WHAT ROLE FOR TURKISH PORTS IN THE REGIONAL LOGISTICS SUPPLY CHAINS?

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Abstract - An important role has been attributed to the ports for regional economic development. Over time the role of ports has evolved as locations for value added logistics activities. The meaning of logistics for the local and regional development particularly in port-located areas is becoming more and more important. This paper focuses on the changing role of ports from traditional services to value added logistics services, discuss the opportunities for Turkish ports and their abilities in this respect within the East Mediterranean and the Black Sea region with a SWOT analysis.

Keywords - Ports, regional supply chains,Turkey

INTRODUCTION

Trade and transport throughout the world are dynamic, undergoing constant innovation and reorganization to better meet the needs of global and regional supply chains. Over 90% of all of the world's trade is seaborne. In the world trade, the role of ports becomes more important as they act as gateways connecting continents and transferring goods between maritime and land-based modes (Müller-Jentsch,2002).

With globalization, the development of global supply chains increased and thus put pressure on the maritime transport, on port operations and inland freight distribution. Therefore, the functional role of ports in value chains has been changed towards providing logistics functions to capture a greater share from the trade and transport market. A modern port acts as an integrated node in a logistics chain (Estrada, 2007). In other words, ports are not an end point in themselves, but rather that they are links in a supply chain.

A number of ports in West Mediterranean Region have responded to this trend by focusing on value-added services as a means of gaining a competitive advantage.
In this article, value-added service refers to the activities:

- Receiving goods, breaking shipments, preparing for shipment, returning empty packaging
- Simple storage, distribution, order picking
- Countrylizing and customizing, adding parts and manuals
- Assembly, repair, reverse logistics
- Quality control, testing of products

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• Installing and instruction
• Product training on customer's premises (UNESCAP,2002).

LOGISTIC TRENDS IN THE REGION

Since logistic trends generate and shape the transport demand, ports need to understand changes in logistics systems and be able to improve the attractiveness of their location.

With the globalisation of trade, production and distribution strategies of manufacturing companies have changed and they have relocated production to Eastern Europe or Asia resulted with a major shift in the flow of goods and a large increase of the transport volume (EIRAC, 2005). Maritime traffic is expected to continue to be the dominant mode, particularly in trade with the Mediterranean countries.

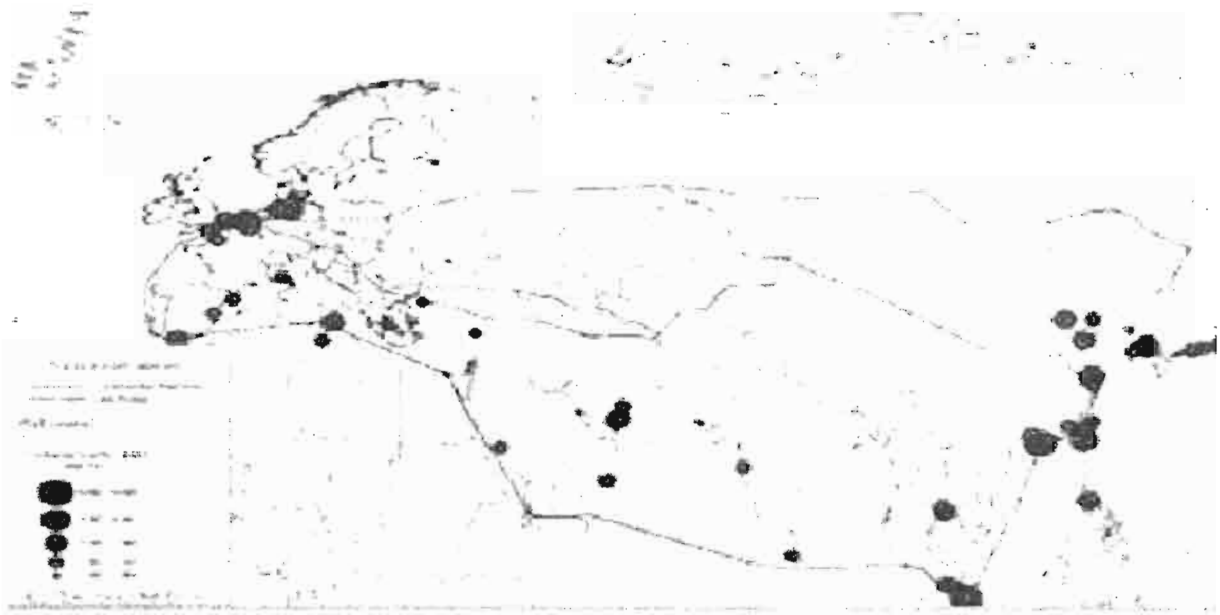
Trend in industrial growth and location patterns (Far East, Eastern Europe), new markets and production sites foreseen in North Africa and international seaborne trade (East-West route) will create outstanding opportunities for the East Mediterranean and Black Sea ports.

Until now this container traffic was mainly maritime in nature, 1% only of the TEU between Europe and Asia being transported by inland transport, mainly by the trans-Siberian railways (150 000 TEU / year) (Rathery, 2007).

Between 2000-2004, the flow of containerized goods in TEU from Asia to Europe increased at a rate of 85 %. During the same period, the flow of containerized goods in TEU from Europe to Asia increased by 55 % [5]. One of the features of the current growth in trade between Europe and Asia is that a broad number of countries is now involved from Europe to Asia, with important roles played by Turkey, Russia and India(Rathery, 2007).

Extension of the European Union and inclusion of new members, Bulgaria and Romania as of 1 November 2007, considerably broadened external borders of EU further to east and next to the border of Turkey. It is expected that the EU enlargement and the growth of trade from Asia will be the driving force for the development of transport volumes and thus will give further momentum and dynamism to the Mediterranean and the Black Sea ports (European Commission, 2005).

Traffic volume between the EU and the neighbouring countries is expected to grow by 100% between 2000 and 2020. In 2020, the total volume of EU imports from the neighbouring countries is estimated to be 254 million tons and the volume of exports is estimated at 859 million tons. The EU's main trade partners among the neighbouring countries are Turkey and Russia. The growth in trade between; the "old" and recently joined EU Member states is expected to be almost 2% per annum. On the orher hand, the growth in trade between the enlarged EU and other European countries such as Turkey or Russia expected to be up to 2.6% per annum (European Commission, 2007a).



Source: Adapted from Rathery.,2007

FIGURE 1
Main Container Ports and Traffic Routes between Europe-Asia

Another trend in Europe is the increase in regional distribution centres closer to markets and centres of population (EIRAC, 2005).

PORTS AND SERVICES IN THE REGION

The Mediterranean and the Black Sea regions are fast developing and dynamic regions. Mediterranean region can be grouped geographically as Western Mediterranean and Eastern Mediterranean. East Mediterranean where Turkey is located, including Black Sea Region shows a rapid increase in comparison with the West. The Region's port system embrace the major ports of Europe and the world. Since the port activities depend largely on the availability and characteristics of the ports connections with hinterland, we focus on gateway ports involved in the inland distribution process acting as a gateway. Gateway ports, named also as main ports or commercial ports, constitute the basic outlet for the hinterland rich in production and consumption (Foschi, 2003). Ports of Barcelona and Valencia in Spain, French port of Marseille, Italian ports of Genoa and Trieste, Slovenian port of Koper, Croatian port of Rijeka are important gateway ports of the West Mediterranean, whereas, Turkish ports of Ambarli, Mersin and Izmir, Greek ports of Piraeus and Thessaloniki, Israeli ports of Haifa and Ashdod, Bulgarian port of Varna, Romanian port of Constantza, Ukranian port of Illichivsk, Russian ports of Novorossisk and Sochi, Georgian ports of Poti and Batumi are important gateway ports of East Mediterranean and Black Sea region.

There is no doubt that all the ports situated on the shore of the Black Sea would play an indispensable role in meeting the transport needs of the region extending eastwards through Central Asia. When considered together with the Caspian Sea system, where the Caspian ports Baku and Krasnovodsk form nodes in the regional road and rail systems, the Black Sea system would ensure the most efficient and the shortest combined transport route from west to east up to China.

Since the late-1990s the Med basin and the Black Sea have been experiencing a wide process of port reform, generating a progressive involvement of private stevedoring companies and an increasing productivity in container handling. EU enlargement will give further momentum and dynamism to Mediterranean and Black Sea ports.

Due to the tough competition among ports in attracting additional traffic flows mainly from Asia, ports invested in the development of distriparks, industrial areas managed by firms specialising in logistics activities such as warehousing and value-added services. Especially, West Mediterranean ports have been investing heavily in logistics platforms or facilities in order to increase the economic impact of their throughput (Ferrari, *et al*, 2006).

TABLE 1

Container Throughput of Major West Mediterranean Gateway Ports ('000 TEU)

Port	Country	2004	2005	Increase %
VALENCIA	Spain	2.145	2.410	12.4
BARCELONA	Spain	1.916	2.071	8.1
GENOA	Italy	1.629	1.625	-0.2
MARSEILLE	France	916	908	-0.9

Source: Cargo Systems,2006

East Mediterranean and Black Sea ports show a significant increase in container throughputs in recent years. Among these ports, there is a trend towards investing in terminal development, enlargement and modernization mainly by attracting global operators (Ferrari, *et al*, 2006).

TABLE 2

Container Throughput of Major East Mediterranean and Black Sea Ports ('000 TEU)

Port	Country	2004	2005	Increase %
.ISTANBUL (Ambarli+Haydarpasa)	Turkey	1.397	1.527	9.3
PIREUS	Greece	1.541	1.394	-9.5
HAIFA	Israel	1.043	1.123	7.7
IZMIR	Turkey	804	784	-2.5
CONSTANTZA	Romania	386	768	99.0
MERSIN	Turkey	529	596	12.7

Source: Cargo Systems,2006 and Association of Turkish Ports Operators (Türklim)

İstanbul(Ambarli+Haydarpasa) remains comfortably in the lead as the main container traffic hub in the East Mediterranean and the Black Sea region, ahead of Pireus in Greece, Haifa in Israel and Constantza in Romania. Odessa and Ilyichevsk in Ukraine and Novorossisk in Russia.

TURKISH MEDITERRANEAN AND BLACK SEA PORTS

Surrounded by sea on three sides, Turkey has the privilage of having strategic ports in a very rapidly developing region. Turkey's foreign trade (by volume) is carried out primarily by sea (87 %), followed by road (10 %) and rail (1 %) respectively, depending on the type of trade and destination (Zeybek and Kaynak, 2007). Container traffic plays a key role in maritime traffic.

TABLE 3
General Specifications and Capacities of Major Turkish Ports

Ports	Status	Berth length (m)	Max draft (m)	Container Handling Capacity (TEU/year)	Traffic Capacity (Vessel / year)
Ambarli	Private	1,950	-14.5	1,500,000	5,920
Izmir	Privatized but not yet started in operation	2,959	-12	443,000	4,059
Haydarpasa	Public	2,765	-12	354,000	2,389
Mersin	Private	3,180	-14.5	266,000	2,651
Samsun	Public	1,756	-12	40,000	1,130
Bandirma	Public	2,788	-12	40,000	1,037
Derince	Privatized but not yet started in operation	1,132	-15	40,000	862
Iskenderun	Public	1,427	-12	20,000	640

Sources: TCDD 2007; www.marport.com

A significant volume of the maritime traffic is handled through Izmir, Mersin, Haydarpasa and Ambarli all having an hinterland supporting them that is rich in production and consumption. There will be a growing demand for the movement of containers in the near future and it is forecasted that the container traffic (3.8 million TEU in 2006) will exceed 8,5 million TEU by the year 2020 (TUSIAD, 2007).

Ambarli, located on the European coast of the Sea of Marmara, 34 km away from Istanbul is one of the fastest growing private container port regions in Turkey and handles the rising volume of exports and imports. With a throughput of 1.527,000 TEU in 2005 (Ambarlı (1,187,000 TEU) and Haydarpasa (340,000 TEU)), İstanbul is ranked 61st among the World's top 100 Container Ports (Cargo Systems,2006). Ambarlı Port handles 25% of the container traffic of Turkey. Global operator MSC is running at Ambarli with local operator Arkas. The port strategies aim at further strengthening Ambarli's competitive position and turning it into a more modern and efficient container-handling centre. The total container handling capacity of Ambarli is 1.5 million TEU per year. Marport is Turkey's deep water container terminal serving post-panamax ships with a draft of 14.5 meters (www.marport.com.tr).

Haydarpaşa which is the main import port of Turkey is situated on the Asian side of the Bosphorus. Traffic capacity of this port is 2,389 vessels/year and the container handling capacity is 354,000 TEU/year.

Izmir Port is the main export port of Turkey, located on the west coast by the Aegean Sea, with its traffic capacity of 4,059 vessels/year and the container handling capacity of 443,000 TEU/year. Izmir port is ranked 95th container port with its container throughput 784,000 TEU in 2005. Izmir Port has been recently privatized and a consortium comprising Hutchison Holding, the Turkish Global Holding and Aegean Exporters' Association has been awarded a 49-year concession to operate the port (International Transport Journal, 2007).

Mersin port is the largest port of Turkey. It is situated on the eastern part of the South coast of the country. Mersin Port has 2,651 vessels/year traffic capacity and 266,000 TEU/year handling capacity. There is a free trade zone established in 1986 within the port domain. Singapore's PSA and local group Akfen has recently take over the operation of Mersin Port for 36 years (International Transport Journal, 2007). New operator has already increased the capacity of the port by 30 % with new handling equipment procured and new investments are underway.

Since the port activities depend largely on the availability and characteristics of the ports connections with hinterland, it important to know that all the above mentioned ports have road links and except Ambarlı, have rail connections.

SWOT ANALYSIS OF TURKISH PORTS

Turkey is a big market with its 71.6 million population and 7.4 % growth in GDP in 2005 (European Commission, 2007b). Increasing foreign trade places additional demands on the country's transport infrastructure and services. In order to respond to these increased demands, it is necessary to invest on transport infrastructures especially on port infrastructures.

Strengths

Geographic and strategic position of Turkey

- at the crossroads of three continents : Asia, Europe and Africa and intersection point between regions: Black Sea, Balkans, Caucasus and the Middle East
- Closeness to trunk route (Suez-Gibraltar)
- EU accession candidate country status

Growth of Turkish economy and foreign trade

- 71.6 million population
- 7.4 % growth in GDP (2005)
- US $ 222 billion foreign trade (2006)
- US $ 85 billion exports

Transport and logistics System
- Good structured national road network
- Dynamic logistics sector
- Skilled labor force

Weaknesses
- inadequate rail infrastructure and supporting facilities
- poorly coordinated linkages between transport modes
- no investment yet in the distribution and logistics centers inside port areas
- weak cooperation between port authorities and their intermodal partners in order to improve supply chain performance.
- insufficent information and communication technology
- location in urban areas limits further expansion: scarce space for logistics activities
- lack and inadequacy of port development projects
- complexity and inadequacy of legal regulations related to port services
- insufficient investments

Opportunities
- Trade growth between Europe and Asia
- Trade growth between Europe and Turkey
- Trade growth between Turkey and Asia
- Enlargement of the European Union
- EU's neighbour policy aiming to reach Asian markets with improved logistics infrastructure (e.g. Trans European Transport Network, TRACECA Corridor, Pan European Transport Routes)
- Adoption of Acquis Communitaire
- Increasing demand for logistics

Threats
- growing competition in the region
- political and security stability conditions in the region

The size of the Turkish market, adequate business climate, harmonized laws and customs, dynamic logistics sector give rise to a potential for attracting value added logistics activities with a regional scope in Turkey. There is a big opportunity for the development of Turkish ports to capture traffic flows from/to Far East, triggered by the logistics trends in the region.

As Europe aims at reaching Asian markets with improved logistics infrastructure (e.g. Trans European Transport Network, TRACECA Corridor, Pan European Transport Routes), Turkey can be a logistics base between Europe and Asia by using its geographical advantages. In paralel with the liberalisation activities and port reform in Turkey, presence of global carriers and stevedores are increasing in Turkey; like MSC in Ambarli; DP World in Yarimca and PSA in Mersin Hutchison in İzmir.

WHAT ROLE FOR THE MAJOR TURKISH GATEWAY PORTS IN THE REGION

Among the Turkish Gateway ports, considering their characteristics and capacities, we choose İstanbul (Ambarli + Haydarpasa), Mersin and İzmir to analyse in detail their potentials to develop efficient value added logistics facilities.

Istanbul Ports

The Marmara region where İstanbul ports are located, is the prime hinterland for the export-import cargoes of Turkey since most of the industrial plants are located in this region. A gateway port with value added logistics facilities in Marmara region could serve the Black Sea region and the hinterland movement of containers can be by rail towards Europe, the Caucasian countries and the Central Asian countries.

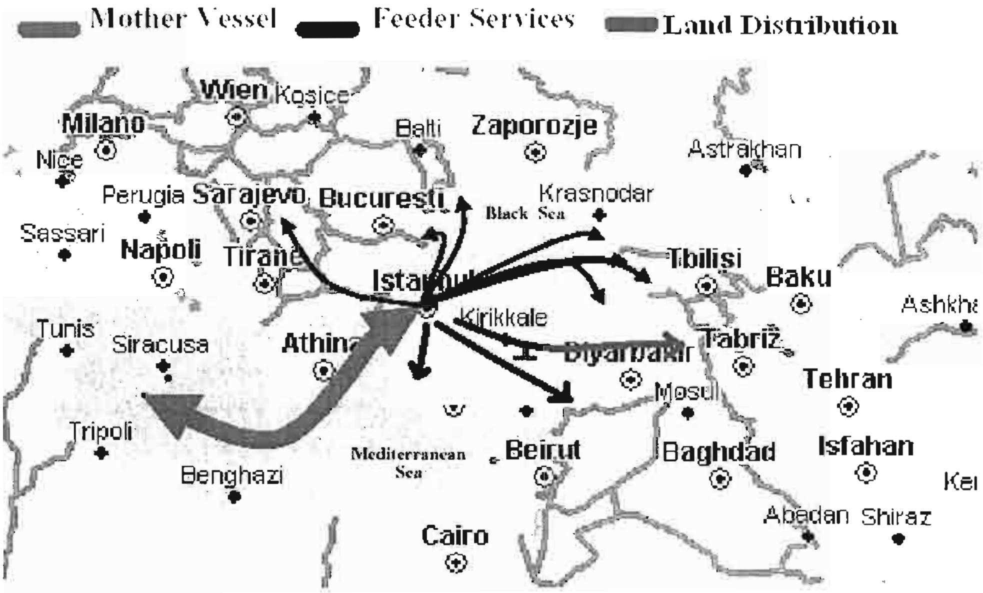


FIGURE 2
Future Role of İstanbul ports

Source: Adapted from JICA,2000, Tuna 2002

Izmir Port

Izmir Port has also rich industrial hinterland connected with rail and road. Its recent privatization will facilitate its physical, technical and infrastructural improvement towards developing value added logistics facilities in order to increase the economic impact of their throughput.

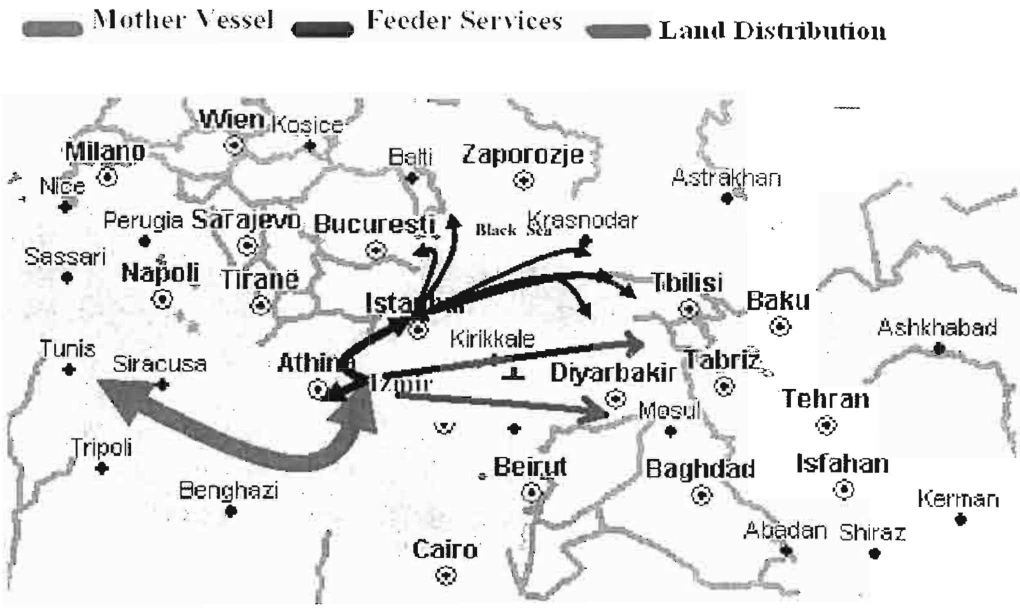


FIGURE 3
Future Role of İzmir Port

Source: Adapted from JICA,2000, Tuna 2002

Mersin Port

Mersin Port is located in the rapidly developing region of Anatolia making the Port's hinterland rich in production and consumption. Its closeness to the trunk route (Suez-Gibraltar), Middle East and Asia is a big advantage. Available intermodal connections with rail and road and its private operation will facilitate its physical, technical and infrastructural improvement towards developing the logistics center of the Region.

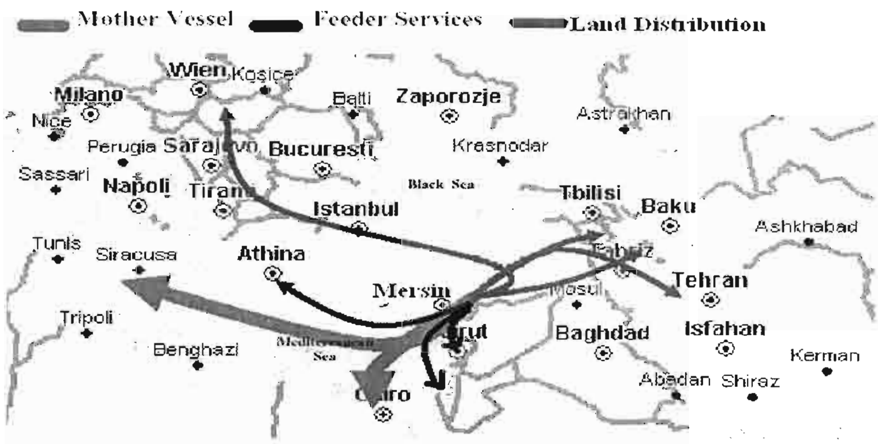


FIGURE 4
Future Role of Mersin Port

Source: Adapted from JICA,2000, Tuna 2002

Although Turkish ports have not yet invested in the distribution and logistics centers inside port areas, they will be ideal locations for creation such centers considering the advantages mentioned above. Growth in export and import container volumes will be the pre-eminent driving force behind the development of intermodal facilities by the major gateway ports of Turkey (Zeybek and Kaynak, 2007). From the above discussion, it seems that Turkish ports, Istanbul, Mersin and İzmir have potential to develop efficient value added logistics facilities in port located areas or near ports.

CONCLUSION

Internationalisation of the production and assembly of components and partly or fully finished goods has created a need for logistics platforms to perform tasks like groupage, quality control and final distribution. Ports are the ideal location for international companies to distribute their products and these companies prefer in, or near, container port areas to locate a distripark (UNESCAP 2005). The proximity to the point where loads are broken down between sea and overland transport leads this ideal location Ferrari, *et al,*2006.

Therefore, formulation of a strategy on container traffic is the key for the development of this sophisticated industry to which Turkey has been orienting. Considering the development of consumer markets and new logistic activities of the multinational companies in Eastern Europe and Black Sea region, ports of Turkey should be restructured to include value added logistics in their activities based on the lessons from North Europe and South Mediterranean ports. It seems that the development of inland intermodal transport network and logistics facilities on hinterland penetration is a big challenge for Turkey.

Turkey has experienced a rapid growth of both imports and exports in recent years and this trend will continue in the years to come. It is expected that the negotiations with EU, started on 3 October, 2005 will contribute to this up going. The size of the Turkish market, adequate business climate, harmonized laws and customs, dynamic logistics sector give rise to a potential for attracting value added logistics activities with a regional scope in Turkey. Turkey's gateway ports, İstanbul, Izmir and Mersin Turkish Mediterranean ports, especially Mersin and İzmir have potential to develop efficient value added logistics facilities in, or near, port areas to expand port hinterlands. The ongoing privatization process will facilitate their physical, technical and infrastructural improvement towards that direction.

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Title : **What role for Turkish ports in the regional logistics supply chains?**

Author(s): **Hülya Zeybek and Muhtesem Kaynak**
N° : **30- Zeybek and Kaynak**

	Excellent	Very good	Good	Average	Weak	Does not apply
Clarity			x			
Originality				x		
Relevance to Conference			x			
Usefulness for researchers			x			
Usefulness for practitioners		x		x		
Overall organization of the paper		x				
Technical soundness			x			
Overall appreciation			x			

Rating of this paper in comparison to similar papers published in top-rated scientific conferences

Below publication Level	Bottom 20%	Below average	Average	Above average	Top 20%

Evaluation Summary :
Revisions required : ☐many ☐ some ☒ few ☐ none

Acceptance :
☐ Strongly accepted ☐ Accepted as it is
☒ Accepted with modifications (MINOR) ☐ Refused

Recommendation (please, mark a cross):

Do you recommend the paper for a scientific journal? Can't say, this is much applied.

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Recommendation to authors:

General comments:

Interesting applied paper.

Well structured.

References are not numbered therefore the authors should review page 6 when they ref. to (9).

Title should be changed; the "regional logistics supply chains" doesn't make sense for me. The products are flowing from Asia and moved all over Europe.

Last sentence of abstract is too long, please review.

Figures are not clear; please make sure the quality will be maintained at printing.