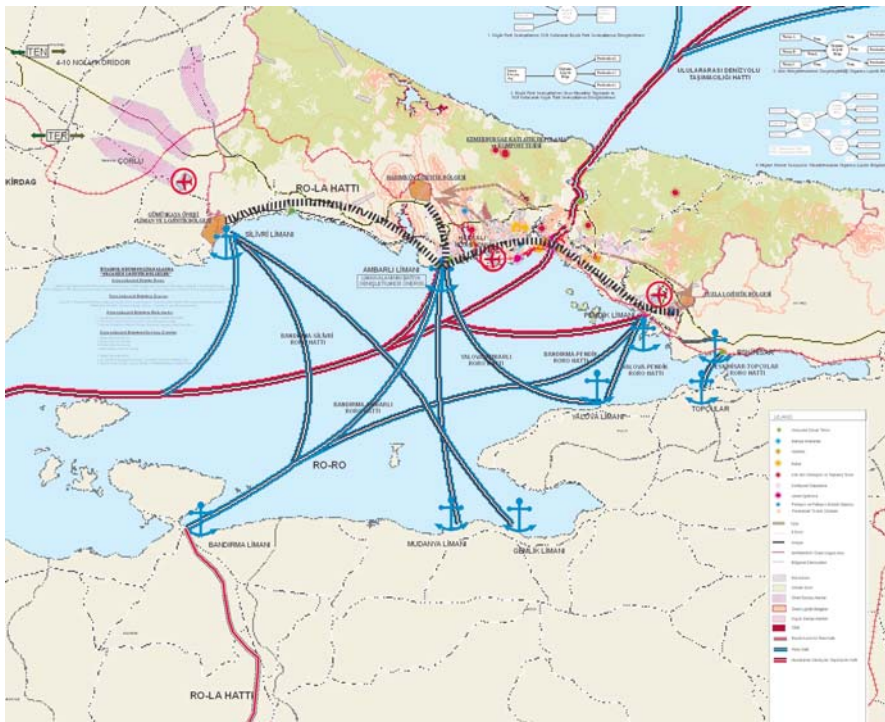


URBAN LOGISTICS PLANNING FOR ISTANBUL

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Logistic planning study is an interdisciplinary approach and is closely related to fields such as economics, social sciences, engineering, mathematics and environmental science.



LOGISTICS SERVICES

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Logistic nodes, transportation networks, the relation between these and logistic demand are the focus of the study. Istanbul is an important centre of many sectors such as trade, industry, tourism for Turkey and regional countries. In addition, since 60 % of Turkey's \$ 30 billion worth of logistic movement takes place in Istanbul, it is important that these relations should be studied carefully.

Logistics Nodes in Istanbul

The logistic nodes in Istanbul include the following:

Organized Industrial Zones - There are 8 Organized Industrial Zones (OIZ) in the province of Istanbul: Dudullu, İkitelli, Tuzla Deri, Tuzla Organize Sanayi, Tuzla Mermerciler, Tuzla Boya Vernik, Tuzla Kimya and Beylikdüzü.

Small Industrial Sites - 113 small industrial sites in Istanbul include 35 000 businesses where 150 000 people are employed.

Cargo Terminals - Topkapı Cargo Terminal includes 140 businesses, employs about 1250 people and has a daily economic turnover of approximately \$ 1 400 000.

Food Terminals - Food terminals in Istanbul are Bayrampaşa and Erenköy fruit and vegetable terminals, Rami and Mega Centre dry food terminals and Yenikapı seafood terminal. The average daily traffic of these terminals is about 17 000 vehicles.

Customs Warehouses - There are 424 customs warehouses under 16 Customs Offices in Istanbul.

Storage of Chemical Products - Special storage areas are needed for explosive and flammable materials. The areas in Küçükçekmece and Tuzla districts are not being used and therefore they occupy space idly in urban areas.

Logistics Terminals in Istanbul

The logistic terminals in Istanbul include the following:

Ports - The most important four ports of Istanbul are Ambarlı Port, Istanbul Passenger Port, Zeyport and Haydarpaşa Port.

Airports - Atatürk and Sabiha Gökçen Airports are located in Istanbul. In addition, Çorlu Airport also assists in freight transportation of Istanbul.

Railway Freight Stations - Halkalı and Haydarpaşa Stations are available for international and intercity cargo transportation.

Customs - Halkalı and Erenköy Customs are important for logistics activities in the Istanbul Metropolitan Area and Marmara Region due to their positions and services they provide.

Freight Flow in Istanbul

The freight flow in Istanbul is made up of the following segments:

Petroleum Distribution Logistics - Petroleum and gasoline is transported to 4700 stations in Istanbul from Ambarlı and Tüpraş Facilities with 600 vehicles travelling 180 km per day. Volume of freight flow is 20 000 tons per day, of which 12 000 tons is delivered to fuel stations and 8000 tons to the airports.

Cargo Distribution - Cargo sector, which includes small parcel and mail distribution, employs about 40 000 people. Istanbul has a 57 % share in Turkey's total annual turnover of \$1 400 000. Daily average number of cargo distribution vehicles in Istanbul is 3500.

Retail Sector - With 13 hypermarket chains and over 40 000 employees, the retail sector has an important place in logistic movements.

Solid Waste Logistics - There are 6 waste transfer stations, one compost facility and one sanitary landfill disposable on each side (European and Asian). A daily average of 4500 vehicles carry waste.

Logistics Solutions

Logistics solutions proposed for the Istanbul Metropolitan Area are summarized as follows:

Shifting of Freight Transportation to Railways

It is proposed that trucks and other heavy vehicles be carried on Ro-La trains between terminals to be established on the Western and Eastern ends of the city by shuttle services on the Marmaray line, which is designed according to the principle of carrying passengers during the day and freight at night. For this purpose, two main terminals at Gebze on the East and at Halkalı on the West (according to the needs of the system), with intermediate loading / unloading stations should be established. It will then be possible to carry 20,000 vehicles per night in each direction. Halkalı Station should play the role of central station of Istanbul for major freight and passenger transfers.

Road transportation between Thrace and Anatolia, and especially the international transit traffic that passes through Istanbul, should be shifted to Ro-La line with priority. At a later stage, delivery vehicles should also be included in the Ro-La system in order to minimize urban road traffic. To operate Ro-La system efficiently, it should be connected to the logistics zones that are planned for Tuzla on the East, in Hadımköy on the West and in Silivri at the second stage.

Besides existing organized industrial zones and proposed logistics zones, rail lines should also be extended to areas where major industry is present in the medium and long term in order to expand the Ro-La system.

Ro-Ro Vessels in Sea Transportation

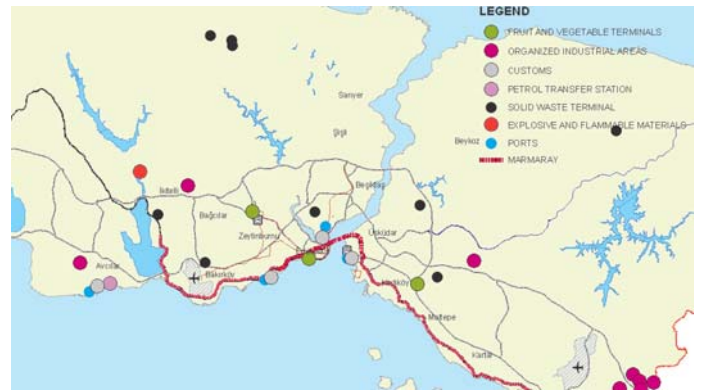
There are two private firms in Istanbul that can carry 350 trucks per day between Ambarlı and Bandırma. Another private line operates between Tekirdağ and Bandırma with a capacity of 80 trucks per day. In addition, the Istanbul Sea-bus Corporation operates a ferry line between Eskişehir and Topçular that carries an average of 1000 trucks per day.

The Istanbul Sea-bus Corporation is planning to start Ro-Ro trips between Ambarlı-Bandırma and Ambarlı-Mudanya. It is anticipated that the daily potential will increase 2 to 3 times with the development of these lines. Instead of trips parallel to the shore, lines connecting the Southern and Northern Marmara provide great benefits to operators in costs and time.

Another benefit of establishing Ro-Ro lines is their contribution to increasing the use of sustainable transportation systems. In developed nations such as the European Union, the rate of increase in road traffic is reduced to zero; hence the negative effects of air pollution, risk of accidents and noise are minimized.

Establishment of Specialized Logistics Zones

Specialized logistics zones akin to examples like Paris and Barcelona should be established in order to allow the sector to grow and achieve competitiveness. According to demand, an area of 300 to 1000 Hectares on each side of Istanbul should be dedicated and developed as 'Logistics Zones' of Istanbul.



Integration of the System

To achieve optimization of freight flow between logistics zones, ports and road terminals, Ro-La and Ro-Ro systems should be integrated with each other. Cargo that arrives from both international and national sources by sea, rail or road should be moved primarily to the Ro-La system in Istanbul and routing of freight movement in the East-West axis over the Ro-La line should be promoted.

Cargo coming from or going to the Aegean Region should be transported to Mudanya and Bandırma with Ro-Ro ships that are expected to commence service and truck traffic from the Aegean Region should be shifted to the Ro-Ro line. The traffic that comes from railways of the Aegean Region via Bandırma should be transferred to Ro-La after the Ro-Ro and the possibility of shifting this traffic partly from road to rail should be developed.

Regulation of Fuel Delivery Traffic and Pipeline Transportation

The following are proposed to regulate fuel delivery traffic in Istanbul:

- Short-distance filling stations should be developed,
- A fuel pipeline should be developed from Ambarlı and Tüpraş to Atatürk, Sabiha Gökçen, Çorlu airports and to other nodes,
- Existing idle pipelines should be used for fuel transportation and/or new lines should be built,
- Capacity of existing fuel transfer stations should be increased,
- Since the transfer facilities in Dilovası are located in a critical position close to the transportation axes connecting to Anatolia rendering them vulnerable, security measures should be increased to required levels,
- The afore mentioned facility should be moved closer to Tüpraş,
- Work authorization permit formalities at the transfer facilities in Dilovası should be finalized.

Efficient Use of Ports

The container traffic of Istanbul ports in 2005 was 1,126,000 TEUs. According to various estimates for year 2015, this figure is anticipated to increase 2 to 3 fold. Therefore, container traffic of Istanbul in year 2015 is estimated at between 2,500,000 and 4,000,000 TEUs.

Physical arrangements and reservation of required area is necessary for warehouses, antreposes, CFS areas and trailer parks.

In this context the following measures are recommended:

- The existing railways of Istanbul are insufficient. Ambarlı Port cannot overcome this deficiency due to limited physical space. Land located 5-10 km behind the port should be included in the port area to overcome this deficiency.
- To make up for the deficiency of Ambarlı Port and to integrate services in this area with the port, it will be an important step that the area located at 500-600 meters depth of the neighbourhoods behind the port be designated as reserve area.
- In order to minimize the traffic load generated by Ambarlı Port, the port should be connected to the Halkalı-Edirne railway line at Bahçeşehir and the possibility of transporting cargo arriving from the Marmara Sea through this line should be created.
- The above mentioned connection should be extended to the logistics zone to be developed in Hadımköy and the zone should be connected to Ambarlı Port.
- In addition, other ports in the region should be restructured in the same way.

Airports

Suggested solutions for problems encountered at airports in Istanbul can be listed as follows:

- The area on the East of Atatürk Airport, including the World Trade Centre, should be appended to the airport borders.
- A logistics zone similar to examples in other countries should be established in Atatürk Airport.
- Sabiha Gökçen Airport and its surrounding area should be preserved to fulfil future expansion needs and illegal urbanization should be prevented.



- New cargo facilities should be integrated with ports via road (TEM Highway) and rail (Bosphorus Tube Crossing).
- Coordination and integration should be formed between Atatürk and Sabiha Gökçen Airports.
- The proposed solution for the next 10 years is to move cargo facilities in Atatürk Airport to somewhere else within the airport.
- Proposed locations for cargo facilities at Atatürk Airport are to the Southern area where current functions exist and the unoccupied land on the East around World Trade Centre.

Solid Waste Management

The following suggestions have been developed for solid waste logistics in Istanbul:

- The current solution of burying the waste is very costly and has severe undesired effects on the environment. As a principle, instead of developing new storage areas, the system should be upgraded to EU standards.
- Technologies for recycling and utilizing waste should be implemented.
- Waste collection activity, 70 % of which is currently performed during business hours, should be shifted to nights.

Moving Customs

Since 3000 to 4000 trailer trucks travel to Halkalı and Erenköy Customs causing an additional burden on urban traffic, these units should be moved to the proposed logistics zones. The land that will be evacuated by customs should be reserved for the infrastructure of the Marmaray urban, intercity and international railway transfer stations.

Logistics Planning for Disasters

Logistics planning is needed for transportation of food and technical material to places of need during natural disasters such as earthquake and flood that can affect large swathes of Istanbul. For this purpose, two 'emergency logistics centres for disasters' should be developed, one in Halkalı on the European Side and one in Tuzla / Aydınlı region on the Asian Side, close to main arteries, on easy to reach areas, where basic materials and equipment that need to be transported in the first 10 hours after the disaster can be dispatched, with an average area of 2 hectares each. ■

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