

**IMPORTANCE OF TRANSPORTATION IN TERMS OF LOGISTICS
MANAGEMENT, EUROPEAN UNION, AND TURKEY:
WHY DOES TURKEY NOT QUALIFY FOR INTERMODAL PRINCIPLES
IN TRANSPORTATION SECTOR?**

ERKAN DEMİR

AUGUST 2005

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ABSTRACT

Importance of Transportation in Terms of Logistics Management, European Union,
and Turkey: Why Does Turkey not Qualify for Intermodal Principles in
Transportation Sector?

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This thesis emphasizes technologically and socially the importance of transportation and transportation modes in the improving world. In this thesis, how countries, people, and environment are being affected from transportation activities, what kinds of benefits they get, and what positive effects can be gotten in terms of economic and social are being investigated. In the globalizing world, with the abolishment of borders, the concept of human, which becomes more important by degrees, has determined the “time” factor. In this perspective, transportation of right product, at the right time, to the right place, and by the right transport mode has become the most important element determining the competitive power of firms even countries. Deficiencies of Turkish transport sector and the appropriateness of “Intermodal Transportation System” were analysed by taking the EU transportation sector as a modal.

Key Words: Logistics, European Union Transport Policy, Turkish Transport Sector, Transportation Modes, Intermodal Transportation, Geographic Information System (GIS)

ÖZET

Ulaştırmanın Lojistik Yönetimi, Avrupa Birliği ve Türkiye Açısından Önemi:
Kombine Taşımacılık İlkeleri Açısından Ulaştırma Sektöründe Türkiye Neden
Yetersizdir?

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Bu tez, ekonomik, teknolojik ve sosyo-kültürel açıdan sürekli değişim halindeki dünyamızda ulaştırmanın ve ulaştırma modellerinin önemini vurgulamaktadır. Ülkelerin, insanların ve çevrenin ulaştırma faaliyetlerinden nasıl etkilendikleri, ne gibi faydalar sağladıkları, ekonomik ve sosyal açıdan uygun ulaştırma sistemlerinin ne gibi artılar getirdiği bu tezde incelenmektedir. Globalleşen dünyamızda sınırların kalkmasıyla birlikte daha önemli hale gelen insan faktörü zaman kriterini ortaya çıkartmıştır. Bu doğrultuda doğru malı, doğru zamanda, doğru yere ve doğru ulaşım aracıyla ulaştırmak firmaların ve hatta ülkelerin rekabet gücünü belirleyen en önemli etken haline gelmiştir. Avrupa Birliği örnek alınarak Türk ulaştırma sistemindeki eksiklerin belirlenmesi ve “Intermodal Ulaştırma Sistemi” nin uygunluğu analizi bu tez bünyesinde yapılmıştır.

Anahtar Kelimeler : Lojistik, Avrupa Ulaştırma Politikası, Türk Ulaştırma Sektörü, Ulaştırma Modelleri, kombine Taşımacılık, Coğrafi Bilgi Sistemi (CBS)

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LIST OF ABBREVIATIONS

EC	EUROPEAN COMMUNITY
EEC	EUROPEAN ECONOMIC COMMUNITY
EI	EUROPEAN ECONOMIC INTEGRATION
EU	EUROPEAN UNION
EP	EUROPEAN PARLIAMENT
OECD	ORGANISATION FOR ECONOMIC CO-OPERATION AND DEVELOPMENT
TCDD	TURKIYE CUMHURİYETİ DEVLET DEMİRYOLLARI
TUSIAD	TURKISH INDUSTRIALIST’S AND BUSINESSMEN’S ASSOCIATION
US	THE UNITED STATES
WW II	THE WORLD WAR II

INTRODUCTION

There have been many corner stones in the history of humanity and these corner stones had played important roles to change the world. Emergence of communities, invention of money, improvement of trade owing to money, appearance of different cultures and religions, new continents and countries and so on can be showed as factors which have affected the world life. However, economically the last century has affected the world more the previous centuries. The 20th century has brought differences together with it. At the beginning of 20th century, the world has been shocked with the First World War. This war lasted four years and in the EU rope the balances had disturbed. Eleven years after, “Great Depression” occurred. Especially European countries had faced big famine and economic problems. A new problem was coming up and authorities were not late to diagnose this threat. And finally the Second World War had been started by Germany. It meant that the first half of the 20th century witnessed two big wars. With these wars the concept of “Military Logistics” had started to be talked by sides. At that time, Military Logistics was consisting of distribution of military equipment to frontiers. That is, transportation of soldiers, food, weapons etc. was function of the Military Logistics.

After the World War II, some crucial improvements have happened such as The European Economic Integration (EEI) and the polarization of the world. In the triangle of the US, the EU and Soviet Russia, the main aim of all countries have been to revive and improve new trade zones. In this context, in spite of weapons and wars, economic development and customer satisfaction became new instruments of countries and companies.

The Second half of the 20th century witnessed a huge process of economic development despite some economic crises such as petroleum crises. The process starting with the Henry Ford's "production line" has accelerated in the 1980s. At that time, companies were trying to produce as much as they could. Therefore, we cannot talk about marketing, customer service or other elements of company because companies undervalued them. It is possible to say that in comparison to other concepts, production was the most important element.

When we come to the 1980s, we saw that borders have started to be abolished by economic and politic conjunctions. In this perspective, new technologies, boundless economic relations, various costumer needs and emergence of information communities have opened the way for globalization and forced the companies to obey the new rules of globalization. In this new era, the world has started to be taken up as whole. To revive and improve themselves, all firms have to obtain competitive advantages in markets and benefit from information technologies to respond to customer needs. This information coming from customers can be used to form an effective and efficient logistics lines between firms and customers. Authorities have understood that it can be solved through "Logistics Management".

Transportation from the perspective of both logistics management and countries has an important place. In terms of economic and social life its effects can determine position of a country. To gain time, provide safety, protect environment and benefit from cheap transportation countries have to solve infrastructure problems and give equal attention for all modes. Today, the most important indicator of a developed country is how much effective and efficient they have. As a candidate

country Turkey has a huge transportation potential between The Europe and Asia. In addition to this feature of Turkey, its growing economic potential needs more developed and modern transportation sector. To obtain transportation sector at The EU standards, Turkey should determine its defective point and abolish all of them. The European Union has been trying to solve all transportation problems in Member States. As its White Paper for 2010 mentioned, abolishment of imbalance between transportation modes, traffic accidents and environmental pollution vital measure have been taken into account. At this point, Turkey also has to take into account these measures before it become too late.

To sum up, increasing use of new technologies, the emergence of complex systems, decrease in raw materials used in industrial base, improvement of cost reduction systems and increase in the level of competition around the world have proved the rising of need for Logistics Management and well developed transportation sectors.

CHAPTER 1

Logistics and Its Role in Organizations

1.1. What is Logistics?

The concept of logistics does not go back. Previously this concept was used in military and its activities. In particular, transportation of military equipments such as soldiers, weapons, food etc. to frontiers is the main task of military logistics. According to authorities, military logistics is the design and integration of all aspects for the operational capability of the military forces (deployed or in garrison) and their equipment to ensure readiness, reliability, and efficiency (Coyle, Bardi, Langley, 2003, pp.38-39).

The best example we can give is the Gulf War. In this war the US has showed the importance of logistics in the times of war. In the early part of 1991, the world was given a dramatic example of the importance of logistics. As a precursor to Gulf War it had been necessary for the United States and its allies to move huge amounts of materials great distances in what were thought to be impossibly short time frames (Christopher, 1998, p.3). However, it was not the unique example of military logistics. The biggest war of the world had been not only in frontiers but also in logistics arena. During the World War II, military forces made effective use of logistics models and forms of systems analysis to ensure that materials were at the proper place when needed (Wood, Barane, Wardlow and Murphy, 1998).

Table 1. Different Definitions of Logistics

Perspective	Definition
Inventory	Management of materials in motion and at rest
Customer	Getting the right product, to the right customer, in the right quantity, in the right condition, at the right place, at the right time, and at the right cost (called the “seven R s of logistics)
Dictionary	The branch of military science having to do with procuring, maintaining, and transporting material, personnel, and facilities
International Society of Logistics	The art and science of management, engineering, and technical activities concerned with requirements, design, and supplying and maintaining resources to support objectives, plans, and operations
Utility/Value	Providing time and place utility / value of materials and products in support of organization objectives
Council of Logistics Management	That part of the supply chain process that plans, implements, and controls the efficient, effective flow and storage of goods, services
Component support	Supply management for the plant (inbound logistics) and distribution management for the firm’s customers (outbound logistics)
Functional management	Materials requirements determination, purchasing, transportation, inventory management, warehousing, materials handling, industrial packaging, facility location analysis, distribution, return goods handling, information management, customer service, and all other activities concerned with supporting the internal customer with materials and the external customer with stories.
Common culture	Handling the details of an activity

Source: Adapted from Coyle, J. John, Bardi, J. Edward, Langley, C. John. 2003. The Management of Business Logistics. 7th edition, South-Western, Thomson Learning, p.39

Following the clear importance of contribution of logistics the allied victory in the World War II logistics began to receive increased recognition and emphasis. (Lambert, Stock and Ellram, 1998, p.5).

In fact, apart from military, logistics had been used for farm products during the second half of 19th century. Logistics activity is literally thousands years old, dating back to the earliest forms of organized trade. As an area of study, however, it first began to gain attention in the 19th century (Lambert, Stock and Ellram, 1998, p.5). Henry Adams who was the president of Yale University in 1850 made the first study about logistics under the title of “Railway Economy”. However, attention of head management emerged between 1950 and 1960. The reason of this tendency, at that time, was reflected as a need to deal with the problem in markets (Orhan, 2003, p.9).

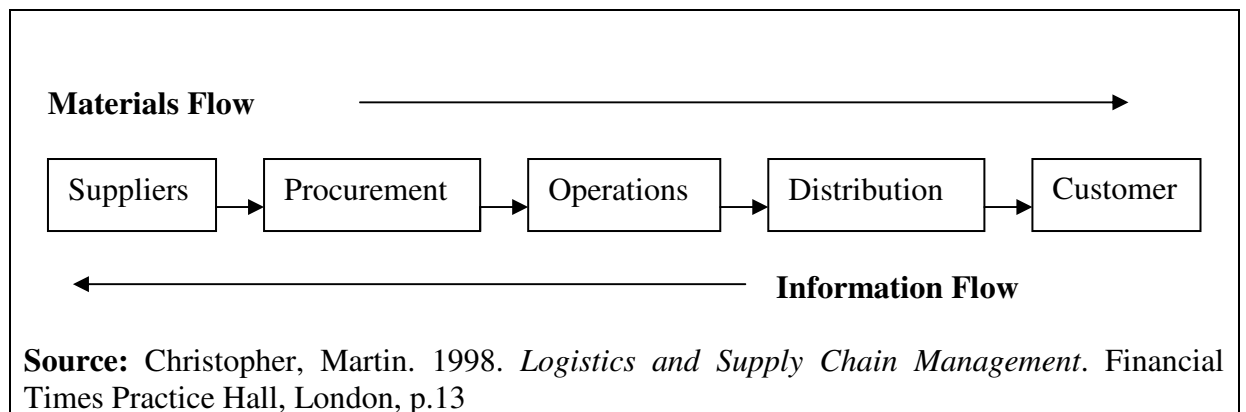
In this process, logistics has had different names, which had the same meaning. Logistics management has been called by many names, including the following;

- Business Logistics
- Distribution
- Logistics
- Material Management
- Physical Distribution
- Supply Chain Management

These terms commonly deal with the flow of goods or materials from the point of origin to the point of consumption (Lambert, Stock and Ellram, 1998, p.2-3). Since the emergence of these terms, there have been different definitions of logistics. However, definitions have been emphasizing different points because of different companies. The Council of Logistics Management (CLM) has made the common

definition of logistics. In 1991, the CLM, a prestigious professional organization, defined logistics as “the process of planning, implementing and controlling the efficient, effective flow and storage of goods, services, and related information from the point of origin to the point of consumption for the purpose of conforming to customer requirements” (See the Web Portal of the Council of Logistics Management)

Figure 1. Total System Concept



1.2. How Logistics came to today?

The concept of “logistics” started to be discussed in 19th century firstly. The first attempt came from Henry Adams who was a professor at Yale University and he offered that a course might be opened under the name of “Transportation Economics” (Orhan, 2003, p.9). In addition to this initiative, in London and New York an important book was published by Dionysius Lardner as *Railway Economy: A Treatise on the New Art of transportation*. According to Kent and Flint, “*Logistics known as physical distribution, first appeared in the academic literature in the early 1900s.*” (Kent, Flint, 1997, p.16)

During these years, the agriculture sector was ahead in comparison with other sectors. In order to transportation agriculture products to the point of consumption,

manufacturers needed a strong logistics lines. Therefore it is possible to say that the need for logistics firstly came from agriculture (Lambert, Stock, Ellram, 1998, p.5). At that time attention centered on transporting products from the farm to the point of sale. Thus, until World War II, agriculture economics had a great deal of influence (Kent and Flint, 1997, p.21).

Between 1940 and 1945, authorities discovered another side of logistics called “Military Logistics”.

“Following the clear importance of contribution of logistics towards the Allied victory in World War II, logistics began to receive increased recognition and emphasis. Just as in the Persian Gulf War in 1990-91, the ability to efficiently and effectively distribute and store supplies and personnel were key factors in the success of the US Armed Forces.”(Lambert, Stock and Ellram, 1998, p.5-6)

However, the attention of business area to logistics has been very new in comparison with military and agriculture. This attention occurred between 1950 and 1960 and the cause of this recognition was shown as the bottleneck in markets. In the early 1960s, as a writer and management consultant, Peter Drucker proposed that logistics management must be analyzed deeply. According to Drucker, We know little more today about distribution than Napoleon’s contemporaries knew about the interior of Africa. We know it is big, we know it is there, and that’s about all. (Drucker, 1962,)

The process of recognition of logistics has accelerated in 1980s and this acceleration has increased gradually all over the world during the 1990s. After the 1990s, all sectors have started to accept the importance of logistics management.

1.3. Role of Logistics in Organizations

With the recognition of logistics management all over the world, authorities understood that all activities in organizations are elements of logistics management. Therefore, organizations can obtain vital advantages in international markets by using logistics management. As we know, in the present world, technology, cost, communication between activities and correct information from customers are the most important key elements of Logistics Management. Efficient and effective use of these concepts can give many advantages to firms and even to countries.

Especially, costs of activities occurred in factories have the effective potential to coordinate the road of organizations. Therefore, decreasing the costs and having a strong cost control system owing to logistics management can be indicator of success in international markets.

“The Factor strongly contributing to the increased emphasis and importance of logistics is a continued and growing emphasis on cost control. A survey of chief executive officers of fortune 500 manufacturing firms and fortune 500 service firms indicated that they believed that the most important way to improve company profitability was through cost cutting and cost control system”
(Lambert, Stock, and Ellram, 1998, p.6)

According to Lambert, Stock and Ellram, \$1.00 saved in logistics costs has a much greater impact on the organization’s profitability than a \$1.00 increase in sales.

In most organizations, sales revenue increases are more difficult to achieve than logistics cost reductions.

Table 2. Profit Leverage Provided by Logistics Cost Reduction

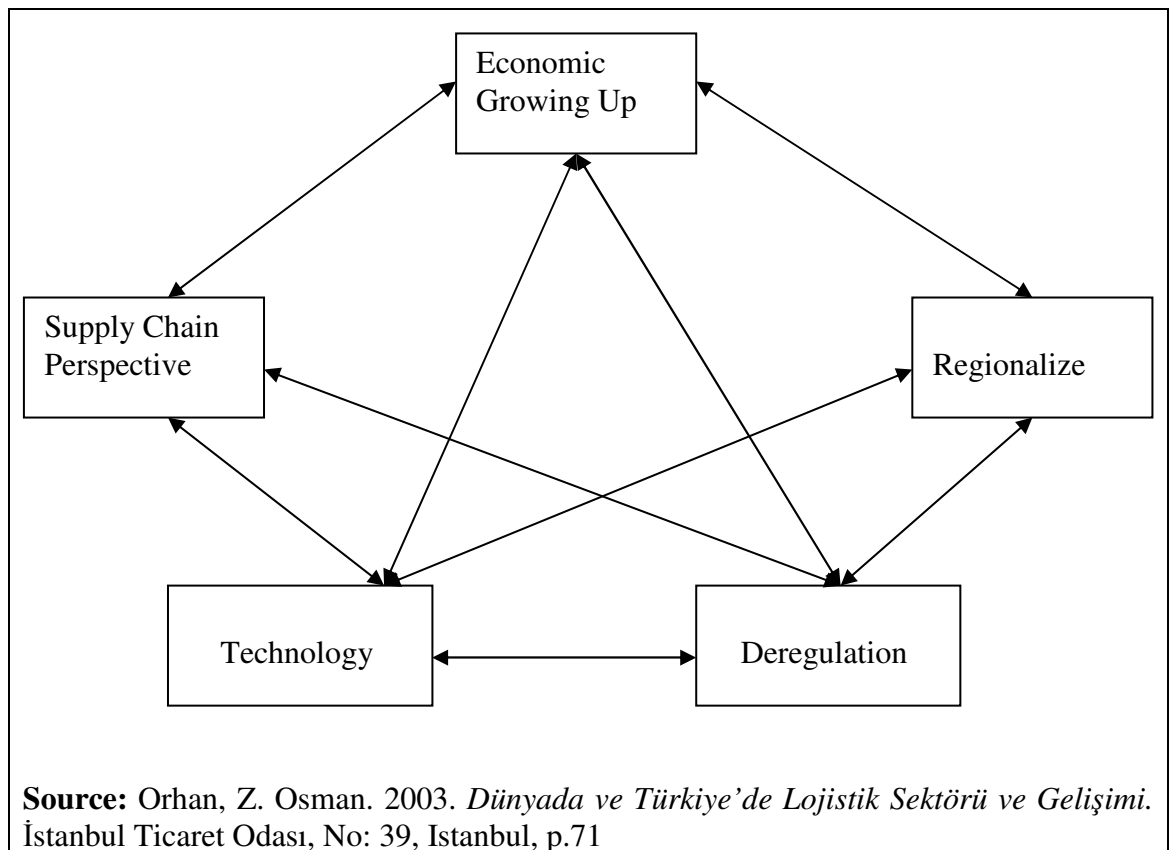
If net profit on the sales Dollar is 2.0 percent, then....			
A Saving of		Is Equivalent to a Sales Increase of	
-----		-----	
\$	0.02	\$	1.00
	2.00		100.00
	200.00		10000.00
	2000.00		100000.00
	20000.00		1000000.00
-----		-----	
Source: Lambert, M. Douglas, James R. Stock, and Lisa M. Ellram. 1998. <i>Fundamentals of Logistics Management</i> . McGraw- Hill Companies, United States, p.8			

Another important factor that is directing the road of firms is technologic improvements. Technological improvements have entered into all life areas, it should be considered by firms as well. With the emergence of information communities, technology has been significant. If we suppose that globalization and technological improvements are collateral, perspective from commercial movements technological improvements have vital importance. At this point, flow of information directly affects the firms' efficiency in international markets. Relationship between globalization and technology is given in figure 2.

With the help of the recent technologic developments, firms have gotten many advantages. A company, which does not follow enough the technological improvements, can lose its abilities gradually (Ecevit, 2002, p.74).

“These technologic improvements gave organizations the ability to better monitor transaction intensive activities such as the ordering, movement, stage of goods and materials. Combined with the availability of computerized quantitative models, this information increased the ability to manage flows and to optimize inventory levels and movements (Lambert, Stock, and Ellram, 1998, p.6-79).

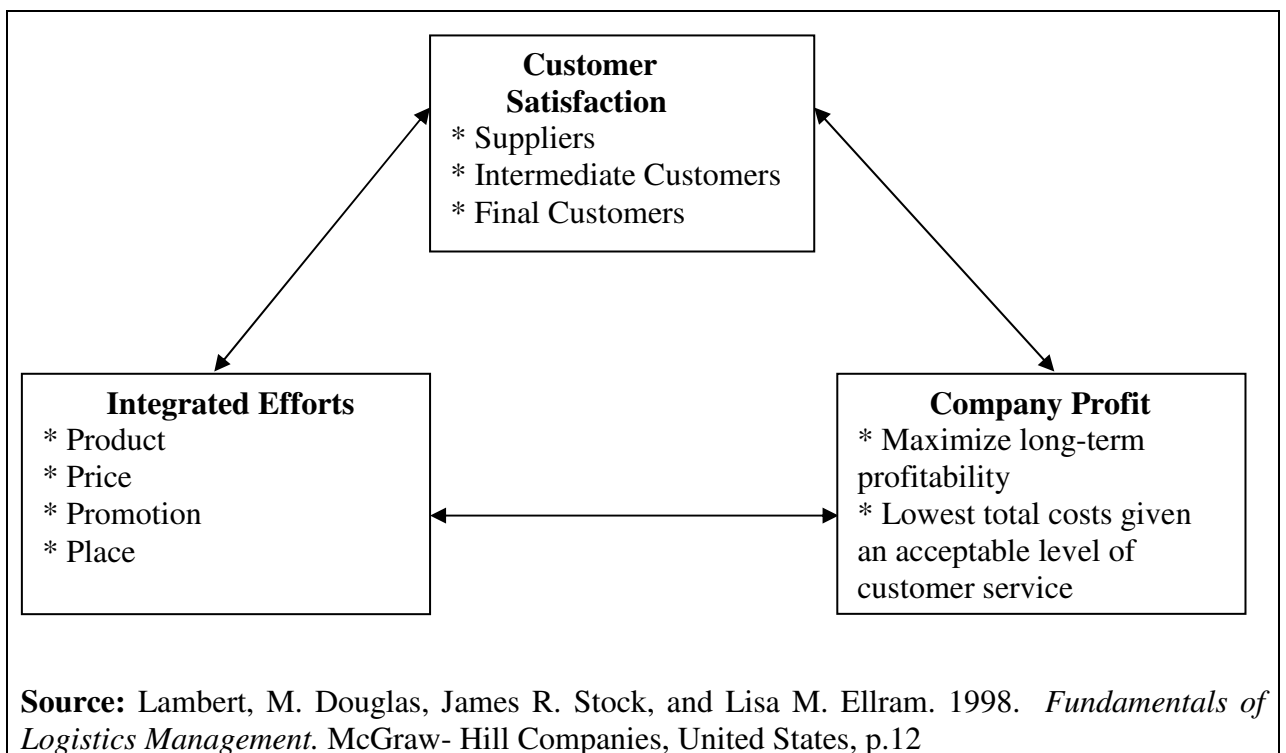
Figure 2. Factors behind Globalization



At this point, Logistics Management’s framework includes technological improvements in the world. According to logistics management approach, technology can be considered as a bridge between elements of firm and its customers.

The role of logistics in marketing strategies has a great importance. The “four P’s” marketing mix require that for a firm to be successful, any marketing effort must integrate the ideas of having the right product, at right price, publicized with the proper promotion, and available in the right place (Lamber, Stock, and Ellram, 1997). The relationship between logistics and the three critical elements of marketing concept are shown in figure 3.

Figure 3. Marketing/Logistics Management Concept



1.4. Elements of Logistics Management

1.4.1. Customer Service

1.4.1.1. What is Customer Service?

Clients who are consuming the products and service of firms are the most important and clearest indicators of a firm’s success in markets. Therefore, to get loyalty of customers and provide customer satisfaction, firms have to co-ordinate

their activities according to customers' demands. In order to fulfill customers' demands and create of different answers to different kind of demands, in the 21st century, companies have to plan their style of relation with customers and form their original "Customer Service".

Customer service is being defined in different types by firms. Each firm has its own service approach but at the basis of all these approaches the customer satisfaction exists. According to Kyj and Kyj, customer service, when utilized effectively, is a prime variable that can have a significant impact on creating demand and retaining customer loyalty (Kyj and Kyj, 1994, p.41-42).

Definitions of customer service can change from factor to factor. For example, some define customer service as an activity that must be managed such as invoicing, order processing, or handling complaints, while some authorities define it with performance measures (Bloomberg, LeMay and Hanna, 2002, p.64).

There are different types of organizations and customers in the world. Moreover, their demands change from customer to customer. In a broad sense, customer service is the measure of how well the logistics system is performing in providing time and place utility for a product or service (Lambert, Stock and Ellram, 1997, p.40). As we mentioned before, there are three ways created by organizations to determine the definition of customer service (Kyj and Kyj, 1994, p.41); (1) An activity or function to be managed such as order processing, (2) actual performance on particular parameters, (3) part of an overall corporate philosophy, rather than

simply an activity or performance measures. Based on all thing said above, customer service is

“...a process which takes place between the buyer, seller, and third party. The process results in a value added to the product or service exchanged. Customer service is a process for providing significant value added benefits to the supply chain in a cost-effective way.”
(Lambert, Stock, and Ellram 1998, p.41)

According to Doctker, customer service is the entire process of filling the customers' order. This process includes the receipt of the order, managing the payment, picking and packing the goods, shipping the package, delivering the package, providing customer service for the end user and handling the possible return of goods (Doctker, 2000, p.356).

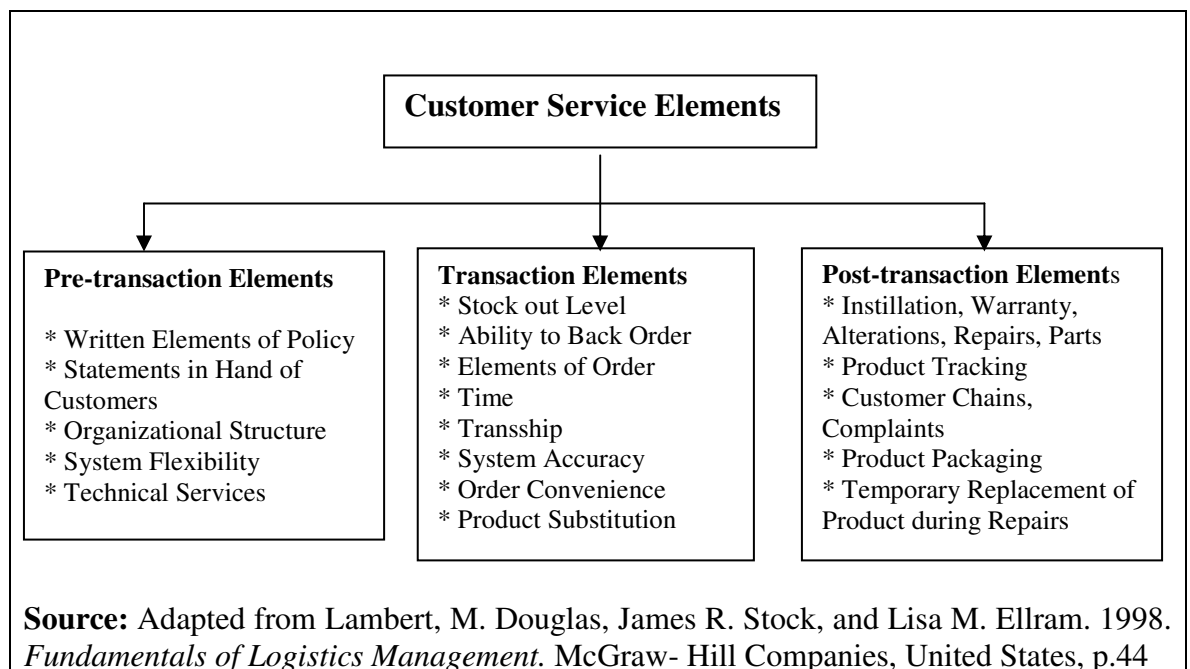
1.4.1.2. Customer Service Elements

The “Seven R’s” rule shows the level of customer service. The “Seven R’s” means the right product, in the right quantity, in the right condition, at the right place, at the right time, for the right customer, and at the right cost. This chain of rules establishes the framework for customer service elements and if any breakdown happens in this chain, the flow of products and service is disrupted. So, it means that customer service fails (Bloomberg, Le May, and Hanna, 2002, p.65-66).

Customer service elements are separated into three groups called Pre-transaction, Transaction, and Post-transaction. Figure 4 shows these groups.

If we look at the first element of customer service, even though this element does not include the core services, it forms the framework of all customer service of organization and determines the style of this service. Before creating a customer service, organizations have to regulate their rules and policies about this subject. In pre-transaction elements, statements about policy, structure of organization, technical points and flexibility of system exist.

Figure 4. Elements of Customer Service



“The pre-transaction elements of customer service tend to be related to the organization’s policies regarding customer service, and can have significant impact on customer’s perceptions of the organization and their overall satisfaction. These elements are not all directly to logistics. They must be formulated and in place before the organization can consistently implement and execute its customer service activities.” (Lambert, Stock, and Ellram, 1998, p.43)

As to other element of customer service, transaction elements are more technical components of customer service in comparison with other elements. Within this group, all components work for implementation of pre-transaction elements. At the main point of this process, movement of products and services to customers take place. According to Bloomberg, Le May and Hanna, this flow is called “Order Cycle” and it begins when an order arrives and ends when a firm fulfills order by transporting the product to customer.

The border of post-transaction begins after sale. Therefore, all services after sale such as warranty, repairs, returns, complaint are included at this stage. Post-transaction activities can comment a solid relationship with the customer and lead to repeating business, one of the goals of customer service (Lambert, Stock, and Ellram, 1998, p.48). According to Ballou, post-transaction elements represent the array of service needed to support the product in the field; to protect consumer from defective products, to provide for the return of packages, and to handle claims, complaints, and returns. These takes place after the sale of products, but they must be planned for in the pre-transaction and transaction stages (Ballou, 2004, p.93). At the main point of this stage, customer satisfaction and the protection of customer loyalty exist.

1.4.1.3. Importance of Customer Service

All firms know that all of them have reasons for foundation. And one of the most important reasons for foundation is to serve to customers. Customers are the last piece of the puzzle and if this piece is missing, we cannot see the whole picture. Therefore, this is a world which is customer oriented. As Murphy and Wood said,

*“Customers are important! Today many business claim that they are **Customer Driven.**”* (Murphy and Wood, 2004, p.96)

Information flow between points such as retailers, firms and customers has a vital importance. Actually, the perspective from customer service, the situation is more important than other points. For example, in the 21st century, letters and all handwritings have been replaced with computer Technologies. Therefore, the best way to set a contact with customers and get information from them is the Internet or e-mails. A survey applied to over 2000 manufacturers dealing with supply chain indicated that the logistics activity that benefited most from increased exchange of information was customer service (Murphy and Wood, 2004, p.97). With good information flow or exchange between customers and firm, firm can have a excellent weapon in markets. As we know, the customer service has started to increase its importance in comparison with product since the early times of 1980s. At this point, domination of product started to decrease.

“In more and more markets, the power of the brand has declined and customers are willing to accept substitutes; even technology differences between products have been removed so that it is harder to maintain a competitive edge through the product itself. In situations like this, it is customer service that can provide the distinctive difference between one company’s offer and that of its competitors.”(Christopher, 1998, p.37-38)

For example, poor customer service is the number 1 reason for American companies to lose business. A Research conducted by the American Management Association shows that 68 percent of clients stop doing business with a company because of poor service. Another study reveals that 90 percent of clients who ceased

doing business with a company made no attempt to tell the firm why. Even worse, the average dissatisfied customer tells up to 10 other people of his or her dissatisfaction; the average satisfied customers tell only five people (Nierenberg, 2000, p.1).

According to another study, research of CSI (Customer Service Institute) shows that a business that each day for a year loses just one customer spending \$50 a week will find its sales reduced by \$949,000 for the following year. (CIS, Customer Service Institute, 2003)

1.4.2. Inventory Management

1.4.2.1. Definition of Inventory

Inventory management can be seen as the most complex integrated logistics activity. In the contemporary world, manufacturers do not want to hold stock at hand because they have to forecast the amount of demand and supply correctly. Determination of level of demand and supply become the most necessary thing for firms (Bloomberg, Le May, and Hanna, 2002, p.135). According to Water, “*Stocks are supplies of goods and materials that are held by an organization. They are formed whenever the organization’s inputs or outputs are not used at the time they become available.*” (Waters, 2003, p.252)

From this point, inventory management can be perceived as a safe jacket. Although companies must revive without stocks, the world is not perfect and forecasts are not accurate. Firms must produce and store additional stocks just in case to meet changing demand patterns (Bloomberg, Le May, and Hanna, 2002, p.135).

According to Murphy and Wood, inventories are stocks of goods and materials that have maintained for many purposes, the being satisfy normal demand patterns. And also inventory decisions are often a starting point, or driver, for other business activities such as warehousing, transportation, and material handling (Murphy and Wood, 2004, p.270).

A different definition comes from Ballou; inventories are stockpiles of raw materials, supplies, components, work in process, and finished goods that appear at numerous points throughout a firm's production and logistics channel (Ballou, 2004, p.326)

1.4.2.2. Why Do Firms Hold Inventory?

At the basis, firms hold inventory because of five reasons. Formulation of an inventory policy requires an understanding of the role of inventory in production and marketing. Therefore, inventory serves five purposes within the firm: (1) achieving economies of scale, (2) balancing of demand and supply, (3) specialization in manufacturing, (4) protection from uncertainties, and (5) a buffer between critical interfaces (Lambert, Stock, Ellram, 1998, p.112).

- a. When a firm realizes economies of scale, inventory is required. For instance, ordering large quantities of raw materials or finished goods inventory allows the manufacturers to take advantages of the per unit price reductions associated with volume purchases. Purchased have a lower transportation cost per unit (Lambert, Stock, and Ellram, 1998, p.112).

b. If there is a gap between demand and supply, it can cause important problems, and also create big costs. Therefore, an efficient forecasting system can overcome these problems. Forecasts are essential in inventory management. The forecasts may be crude intuitive, or even hidden, but they are there. Since forecasts errors will always exist, inventory control methods must be flexible and responsive to unforeseen conditions. (Magee, International Student Edition) Balance between demand and supply is the most dominated duty of inventory management.

c. Inventory allows firms with subsidiaries to specialize. Instead of producing a variety of products, each plant can manufacture a product then ship the finished products directly to customers or to a warehouse for storage. By each plant can gain economies of scale through long production runs (Bloomberg, Le May, and Hanna, 2002, p.136). Inventory makes it possible for each of a firm's plants to specialize in the products that it manufactures (Lambert, Stock, and Ellram, 1998, p.113).

d. This reason seems to be a buffer duty of inventory. In commercial world, there must always have some measures for uncertain conditions such as crisis, disasters, shortages etc. In these times, inventory management acts as a survivor.

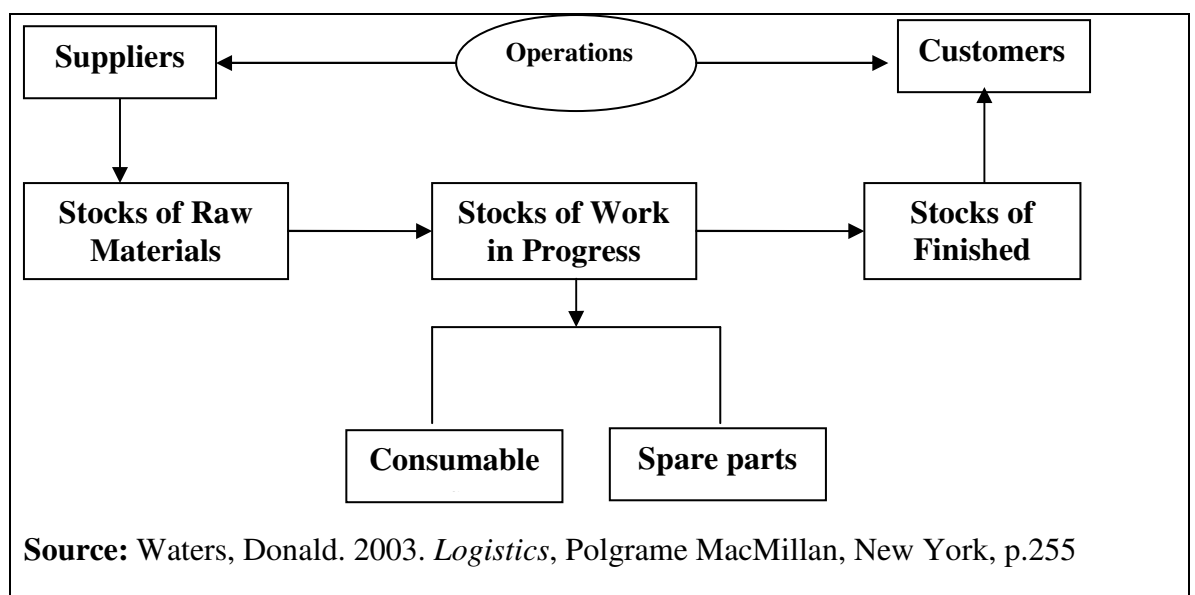
e. The main purpose of stocks is to act as a buffer between supply and demand. They allow operations to continue smoothly and avoid disruptions (Waters, 2003, p.254).

All these reasons that are why firms hold inventory can be perceived within a whole inventory planning system. Essentially, inventory planning system is critical to successful manufacturing operations because a shortage of raw materials can shut down the production schedule; these events may increase expenses or result in a shortage of finished goods (Lambert, Stock, and Ellram, 1998, p.114).

1.4.2.3. Types of Inventory and Discussions about Inventory Management

Each organizational function does not think the same about inventory. Ideas about this can change from department to department. If we take the discussion from the perspective of marketing, it is apparent that marketing tends to want to ensure that sufficient inventory is available for customer demand in order to avoid potential stock out situations while finance department seeks to minimize the costs associated with holding inventory. At this point, the situation of marketing means higher inventory, while the situation of finance means lower inventory (Murphy, and Wood, 2004, p.270).

Figure 5. Types of Stock



As to types of stock, it is separated into three categories:

a. Raw Materials

b. Work in Process

c. Finished Goods

- Materials, parts or components which have been delivered to a firm and which are not used yet are called “**Raw Materials**”.
- Materials that have started but not yet finished their journey through the production process are called “**Work in Process**”.
- Goods that have finished the process and are waiting to be shipped to customers are “**Finished Goods**”.

1.4.3. Transportation Management

Under this title, transportation management will be explained briefly. In Chapter 2, transportation management will be investigated deeply.

Transportation is the biggest cost factor of companies. Therefore, choosing of transportation mode and carrier, and determination of company location, all things related to transportation play really important role during the life of firms. According to Bloomberg, LeMay and Hanna, Transportation plays a key role in economic success by allowing for the safe and efficient distribution of goods and services throughout the supply chain (Bloomberg, Le May, and Hanna, 2002, p.94).

However, having an economic success depends on the infrastructure a country has. If there are not enough railways, highways, air ports and ports, the road of success narrows. This infrastructure condition is related to the country itself.

Shortly, transportation is responsible for the physical movement of materials between points in the supply chain (Waters, 2003, p.309).

Many people perceive logistics as transportation. However, logistics contains many activities within itself. But, transportation is the most important component of logistics. (Waters, 2003, pp.309-310) And also, transportation combines the different activities in integrated logistics.

According to Bloomberg, Le May and Hanna, transportation does more than just linking the other integrated logistics activities. An efficient transportation system forms the backbone of firms (Bloomberg, Le May, and Hanna, 2002, p.94).

The concept of transportation shows not only the development level of firms, but also shows the development level of countries. According to Lambert, Ellram and Stock, transportation provides value-added through “time utility” and “place utility”. As we said before transportation moves products from where they are produced to where they are needed. This movement adds value to products and this referred to as Place Utility.

During operations within a company, products are held in warehouse and storage house, until they are needed. Delivery of goods to point of consumption on time shows the “Time Utility” factor of transportation. Because, transportation determines how fast and how consistently a product moves from one point to another (Lambert, Stock, and Ellram, 1998, p.21-22).

Detailed explanation about “Transportation Management” will be made in Chapter 2.

CHAPTER 2

Transportation in Trade and Social Area As A Key Element

2.1. What is transportation and What Does It Contain?

As we discussed in Chapter 1, transportation is a movement of goods, raw materials, and people occurring between suppliers, retailers, firms and final consumers. According to Bowersox, Closs and Cooper, whether in the form of materials, components, work-in-process, or finished goods, the basic value provided by transportation is to move the inventory to the next stage of the business process. Therefore, the performance of transportation is vital to procurement, manufacturing, and market distribution.

Transportation is not only used for movement of goods and raw materials, it is also used for public transportation. It has a vital role in countries' and governments' plans.

Figure 6. Relationship among Transportation Participants

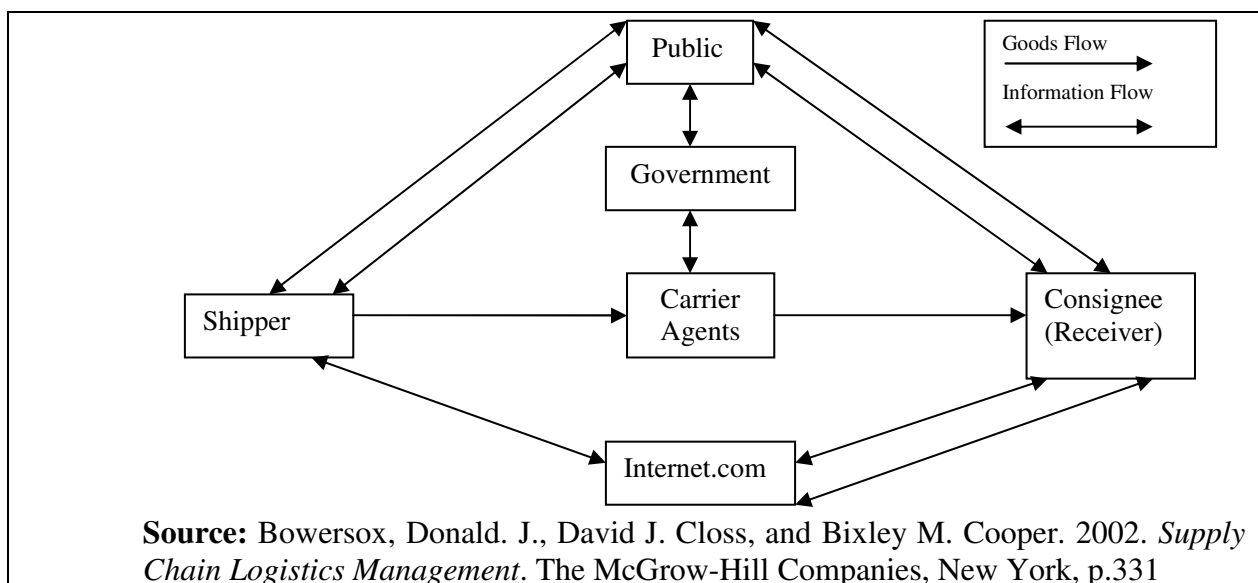
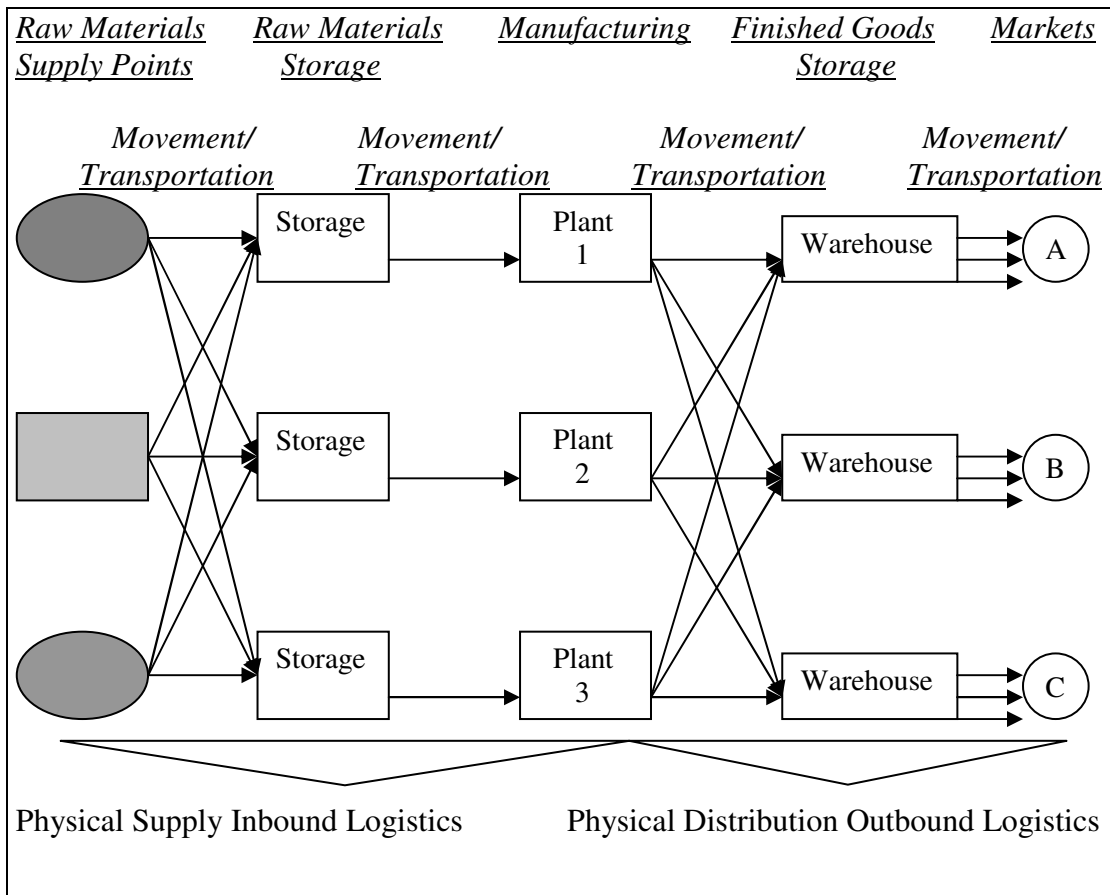


Figure 7. Transportation Interfaces in Integrated Logistics



Source: Bloomberg, David. J., Stephen LeMay, Joe Hanna B. 2002. *Logistics*. International Edition, Pearson Edu, New Jersey, p.95.

As a result, transportation seems to be a spider-line which links the points from supply points to markets. In this long process, the concept of transportation plays a critic role. If any delay happens, it creates a chain of reaction. Therefore, a schedule of transportation modes and times is one of the most important steps of companies. Figure 7 above shows the links between points.

2.2. Modes of transportation and Their Place in the World Economy

In today's world, there are five different transportation modes. Many economic and social transportation affairs are made by these modes. These modes are;

1. Road transportation
2. Railway Transportation
3. Water Transportation
4. Air Transportation
5. Pipeline Transportation

2.2.1. Road Transportation

Among the modes of transportation, the most flexible and popular mode is the road transportation. Around the world, many companies are choosing the road transportation because of its advantages in comparison with other modes. However, extreme usage of road transportation has brought some problems. We will investigate this issue under other titles.

As we said before, the main benefit of road transportation is flexibility, being able to visit almost any location. Even though there is a speed limitation on highways, road transportation's ability to give a door-to-door service brings many advantages such as time (Waters, 2003, p.313).

Since the end of the World War II, road transportation has increased rapidly. After the war, existing of huge demand and increase of economic power of the U.S created a big market in the world especially in The Europe. Thus, trades among countries have increased gradually. Because of the war, there were no sea ports and airports enough. Therefore, road transportation with its speed took the initiative in trade (Bowersox, Closs and Cooper, 2002, p.342).

There are many competitors in motor carrier industry and amount of competitors is more than any other types of transportation (Bloomberg, LeMay, and Hanna, 2002, p.103).

The average mile road transportation can make is 500 miles. However, with the new technologies and regulations this rate is growing up gradually. Another advantage of this mode is its networks. There are many alternative ways road transportation uses. Therefore, planners can regulate or draw their lines according to their strategies. In logistics networks of many firms, motor carriage has become an important part. As long as it can provide fast, efficient service at rates between those offered by rail and air, the motor carrier industry will continue to prosper (Lambert, Stock, and Ellram, 1998, p.220-221).

The motor carrier industry is not without problems (Bowersox, Closs and Cooper 2002, p.343). Nowadays, all attentions are on the road transportation on its affects on environment and people. In other word, environment and safety are the most important reasons of why authorities want to increase the share of other modes. In developed countries, firms and governments have special policies about these problems because the pollution and accidents that kill people and environment create huge costs for both governments and firms. Individually car owners also have a big share of this pollution and traffic accidents.

2.2.2. Railway Transportation

If we look at the historical process of railways, we can see that it had a very special position in the world transportation sector. Historically, railroads have handled the largest number of ton-miles within the continental United States, The

Europe and other places in the world. As a result of early development of a comprehensive rail network connecting almost all cities and town, railroads dominated intercity freight tonnage until after the World War II (Bowersox, Closs and Cooper, 2002, p.340-341). However, rail transportation has entered into a stagnation process. Because of that, railroads are being shown as an alternative and potential transportation mode to road transportation.

According to Ballou, the railroads is a long hauler and slow mover of raw materials (coal, chemicals etc.), and of low-valued manufactured products (food, paper, and wood products) and prefers to move shipment sizes of at least a full carload (Ballou, 2004, p.171).

Railroads contain advantages and disadvantages from different perspectives. The most important advantage of rail transportation is its low costs per unit in comparison with other modes. In addition, railroads are more suitable for environment and safe transportation. Environmental and safety problems are the main subjects of the European Union's transportation policy. Therefore, we can understand why governments are trying to increase the usage of railroads by passengers and firms. Another advantage of railroads is its load capacity. Railways can carry massive loads in comparison with road and air transportation.

As to disadvantages, railroads lack the versatility and flexibility of motor carriers because it is limited to fixed track facilities. As a result, railroads –like air, water, and pipeline transportation- provide terminal-to-terminal service rather than point-to-point service unless companies have a rail siding at their facility, in which

case service would be point-to-point (Lambert, Stock, and Ellram, 1998, p.221). In the transportation world, speed means everything because time is the most valuable thing firms and people have. Therefore, any delay can cause big problems in the process. In the previous times, the average speed of trains was 20 km and this speed was too low in comparison with other modes such as air and motor transportation. In the today's world, high-speed trains are working between cities even countries. This excellent improvement cause rises in passenger and goods transportation. For example, in 1996, passenger transportation has increased gradually and reached to 42,3 billion pass./ km with the entry into force of the "Thalys" railroad network between Germany, Holland and France Figure 8 and 8.1 shows some statistics about railway transportation.

Table 3a. Freight Traffic around the World (in billions of tones/km)

	2000	2001	2002
America	2,254,854	2,497,712	2,502,025
The Europe	1,993,825	2,048,140	2,141,417
Asia	1,861,784	1,993,287	2,101,705
Africa & Middle East	139,973	148,599	149,566
Oceania	34,050	38,528	40,628

Table3b. Passenger Traffic around the World (in billions of passenger/km)

	2000	2001	2002
Asia	1,191,202	1,242,647	1,214,130
The Europe	626,116	603,742	592,991
Africa & Middle East	100,766	75,583	71,143
America	12,833	12,885	12,443
Oceania	1,265	1,24	1,379

Source: <http://www.uic.asso.fr/> (UIC, Annual Reports 2003-04) 25.01.05.

Historically, railroads have been unreliable due to poor scheduling, a substandard infrastructure, and unreliable equipment (Bloomberg, LeMay, and Hanna, 2002, p.105). However, recent developments in the rail industry have helped to overcome some of these utilization problems. Advances have included computer routing and scheduling; the upgrading of equipments, roadbeds, and terminals; improvement in railcar identification system (Lambert, Stock, and Ellram, 1998, p.223).

2.2.3. Air Transportation

In the 21st century, air transportation has become the name of fast and reliable transportation from the perspective of passengers. However, air transportation is still working under its potential. Domination of road transportation and its flexibility in service, which is door-to-door, have affected not only water and rail transportation but also air. Historically, air transportation had a vital role during the World War II and Post-Cold War period. There was a great need for planes which fulfilled transportation of military equipment.

In the today's world the usage level of air transportation is growing gradually. Especially, passenger transportation between cities and even countries has risen extremely after 1980s. In particular, transportation of goods and passengers has gotten a good acceleration in developed countries. First of all, air transportation provides and reliable service and rapid time-in-transit, but terminal and delivery delays and congestion may appreciably reduce some of these advantages. Despite the limitations of air carriers, the volume of air-freight has grown even in the face of higher rates (Lambert, Stock, and Ellram, 1998, p.224).

2.2.4. Water Transportation

This mode is the backbone of the international transportation. If we think that oceans and seas cover 79 percent of the world, we understand why water transportation has not lost its importance for centuries. If we look at the picture from the historical perspective, discovery of new continents, big wars, emergence of new trade lines, and geographical advantages have strengthened the water transportation's position in the international transportation sector.

As Bowersox, Closs and Cooper said, "water is the oldest mode of transportation". There have been many kinds of vessels in the history of water transportation. However, the corner stones of this period started with the invention of steam-powered boats. Steam-powered boats replaced the original sailing vessels in early 1800s and by diesel in the 1920s (Bowersox, Closs, and Cooper, 2002, p.344).

Recently, water transportation carries out more than %90 of the international trade movements. There are many reasons behind this domination such as geographical reasons, fiscal reasons, and capacity. As we mentioned in previous chapters, water transportation is geographically the most suitable mode for international trade. Another reason is the costs of mode. Water carriers dominate international transportation because of their cost structure and ability to transportation large volumes. Water transportation's cost is the lowest one among the transportation modes. As it was said, the last reason is the capacity. This can be perceived as main reason. According to Bowersox and his friends, the main advantage of water transportation is the capacity to transportation extremely large shipment (Bowersox, Closs, and Cooper, 2002, p.344).

Water transportation is made not only between countries but also between cities within the countries by inland waterways. By these waterways, water carriers compete with road and air carriers. From the perspective of environment and safety, inland waterways are more suitable than other inland carriers. There are basically three types of water transportation; river, and canals (usually called inland water ways), coastal shipping (moving materials from one point to another along the coast) and ocean transportation (across the major seas) (Bowersox, Closs, and Cooper, 2002, p.344). We can give some example to these groups: Inland Waterways: Rhine in The Europe and Mississippi, Ports: Rotterdam, New York, Hong Kong. These are the most important ports and inland waterways in the world. We can classify the water carriers as domestic and international also (Bloomberg, LeMay, and Hanna, 2002, p.107).

As to negative sides of the water transportation, water carriers, first of all, are relatively slow, unreliable, and inflexible compared with other modes (Bloomberg, LeMay, and Hanna, 2002, p.107). Water transportation is the slowest mode and it contains many external effects. For example, during the movement of goods, bad weather conditions in seas and humidity create unsuitable conditions for goods. Therefore, high-valued products, in generally, are not be carried by water transportation. And also, this mode is inflexible mode. When goods arrive at ports, rail and road transportation carriers must carry these goods to other points. This issue is related to “integrated logistics” also.

2.2.5. Pipeline Transportation

As a mode having lowest usage level, pipeline transportation is another transportation mode in the world. To make pipeline transportation, there must be pipeline stations between cities or countries. Pipeline transportation is being used generally in continent. Even though there are some attempts to transfer liquid products to another points under waters and lakes, pipeline transportation is still more popular than others. The circle of products carried by pipelines is very narrow. Only liquid products such as petroleum products and gas can be transportation to another point by this mode.

“Pipelines have the advantage of moving large quantities over long distances. Unfortunately, they have disadvantages of being slow, inflexible, and only carrying large volume of certain types of fluid. In addition, there is the huge initial investment of building dedicated pipelines.”(Waters, 2003, p.316)

However, although investment costs are too high, pipeline is the cheapest mode of transportation. According to Bloomberg, LeMay and Hanna, pipelines offer one advantage that none of the other modes can offer; a pipeline is a continuous flow mode. When the pipeline is full, the product flows to the destination immediately and continues to do so, almost without fail. Pipelines operate on 24 hours; 7 days per week are limited only by commodity change over and maintenance (Sector Investigate Series, 2001).

Pipeline transportation are also unaffected by external factors such as weather conditions. In addition, environmentally it is the safest mode. The longest line in the

world is between Alaska (USA) and Canada. Its total length is 7700 km (Sector Investigate Series, 2001).

2.3. Economic and Social Dimensions of Transportation

Above all, transportation is a link binding different sectors to each other. These linkages form the relationship between sectors by different transportation modes. Such important duty of transportation gives itself a big role in which economic and social dimensions exist. The place of transportation in the perspective of countries is growing day by day. Therefore, from the infrastructure of transportation to its process everything, which is indicators of development level, must be taken into account carefully. Today, all sort of transportation in the world create big economic benefits to countries. However, transportation affects not only economic structure but also social life. For example, the work force needed by transportation activities and investments; effects of traffic congestions and pollutions of weather, waters and finally accidents, which cause death of thousands of people all over the world, are perceived as social dimensions of transportation. Although there are many positive effects of transportation in developed countries, there are also many negative situations. For instance, because of the bad effects of transportation on environment, many people suffer from that by getting ill and eating unhealthy foods. As it is mentioned above, as a key system, transportation contains both negative and positive impacts. According to many studies on this issue, disappearing of negative sides of transportation depends on the balance between transportation modes and conscious communities. The effect of air pollution or oil spillage is a significant transportation related issue. The cost of environmental impact and safety is ultimately paid by consumer.

Each transportation system operates within a large economic, social and physical environment, as noted above; accordingly, each system generates certain external effects, or externalities, on its environment. Among these are emissions, noise, and damage to prosperity and persons, both using the system and adjacent to it (Boyce, 2002, chapter 6, p.2).

The interface between transportation and economic development has broad ramifications that beyond transportation's basic purpose of moving goods and people from one place to another. Whereas there is no doubt that transportation is essential in the operation of a market economy, much still needs to be understood about ways in which an efficient transportation system can improve the productivity of the economy (Eberts, 2002, p.1).

Transportation has also a broader role in shaping development and the environment. Policy concerns in this century will increasingly focus on the effects of transportation on where people live and on where business locate, and on the effects that these locations decisions have on land use patterns, congestions of urban transportation systems, use of natural resources, air and water quality, and the overall quality of life. There are many problems waiting for 21st century in the world. All these problems must be addressed if the transportation sector is to be sustainable beyond 21st century.

Among the proposals to create a sustainable transportation system are the following (Black, 2003, p.4):

- a. Switching to an alternative fuel that is renewable and does not pollute, such as solar energy or hydrogen fuel;
- b. Increasing the safety and reducing the emissions of motor vehicles through intelligent transportation system; and
- c. Decreasing the demand for motor vehicle transportation through various public policies, demand management, and educational actions.

In fact, if we look at carefully, we see that all economic developments by transportation create social results while all social events are creating economic dimensions. For example, if pollution created by transportation activities affects environment, it creates negative economical consequences. On the other hand, a new transportation investment creates many job opportunities. So, social and economic research related to transportation is a broad subject, because of the many ways in which transportation policies and actions can produce social and economic impacts on the population. At the same time, social and economic policies can produce unforeseen and unintended transportation impacts on population-such as the transportation related problems generated by the welfare to work movement (Black, 2003, p.5).

For preventing social and economic structure from these problems, countries need “Transportation Demand Management System” (TDM). TDM includes more than three dozen strategies that result in more efficient transportation and land use patterns. (VTPI, www.vtpi.org/tdmonline)

Transportation affects economic development in three major ways (Litman, 2002, p.2):

- a. As A Factor of Production: transportation is an important factor in most production activities. It delivers raw materials and employees to factories and worksites, and allows goods and customers to reach markets.
- b. As A Consumer Good: transportation is a major consumer good, representing the second largest category of consumer expenditures after housing. A typical household spends 15-20% of net income directly on transportation costs, such as expenditures on residential parking and taxes spent on transportation facilities.
- c. As A Source of Externalities: transportation activities impose external costs including congestion, facility costs, land requirements, crash damages and pollution. These external costs can reduce economic productivity and development. For example, traffic congestion increases business overhead costs, road and parking subsidies increase tax costs, and pollution can reduce farming tourist industry productivity.

As it is mentioned above, despite their positive effects, transportation systems also can, and often do, have large negative effects on the economic and social systems they serve. One of the most pervasive affects it that of traffic congestion at all level and types of transportation services. Congestion is effectively the wasted time and expense of using an inadequately supplied transportation service; but congestion also serves to bring the system's use into balance with its available capacity.

Making new roads or highways to solve the traffic congestion problem is not a good solution. We can explain this situation with an example. If you only eat one meal a day, a second daily meal provides significant benefits, and a third daily meal is also worthwhile, but a fourth meal may provide little additional benefit, and a fifth or sixth daily meal would be harmful overall (Litman, 2002, p.3). This situation is known as marginal benefit by economists. From this perspective, countries have to find optimal levels of transportation investments. For example, if road congestion to a common destination is pervasive, the solution may be to improve the quality of public transit service available, rather than increasing road capacity, such solutions may also need to be accompanied by disincentives for the use of private cars (Boyce, 2002, chapter 6, pp.2-3).

2.4. The Future of Transportation Sector in 21st Century

An efficient transportation system is crucial precondition for economic development and an asset in local, regional and international mobility (Ubbels, Rodenburg, and Nijkamp, 2002, p.1). From the point of both countries and firms, the future of transportation seems very complex. In the world in which there are many ecologic problems transportation activities will be more complex than it was. If we think that energy source of transportation is petroleum products, it can be perceived another problem in future. Transportation is based on energy consuming technologies, primarily technologies that use oil. Cars and light trucks are oil's main users and its dominant growth market. As a result, changes in the price and availability of oil could have major impacts on transportation. Conversely, improvements in transportation technology can improve energy productivity and reduce the effects of fossil fuel combustion on human health and the environment.

Important changes in oil prices and availability and in transportation technology are likely over the next two decades (Olson, 2000, p.6).

“As the third millennium begins, society faces the task of creating transportation system that expands the energy sources available for mobility while reducing negative effects on environment. This task is international in scope. Three critical issues- oil dependence, air pollution, and greenhouse gas emissions- confront the global transportation and energy system. Meeting these challenges will require energy-efficient Technologies that are powered by improved energy sources.” (Greene, and DeCicco, 1999, p.1)

The technologies, which determine transportation energy use, were invented thousand years ago. The investigations on creating renewable energy sources have not been carried out adequately. The new understanding that is given to people by consumption community has been obstructing the healthy management systems on transportation demand. Increase of individual car owners has brought vital problems with together.

Personnel highway vehicles (passenger cars, light trucks and motorcycles) used 84 percent of energy consumed for personnel mobility. Bus and rail together accounted for less than 2 percent about the same amount of energy Americans used for recreational boating (Greene, and DeCicco, 1999, p.2).

Twenty-five years ago, petroleum dependence led to the first “energy crisis” when the Organization of Petroleum Exporting Countries (OPEC) boycotted nations they believed to be key supporters of Israel in 1973 October war. The Iranian Revolution induced another, more severe, oil price shock from 1979 to 1980.

However, the growth of transportation energy demand and its continued reliance on petroleum have changed (Greene, and DeCicco, 1999, p.2).

Energy is a major factor that provides the continuity of transportation activities. If we think that these activities are growing so fast that new plans must be created for preventing the world from bad effects of that.

“Transportation energy problems are becoming increasingly global. In 1950, 70 percent of the world’s 70 million cars and trucks were in the United States. Today, the world fleet stands at more than 670 million, 70 percent of which are located outside of the United States.”(Greene, and DeCicco, 1999, p.2)

In future, another big problem the world will face is traffic congestion. As we know, transportation activities link different sectors. In this circle, there are many different sides. Because of traffic congestions, these activities are being hampered. Each minute means extra costs for firms. As a reality, if imbalance between transportation modes and increase of individual car owners cannot be abolished, the powers solving these problems regarding congestions and other things will decrease.

Facing frightening forecasts of worsening congestion, transportation planners are understandably interested in the possibility that telecommunication can substitute for travel. Areas where this kind of substitution seems feasible include (Olson, 2000, p.19):

- a. Telecommuting, using telecommunications to replace commuting between home and work

- b. Online shopping, banking, entertainment, and health services that allow consumers to obtain the services they desire without leaving home
- c. Distance learning and other interactive educational services that make formal learning possible from home or work
- d. Web portals for obtaining government services and carrying out routine activities like licensing and income tax filing
- e. Just-in-time manufacturing systems that avoid wasteful shipping and reduce dependence on large inventories
- f. Broadcasting of a wider variety of live events, combined with the spread of wide screen high resolution television, so that more people watch the events from home
- g. Dedicated telecommunications applications that expand traveler ridesharing or that save trips by consolidating freight loads

In a global perspective, international trade is growing so fast that we need extra regulations. In 2005 all customs will be abolished World Trade Organization (WTO) and it will cause more and more international trade and more ships moving on seas. Its ecologic, energy, and economical dimensions must be underlined carefully. A more global world will come with its difficulties. Therefore, authorities have found new energy sources such as electricity, hydrogen or hybrid vehicles. Shortly, in future, the main problems of transportation will be energy and environment.

In order to estimate the conditions and take measures, Ubbels, Rodenburg and Nijkamp create new scenarios. The future of the transportation sector is fraught with uncertainties, as the system can be influenced by many factors, which can develop in

various ways. This investigation is done by applying a scenario approach and by designing four possible development paths for the transportation sector.

The purpose and advantages of scenarios are that they are a kind of structured brainstorming method, created to widen the perceptions of policy makers and researchers regarding future possibilities and policy options, other related developments and impacts (Ubbels, Rodenburg and Nijkamp, 2002, p.3).

Transportation scenarios are seen as pictures of the future within the pre-specified framework of movement of goods and persons. The scenarios can be described based on different characteristics of transportation (e.g. volume, spatial organization, modal split, transportations technology, and distance and emission factors). The construction of these scenarios will give insight into the future developments of the transportation sector. These developments will be translated into quantitative numbers of flows for both passenger and freight transportation.

1. Growth
2. Core-Growth
3. Peripheral Growth
4. Sustainable Growth

Growth:

The main force behind this scenario is the high level of economic growth. The economic development will take place in OECD as well as non-OECD countries. For transportation, a very important point is that speed and flexibility will

not suffer from any barrier. All developments in this field, as a result of the high economic growth, will support the growth and development of the transportation sector. Negative consequences can be expected in terms of environment and congestion.

Core-Growth:

This scenario makes a distinction between countries belonging to the OECD and non-OECD countries. High economic progress in OECD countries exists, whereas the non-OECD countries lag behind. As a result of political unstable situation, over population, and low incomes in non-OECD countries and high economic progress in OECD countries, large international migration flows come up from non-OECD to OECD countries.

The flourishing economy in the OECD countries will cause increasing mobility in qualitative as well as quantitative terms. This means that transportation networks will develop considerably, including the transfer points. Consequently, harbors and main ports will become crucial with regard to the efficiency of these networks. The development of networks in non-OECD countries is lagging behind and there is no real concentration of spatial activities. Infrastructure will not be structured in networks and main ports will not be developed, mainly due to the non-market orientation and inward orientation of government policies.

Peripheral Growth:

In this scenario, growth will for the greater part take place in non-OECD countries instead of the OECD countries. The trend towards globalization of

production and consumption causes an increase in the average distance covered by the diverse transportation modes too. In addition, the improvement of technology will mainly take place in the non-OECD countries. These countries will implement new technologies mainly imitated from OECD countries, which are still a way ahead concerning the implementation of transportation technology. The strong economic growth and the technological development in non-OECD countries cause a fast growth of transportation by road, air, and shipping in those countries. Sea shipment and air transportation will benefit from new available techniques and liberalization of trade.

Sustainable Growth:

The former scenarios pay little or no attention to the environment. However, this scenario does take environmental quality as an objective. People do not care about an increase in income or a physical amount of goods as much as in the other scenarios, but they care about happiness, the local environment and efficient use of natural resources. Economic growth will be low mainly due to the lack of technical progress, which is aimed at environmental progress.

Transportation becomes more expensive as it is unfriendly from an environment perspective. The length and direction of the transportation flows will change towards shorter, more regional flows.

Table 5a. Estimated Volumes for Freight Transportation For 2020

		Freight (billion ton-kilometres)					
		Air	Road	Rail	Sea	Inland ww	Total
Scenario 1	OECD	535	7,818	4,798	42,718	1,707	57,576
	Non-OECD	482	0	22,185	57,856	0	80,523
Scenario 2	OECD	516	7,627	6,531	41,236	1,665	57,575
	Non-OECD	149	0	6,854	3 1,234	0	38,237
Scenario 3	OECD	310	4,611	2,830	24,765	1,395	33,911
	Non-OECD	314	0	8,831	65,865	0	75,010
Scenario 4	OECD	224	4,611	3,460	21,844	1,007	31,146
	Non-OECD	70	0	6,963	3 1,729	0	38,762

Table 5b. Estimated Volumes for Passenger Transportation For 2020

		Passengers (billion passenger-kilometres)			
		Air	Road	Rail	Total
Scenario 1	OECD	5,209	20,532	1,594	27,335
	Non-OECD	3,361	0	3,644	7,005
Scenario 2	OECD	5,209	20,532	1,594	27,335
	Non-OECD	1,161	0	2,166	3,327
Scenario 3	OECD	4,098	10,112	1,890	16,100
	Non-OECD	3,113	0	3,413	6,526
Scenario 4	OECD	1,702	12,142	943	14,787
	Non-OECD	543	0	1,014	0

Source: Rodenburg, Caroline, Barry Ubbels, and Peter Nijkamp. 2002. "Different Perspectives on the Global Development of Transportation", Series Research Memoranda, URIJE University, Amsterdam, p.16-17.

2.5. Why Countries Want to Have an Effective Transportation Sector

While countries are trying to increase economic benefits of transportation, ways of minimizing the negative sides of transportation are also being investigated. Undoubtedly, transportation sector and its infrastructure are economic incomes all on its own. However, healthy transportation sector, which provides economic incomes, needs excellent infrastructure and trained personnel. All necessary preliminary studies for balanced investments from government and its long-term ability to work for economic and social environment must be done carefully. Problems in terms of

investment, especially in developing countries, cause imbalances between transportation modes. New regulations and obligation for job education in firms are seen as first step for a better transportation sector.

Today, highways cover all countries as a spider-lines and it responds many economic and social activities. Sometimes it delivers raw materials to plants, sometime an injured person to hospital. Therefore, it has a vital role in social and economic activities. And also, an effective transportation system responds to many fields. Transportation sector affected badly by lameness creates big problems for countries. When we look at the Picture from that point we can easily understand what countries want. Having a perfect infrastructure for effective and efficient transportation sector is the first aim. And the main reason under this approach is the economic benefits of transportation sector for country.

On the other hand, countries want to have an effective transportation sector for decreasing the pollution and traffic accidents, which cause deaths and environmental problems. Today, in many countries, especially in The European Union, to prevent traffic accidents and environmental problems, new policies have been entering into force, such as “White Paper: For 2010”

Transportation sector as a linkage between agriculture, industry and mine industry and a tool for improvement of economy is an important intermediate sector (Ayten and Dede, 2003, p.96).

In developed countries (Çınar, 2003, p.17):

- a. There is integration between transportation modes,
- b. Combined transportation and as a result of this container transportation is given importance,
- c. Economy, speed, safety and environment are the most important factors,
- d. Railways are taken into account strongly.

2.6. Passenger Transportation and Its Changing Face

To decrease transportation costs that affect countries' economic development, many researches are being made, especially in developed countries. Many alternative ways are being investigated by doing very thorough job. However, as it was mentioned other chapters, making more investment to overcome problems in road, air or rail transportation creates new problems in stead of solving previous problems. Its clearest example is road transportation. 90% percent of inland transportation activities in both developing and developed countries are made by road transportation. In addition to these activities, individual car owners are also using same roads. As a result, traffic congestion, air pollution and accidents are occurring. Therefore, making new roads makes the situation worst than it is. To solve this important problem other transportation modes must be used. For instance, a better public transportation is an alternative way.

We can arrange some benefits of public transportation in order as followings;

- a. In the major metropolitan areas of the world, the engines of the nations' economy, public transportation is an essential transportation option that can cut through congestion to provide Access to job markets and remove auto trips from

the highway system, thereby helping to maintain highway capacity for shipment of goods and materials (The National Business Coalition for Rapid Transit Report, 2003).

b. Public transportation connects workers to jobs in suburban and rural areas. For service and employees with limited mobility options, transit is key link to suburban-based jobs (The National Business Coalition for Rapid Transit Report, 2003).

c. Public transportation relieves traffic congestion and improves business productivity.

d. Public transportation stimulates economic development around stations. Transit oriented development is being used as a tool to encourage business growth, to revitalize aging downtowns and declining urban neighborhoods, and to enhance tax revenues for local jurisdictions (The National Business Coalition for Rapid Transit Report, 2003).

e. Another advantage of public transportation is that it reduces energy consumption and achieves clean air standards.

f. Finally, public transportation generates jobs and significant investments. Every \$1 billion investment in public transportation generates 30,000 jobs and the same amount invested in transit operations creates 60,000 jobs (The National Business Coalition for Rapid Transit Report, 2003).

“Transit not only provides benefits to our economy, promotes jobs, and creates economic growth; it also provides important environmental benefits. Automobiles are getting cleaner all of time, but transit is an environmentally friendly way to travel” (The National Business Coalition for Rapid Transit Report, 2003)

CHAPTER III

Transportation in the European Union and Turkey

3.1. Evolution of the European Transportation Policy

A functioning Internal Market requires an efficient and effective transportation system that satisfies the economic, environmental and social aims of the Union. The absence of such a system would make the physical free movement of goods, persons and services little more than an aspiration (Glöckler, Junius, Scappucci, Usherwood, and Vassal, 1998, p.132).

Common policies such as Common Transportation Policy (CTP), Competition Policy are perceived as the main dimensions of the European Economic Community (EEC). In the first phases of the creation of the EEC, authorities wanted to create a political integration but they finally understood that it could not be achieved without an economic integration. Therefore, the Single European Market (SEM) was mentioned for the first time. Because of its role linking social and commercial activities, transportation is the main factor in the SEM. In this chain, creation of CTP was perceived as an economic step. To improve trade between member countries, all barriers in front of commercial relations had to be removed. It is aim of the EU to develop a transportation policy that supports its economic and sustainable growth and in which the concept of sustainable mobility is a driver in the development of such policy (Paixao, and Marlow, 2001).

The thought of creating a single market was the first ring of this chain. The focus of the 1957 Treaty of Rome establishing the European Economic Community (EEC) was the economic development of the original signatory states through the

establishment of a single market (Schmidt and Giorgi, 2001, p.293). At that time, the EC stated that for free movement of goods, services, capitals and labor they needed a common transportation policy. Transportation has been a major sector in the European economy and fulfils two functions. First, it is a vital link in the spatial economy, which affects the efficiency of all other markets. Second, it is a major sector in its own right, as an employer and as a producer of output. Altogether it contributes around 7 percent of the EU GDP and employs, directly and indirectly, over 8 million people (Vickerman, 1998, p.223). The European Transportation Policy (ETP) is, therefore, particularly important in terms of its economic impact (ETP, The European Parliament Report, 2002, p.9).

Article 75 of the Rome Treaty determines the details of the legal basis of the Common Transportation Policy. According to Article 75:

- a. Common rules applicable to international transportation to or from the territory of a member state or passing across the territory of one or more member state;
- b. The conditions under which non-resident carriers may operate transportation services within a member state;
- c. Measures to improve transportation safety;
- d. Any other appropriate provisions

In 1961, the European Commission published the Schaus Memorandum, which represented the first attempt to establish comprehensive and specific objectives and principles to enable the Commission to operationally the CTP (Johson and Turner, 2000, p.171).

In the years 1958 to 1972, the main aim was the achievement of freedom to provide services and the extension of the competition rules to the transportation sector (ETP, the European Parliament Report, 2002, p.11).

Although the goal of the Common Transportation Policy was set out in Article 74-84 of the Treaty of Rome, until the 1980s little was done to achieve it. The reasons why the CTP has proved so difficult to develop can be summarized as (Jones and Elgar, 1996, pp. 209-210):

- a. Vested interests: the domination of some transportation sectors by national carriers, which have an interest in defending monopoly positions;
- b. Diversity: the difficulties involved in harmonizing the different national transportation networks;
- c. Costs: the enormous expense involved in developing a common transportation infrastructure;
- d. Burden-Sharing: the “who pays?” problem

The process of the CTP can be divided into three stages;

1. The period between 1957 and 1985
2. The period between 1985 and 1992
3. The period since 1992

In fact, between 1957 and 1985, the CTP could not receive enough attention from member countries. As we mentioned before, the 1961 Schaus Memorandum presented first guidelines for a community-wide action program in transportation but

Member Mtates showed little real interest. Therefore, transportation policy during this time continued to be primarily a matter for nation-states (Schmidt, and Giorgi, 2001, p.294).

The turning point in the development of the CTP came in 1985 with the publication of the “White Paper Completing the Internal Market” which identified restrictions on the provision of transportation services as serious barrier to open trade, thus confirming an opinion of the Commission already published in 1975 (Schmidt, and Giorgi, 2001, p.294). The Maastricht Treaty of 7 February 1992, which entered into force on 1 November 1993, reinforced the political, financial and institutional foundations of the Community’s transportation policy, one example being the replacement in the principle of unanimity rule for Council decision-making with qualified majority voting (ETP, The European Parliament Report, 2002, p.12).

In the period between 1985 and 1992 the Commission initiated more than a dozen direction and regulations, amongst them such important ones as CD 440/91 on the development of Community’s railways and CR 3820/85 on the harmonization of social legislation relating to road transportation; as well as three liberalization packages on air transportation in 1987, 1990 and 1992 (Schmidt, and Giorgi, 2001, p.294).

On the basis of the Commission’s 1992 White Paper, on *the Future Development of the Common Transportation Policy*, the guiding principles in this area can be defined as (Glöckler, Junius, Scappucci, Usherwood, and Vassal, 1998, p.133);

- a. Balancing the need for an effective transportation system for the EU with protection of the environment, leading to a situation of sustainable mobility;
- b. The defense of the needs and interests of individual citizens as consumers, transportation users and people living and working in areas of transportation activity.

Table 6. Milestones in the Common Transportation Policy (CTP)

1957	Common Transportation Policy accorded its own section within the Treaty of Rome (Article 74-84)
1961	Schaus Memorandum establishes comprehensive principles and objectives for the CTP
1973	First enlargement of the EC to nine countries
1982	The European Parliament takes the Council of Ministers to the ECJ for failure to introduce the CTP in line with its Treaty obligations
1985	ECJ supports the European Parliament and requires the Council to table measures to liberalize transportation services
1985	Single Market White Paper contains transportation liberalization measures
1987	Agreement on first airline package
1989	Transition agreement on the lifting of road haulage cabotage restrictions
1992	Treaty of Maastricht
1992	White Paper on the future development of the Common Transportation Policy
1993	White Paper on growth, competitiveness and employment
1994	Christopher Son Group report / Essen Summit
1995	Publication of the 1995-2000 Common Transportation Policy action program
1996	White Paper on the revitalization of the Community's railways
1998	CTP action program for 1998-2004
1998	Full cabotage liberalization - road haulage
2001	White Paper on The European Transportation Policy for 2010

Source: Johnson Debra, and Colin Turner. 2000. *The European Business: Policy challenges for the new commercial environment*. Routledge, New York, p. 172.

As to the financing of transportation policy we see that there are different funds in the European Union. We can categorize them as;

- a. The European Regional Development Fund provides ECU 15 billion,
- b. Direct financing from Cohesion Fund approximately ECU 8 billion,
- c. The European Investment Bank (EIB) provides fund with low-interest,
- d. Loan guarantees from the European Investment Fund (EIF).

3.1.1. Trans-The European Networks (TENs)

Master plan for TENs was first adopted in 1994 and covered land, sea, and air infrastructure projects, together with a special funding mechanism through the European Investment Bank (Roney, 2000, p.93). The term “Trans-European” relates to the fact that these Networks constructed within the Union by the EC are intended to serve the purposes of the EC and in particular to satisfy the growing demand created by the single market (ETP, The European Parliament report, 2002, p.19).

“The Union is currently according high priority to the promotion of Trans-European Networks (TENs) programs in the fields of transportation, energy, telecommunication and environmental infrastructure. These programs seek to connect the Networks of member states, in order to create integrated, Union-wide Networks.” (Jones and Elgar, 1996, p.208)

The Trans-European Networks are an attempt to rationalize the often-incompatible national transportation networks on a European level by improving the links between the existing systems and filling in the missing links (Glöckler, Junius, Scappucci, Usherwood, and Vassal, 1998, p.136).

According to Glöckler, Junius, Scappucci, Usherwood, and Vassal, the Commission expects these costly projects (Glöckler, Junius, Scappucci, Usherwood, and Vassal, 1998, p.136):

- a. to create a more vigorous, competitive economy capable of creating many more new jobs;
- b. to embody the concept of sustainable mobility by improving the quality of today's environment and preserving tomorrow's natural resources without sacrificing today's economic growth;
- c. to guarantee higher personal safety and a decline in traffic congestion and pollution;
- d. to offer travelers and goods a wider choice of transportation means and delivers them to their destination more quickly;
- e. to establish better connections between regions on the periphery of the Union and those at its centre;
- f. to include links with partner countries in Central and Eastern The Europe moving towards membership of the Union.

3.2. Condition of Transportation In Terms of Sectors

3.2.1. Road Transportation

As in many countries in the world, road transportation plays the most important role in the economy of the EU. It has a strong and dominant power in the European road transportation. In the European Parliament's report, for freight and passenger transportation, road is the most popular choice. Road haulage is the linchpin of trade and economic growth in the European Union (ETP, the European Parliament Report, 2002, p.27).

In order to show the importance of road transportation in terms of the EU, some statistics can be shown; the volume of the freight transportation, in terms of tone / kilometers, is distributed as follows: about 44 % is carried by road, about 41 % by sea within the community, about 8 % by rail, about 4 % by inland waterways and about 3% by pipelines (ETP, The European Parliament Report, 2002, p.27).

At the time, when the EC was first established, most Member States tightly regulated their road-haulage activities for two reasons (Lee, 1997, p.216-217):

a. to reduce competition between road haulage and their national railway systems. The railways were already subject to considerable regulation and their financial performance had previously been undermined by the growth of the road haulage industry.

b. to reduce competition within the road haulage industry. The unregulated industry was characterized by a large number of sellers and relative ease of entry by new operators.

The road transportation market is widely liberalized in most the EU member states. Tariff regulation has been abandoned completely and later on (Deregulation and Transportation in an Enlarged European Union, IPTS, ESTO, 1999):

- a. Market access was extended to remove quantity limitations;
- b. Driving/rest time, quality regulations and technical standards were harmonized (at a low level);

c. free cabotage was introduced.

As from 1 January 1993, a hauler established in member states of the Community may freely transport goods to another member state. Whereas until this date, such an operation would require special authorization in application of bilateral agreements or Community quotas, from that date on, the right to conduct this business is based on quality conditions, which transportation operators must observe and which entitle them to Community transportation license (See the Web Portal of the EU).

Since the introduction of the free movement of goods and persons, the creation of a safe and efficient system of road has been one of the main subjects of deliberation in the EU, in terms of freight and passenger transportation. When it comes to passenger transportation, road transportation is even more dominant, with private cars accounting for about 79% of passenger/kilometers and busses for about 8%. The CTP has, until recently, paid much less attention to road passenger transportation operations than it has to road haulage. The Commission has recently signaled its increasing interest in policy relating to all forms of public passenger transportation through the publication of its consultative document on "The Citizen's Network" (Lee, 1997, pp.219-220).

Recently, road transportation, for both goods and passengers, is still a dominant sub-mode in transportation sector. However, its effects on economy, social life and environment are forcing the institutions of the EU to take some measures. After the World War II, the European road freight transportation has expanded

rapidly. Purchasing a truck and entering to the road haulage industry was a chance to solve the employment problem for many people and investment capital was low as army lorries could be used to begin business. The main consequences of this development were: fierce competition and frequent bankruptcies, unreliable service, road damage, accidents and disturbance to residents and; low tariffs and crowding out of the railways (OECD Report, 1997, p.11).

As it is mentioned in the last White Paper for 2010, in terms of traffic congestions, environmental problems and safety, other modes' share in the transportation sector must be increased gradually in comparison with the road transportation. As it was mentioned in the future scenarios, due to the use of the road transportation widely, not only in the Europe but also in other regions of the world, vital economic, social and environmental problems are occurring.

The main aim of the road transportation policy in the EU is to create a unique system by providing same regulations in all member states. These regulations consist of license, driving time, type of freight, taxes, pricing, penalties, safety measures etc. Briefly, the EU wants to eliminate all differences between member states in order to create effective and efficient transportation sector.

In recent years, the EU road transportation policy has focused on four issues (Jones and Elgar, 1996, pp.211-212):

a. The opening up transportation markets to cross-border competition: The Council agreed in June 1998 to liberalize road haulage. National quota restrictions

ended in 1993. On January 1993, checks on goods crossing internal frontiers were abolished. A regulation on road cabotage was adopted in 1994, but did not be fully completed until July 1998.

2. **Integration of Networks:** A Trans-European network is planned for the aim of connecting national Networks and relieving road congestion. Cross-border Networks include motorways and tunnels.

3. **Pollution:** Road transportation is responsible for 80 % of CO₂ emissions from transportation, which contributes to global warming.

4. **Safety:** About 50.000 people are killed each year on the EU roads. The EU explicitly refers to measures to improve road safety.

Road transportation is the backbone of the European economy, with 11 % of total GDP. It is a major source of employment and highly research-intensive sector. Within the EU companies, there is more investment in road than in any other sector (See the Web Portal of the EU).

With the researches of the European Road transportation Research Advisory Council (ERTRAC), four priority themes were identified for future researches (See the Web Portal of the ERTRAC):

- a. Mobility of people, transportation and goods- how to enhance mobility for all;
- b. Safety and security- how to design a safe and secure road transportation system for all users;
- c. Environment, energy, and resources- how to make road transportation system cleaner, quieter and more energy efficient;

d. Design and production systems- how to ensure the competitiveness and sustainability.

3.2.2. Rail Transportation

At the beginning of the 20th century, the usage of railways was at top in comparison with other modes. In both passenger transportation and good transportation, it had a dominant role. However, increase of railways went on until the end of the World War II. Rail has been in decline. Since 1970, its market share has fallen from 10 to 6 % for passenger traffic and from 21 to 8 % for freight. The main problem facing the railways is that they cannot compete with road transportation. Not only are they slower but they are also less reliable when it comes to delivery times (See the Web Portal of the Turkish Delegation of European Commission).

Railways have unique advantages as a safe and clean mode of transportation. Their infrastructure covers a lot of the EU territory and is generally in a good state. If rail can be revitalized, it will offer a real alternative to congested road and air transportation (See the Web Portal of the Turkish Delegation of European Commission).

There is, therefore, a need for further liberalization of the European railway market, particularly with regard to freight operations (ETP, The European Parliament Report, 2002, p.27).

The Community's long-term strategy, adopted in 1991 was to provide (Roney, 2000, p.97):

- a. Access for any railway operator to any railway infrastructure;
- b. That railways should be operated on commercial principles (and not to be restricted to the operations of railway services);
- c. For aid to certain railway operations and to modify the rules;
- d. For the separation of responsibility for the railway infrastructure from the operation of railway services so as to facilitate privatization, which itself is a national matter.

According to Philippe Roumequere from International Railway Journal, rail transportation has a double advantage: On one hand, railways have shown indisputable proof of the efficiency of their system in the amount of energy consumed, transportation performance and capacity, operational costs, and very low impact on the environment. On the other hand, railways are the only means of transportation with considerable potential for improvement, through perfecting standard rail methods and combining them with a whole series of new technologies.

The success of rail transportation in the coming decades depends, in fact, on carrying out a set of investments that cannot legitimately be left to railway companies to pay for alone. In the case of The Europe, think of the construction of high-performance passenger and freight routes, reflecting 21st century geographies (Roumequere, 2003, p.1).

The European railways show differences from one member to another. Therefore, many technique problems occur such as different breaking and signaling systems and different electric power systems. Because of these differences, for

example, the Eurostar trains, traveling via the Channel tunnel, have to cope with the different signaling and electric systems of the British, French, and Belgian rail Networks (Jones, and Elgar, 1996, p.212).

In the railway sector, the basic principles for market-oriented development were formulated in the EU Commission Directive 91/440. This obliges Member States to reduce state involvement and increase the competitive power of the railway companies by decreasing accumulated debt, introducing commercial financial management, substituting flat rate subsidies by contracting out public services, separating the infrastructure accounts from the operating business and providing access to the infrastructure for third parties (Deregulation and Transportation in an Enlarged The European Union, IPTS, ESTO, 1999).

In the EU, directives are focusing on, in particular, safety, competition and harmony of national systems. While the safety level of the rail transportation in the EU is generally very good, particularly in comparison with its main competitor, road transportation, the recent White Paper nevertheless revealed the existence of shortcomings in railway safety. Therefore, directive 2004/49/EC of the European Parliament (EP) and of Council aims to establish a more competitive and safer railway system which covers the entire Community market instead of confining itself to national markets (Directive 2004/49/EC of EP, See the Web Portal of the EU).

Another directive of Parliament and Council is aiming to access all markets to other countries. In some member states, the rail freight market is still closed, while in others it is already being opened. Access is possible, for example, in Austria, Italy,

Germany, the Netherlands, Sweden and the UK. Therefore, directive 2004/51/EC seeks to create an integrated The European railway area and speed up market integration by removing major obstacles to cross border services (Directive 2004/51/EC of The European Parliament and Council, See the Web Portal of the EU).

Shortly, with regard to the opening of rail networks, and hence the national railway markets, the Member States were required to grant access rights to train operators from other Member States (ETP, The European Parliament, 2002, p.47).

In July 1996 the Commission issued a White Paper outlining its strategy for revitalizing the Community's railways, by rationalizing their financial situation, ensuring freedom of Access to all traffic and promoting the integration national systems (Glöckler, Junius, Scappucci, Usherwood, and Vassal, 1998, p.140).

In 2001, the "infrastructure package" was presented with the aim of opening up rail freight markets, by establishing a framework for the conditions of access to national networks for rail companies. In 2002, the Commission proposed a new package of measures aimed at revitalizing the railways through the rapid construction of an integrated railway area in the Europe (See the Web Portal of the EU).The EU took the first major step in third direction in March 2003 when new legislation came into force allowing private train operators to compete with the State-owned rail companies for rail freight services. Competition will first take place on 50 000 kilometers of main line track, which carries between 70 and 80 % of the EU rail

freight. Other EU freight services will follow by 2008 (See the Web Portal of the Turkish Delegation of the European Commission).

Through the last railway package, adopted in the first half of the 2004, the Community has succeeded in eliminating more barriers to competition in the European transportation market and has taken the decisive step towards a European rail market (ETP, The European Parliament Report, 2002, p.42). At the origin, in fact, of the European railway system, “high-speed” trains are going to be improved. With the links covering all Western and Central Europe, the EU is planning to connect major the European cities by 2015.

As a result, for increasing the power and competition ability of railways in comparison with road transportation, integrated railways are needed. For this aim, important safety, quality, environment factors must be taken into account. At this point, the EU is forming a unique railway system in which every component, from infrastructure to training of crews, is same in all Member States.

Some Statistics about Rail Transportation (Eurostat):

- a. 364 billion tone / km of rail goods were transported in the EU in 2003.
- b. Germany carried the largest quantity of goods, followed by Poland, France, Italy, Sweden and the United Kingdom.
- c. Germany has the highest level of transit traffic with 8 465 million km of goods on its network in 2003.
- d. Within the overall growth of rail transportation over the period 1990-2003, there were wide disparities in individual Member States: percentage changes in

rail goods transportation varied from a fall of -32 % for Ireland to a rise of +54 % for the Netherlands.

e. National transportation increased in the majority of Member States: the largest increase was registered in Portugal (+38 %) followed by Austria (+27 %).

f. Overall, international goods transportation by rail increased between 1990 and 2003: the largest increase was registered in the United Kingdom (+149 %), albeit from a small base, Portugal + (92 %) and the Netherlands (+82 %).

g. Four countries: Germany (17 %), Poland (10 %), the Czech Republic (10 %) and Belgium (8 %) account for 45 % of the total international outgoing transportation by rail from the EU.

3.2.3. Water Transportation

Although, in passenger transportation and inland transportation, waterways has not sufficiently competed with road, air and rail transportation, its place in international trade have always been at top. The shipping industry is a capital intensive and highly risky industry, and the history of shipping is full of facts supporting this statement (Paixao, and Marlow, 2001, p.187).

Despite fierce global competition, the European Maritime Industry has proved a strong player, due to intense co-operation between the members in its cluster. The total added value of the European Maritime Industry amounts 111 billion EURO (MIF, Maritime Industries Forum). In addition, over 90 % of its external trade and some 43 % of this internal trade goes by sea; more than 1 billion tones of freight a year are loaded and unloaded in the EU ports. And also, maritime companies belong to the EU nationals control one third of the world fleet, and some 40 % of the

EU trade is carried on vessels controlled by the EU (EMSA, The European Maritime Safety Agency, 2004 Report). According to the European Commission Data (October 2004), the European Economic Area (EEA) registered trading fleet totals 10.034 vessels (OECD Workshop on Maritime Transportation, 2004). With the arrival of 10 new members, the enlarged EU's fleet is rising to 26 % of total world merchant shipping.

The fleet of the Member States operates not in a European but in a global market, and so the international competitiveness of the European ocean-going shipping lines is a vitally important element of European policy on maritime transportation (ETP, The European Parliament Report, 2002, p.47).

Moreover, 41 % of goods transported within the EU travel by ship over so-called short-sea routes and this share is also growing. As for road and air, the EU has opened up national shipping markets to competition from vessels of other Member States (See the Web Portal of the Turkish Delegation of the European Commission).

However, the EU has not reached its recent position easily. For many years; the European Community did not have a shipping policy (Paixao and Marlow, 2001, p.187). Maritime shipping was not included in the provisions relating to the CTP within the Treaty of Rome. Although the decisions taken by the European Court of Justice (ECJ) stated that the rules of the Treaty of Rome (Article 84) did apply to the shipping industry, the fact is that no provisions were made on the articles relating to transportation matters (Paixao and Marlow, 2001, p.188). This helps to explain the

limited progress in developing a Community shipping policy until the mid-1970 (Lee, 1997, p.217).

The initial move towards the development of a The European shipping policy was made after the first enlargement of the EC to include the UK, Denmark and Ireland. The move was prompted by the fact that, firstly, the UK and Denmark had big interests in this economic activity. Secondly, the UK and Ireland were islands and, for the first time in the history of the EC, two countries were reached either by air or by sea (Paixao, Marlow, 2001, p.188).

In 1976, the first document about maritime policy was published by Commission in which general problems of maritime problems were determined and unfair pricing competition was prevented. So, this document can be perceived as the basis for the development of the future maritime policy. Another vital step was taken with the accession of Greece to Community in 1981. With the accession of Greece, EC had to take maritime policy into account. Finally, Commission presented another Communication about maritime transportation in 1985. The main aim of this Communication was to form a framework in which a strong maritime policy could be created. In this Communication, some measurements had to be taken into account such as maritime safety, pollution, development of Member States' infrastructures accordingly, implementation of navigation systems and abolishment of bureaucratic obstacles in front of maritime transportation.

Finally, Council, in 1986, agreed a package of measures, comprising regulations, which established the legal foundation of an EC maritime policy. In brief, the package (Lee, 1997, p. 224);

- a. Established the principle of freedom to provide maritime services, without discrimination, for intra-EC traffic and traffic between Member State and third countries
- b. Provided for the application of the Treaty of Rome's competition rules to liner shipping
- c. Provided for measures to be taken to deal with unfair pricing and other practices by non-EC ship-owners and third countries

Commission of the European Communities (CEC) viewed the 1986 package as being based on the open market non-protectionist philosophy (Paixao and Marlow, 2001, p.190). After 1986 package, no further improvement was made about maritime policy until 1989. In 1989, Commission presented two new documents on shipping policy and each of them was in related different subjects of shipping industry. The first document concerned the main problems faced by the Community and proposals. The second document was related to the subsidies.

The package of regulations dating from 1986 shows that the Community has already decided to liberalize transportation between the Member States of the Community and to make establishment of registration in the EU the sole condition for access to the transportation market (ETP, The European Parliament Report, 2002, p.47). The introduction of cabotage and the need for the Community to help

improve the conditions for international maritime transportation have resulted in the adoption of measures relating to competition policy to prevention of unfair pricing practice, to standards for ships engaged in the transportation of dangerous goods and to working conditions (See the Web Portal of the EU).

In its communication of 13 March 1996, approved by the Council on 13 December of the same year, the Commission determined the three priorities in the development of maritime policies; safety, maintenance of opens markets and enhanced competitiveness. Recent accidents have added impetus to the first priority and have led to the EU initiatives on safety on roll-on roll-off ferries and the obligation for the registration of ferry passengers (Glöckler, Junius, Scappucci, Usherwood and Vassal, 1998, pp.140-141).

3.2.4. Air Transportation

Air transportation in the European Union has grown fast. Passenger traffic has risen at an average annual rate of more than 7% for the past 20 years. The result has been more Customer choice and lower fares. It is estimated that between 85 and 90 % of the EU passenger travel on reduced or discounted tickets (See the Web Portal of the Turkish Delegation of the European Commission).

Passenger transportation, as in the other courtiers, has showed more increase than freight transportation. Therefore, civil aviation is critical to most national economies of The Europe and to the health of the European Community as a whole. The air transportation industry sustains millions of direct and indirect jobs. It is the lifeblood of the travel and tourism sector (Eigl, 2002, p.1).

Even though, air transportation, historically, has a same position with water transportation, it was not also taken into account in the CTP of the EC. Although according to Article 82 of the EC Treaty the air transportation sector was not originally part of the core area of common transportation policy (ETP, The European Parliament Report, 2002, p.55).

The evolution of air transportation policy in Europe differs from that in many jurisdictions because of the geographic limits of Europe and the availability of other modes. In the US, Canada, and Asia distance is the key factor and for distances of up to 300 km particularly for business travel are considered. The Europe, however, is special in that most states, France and Germany, for example, have well developed high-speed rail systems and the other European countries have well developed rail networks and services (Gillen, 2001, p.3). Another reason could be that the air transportation industry has been resistant to effective deregulation because a national airline is almost regarded as a symbol of nationhood. One or two carriers monopolize more than 95% of the 630 international routes in Europe (Jones and Elgar, 1996, p.212).

In order to form an integrated air transportation policy, deregulation was needed. The move towards deregulation that led to the liberalization of the EU's internal air transportation market began in the United States with the passage of the Airline Deregulation Act of 1978 (Gillen, 2001, p.3). According to the US, the EU was slower to deregulate its air transportation policy but faster to move improve the economic efficiency of airports.

The think of liberalization of air transportation in the EU started to be thought at the beginning of the 1980s. The Community policy on liberalizing air transportation covers four main areas: market access, capacity control, fares and the issue of operating licenses for companies (Gillen, 2001, p.8). This was perceived as a process and has consisted of three stages. The liberalization of air transportation, in terms of market access, capacity control, fares and the issue of operating licenses entered into force in 1993 (Glöckler, Junies, Scappucci, Usherwood, and Vassal, 1998, pp.140-141).

The first Liberalization Package was approved in December 1987. The Package consisted of two Council Decisions and two regulations, which came into force on 1 January 1988 (Lee, 1997, pp.226-227). It provided for greater flexibility with regard to fares and traffic sharing, although it was limited to scheduled services between member countries and contained block exemptions (Jones and Elgar, 1996, p.213).

The second package adopted in July 1990 revived the liberalization process by replacing the liberalization measures with more far-reaching measures (Gillen, 2001, p.11). This package provided for more extensive fare discounting and greater market access including some limited provision for cabotage (Lee, 1997, p.227). In addition, this package extended the existing bilateral agreements between Member States (Gillen, 2001, p.11).

As to the last package, in June 1992, transportation ministers agreed a third liberalization package to establish a single market in civil aviation. (Jones and Elgar, 1996, p.213) The third package contains these provisions (Lee, 1997, p.227);

- a. Any carrier satisfying safety, financial fitness, and the EU nationality tests is entitled to the EU operator's license.
- b. Virtually all intra-EU air routes are open to recognize the EU operators. Cabotage restrictions are further reduced, with full cabotage rights being established by April 1997.
- c. Airlines are free to determine their own scheduled passenger fares, subject to certain safeguards. All restrictions on charter fares are removed and cargo rates continue to be unregulated.

Briefly, the third package replaced the bilateral agreements previously concluded between the Member States and allows the establishment of an air carrier anywhere in the community and possibility to operate any intra-community air route without being subject to restrictions on capacity, frequency and pricing. When the last phase of the third package was put into effect on April 1, 1997 the legal and formal liberalization of the civil aviation market of the European Union was completed (Gillen, 2001, p.11).

“The main motive of the three air transportation market liberalization packages was to bring the single market to the field of air transportation which was market by state's furthering the commercial interests of their national flag carrier.” (Gillen, 2001, p.12)

With the liberalization of air transportation in the EU, the boom in air travel has pushed some airports to saturation levels and has overloaded present air traffic control system. Costly delays result: flights leave and arrive late, and pollution increases as aircraft burn additional fuel during waiting time on the ground or when stacked in the air waiting to land. Delays cost the EU airlines somewhere between EUR 1.3 and EUR 1.9 billion a year (See the Web Portal of the Turkish Delegation of the European Commission).

The International Civil Aviation Organization's (ICAO) latest outlook for world airline passenger traffic shows increases for next decades approximately 5 % per year. Airlines of the European Region are expected to match this trend closely or even exceed it (Eigl, 2002, p.1). Therefore, the air transportation industry in The Europe needs airspace capacity to be enhanced for present and future growth, while keeping air traffic management safe and economically viable. The European Single Sky (ESS) initiative represents a systematic approach to solving the issue that currently affect air transportation as well as for planning for future (Aguado, 2004, p.1).

The approach of ESS is not the first step taken in this process. The EUROCONTROL, the European Organization for the Safety of Air Navigation, was founded in 1960 for overseeing air traffic control in the upper airspace of Member States. The EUROCONTROL has the task to harmonize The European Air Traffic Management (ATM) with the goal of using a single The European Air Traffic Management System (EATMS) (Gillen, 2001, p.12). On the basement of the EUROCONTROL, the Commission has adopted a set of proposals on air traffic

management aimed at creating a “Single European Sky” by 31 December 2004 (See the Web Portal of the EU).

The Single European Sky was drafted with these objectives (Aguado, 2004, p.2):

- a. to improve and reinforce safety;
- b. to restructure The European airspace as a function of air traffic flows, rather than according to national borders;
- c. to create additional capacity; and
- d. to increase the overall efficiency of the Air Traffic Management system (ATM).

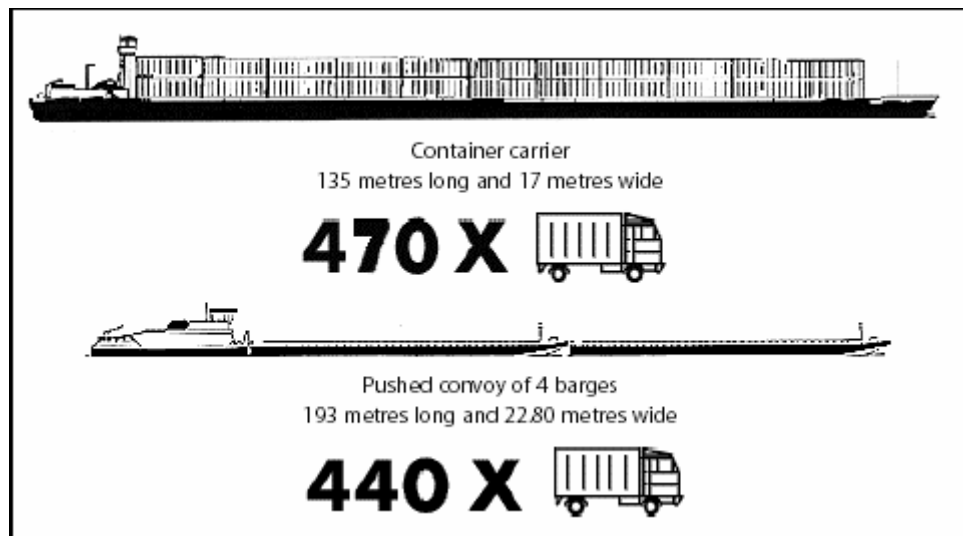
The main advantages of the Single European Sky are a reduction in delays, an increase in air safety, optimum use of airspace and hence an increase in capacity, less environmental stress and the reduction of cost, hence a reduction in flight fares (ETP, The European Parliament Report, 2002, p.58).

3.3. Inland Waterways As a New Challenge

As highly developed region, The European Union has to deal with many problems regarding transportation. Increasing of commercial relations by degrees and high level of car ownership has been creating many problems causing economic impacts on countries. In this perspective, main institutions of the EU are trying to take measures, which have been declared in White Papers of 1992 and 2001. As a dominant factor road transportation is perceived as the main reason of problems. Traffic growth of the past decade led to an unacceptable congestion and pollution in

the EU. The EU plays a key role within the policy guidelines regarding future development of society by recognizing that the effect of imbalance between modes led to situations which are at least not in favor of the Community (Trans-The European Inland Waterways Network, EBU, www.ebu-uenf.org, p.1).

Figure 8. Capacity Comparison between Inland Water Carriers and Road Carriers



Source: White Paper, The European Transportation Policy: Time to Decide, 2001, p. 47.

The Europe suffers from severe congestion problems for which solutions are to be defined and implemented. Therefore there is a need to find a new balance between transportation volume and sustainable development. Promoting underestimated modes of transportation is means to realize a new balance between growth and environmental protection (Trans-The European Inland Waterways Network, EBU, www.ebu-uenf.org, p.1).

The main advantage of the EU apart from the other regions of the world, industrialized regions of the EU is covered by inland waterways as a spider-line. This

advantage gives the EU vital opportunities to solve the transportation problems. However, the inland waterway networks are under used. Yet, it is safe, reliable, quiet and energy-efficient: a single barge carries the same load as 110 trucks (See the Web Portal of the Turkish Delegation of the European Commission). In inland navigation, 1 liter of fuel allows to carry 127 tons of cargo on a distance of 1 km, whereas road or rail transportation means would carry only 50 and 97 tons of cargo respectively (White Paper-The European Transportation Policy for 2010: Time to Decide, p.41).

Although there has been a fall in the use of inland waterways, they still play important roles in transportation of heavy industrial goods in some areas, notably the Rhine and its tributaries (Jones and Elgard, 1996, p.214). Potential of inland waterways should not be forgotten. Inland waterway transportation has proved to pay an important contribution to the demands within the European policy, although this mode of transportation suffered from an underestimation during the past decades (Trans-The European Inland Waterways Network, EBU, www.ebu-uenf.org p.1). Even though the share of inland waterway transportation in specific areas plays an important role and reaches share up to 40% in some Member States, the overall share of inland waterway transportation is only 4%.

However, researches on this issue show that inland waterway transportation can grow by 100% and even by more than 170% as regards the “Danube” waterway. The factors that provide the development of inland waterway transportation in the EU are (Rydzkowski, 2003, p.3):

- a. Combining sustainable and balanced growth with an increasingly destructive impact of transportation upon the environment, which is connected especially with excessive increase in road transportation,
- b. Finding a solution to the problem of traffic congestion, bearing in mind that
 - On the one hand, infrastructure development is limited by various geographical factors, but
 - On the other hand, globalization and economic integration process lead to growing demand for cargo and passenger transportation
- c. Ensuring accessibility and overcoming the problem of numerous bottlenecks in the Trans-European Network.

In addition to these factors above, although inland waterways network is considerably shorter and less dense than network of other modes of transportation, the majority of highly developed The European areas are located close to inland waterways. In 2001, inland navigation carriages grew by 13% and the share of inland navigation was quite substantial in areas accessible through waterways (Rydzkowski, 2003, p.8):

-The Netherlands → 42%

-Belgium → 12%

-Germany → 14%

-France, in the area of waterways → 15-20%

-Austria, in the area of waterways → 18.5%

In the Germany the share of inland navigation achieved in 2001 was equal to that forecast for 2010. New forecasts predict that by 2010 container transportation by inland navigation should have increased by 40 % (Rydzkowski, 2003, p.8).

With the development of inland and short sea navigation, many problems related to transportation can be solved. In the EU countries, development of pro-ecological transportation system very often includes inland navigation. It is an environmentally friendly mode of transportation because of:

- a. relatively low consumption of energy,
- b. low emission of air pollutants,
- c. low external costs,
- d. capacity to take over some part of road transportation loads, hence reducing congestion on motorways.

If we look at the position from the points represented above, the EU had to take some important measures. Historically the first important step was taken in 1993 to t open the inland waterway transportation's future. With this step, cabotage for internal waterway transportation was liberalized (Glöckler, Junius, Scappucci, Usherwood, Vassal, 1998, p.141). Since the 1 January 1993, inland waterway transportation has benefited from the liberalization of cabotage, the main effect of which has been the end of the route system which prevented companies employing these services from having a free choice of carrier (See the Web Portal of the EU).

The recent condition of inland waterway transportation is still under-capacity. The future development of inland navigation depends crucially upon implementing the policy of creating (Rydzkowski, 2003, p.6):

- a. An integrated European network of waterways,
- b. A network of water transportation for combined transportation,
- c. Logistics centers in river ports and sea-river ports.

Thus, eliminating bottlenecks and developing new connections may ensure stable growth of inland navigation.

3.4. Dealing with Safety and Environmental Problems

Increases in the world trade and globalization have paved the way for potentially improved transportation sector. Transportation sector has reached its highest levels owing to these events. In addition to this, the increase in the world population has led to the increase of the individual car ownership. As a chain reaction this has reinforced the automotive sector. Transportation sector, which has direct effects on national economies, has brought its own problems. And also these problems cause big costs for countries and can reach billion dollars. Apart from the economic effects of transportation, it has long term effects on the environment. Today, in developed countries' transportation policies, safety and environmental measures precede. It can be seen it in the "European Transportation Policy" (ETP). White Papers that are included in ETP emphasize the importance of safety and environment.

Safety measures have been taken into account in each mode of transportation since the CTP entered into force. Especially road and sea transportation have taken the priority in the CTP. Since 1970, the Community has enacted numerous provisions on vehicle technology, which have served, among other things, to improve road safety. Besides improving vehicle safety by extending the EC type-approval procedure (ETP, The European Parliament Report, 2002, p.38) thereby harmonizing the national roadworthiness rules, the Community has also enacted other vehicle-related safety legislation including provisions on safety belts and restraint systems.

3.4.1. Harmonization of Rules for Road transportation in the Europe

According to the surveys, the three most serious human behavioral problems on the roads are speeding, which is responsible for the third of all serious accidents, failure to wear a seat belt and drunk driving (ETP, The European Parliament Report, 2002, p.38). In 2000, road accidents killed over 40,000 people in the European Union and injured more than 1.7 million. The age group most affected is the 14-25 year olds, for whom road accidents are the prime cause of death. One person out of three would be injured in an accident someday in their lives. The directly measurable cost of road accidents is the 45 billion Euro. Indirect costs (including physical and psychological damage suffered by the victims and their families) are three to four times higher (White Paper for 2010, 2001, p.65). The Commission aims to halve the number of road deaths by 2010. As the most dangerous mode of transportation, the safety of roads has become a prior subject of concern.

The first thing the Commission has to cope with is the different rules and penalties changing from one member state to another. Therefore, the Commission proposed to harmonize the standards that countries have. According to harmonization plan of the Commission, penalties vary from one Member State to another and this causes confusions. For example, because of the speed limit differences between countries, cars or lorries lead to vital accidents. Another important measure taken in harmonization package is the increased control on vehicles carrying dangerous materials (fuel, gas, chemicals etc.). In addition to this regulation, instead of making them fine, applying legal sanctions to people will be more obstructive.

Another problem is different traffic signals and lights. The great diversity of road markings and road signs on the European routes, especially directional signs which have not been harmonized by UN conventions, is a constant hazard to drivers. The rules for indicating directions can differ from one country to another for the same type of road (White Paper for 2010, 2001, p.67). As regards the maximum blood alcohol level, the Commission issued a recommendation on 17 January 2001 that the Member States adopt a maximum blood alcohol level of 0,5 milligrams per milliliter for drivers and riders of motor vehicles (ETP, The European Parliament Report, 2001, p.39).

Table 7. Permitted Speed Limits and Blood Alcohol Levels in The EU Countries

	B	DK	D	EL	E	F	IRL	I	L	NL	A	P	FIN	S	UK
Built-up areas (km)	50	50	50	50	50	50	48	50	50	50	50	50	50	50	48
Tunk roads (km)	90	80	100	110	90	90	96	90	90	80	100	100	80	90	96
Motorways (km)	120	110	130	120	120	130	112	130	120	120	130	120	120	110	112
Blood alcohol level	0,5	0,5	0,5	0,5	0,5	0,5	0,8	0,8	0,8	0,5	0,5	0,5	0,5	0,2	0,8

Source: Eurostat

With the help of new technologies, safety measures can be increased and controlled easily. The European Union has considerable responsibility for encouraging the deployment of innovative technologies, which should lead to the introduction of safe new vehicles on the market. For example, electronic licenses can help with the enforcement of penalties (White Paper for 2010, 2001, p.68).

To sum up, the measures to be taken in this respect are the following: development of appropriate signposting of black spots, combating excessively long driving times, harmonizing road transportation penalties at the European level, and increasing considerably the use of new technologies.

3.4.2. ERIKA I and ERIKA II Packages

After road transportation, one of the most dangerous transportation modes in terms of environment and safety is water transportation. If one considers the role of water transportation in international trade, he/she can understand the dimension of the risk. Especially, tankers carrying fuel, gas or chemical materials constitute the whole risk on seas. The need to protect the environment, natural life, crews of ships and their passengers as well as the inhabitants of coastal areas and their environment dictates that high safety standards must be set for all vessels at the European ports and the European waters.

Primarily the London-based “International Maritime Organization” (IMO) of the United Nations carries out the international standardization of safety provisions. During the Community stepped up its efforts to improve the safety of ships after the European Parliament had urged the Commission and Council yet again to draw up

and adopt the necessary safety provisions (ETP, The European Parliament Report, 2001, p.48). Even though the EU has taken many steps for safety, two big tanker accidents occurred called Erika and Prestige accidents.

As it was mentioned above, even though many measures taken by the Commission to improve the safety rules for the European waterways, sea accidents have determined the future steps of the maritime transportation of the EU. The first tanker accident happened on 12 December 1999. The *Erika*, a 25 years old single-hull oil tanker flying the Maltese flag and chartered by TOTAL-FINA, broke in two some 40 nautical miles off the southern tip of Brittany, polluting almost 400 kilometers of French coastline. The damage caused to the environment and the exceptionally high cost of the damage to fisheries and tourism make the Erika oil spill one of the major environmental disasters of recent years (The European Commission Report, 2002). On Wednesday, 13 November 2002, under stormy conditions, the tanker *Prestige*, built in 1976, on the route from Baltic to Asia, sustained hull damage (Höfer, 2003, p.1). The 25 years old tanker was transporting 77,000 tons of heavy fuel oil from Lithuania to an undetermined destination (Vazquez and Prada, 2003, p.1). Thousands of tones of heavy fuel oil spilled into the sea, polluting the Galician coastline. On 31 December 2002, it reached the French coast and the first lumps of oil were washed up on the beaches of the Landes and the Gironde (The European Commission, Directorate General for Energy and Transportation, 2003).

After the wreck of the *Erika* on 12 December 1999, the EU considerably reinforced its legislative arsenal to combat flags of convenience and give the

European continent better protection against the risks of accidental oil spills (The European Commission, Directorate General for Energy and Transportation, 2003). With the Erika accident off the coast of France in 1999, the European Union began to prepare new packages of regulations designed to improve maritime safety in the European Atlantic corridor. From these efforts there emerged the ERIKA I and ERIKA II measures (Vazquez, Prada, 2004, p.6).

These packages had two objectives: firstly, to tighten existing legislation and secondly, to propose new measures to speed up the phasing out of the one-hull tankers, improve controls on shipping in European waters, establish a European Maritime Safety Agency and create a supplementary fund for compensation for oil pollution (The European Commission, Directorate General for Energy and Transportation, 2003).

Erika I Package

The Erika I package was proposed by the Commission in March, 2000 and approved by the EU in December 2001. In this package three important measures were pointed out;

- a. Strengthening the existing Directive on Port State control. According to this measure, tankers must be inspected by independent inspectors.
- b. Strengthening the existing Directive on classification societies, which conduct structural safety, checks of ships on behalf of flag States. With this measure quality requirements for classification societies have been raised

(The European Commission, Directorate General for Energy and Transportation, 2003).

c. Elimination of single-hull tankers. Single-hull tankers, which present a high risk of pollution in the event of an accident, are often old tankers. Therefore, this measure aims to phase out these tankers from the European waters until 2015 (The European Commission, Directorate General for Energy and Transportation, 2003).

Erika II Package

The Commission in December 2000 tabled the Erika II package. It was perceived as complementary package of Erika I. The Erika II package comprises three additional measures designed to bring about a radical improvement in maritime safety in the European Union waters (The European Commission, Directorate General for Energy and Transportation, 2003).

This concern:

- a. The creation of a “European Maritime Safety Agency” (EMSA) charged with the enforcement of the EU maritime safety rules. In general terms, the Agency will provide technical and scientific advice to the Commission in the field of maritime safety and prevention of pollution by ships (See the Web Portal of the European Maritime Safety Agency)
- b. The establishment of an information system to improve the monitoring of traffic in European waters (The European Commission, Directorate General for Energy and Transportation, 2003).

c. Improvements in the existing schemes concerning liability and compensation for pollution damage (The European Commission, Directorate General for Energy and Transportation, 2003).

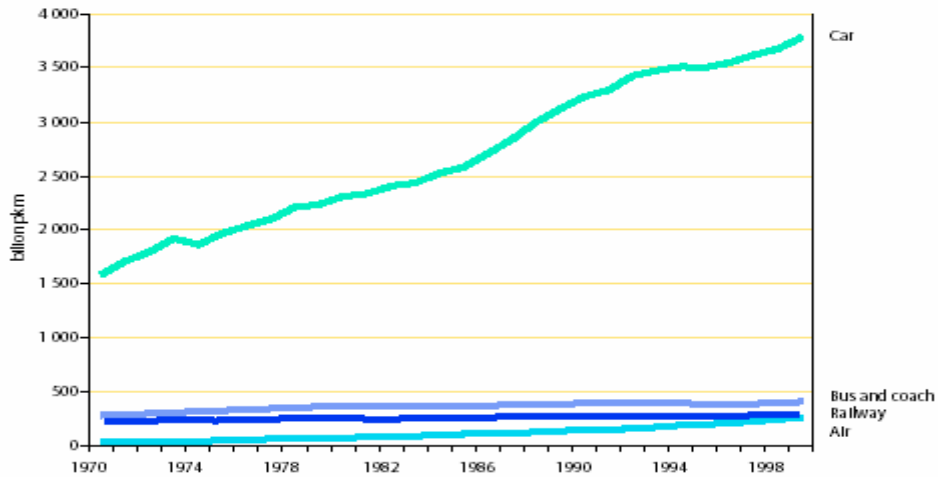
3.4.3. “White Paper” as a Savior

White Papers have aimed to make the CTP more effective and efficient for the EU. If it is considered that the CTP has been created for making all logistics activities more balanced and effective, White Papers have drawn the outlines of the CTP. That is, White Papers, in terms of both member states and candidate countries, constitute a road map. As it was mentioned above, White Papers show general transportation regulations for candidate countries waiting for full membership such as Turkey. The White Paper for 2010 adopted by the Commission on 12 September, 2001 sets a comprehensive strategy aimed at delivering a sustainable transportation system, from an economic, social and environmental viewpoint. A key objective of the paper is to shift the balance of transportation in Europe from road and aviation towards rail, shipping and inter-modal operations by 2010. It recognizes, in particular, the increasing problems of congestion on road and rail routes, in towns and at airports and the harmful effects of transportation on the environment and public health and the heavy toll of road accidents (See the web side of the British State Department of Transport). White Paper for 2010 called “time to decide” focuses on;

- Removal of the imbalance between modes
- Overcoming bottlenecks
- The importance of the transportation users
- Managing the global effects

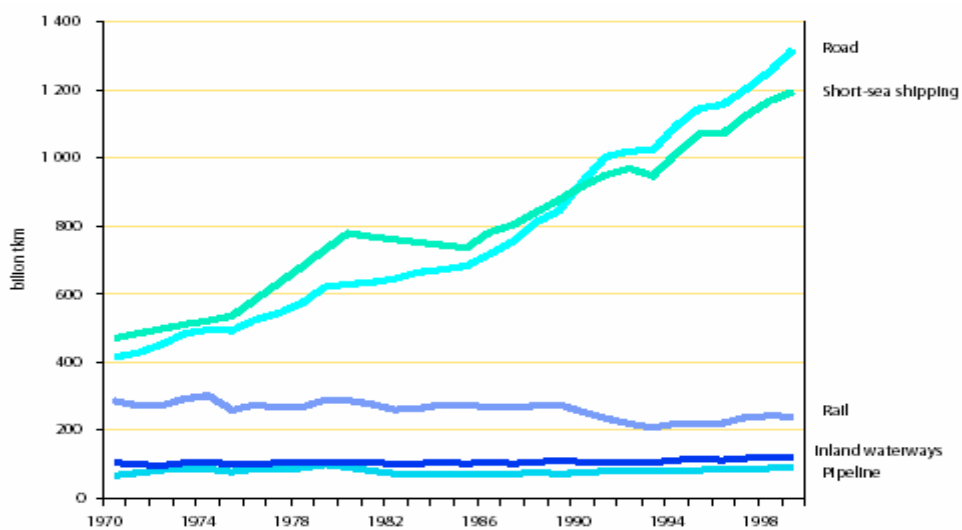
3.4.3.1. Removal of the Imbalance between Modes:

Figure 9a. Passenger Transportation- Growth of Traffic by Mode of Transportation (transportation of a person over one kilometer)



As in the other regions of the world, imbalance between transportation modes has been growing gradually. Increase of road transportation and its time advantage compare to other modes have resulted in unreliable transportation activities and increasing congestions especially on the main European corridors.

Figure 9b. Goods Transportation- Growth of Traffic by Mode of Transportation (transportation of one tone over one kilometer)



Source: White Paper for 2010: Time to Decide, The European Commission, 2001, pp.23-25.

According to White Paper, to solve the problem of imbalance between modes, two priority objectives need to be attained by 2010:

→ Regulated competition between modes;

→ A link-up of modes for successful intermodality

“Unless competition between modes is better regulated, it is utopian to believe we can avoid even greater imbalances, with the risk of road haulage enjoying a virtual monopoly for goods transportation in the enlarged European Union” (White Paper For 2010, 2001, p. 23)

In order to gain an intermodal transportation sector quality of all modes must be improved. According to the White Paper, other modes have to improve their abilities to catch up with the level of road transportation. Today, nearly two households out of three own a car and every day another 10 hectares of land are covered over by new roads. Taking the Union as a whole, the number of kilometers of motorway tripled between 1970 and 2000 (White Paper for 2010, 2001, p.23). Because of smallness of the Europe continent in comparison with other continents, road transportation gets a greatest competitive advantage to carry goods all over the EU. Even though road transportation is fast and flexible, its negative effects on environment and economy have opened the way of other modes. Therefore, other modes especially rail and water transportations have to raise their quality level and competition power by providing efficient and effective transportation activities.

In order to prevent problems created by road transportation, the White Paper projects to tighten up controls and penalties. The EU regulations on road

transportation, particularly on working conditions, are not only insufficient, they are also poorly enforced (White Paper for 2010, 2001, p.25).

Another important thing pointed out under this measure is the revitalizing the railways. Between 1970 and 1998 the share of the goods carried by rail in Europe fell from 21,1 to 8,4 %, even though the overall volume of goods transportation rose spectacularly (White Paper for 2010, 2001, p.26). Over the last 20 years, air transportation in the EU has shown the largest increase. However, it created air congestions and delays. Therefore, the EU needs urgently air traffic management system to which all member states participate. The biggest step on this way is the creation of a single European sky.

The biggest missing link is the lack of a close connection between sea, inland waterways and rail (White Paper for 2010: Time to Decide, 2001, p.40). Under this measure, the EU is planned to make the use of all modes equal. It means that a coordinated logistics activity is planning to be done by the EU. In other word, intermodality in which all transportation modes work in terms of their best sides is a vital measure, which is tried to be done by the EU.

3.4.3.2. Overcoming Bottlenecks

To improve the CTP of the EU, another important measure taken by the Commission is the elimination of bottlenecks on main corridors of the EU. Especially between developed countries such as Germany and France goods and passenger transportation cause bottlenecks, which affect all logistics activities between those points. Delays created by congestions cause some problems in terms

of both time and cost and also affect all modes of transportation. With the transportation boom outstripping economic growth, the persistence and indeed the every size of a number of bottlenecks on the main international routes is posing a major problem for the transportation system in Europe (White Paper for 2010, 2001, p.48).

According to the Commission, unless new infrastructure projects would be taken up, the internal market and the territorial cohesion of the Union would not be realized. After the fast growth of economic activities around the EU as well as the world, bottlenecks have started to increase in main regions. Because of this problem the Commission proposed a two-stage plan, which has revised the future of the Trans-European networks.

The first of these, adopted on 3 October 2001, concentrates on eliminating bottlenecks, completing designated priority routes and improving access to outlying region (See the Web Side of the British State Department of Transportation). The second stage in 2004 involved a more extensive revision, in the light of reactions to the White Paper, aimed in particular at introducing the concept of “motorways of the sea”, developing airport capacity, and including sections of pan-European corridors situated on the territory of candidate countries (White Paper for 2010, 2001, p.49).

The road transportation as a mode having the biggest share of the market is the main factor causing bottlenecks. Therefore, as it was mentioned in previous chapters, traffic conditions and harmonization should be taken into account. The measure package taken into consideration under this circumstance by the

Commission by 2006 is that all the main Trans-The European links should have common traffic management systems.

3.4.3.3. The Importance of Transportation Users

According to this measure, the factor of users must be put at the heart of the transportation policy (White Paper for 2010, 2001, p.64). Firms, public sectors and individual users use all infrastructures made by countries and these infrastructures meet the needs of all these factors. Therefore, the most important expectation of users is safety. They also want to know exactly what they are paying for when they use motorways or public transportation (White Paper for 2010, 2001, p.64). Another fact creating a concern for users is the condition of transportation when they use the different modes of transportation. Finally, users want that their rights must be taken into consideration.

3.4.3.4. Managing the Global Effects

According to the Commission, with the enlargement of the EU, its transportation policy will have a more complex and detailed structure. That is, it will extend across the continent and be more international. The first challenge in making enlargement a success will be to connect the future member states to the Trans-European Networks; this is a precondition for their economic development, based on anticipated growth in transportation, as was the case with accession of Greece, Spain, and Portugal. The Trans-The European transportation Networks of candidate countries amounts to some 19,000 km roads, 21,000 km of railways, 4,000 km of inland waterways, 40 airports, 20 seaports and 58 inland ports (White Paper for 2010, 2001, p.87).

3.5. Turkey Waiting For Full Membership

Relations between the European Union and Turkey are based on the agreement establishing an association between the EEC and Turkey, the so-called Ankara Agreement, which was signed on 12 September 1963 and came into force on 1 December 1964 (Francois, 2003, p.2). The reasons of this application can be classified as political and economical reasons. Political reasons can be expressed as a continuation of the process of Westernization. Under the economic reasons can be summarized as the expected financial opportunities. The cornerstone of this agreement is the establishment of a Customs Union in three stages. The Customs Union Agreement Turkey has signed with the EC has improved through a hilly process (Özen, 2002, p.3). On April 1987 Turkey applied for full membership. However, because of the Commissions economic and political reasons Turkey's application was rejected. As an answer to Turkey's application, the Commission's *Avis* pointed out that Turkey needed time to ready for full membership (Özen, 2002, p.6). On 7 June 1990 the Commission adopted a set of proposals (the Matutes Package) including completion of the Customs Union, the resumption and intensification of financial cooperation, the promotion of industrial and technological cooperation and the strengthening of political and cultural ties. However, the Council did not approve this package. In 1996 Turkey finally entered into the Customs Union. Some positive effects of the Customs Union can be listed as (www.deltur.cec.eu.int/booklets/customsunion 12.04.2005):

- a. The Customs Union makes trade easy through the principle of the free movement of goods between countries and creates many advantages.

- b. The Customs Union forces the national companies to productivity and competition.
- c. The Customs Union forces the national producers to standardize their goods with European standarts.
- d. The European Union-Turkey Customs Union is not only in economic area but also in different area.
- e. The increasing competition power of Turkey creates employment opportunities.
- f. The Customs Union is the crucial step for further integration.

Turkey's position has been changed as a candidate country with the Helsinki Summit on December 1999. At that point Turkey has started a very complex period in which Copenhagen Criteria have been accepted to determine the road map of Turkey. Even though many vital regulations and developments in both economic and political are made, there are still some gaps between Turkey and the EU. Quality standards and competition rules existing in the EU markets are the key points that will affect the Turkey's adaptation to these rules and regulations. As we have explained the EU's CTP, in each modes of transportation sector Turkey have to make many regulations come true.

3.6. Analysis of Turkish Transportation Sector

Anatolia, which is binding the Europe, Asia and Africa as a bridge, has played a very important role for centuries. The most importance commerce roads have moved through Anatolia such as "Spice Road". History of transportation in Anatolia reaches to the B.C. 300.

Activities about logistics during the period of the Ottoman Empire had focused on transportation of goods. The Ottoman Empire had given attention on this issue and formed an association, which was dealing with road problems. After the collapse of the Ottoman Empire, the Republic of Turkey was founded and incredible industry revolution in which vital development plans took place. At that point, the most important steps must have taken in industry. Therefore, between 1932 and 1936, first and second five year development plans was made. From the Ottoman Empire had left approximately 3000 km railway and 18.335 km road (Baki, 2004, p.39).

If we take the issue from the perspective of future of Turkey, its strategic position will gain more and more attention with the full membership to the EU. It has already showed its importance in the first and second Gulf Wars. Turkey's current condition has still includes some problems. Turkey that is at the gate of the EU has to overcome infrastructure problems. There are still imbalances between modes used. Turkey's geopolitical position as a link between the East and the West makes the transportation sector crucial for the economic development of the region. Turkey is a major player both as a transit country and as an origin and destination of freight. The severe fiscal instability and the recent external developments with regard to the EU accession and the growing role of Turkey in trade between Central Asia and the South Caucasus make the focus on transportation even more important (See the Web Portal of the Worldbank).

Turkey has been transportation and logistics centre in the middle of three continent for a long time. As we said before, Gulf Wars increased the importance of

Turkey. Logistics firms in Turkey are accounted approximately 1500 (Baki, 2004, p.44).

Table 8. Goods Transportation by Modes inside Turkey (Million Tones/km)

X1000	1995	1996	1997	1998	1999	2000	2001	2005 (expected)
Road	112.515	123.748	124.320	152.210	150.974	161.552	151.421	212.000
Rail	8.632	9.018	9.717	8.466	8.446	9.895	7562	10.000
Water	276	9	-	30	8.200	7.900	8.100	9.700
Air	231	240	263	274	286	310	285	662
Total	121.654	133.015	134.320	160.980	167.906	179.657	167.368	232.362

Source: www.die.gov.tr

3.6.1. Domination of Road transportation

Road transportation in Turkey has improved gradually after the World War II and became the most useful transportation mode by being flexible and providing door to door service.(Baki, 2004, p.45) Therefore, the existing structure of Turkish transportation sector is mainly based on road transportation as other countries. Approximately 95 per cent of domestic passenger transportation and 80 per cent of domestic freight transportation are realized by road transportation (See the Web Portal of the Devlet Planlama Teşkilatı). However, the rate of transportation of both passenger and goods by road transportation is higher than Member States in the EU. The most important factors the EU points are the balanced transportation sector and Intermodal transportation. Table 9 shows the differences between Turkey, Germany and the US.

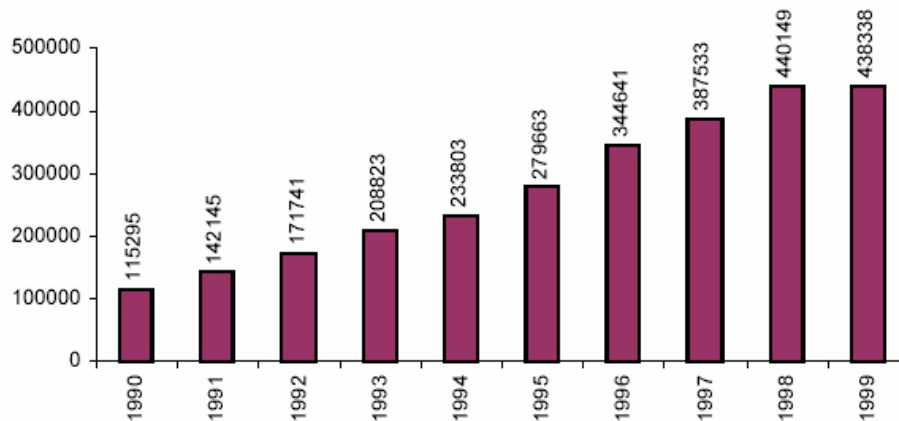
Table 9. Passenger Transportation in Developed Countries and Turkey

Country	Road	Railway	Water	Air
USA	27,2	38,3	24,0	10,5
Germany	58,2	22,0	12,0	7,3
Turkey	96,2	2,0	0,1	1,7

Source: www.dpt.gov.tr

Historically, the Customs Union has affected the Turkish road transportation. With the Customs Union, transportation firms in Turkey have started to make important investments on road transportation. Therefore, the biggest road fleet of the Europe belongs to Turkey. This is the cause of investments on road transportation. In addition, in the development of road transportation, governments have big roles and these governments are another pushing factor. In 1998, road transportation took 56,7 per cent of 463 trillion, which is separated to transportation sector, on its own (Helsinki Summit Report, 1999).

Figure 10. Numbers of Traffic Accidents in Turkey



Source: Karacasu Murat, Bilgic Safak, “*Examination of Traffic Accidents Which Depends on Road Conditions in Turkey*” Osmangazi University, 2002 p.2.

Because of the lack of implementation of regulations and education in the field of traffic, road transportation has been causing vital problems in terms of economy, environment and human life. For example, traffic congestion in case of bad weather conditions in big cities causes delays in terms of both trade and social activities. Its effects on environment are another reason for governments to take

some measures. Situation in Turkey is not suitable with the EU and measures have to be taken without being late. As we mentioned before, safety and environment are the most expressly mentioned factors that must be taken into account by Member States. The rate of traffic accidents in Turkey is too high in comparison with the EU. There are a lot of deficiencies, which cause traffic accidents about road conditions in Turkey. Road standards are not sufficient and public transportation is not developed (Karacasu and Bilgic, 2002, p.1).

According to The General Directorate of Highways 2000 there are 0, 48 km road per square kilometer in Turkey (www.kgm.gov.tr). This figure is not enough for Turkey and roads cannot carry traffic volume. Economical share, which is given by Government to build road, is not enough, even though the biggest share from budget is given to road transportation. Highway transportation is extreme level in Turkey. Highways make 95 per cent of transportation (Karacasu and Bilgic, 2002, p.2). The place of road transportation in commerce is fairly important. In particular, its share in inland trade is approximately 98%. There are 556 company making passenger transportation and 530.000 trucks moving on Turkey's roads (See the Web Portal of the State Statistical Institute).

Although road transportation has dominant role in Turkey, its share in foreign trade is under water transportation. Because of the geographical obstacles such as seas and cost factor, water transportation is chosen in spied of road transportation (See Appendix 1 and 2).

3.6.2. Regression of Railways

Railway transportation was the predominant transportation mode until 1950s. With the foundation of the Republic of Turkey by Ataturk, railway policies were made as the previous steps of the industry revolution. Therefore, the history of railway is separated into two stages as Republic Stage (1923-1950) and stage after 1950s (See the Web Portal of TCDD). Railway left by the foreign companies was approximately 3714 km. and between 1923 and 1950 Turkish companies constructed 3780 km railway and totally there was 7671 km railway in Turkey between 1923 and 1950 (Sector Investigation Series, 2001, p.11). After the WW II, with the help of the Marshall Plan, road transportation started to increase its share and railway construction went down.

Table 10. Railway Network According to Years (km)

	1923	1950	1993	1994	1995	1996	1997	1998	1999	2000	2001
Railway	3756	7671	8430	8452	8459	8607	8607	8607	8682	8671	8671

Source: www.die.gov.tr; Devlet Istatistik Enstitüsü

Table 11a. Freight Transportation by Railway (%)

	1955	1965	1975	1985	1995	2000	2005 (expected)
Railway	61	40	20	16	7	5	2
Road	35	58	79	79	85	89	96

Source: www.dpt.gov.tr; Devlet Planlama Teşkilatı

Table 11b. Passenger Transportation by Railway (%)

	1955	1965	1975	1985	1995	2000	2005 (expected)
Railway	22	12	6	7	4	2	1
Road	71	85	93	91	95	96	98

Source: www.dpt.gov.tr; Devlet Planlama Teşkilatı

As we see, railway's share in passenger and goods transportation has decreased gradually since 1950s. Its main reasons are the imbalance in the distribution of investments and the wrong government policies. As a candidate country Turkey doesn't have sufficient attention on its railway transportation in comparison with other candidate countries. Table 13 shows the railway Networks of candidate countries.

Table 12. Basic Data Railways Accession Countries, 2001

	Length km	Staff*1000	Passenger km Millions	Freight tone km
Bulgaria	4,320	37.3	2,990	4,904
Czech Rep.	9,444	84.1	7,262	16,557
Estonia	967	5.1	183	8,222
Hungary	7,949	56.3	7,387	7,147
Latvia	2,331	15.2	706	14,179
Lithuania	1,696	14.3	533	7,741
Poland	20,134	158.8	18,208	47,656
Romania	11,346	101.4	10,965	15,899
Slovak	3,662	44.5	2,805	10,929
Slovenia	1,229	9.1	715	2,600
TURKEY	8,671	39.9	5,568	7,387

Source: Groot, Hinne. 2001. *Integration of Accession Countries in the EU: the case for railways*. The European Commission, p. 1

The EU's White Paper for 2010 has expressed the importance of railways. Rail transportation has become a mode of transportation that passengers and freight forwarder can freely choose in the accession countries and therefore, the railways have to be more competitive. The railways are moving towards being undertakings independent from the State, competing with other modes and with separate responsibilities for infrastructure and railway service (Groot, 2001, p.1).

Railway transportation has some advantages in comparison with other transportation modes (Baki, 2004, pp.49-50):

- a. railway transportation is not affected by bad weather conditions such as freeze or fog.
- b. railway transportation is the most compatible mode with environment.
- c. it needs fewer fields in comparison with road transportation
- d. the usage of energy in railway transportation is less than other modes.
- e. maintenance of railways costs governments less than highways.
- f. in terms of passenger and goods transportation, railway transportation's capacity is more than road and air transportation.

According to the European Council of Minister's plan, The Europe is going to be covered by a high-speed railway network, which is 30.000 km by 2015. Two corridors, which will be a link between the Europe and Asia, are planning to be binded to Turkey (Sector Investigation Series, 2001, p.13). Today, the share of railway transportation in port-inland links is 5%, which must be increased. Turkey has to keep in step with improvements in the EU. Therefore, Turkey should give priority to carrying out the requirements of The European transportation policy, making sufficient networks in the EU conditions and creating new projects to improve railway conditions (Sector Investigation Series, 2001, p.13). (See Appendix 1 and 2)

3.6.3. Water Transportation and Its Deficiencies

Water transportation is the most widespread mode in the international transportation. Although it is slow, its reliableness is high. In comparison with other modes its first investment is the most expensive mode among all modes. In addition, the most important advantage of water transportation is its high capacity (Baki, 2004). Approximately 90 % of goods transportation in the world is made by water transportation. Today, the amount of goods carried by water transportation is approximately 6 billion tones. And also, water transportation has the lowest costs; air, road and railway are 22,7 and 3,5 times expensive respectively than water transportation. Advantages of water transportation can be ordered as following:

- a. Load capacity at one
- b. Being safe
- c. Minimum level at loss of goods

As to current situation in Turkey, it is possible to say that Turkey has a old fleet which is above the average of the EU standard. The EU standard for ships' age is maximum 15 (Baki, 2004, p.47). Turkey's fleet is shown in table 14 below.

Table 13. Turkey's Water Transportation Fleet

	96	97	98	99	00	01	02
Ships	1,179	1,197	1,204	1,242	1,270	1,261	1,185
DWT (1000)	10,893	10,563	9,760	10,322	9,489	9,307	8,666
GT (1000)	6,622	6,525	6,463	6,778	6,044	6,002	5,736

Source: www.die.gov.tr, Devlet İstatistik Enstitüsü

Table 14. Capacity and Features of Turkish Ports

Ports	Haydarpasa	Mersin	Izmir	Iskenderun
Dock Long	2,765	4,605	2,959	1,426
Amount of Pers.	725	1,098	505	491
Capacity (Ship)	2,651	4,692	3,640	640
Stock Capacity	269	371	343	146
Max. Draft	-12	-14.5	-13	-12

Source: www.tcdd.gov.tr , Türkiye Cumhuriyeti Devlet Demiryolları

Approximately 87 per cent of Turkey's foreign trade is made by water transportation. 69 per cent of Turkey's foreign trade is made by ships with foreign flag, 31 per cent by ships with Turkish flag. Turkey takes only 1% shares from the world water transportation that is 300 billion \$. Greece takes 60 billion \$ from this market and its share is 17 % (See the Web Portal of the State Statistical Institute).

Table 15. Transportation Modes in Foreign Trade in Turkey

Mode	2002				2004			
	Quantity 000.Tone	%	Value 000.\$	%	Quantity 000.Tone	%	Value 000.\$	%
Water	128,626	88.1	41,857,508	48,1	148,972	86.3	80,728,396	50.5
Railway	1,075	0.3	708,736	0,8	2,077	1.2	1,830,643	1.1
Road	14,701	10.6	33,562,867	38,6	19,547	11.3	57,721,456	36.1
Air	237	0.1	8,657,830	10	237	0.1	16,208,559	10.1
Others	2,941	0.9	2,169,435	2,5	1,753	1	3,445,868	2.2
TOTAL	320,166	100	86,956,376	100	172,586	100	159,934,922	100

Source: http://www.roder.org.tr/TR/STATS/sta_intrade.asp

To improve water transportation, Turkey needs a Ministry of Water Transportation urgently. There are some deficiencies in infrastructure and in management of ports. For instance, age of machines, depth of ports, and size of quays are the some of the main deficiencies of Turkey's water transportation (Orhan, 2003, p.100). According to researches, Turkish ports are the most expensive ports in the Mediterranean and Black sea.

To overcome these problems and deficiencies, maritime industry must be supported by financial boosts. As in other countries, which are the important actors in the international water transportation, water transportation industry cannot be improved without financial supports (Sector Investigation Series, 2001, p.16). As we mentioned before, modernization of Turkish fleet is another necessity. According to the EU standards, Turkish fleet is older than the EU's fleet. In addition, existing maritime legislation is not responding to the needs of water transportation sector. It must be regulated in accordance with the EU standards. Finally, training of personnel working in ports should be increased.

According to researches, predecessor future aims of Turkish water transportation are (Lojistik & Taşımacılık Dünyası, 2003):

- a. to increase Turkey's share to 7.5% from world water transportation,
- b. to improve ports' conditions and abolish infrastructure problems,
- c. to decrease the average age of Turkish fleet from 25 to 20 in 2008, and to 10 in 2013,
- d. to make Turkey a technology and ship producer,
- e. to create 1,000,000 employments,
- f. to abolish bureaucratic obstacles and reduce the price in ports.

Another important problem for Turkey is cabotage applied in Turkey's territorial waters. With entrance of Turkey into the EU as a member, cabotage transportation will have to be abolished because of the EU's regulations on this issue (Sector Investigation Series, 2001, p.17). The point is that Turkey has to strengthen

its water transportation policy by making ports and firms more competitive and overcoming its problems in this sector. (See Appendix 1 and 2)

Table 16. The Place of Turkey in the World Fleet in 2003

	Flag	Amount of Ships	(000) DWT
1	Panama	5276	185,598
2	Liberia	1446	75,392
3	Bahama	1165	48,040
4	Greece	1160	47,712
5	Malta	1312	43,505
6	S.Cyprus	1239	36,537
7	Singapore	966	32,867
8	Norway	1108	31,147
9	Hong Kong	636	26,388
10	China	2136	24,102
11	Marshall Isl.	334	22,785
12	Japan	2763	16,144
13	England	671	15,598
14	USA	515	13,125
15	Korea	828	10,357
16	Italy	721	9,787
17	India	390	9,747
18	Saint Vincent	839	9,172
19	Denmark	432	8,942
20	TURKEY	889	8,765
21	Germany	464	7,865
22	Russia	1712	7,700
23	Malaysia	487	7,379
24	Philippine	822	7,372

Source: Lojistik & Taşımacılık Dünyası, Dünya Gazatesi Eki, 2003

3.6.4. Air Transportation in Turkey

Increase of the effects of globalization on social and commercial life by degrees is forcing sectors to get new technologies and to meet the needs of consumers. The best example for this is aviation sector because of its openness to new technologies. The most important factor that new technologies provide is the effective usage of time. Today, document transformation for which hours and even

days is spent is replaced with e-mails, which use time more effectively. Time is a vital factor for all modes of transportation. (Sector Investigation Series, 2001, p.17) As the fastest transportation mode air transportation sector is trying to find new technologies for speeding up to prevent delays, reduce costs and giving more quality to both passengers and cargo owners.

Table 17. Expected Increase in the World Economy and Air Traffic

	Economic Increase	Passenger Traffic	Cargo Traffic
Average Increase	2.7	4.7	6.0

Source: Sector Investigation Series No: 24, Transportation Sector, Türkiye Vakıflar Bankası, 2001, p.26

Even though Government for a long time has controlled air transportation in Turkey, it has improved gradually. There were only 8 planes in 1940, but in 1999 there were 75 planes belonging to Turkish Airlines (THY) (www.dpt.gov.tr). Today there are 48 airports including military airports. Although passenger transportation in aviation sector is foremost, cargo transportation is also growing in Turkey as well as other countries. However, it has not been on expected point yet in Turkey. Development of Turkish industry, in particular textile, electronic, machine, computer and automotive industries have brought up the need and importance of cargo transportation. (Baki, 2004, pp.51-52)

Table 18. Data of Cargo Transportation in 2002

Air Ports	Cargo Carried (tone)
Memphis Airport	2,631,239
Los Angeles Airport	2,122,874
Tokyo Airport	1,680,938
Frankfurt Airport	1,613,292
Paris (CDG) Airport	1,479,304
London Airport	1,263,542
Amsterdam Airport	1,232,031
Ataturk Airport	165,000

Source: Lojistik & Taşımacılık Dünyası, Dünya Gazatesi Eki, 2003

As we said before, THY in Turkey has dominated air transportation. However, in recent years some important steps for creating more competitive sector to present more quality are taken by some private initiatives. By entering of Onur Air, Atlas Air and Fly Air to Turkish aviation sector, preliminary measures before the EU accession has sped up. With the 70 million populations Turkey is a big potential market for both domestic and foreign firms. Eliminating of cabotage will force domestic firms to be more competitive and get new technologies. (Lojistik & Taşımacılık Dünyası, 2003)

According to the Eighth Five Year Development Plan, because of the fact that 94 % of the existing cargo transportation is being made from 8 airports (Ataturk, Antalya, Esenboga, Adnan Menderes, Dalaman, Bodrum, Adana and Trabzon), in stead of making new airports, increasing the service capacity and standards of existing airports will be given attention. (Eighth Five Year Development Plan, 2001-2005) (See Appendix 1 and 2)

3.7. High Competition in the EU and Turkey's Position

According to the Treaty of the European Union (TEU), Member States will appropriate an economic policy, which is suitable with open market economy being supported by free competition. (The European Communities, 2002, p.7) Competition Policy of Community aims to protect active competition and its improvement. (Representative of the European Commission in Turkey, 2002, p.1) EC competition policy is one of the corner stones for the functioning of the internal market. The competition rules are subject to direct and uniform implementation over a wider economic area through a single framework. It is equally important to ensure that economic actors in Turkey will be able to withstand the competitive pressures of the full and direct application of these rules (Commission of the European Communities, 2004). The EU competition policy has been founded on six basic principles (Uyanusta, 2003, p.5):

- a. Prohibiting of contracts being made by companies and limiting fair competition in Single Market,
- b. Forbidding agreements and unions,
- c. Prohibition of taking unfair advantages of dominant position,
- d. Restrictions on subventions limiting fair competition on specific companies or products,
- e. Inspecting of unions which have dimension of Community,
- f. Having unrestricted telecommunication, transportation, and energy sectors.

Turkey has undertaken to adapt its legislation to the EU's legislation with Ankara Agreement signed in 1963 (Uyanusta, 2003, p.21). Governments in Member States can give some monopoly rights to some private associations such as post

distribution, railway transportation, and telecommunications. These rights, given by governments, can cause low quality, high prices, and backwardness in terms of investment and developments (The European Communities, 2002, pp.25-26).

Situation in terms of Turkey is not successful. First step regulating and controlling the competition in Turkey was taken by founding of Competition Committee which entered into force in 5 November 1997 (Uyanusta, 2003, p.26). New legislation started to be regulated as in accordance with the EU legislation.

The most important improvements in transportation sector, since then, have been the liberalization of aviation sector. Today, apart from THY, Atlas Airlines, Onur Air, and Fly Air are new competitors in market. However, monopoly is carrying on railways. If we think that railway transportation is perceived as the new alternative transportation mode to road transportation in the EU, Turkey has to open its railway transportation to free competition. In terms of Turkey's location between the Europe and Asia, transportation has a vital importance. Extension of the EC rules was envisaged in the Ankara Agreement but not implemented. However, Turkey does not have national infrastructure plans that are more recent than 1980, but a new plan is under preparation (Commission of the European Communities, 2004).

Today, companies competing in the EU markets have been equipped with new technologies and trained personnel. To compete with these firms, Turkish firms and government should overcome its problems. In terms of infrastructure distribution of investment, and trained personnel, Turkey is at the end of the list.

From perspective of transportation sector, none of modes can compete with The European firms. For instance, maritime transportation is a sector where major efforts are required in order to implement the *acquis* by accession. There are still a number of Turkish flagged ships on the Commission's list of ships that are currently banned under the new the European safety rules. There is also a need for up-grading administrative capacity and to ensure effective controls of ports (Commission of the European Communities, 2004). Similar deficiencies exist in other modes. Although the basic requirements of the road transportation *acquis* are incorporated in legislation for international road transportation activities, but not yet for domestic road transportation operations, effective implementation and enforcement of social, safety, technical and environmental standards are not ensured (Regular Report of Commission, 2003).

3.8. Does Turkey Have An Efficient Transportation Sector?

3.8.1. Infrastructure Problems

Turkey currently does not have national infrastructure plans that are more recent than 1980, but a new plan is under preparation. In addition, there is not one single Ministry or organization that is responsible for countrywide planning of the national infrastructure. This could potentially cause problems for the future implementation of the TEN-T network and the management and programming of future Community financial aid (Commission of the European Communities, 2004). And also, Turkey should enhance its basic and technological infrastructure in order to attract more Foreign Direct Investment (FDI). Basic and technological infrastructure is one of the basic determinants of attractiveness of a country.

According to IMD World Competitiveness Yearbook 2003, Turkey runs 25th among 30 countries in terms of basic infrastructure (TUSIAD Report, 2004).

In terms of infrastructure Turkey has an underdeveloped transportation infrastructure. It is possible to say that five-year development plans have not had good effect on a modern infrastructure. Turkey is a country, which has a huge domestic demand and is a international bridge. When plans and programs related to infrastructure are being made, it is important to give attention on these factors. However, the lack of national financial sources must be overcome previously (Özden, 2003, pp.35-36-37). Rationalistic transportation policy is combination of all transportation modes without competing each other. Therefore, Turkey, firstly, has to form a developed infrastructure by which transportation modes can process. Especially, Turkey has to obtain the standards of developed countries in infrastructure systems (Çınar, 2004, p.13).

Turkey performs almost the worst after Mexico among the OECD countries in infrastructure capacity, pricing and quality in transportation, energy and telecommunications (TUSIAD Report, 2004). Nonfunctional legislation and bureaucracy are other obstacles in front of the improvement of transportation sector in terms of infrastructure (Cargo and Freight Transportation, 2005).

Turkey's most urgent infrastructure needs can be listed as follows (TUSIAD Report, 2004):

- a. Improvement of the existing road infrastructure
- b. Extension of the road network towards East-Turkey

- c. Further investment in motorways as “metropolis connections” is crucial
- d. Improvement of poor rail conditions and inefficient operations
- e. Creation of opportunities for private involvement
- f. Expansion and improvement of railways lines around the ports
- g. Extension and the modernization of container terminals
- h. Elimination of bureaucratic procedures in the ports for in loading and unloading goods.

3.8.2. Lack of Trained Personnel

Rapidly developing technology has increased the relationship among countries. One of the sectors, which does and will affect the developments in the global and competitive environment, is the transportation sector. Problems dealing with education constitute the main difficulties in the field of transportation like in any areas (Ay, and Erel, 2003, p.151). The lack of educated and skilled personnel in transportation sector is one of the most important obstacles in front of Turkey. At that point, governments, firms and universities must support training. And also, amount of institutions educating personnel should be increased (Cargo and Freight Transportation, 2005).

Today, job information workers have in transportation sector in Turkey is under the standards of the EU and the world. Today, in the U.S. and the EU there are courses made by firms and universities. However, there are several universities, which have logistics courses in Turkey.

3.8.3. Imbalanced Distribution of Investments

Imbalanced distribution of budget can be perceived as the most important obstacle in front of the development of transportation sector. As it was mentioned before, after the World War II, as in other countries in The Europe, railway transportation started to go down gradually year-by-year. Especially after the Marshall Plan, investment on road transportation has gotten substantial acceleration. Table 19 shows the investment percentages on modes.

Table 19. Transportation Sector Investments (%)

	90	91	92	93	94	95	96	97	98	99	00
Highway	31	28	33	37	29	29	33	37	26	29	23
Motorway	48	58	51	44	46	52	43	32	35	21	36
Airway	5	3	4	7	11	7	16	20	21	33	13
Railway	8	5	6	7	10	7	5	4	5	6	6
Water	4	1	2	1	2	2	2	2	3	3	4

Source: www.dpt.gov.tr, Devlet Planlama Teşkilatı.

As it is seen in table, road transportation takes approximately 40% of total investments among all modes. Because of that situation, an intermodal and developed transportation sector has not been gained yet. Between 1990 and 1995 the share of highways and motorways in total investments was 40.5%. However, after 1996 their shares started to decrease, whereas investment on air transportation has showed a great increase (Baki,2004, p.45). In the 2003 investment program, road transportation got 57% from budget pipeline 15.7%, railway 13.7, airway 10.4, and finally waterway 3.2% respectively (Eighth Five Year Development Plan).

The most important reason of this imbalance is the absence of a “Main Transportation Plan”. This has caused independent sub-sectors (Eighth Five-Year

Development Plan). However, in the EU transportation policy combined transportation sector, in other word intermodality, is one of the main aims.

According to the Eighth Five Year Development Plan, increase of efficiency, usage of existing capacity effectively, creation of new capacities, safe infrastructure, and combination of sub-sectors (road, air, rail, water) have not provided in Turkey (Eighth Five Year Development Plan).

White Paper for 2010: time to decide points the importance of rail and water transportation in comparison with road transportation. However, current situation in Turkey is still not enough for the EU transportation policy. For gaining competitive and powerful advantage, Turkey has to abolish gaps between modes and provide intermodality. Currently, Turkey does not have a well regulated transportation policy.

CHAPTER 4

Why Does Turkey Not Qualify for Intermodality Principles in Transportation Sector?

4.1. What is Intermodal Transportation?

Intermodal transportation is the transportation of unitized loads by the coordinated use of more than one transportation mode so that the comparative advantages of the modes are maximized and the transportation chain is guided as one unity (Panayides, 2002, p.401). According to Jones, Cassady and Bowden, intermodal transportation is the shipment of cargo and the movement of people involving more than one mode of transportation during a single, seamless journey (Jones, Cassady and Bowden, 2000, pp.7-8)

The CNC Transport created three different contexts for intermodal transportation (CNC Transport Report, 2003);

Context 1: "...containerization, piggyback service, or other technologies that provides the seamless movement of goods and people by more one mode of transportation."

Context 2: "...the provision of connections between different modes such as adequate highways to ports or bus feeder services to rail transit."

Context 3: "...a holistic view of transportation in which individual modes work together or within their own niches to provide the user with the best choices of service, and in which the consequences on all modes of policies for a single mode are considered. This view has been called balanced, integrated, or comprehensive transportation in the past."

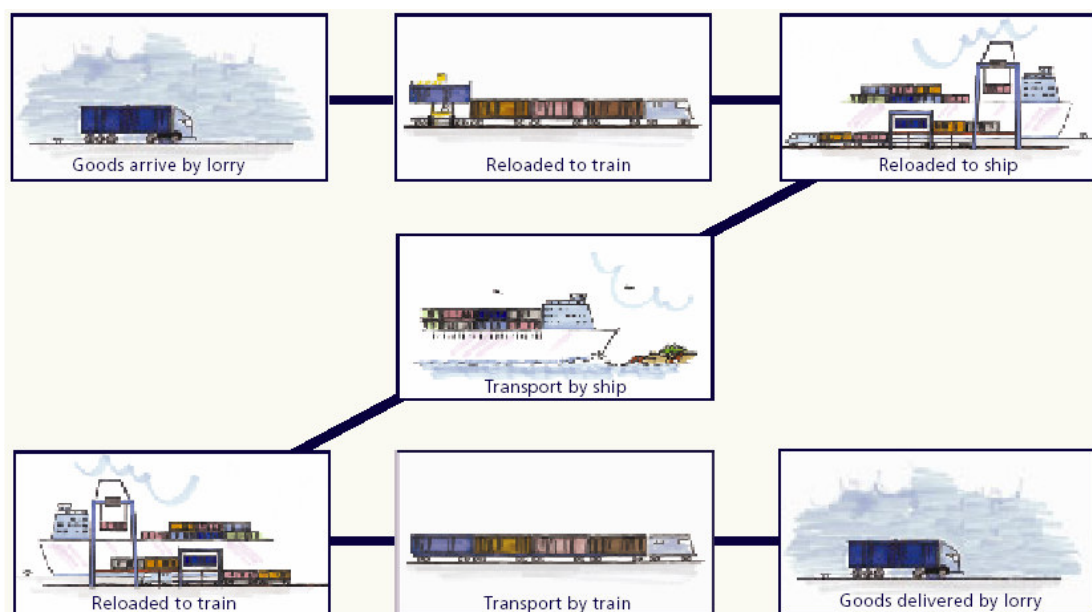
The operational integration sea and inland transportation was initiated by the need for greater efficiency and became feasible due to containerization and

technological developments. Hence, economies of scale in containership operations, rationalization of mainline ports of call and increase in the capability of inland transportation systems to carry large volumes of cargo over a long distance have been instrumental (Panayides, 2002, p.402)

In recent years, there has been ample evidence to suggest a significant interest of ocean carriers in inland transportation and the provision of a total door-to-door logistics packages to their clients. The reasons for such an interest vary and may include, among others, trends in rationalization and liberalization taking place in liner shipping, intense competition for market share, depressed freight rates, and additional customer requirements (Panayides, 2002, p.402)

Shifting the balance between modes involves looking beyond the rightful place of each particular mode and securing Intermodality. The biggest missing link is the lack of a close connection between sea, road and rail (White Paper for 2010: Time to Decide, 2001, p.40)

Figure 10. Intermodality



Source: Copenhagen Institute for Futures Studies, *Future Transportation of Goods*, 2002, p.11, available at www.iff.dk

4.2. Why Does Turkey not Qualify for Intermodal Principles in Transportation Sector

Approximately 75 % of goods are carried by intermodal transportation in the EU member states. However, Turkey cannot use intermodal transportation because of its infrastructure deficiencies. It is possible to say that sub-sectors are not in a good condition to work collectively. This issue can be taken into account from different perspectives such as equipments, technologies, links etc.

Road transportation, as it was mentioned in previous chapters, is the most suitable, flexible and popular mode in both passenger and goods transportation in Turkey. However, growing road transportation has automatically created a structure in which there is not any planning or interaction with other transportation modes. Because of the fact that Turkey has the biggest road transportation fleet of Europe, there is excessive road traffic and congestions. Moreover, there are no sufficient highways in comparison with the member states of the EU.

Table 20. Transportation Infrastructure Comparison between Turkey and Four Big Members of the EU

Countries	Population (Million)	Area (10 ³ km ²)	Highway (10 ³ km)	Railway (km)
Turkey	63,45	779,5	60,9	8.607
The UK	59,01	244,0	369,9	16.656
Germany	82,02	357,0	644,0	38.126
Italy	57,5	301,2	309,0	16.080
France	58,85	547,0	965,0	31.735

Source: Ay, Sevil, and Aydın Erel. 2003. *Ulaştırma Sektöründe Eğitim*. Ulaştırma Politikaları Kongresi, TMMOB, Ankara, p.155.

As it is shown in Table 20, even though Turkey has the biggest lorry fleet, its highways are not enough for this density. Turkey has approximately 510,200 km

road. However, only 61,000 km of total roads is highway. This situation is also similar in railway transportation. Due to the fact that both roads and railways are insufficient and underdeveloped, creating effective and productive links between railways and roads is very difficult in Turkey. Highways account for a stunning 95% of passenger and 92% of goods transportation. Apart from the high potential for railways, bounded by seas on three sides, most analysts agree that Turkey has yet to exploit the huge potential presented by maritime transport. The percentage of paved roads is around 25% of the total roads. The figure for Ireland is around 90%, for Poland it is around 65% (TUSIAD Report, 2004). Table 21 shows road types and their rates in total.

Table 21. Highway Network in Turkey (2002)

	Length (km)
Highway	1.851
National Highway	31.388
Provincial Highway	29.535
Village Road	319.448.
Forest Road	127.959.
TOTAL	510.181

Source: Karacasu, Murat, and Safak Bilgic, *“Examination of Traffic Accidents Which Depends on Road Conditions in Turkey”* Osmangazi University, 2002, p.3.

Another problem is the traffic congestions which is caused by the lack of highways in major cities. There are two reasons for this situation. If the situation is taken into account from the perspective of Turkey, transportation by lorries is unavoidable over very short distances where there is no alternative mode sufficiently tailored to the needs of the economy. The other reason for density is the individual car ownership. Because of the fact that public transportation sector is not working effectively people are using their own cars. As it is mentioned in the last White Paper

for 2010, there are measures aiming to relief the density in major cities and major routes. For example, according to the direction of the European Commission, working time of the long distance drivers and lorry drivers is limited with 48 hours for one week (White Paper for 2010: Time to Decide, 2001, pp.48-60). However, this rate can reach 60 hours in Turkey. Another measure regarding density is weekend bans on lorries. In order to overcome density problem of Turkey, authorities have to tighten up controls and penalties. At this point, for future membership and current situation, Turkey has to regulate its legislation in accordance with the EU.

Apart from these two measures above, Turkey needs a “Traffic Management System” which can produce an overall improvement in traffic conditions on the major inter-city roads. Therefore, infrastructure managers, who have experience in this field, are needed to form a Traffic Management System.

It is possible to say that new technologies are providing more effective controls on road transportation. For instance, new “Digital Tachograp” which works through a satellite radio-navigation system provides very important data such as speed and driving time. However, the use of this device is not widespread. Capacity of vessels is another important point. In the member countries, if vessels carry more than 9 people or more than 3,5 tones, its speed must be maximum 90 km/hours (White Paper for 2010, 2001, pp.68-69). In addition to this measure, vessels carrying more than 10 tones cannot enter city center and use intercity roads. However, there are no any restrictions about these issues in Turkey.

Turkish railway transportation needs general revision. Nothing has done for infrastructure problems since 1950s. Rapid growth of road transportation sector and its competitive advantages made road transportation more attractive in comparison with rail transportation.

As other modes, railway transportation has vital infrastructure problems in Turkey. Discord between old railways and modern transportation equipments is the most important problem. Therefore, modernization of railways in terms of infrastructure, service, technologic improvements and administration is one of the most important prior subjects. In railway sector, priority must be given to resolve the problems holding back its development; the lack of the infrastructure suitable for modern transportation and of interoperability between networks and systems.

Railway transportation is under the control of the state in Turkey and there is no any private railway company in the sector. Due to this situation, There is no substantial growth and improvement in railway transportation. There should be a separation of infrastructure management and railway transportation service. It provides independent management and opens the way of future competition between railway companies. Opening up railway transportation to regulated competition could solve the inactive use of rail transportation in terms of passengers and goods. If more room is made for competition between operators, the railway industry as a whole could become more competitive against other modes of transportation and even the EU companies.

The physical characteristics of the railways in Turkey do not lend themselves to a mass transportation system for freight. The establishment of multimodal corridors giving priority to freight requires high-quality rail infrastructure. At this point, rail access to ports provides essential links in multimodal corridors giving priority to freight (White Paper for 2010, 2001, pp.51-52). So, expansion and improvement of railway lines around the ports is the main intermodal principle (TUSIAD Report, 2004). Even though there are approximately 40 ports in Turkey, only 7 ports (Haydarpaşa, İzmir, Mersin, Iskenderun, Derince and Samsun) have railway connection (Zeybek, 2003, p.213). The most suitable example to the necessity of GIS is that two years ago an investigation was held by TCDD to increase the speed of trains. Elements, which affect the speed, are (Yardımcı and Erel, 2003, pp.174-175):

- a. Pulling Power of Train
- b. Vehicle Features
- c. Lengthways Slope
- d. Breadthways Slope
- e. Superstructure Quality
- f. Infrastructure Quality
- g. Amount of Lines and Administration Conditions

These factors provide necessary planning and implementing information. However, in order to increase the speed, TCDD has taken into account only breadthways slope factor. Due to the lack of sufficient data, two big train accidents occurred between İstanbul and Adapazarı in 2004.

Railways have been connected with weld in TCDD since 1980. However, TCDD has not taken into account the weather conditions. These welded railways are going to dilate when the heat is high. Due to the hot weather, rails become like “S”. Because of this dilate, big train accidents occur. However, TCDD still ignores heat facts (Yardımcı and Erel, 2003, p.175).

Conditions of Turkish ports are still insufficient to make intermodal transportation. Reasons of this weakness can be listed as technical and administrative reasons. Firstly, technique standards of ports are inconvenient for making effective intermodal transportation. For example, forklifts, winches, depth and amount of quays, size of container zone are not suitable for modern water transportation in Turkey. There are seven ports, which have railway connections, in Turkey. However, these ports belong to the state. Therefore, technique and bureaucratic obstacles still remain. The most valid example to this situation is the Alsancak Port in Izmir. This port is the import and export gate of Turkey. However, this port is working under its capacity. Old technical tools and devices (forklift, winch etc.), absence of the computerized systems, narrowness of the container zone, and insufficient annual ship capacity can be shown as main reasons creating the inefficiency.

The most important barrier in front of an intermodal transportation is the infrastructure problem. The source of this problem is the imbalanced and unplanned investments. Transportation investments consist of four stages (Orer, 2003, pp.25-33):

- a. Planning
- b. Considering

c. Decision Making

d. Implementing

In order to pass these stages, reliable and adequate data is needed. It is possible to say that information is the main element of the future decisions.

4.3. The Importance of the Geographic Information System (GIS) for Intermodal Transportation

The application of information and communication technologies to the field of transportation has facilitated the development of intelligent transportation systems that require powerful information systems. Geographic Information System (GIS) is a highly suitable means of technology for processing information (Pons and Perez, 2003, p.53). GIS is a system of computer hardware and software that collects, stores, analyzes and disseminates information about areas of the earth. GIS can also maximize the quality and the use of spatial data analysis to help answer questions of where, how far, how many, what size and within what area (US. Department of Transportation Report, 2004). Many advantages of using GIS for transportation modeling have been identified by researchers. The primary advantages include speed, analytical capabilities, visual power, efficiency of data storage, integration of spatial databases, and capabilities for “finer-grained” spatial analysis (Sanchez, Bania and Leete, 2002, p.6). Data management and computational capabilities of geographic information systems can assist transportation stated preference research by providing respondents with maps and other spatial and non-spatial information in graphical form that enhance respondents’ understanding of decision scenarios (Yamada and Thill, 2003, p.377).

GIS can offer significant advantages over conventional computer programs. It allows geographers to collate and analyze information much easier than is possible with traditional research techniques. GIS technology is a general tool that can be used across a wide range of transportation applications. It allows staff to visualize the spatial relationship among any geographically referenced features such as clusters of highways and roadway characteristics. It facilitates integration of different databases based on geographic proximity. It also helps transportation staff present findings to policymakers and the general public using visually attractive and understandable thematic maps (US. Department of Transportation, 2004). In the world, GIS is becoming increasingly important to a growing number of activities and professions. These include people involved with any aspects of land use (e.g. planning, agriculture, transportation, forestry, and nature conservation), human population studies, commerce, environmental monitoring and management etc. GIS is not merely a means of storing and displaying information. Increasingly, its strengths lie in its processing or analytical capabilities. This might involve integrating data from different themes to find a solution to some form of planning problem e.g. integrating data from road, urban area and wildlife habitat themes to identify possible routes for a by-pass. Also, GIS can incorporate the influence of the 4th dimension, time, very easily into the analysis (<http://www.agocg.ac.uk/train/arcview/arcview1.pdf>, 20.04.2005).

GIS technology meets three important needs: Infrastructure management, fleet and logistics management and transportation management. Planning and analyzing routes, directing and controlling tools, maintenance and replacement management, inventory management, selection of the most suitable route are among

the duties of the geographical information systems. GIS has an important role to take healthy decisions in transportation sector. For example, GIS technology has wide usage area in administration, maintenance, value management, and the decision support management in railway transportation. Following areas are subjects to GIS (Güler and Kaçmaz, 2003, p.186):

- a. Value Management
- b. Association Management
 - 1. Property Management
 - 2. Association Management
 - a. Line
 - b. Energy
 - c. Communication and Signalization
- c. Property Flow Management
- d. Emergency Management
- e. Environment and Constructions Management
- f. Management between Departments
- g. Passenger Information
- h. Capacity Planning
- i. Marketing
- j. Supply Chain Management
- l. Location Selection Management
- m. Risk Management

As it was mentioned above, the associations working on transportation fields use available data to define the goals and target related with services or facilities purposes. Asset Management Systems concept is important on transportation field and it covers facilities, infrastructure and superstructure components of the transportation systems. Due to the specific requirements of transportation applications and rather of the late adaptation of GIS technology in transportation, research has been directed toward enhancing existing GIS approaches to enable the full range of capabilities needed in transportation research and management (Güler and Kaçmaz, 2003, p.183).

Reliable, healthy and accessible transportation data are required for sustaining management, planning and controlling activities and determining transportation policies realistically. Data problem of Turkish transportation system still has not been solved at a satisfactory level. Several studies that have been realized at this issue consider and point out the importance of the problem but could not initiate a big level of transportation data base constitution process. Even at this age of technology there is no a satisfactory level of transportation data for Turkey (Yardımcı and Erel, 2003, p.171).

Rapid developments occurred in information and information technologies cause to reveal different possibilities using in various sectors. Most of the studies are based on locational information because of this, the necessity of computer systems which can collect, store, retrieve and analyse spatial data become a matter of primary importance. The system named Geographic Information System (GIS) has one of the fastest development among the other information technologies. Although GIS uses in

all sectors in the World, the system could not developed enough in Turkey owing to different reasons. After August 17, 1999 Marmara and November 12, 1999 Düzce earthquakes in Turkey, the interest in GIS has started to increase. However, the lack of enough specialists in this subject in Turkey obstructs the usage of GIS in different sectors. It is necessary that universities must pay more attention for the GIS education while there is not enough GIS experts in Turkey. As the experts educated in the universities, they can assist in developing GIS in different sectors and making right progresses in planning, management and decision making process (Tecim, 2002, p.1).

4. CONCLUSION

With the technologic innovations, increase of commercial relations between firms and countries, expansion of globalization rapidly, and increase of the world population, the importance of transportation has showed itself. In whole this complexity, the concept of time has started to play a vital role in terms of firms, countries, and even people. Today, people can order whatever they want through internet from shops. This situation is same for firms also. In any field of life transportation activities determine the most important thing called “time”. As we investigated in this study logistics management which controls the all process starting from suppliers and going to final destination is new approach under which time is used effectively and efficiently. From this perspective transportation is the most necessary element of this process because of its role between points.

If we look at the situation from the perspective of economic and social dimensions of transportation, it is also vital sector in terms of countries. In developed countries, well-regulated and formed transportation sectors that are intermodal in they self-pave the way for safe and economically strong transportation activities. In our study we gave the EU example, which is also subject to accession countries such as Turkey. There are growing measures that are going to overcome problems still existing in The European Union. Having lost its importance after the World War II, railway transportation is seen as savior. Because of the fact that road transportation has dominated transportation sector, problems caused by road transportation such as accidents, congestions, and pollution can only be solved through increasing the share of other modes such as high speed railways or inland waterways in the EU. Therefore, the most effective step taken by Commission was the “White Paper for

2010: time to decide” in which safety, environment, rail and inland waterways have taken the first place. And also, accession countries’ point of view these measures have constituted the road map for the EU full membership.

As a candidate country Turkey is doing its home works for getting entrance right to the EU. As problems existing in other sectors, transportation sector has also serious problems such as infrastructure, trained personnel and imbalanced distribution of budget. In addition to these problems, Turkish transportation firms have not enough competition power to cope with foreign firms in the EU. Five Year Development Plans applied since 1963 have not had a strong effect on transportation sector. In front of Turkey, the most important problems seen are the domination of road transportation, weakness of railway infrastructure which has been understood with train accident last years, governments role in transportation sector as a undertaking, slow process of liberalization, lack of technique developments in all modes, and the absent of an main action plan. At this point, Turkey has got many deficiencies in transportation sector. To deal with high competition with other countries Turkey has to regulate its transportation policy and take important measures for future the EU membership.

To sum up, as it was mentioned, the most important factor that is needed for intermodal transportation is the existing of suitable infrastructure. At this point, GIS technology provides the necessary data for suitable infrastructure. In order to solve the data problem of Turkish transportation sector, researches should be taken into account in short, middle and long terms. The first step that Turkey should take is to form a data agency as in the US and the EU. Turkey can take “Transportation Data

Office (TDO)” and “Bureau of Transportation Statistics (BTS)” as model to establish a “Turkish Transportation Data Agency (TTDA). As a consequence, Turkey is not ready to the intermodal transportation with its sub-sectors. The lack of infrastructure, which is caused by the absence of reliable and sufficient data and action plan, financing problems, and political opportunism on transportation investments can be perceived as main obstacles for creating intermodel transportation in Turkey.

5. LIMITATIONS

There are two main limitations thesis has faced. First limitation is the discussion date, which has not come yet. Because of the fact that discussions about Turkey's the EU full membership have not started, the shape of Turkey's transportation sector and its negative and positive sides could not be designated clearly. Therefore, gaps between the EU and Turkey have to be diagnosed due to the lack of information. At this point, main assistant factors are the EU's Common Transportation Policy and its regulations made different times on transportation policy.

The second important limitation is the absence of the updated sources about logistics and transportation generally in Turkey. Recent development movements in logistics sector in Turkey have started to be a subject to academic field. Understanding the importance of logistics activities in Turkey has become too late compared with The Europe. Consequently, researches and investigations on this issue have started to be made at the beginning of 21st century.

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APPENDICES

Appendix I. Proportion of Modes in Exportation of Turkey (%)

Q: Quantity V: Value

	Water Transportation		Road transportation		Air Transportation		Other Modes	
	Q	V	Q	V	Q	V	Q	V
92	80.4	40.2	18.2	52.6	0.2	6.2	1.2	1.0
93	79.9	41.9	19.3	51.5	0.2	5.9	0.6	0.7
94	84.2	44.4	14.8	47.1	0.6	7.9	0.4	0.6
95	82.6	41.5	16.7	51.0	0.3	7.0	0.4	0.5
96	76.5	42.4	21.9	48.4	1.0	8.4	0.7	0.7
97	72.9	39.1	26.2	53.1	0.4	7.1	0.6	0.7
98	81.5	40.8	17.7	52.5	0.3	6.2	0.5	0.5
99	84.1	45.3	15.2	46.3	0.2	8.2	0.5	0.3
00	84.4	47.1	14.8	43.3	0.2	8.4	0.6	1.2
01	83.6	49.5	15.3	42.0	0.3	7.2	0.8	1.3
02	82.7	47.2	16.2	45.5	0.2	6.5	0.9	0.8
03	80.5	49.2	18.2	43.3	0.2	6.8	1.1	1.0

Source: Foreign Trade Statistics, DIE, 2003

Appendix II. Proportion of Modes in Importation of Turkey (%)

	Water Transportation		Road transportation		Air Transportation		Other Modes	
	Q	V	Q	V	Q	V	Q	V
92	95.4	52.7	3.6	36.4	0.1	9.0	0.9	1.9
93	95.9	54.7	3.4	31.5	0.1	10.8	0.7	2.9
94	96.0	52.4	3.4	33.5	0.1	11.5	0.6	2.7
95	94.8	52.9	3.9	33.5	0.1	11.3	1.2	2.4
96	89.0	50.6	6.7	35.4	0.5	10.2	3.7	3.8
97	89.9	50.5	7.6	35.1	0.4	11.3	2.1	3.0
98	90.5	47.4	5.9	39.1	0.3	11.2	3.4	2.4
99	90.9	47.2	5.9	39.0	0.1	10.8	3.1	3.0
00	90.7	50.6	5.9	33.6	0.1	10.8	3.3	5.0
01	90.4	48.7	6.5	32.6	0.0	12.6	3.0	6.0
02	89.9	55.0	6.4	27.6	0.1	12.4	3.6	5.1
03	91.1	57.3	6.7	25.7	0.1	12.2	2.1	4.8

Source: Foreign Trade Statistics, DIE, 2003