, the years between 2010 and 2012, an increase has been identified in container traffic. The statistics indicated here, combined with the above figures (Fig. 1-3) bear witness of the economic viability of the port, being secured and strengthened through the economic recession indicating operational effectiveness and management efficiency.

#### **4.2 The case of the Port of Thessaloniki**

The Port of Thessaloniki constitutes a special case where the new management structure resulted in the growth of port product since 2001 and after (when the profile of the managing body has transformed into Societe Anonyme). After 2000, where data are being recorded, the operational outcome is in line with Greece’s GDP trend. A continuous increase is spotted until 2007, followed by a hard drop, indicative of the change in the economic environment. However, after 2008 a slight increase is identified in all sectors (economic, operational throughput) of the managing authority (Fig. 4,5 and 7). Since 2001, ThPA SA was owned 75% by the Greek state and 25% by private sector. The involvement of private bodies into the management of the port combined with the transformation into a less public-interest company had been key drivers towards the goals which were set (economic viability and maximization of operational product) [3]. Furthermore, the direct involvement of the private sector (actually the port customers) through the port development country is considered as a best-practice as indicated by the level of service. This advisory board composed by all the involved stakeholders leads to the alleviation of issues identified regarding the port, enhances the efficiency, facilitating also private sector operations.

#### **4.3 The case of the Port of Constantza**

The key time thresholds concerning the upgrading of the performance of the Port of Constantza in the near past are three. An important role in the port development was played by Black Sea-Danube Canal, which was inaugurated in 1984. In addition, in 1998 the port was transformed from public property into a joint stock company. Also, since January 1<sup>st</sup>, 2007, the Port of Constantza has become a Free Zone. Also, in the near future, the 2001-2002 Master Plan will be reviewed. Currently, the port authority is in search for consultant’s bids for the carrying out of the port’s new Master Plan. Looking back to the statistical database and the annual economic reports of the port, it can be seen that the highest traffic figures were registered in 1988, just after the operation of the Black Sea-Danube Canal when 62.3 million tons were operated. Also, the “opening” to the private investors and the creation of the Master Plan enabled the processing of many infrastructural projects leading to the development of the port and its connections to the national and international transportation network. In particular, both the motorway and railway network connectors have been upgraded during the last decade, while the market share has also been considerably broadened and the traffic recorded a 5% annual increase from 2001 to 2009, until the beginning of the recession. Furthermore, the transformation of the port to a free-zone in 2007 immediately gave a 10% boost in the traffic flows handled by the Port of Constantza. After the recession, the business and organizational model continues to provide extra credit to the port and also the recovery of the lost workload has already started, making it a success story.

## 5. Conclusions

In this section, based on the case study experience, a number of guidelines configuring the suggested management structure of terminals and their corridors are identified. Those guidelines have been tested in green logistics terminals, such as ports. Nevertheless, with the appropriate modifications, the suggested framework may constitute a model applied in other types of terminals, as well [2, 10, 11, 12].

As per the ownership status, the PPP model, open to every potential stakeholder seems to guarantee the legal and financial support from the part of the state, while keeping alive the interest of private investors and shareholders. In addition, the privatisation of certain domains, such as the telecommunication service, has proven to be beneficial for the terminal's upgraded operation, as the promotion of private initiative leads to the increase in competitiveness and eventually to the enhancing of the level of provided services.

Pertaining to the management task of the terminals and the decision making processing, the involvement of all stakeholders in general assemblies, although leading to complexity, it seems that it bridges the communication gaps and eliminates monopolies and rivalries, providing solutions acceptable and approved by the majority, in favour of the terminal's benefit. Nevertheless, the obligations, attitude, tasks and jurisdiction of each stakeholder must be identified and well determined in a Master Plan created by the management authority in cooperation with all the involved operators. Also, any plans concerning infrastructural and operational development have to be included in the Master Plan.

As far as the communication and the cooperation of the terminal operators and users with the external partners and customers, especially from different countries, the contracting of intergovernmental agreements with the participation of local, regional and national authorities, such as the MoUs, is indicated as the ideal solution in order for the different standards, requirements and protocols to be correlated. Those agreements, except for setting new communication standards between countries according to the international legal and institutional framework, they also establish new international market alliances affecting the global economy.

Future research should be focused on measuring of the performance of port governance. This implies the identification of links between port management structure models and port performance, a process mutually beneficial both for governments (identify working models and monitor work), users (improve customer satisfaction and services offered) and ports (channels to improve performance, resources allocation). These links could consist of measurement methods and tools that incorporate all the involved stakeholders in a way that the impacts of management models are presented as quantifiable data, i.e. with the use of indicators. Probably, the light should be shed on the tools used in other types of transportation terminals (i.e. airports) and links between users, governments and terminal management.

## References

1. Adamos, G., Nathanail, E. & Zacharaki, E. (2012). Developing a Decision-Making Framework for Collaborative Practices in Long-Short Distance Transport Interconnection, *Procedia – Social and Behavioral Sciences*, 48, 2849-2859.
2. Arnold, J. (2006). *Best Practices in Management of International Trade Corridors*. The International Bank for Reconstruction and Development/the World Bank.
3. Christiansen, P., Johansen, B.G., Andersen, J. & Eidhammer, O. (2012). *Case studies: Results and synthesis. Deliverable 5.2. CLOSER - Connecting Long and Short-distance networks for efficient transport*.
4. European Commission. (2006). *Commission Decision 2007/60/EC of 26 October 2006 establishing the Trans-European Transport Network Executive Agency pursuant to Council Regulation (EC) No 58/2003*. Brussels: European Commission.
5. Eckhardt, J. & Rantala, J. (2011). Analysis and classification of logistics centres in global supply networks. In Proceedings of the 16<sup>th</sup> Annual Logistics Research Network Conference. Southampton September 7-9, 2011. United Kingdom: University of Southampton.
6. Eckhardt, J. et al. (2013). *Transport Corridor Management Structure*. 'Bothnian Green Logistic Corridor' project. European Union (ERDF & ENPI).
7. European Commission. (2011). *Proposal for a REGULATION OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL on Union guidelines for the development of the trans-European transport network*. Brussels: European Commission.

8. Nathanail, E., Adamos, G., Parra L., Ruiz-Ayucar, E., L' Hostis, A., Blanquart, C., Olsen, S., Christiansen, P., Osland, O., Järvi, T., Svedova, Z. & Zan, B. (2011). Analysis of the Decision-Making Framework. In E. Nathanail & G. Adamos (Eds.), Deliverable D4.1. CLOSER – Connecting Long and Short-distance networks for Efficient transport.
9. Rönty, J., Nokkala, M., Finnilä, K. (2011). *Port ownership and governance models in Finland – Development needs & future challenges*. Helsinki: VTT Working Papers.
10. Transportation Research Board - National Cooperative Highway Research Program (2004), “Cooperative Agreements on Corridor Management”, Synthesis 337 – A synthesis of highway practice. Washington: Transport Research Board of National Academies (TRB).
11. Williams, K.M. & Hopes, C. (2007). *Guide for Analysis of Corridor Management Policies and Practices*. Centre for Urban Transportation Research (CUTR).
12. World Bank. (2005). *Best Practices in Corridor Management*. International Bank for Reconstruction and Development (IBRD).
13. <http://www.portofhelsinki.fi>
14. [www.thpa.gr](http://www.thpa.gr)
15. <http://www.portofconstantza.com/apmc/i.do?lan=en>
16. Pallis, A.A. (2008). Linking port performance and port governance models. In Proceedings of the European Sea Ports Organization Conference. Hamburg, May 29-30, 2008. Germany: ESPO.