



ΠΑΝΕΠΙΣΤΗΜΙΟ  
ΘΕΣΣΑΛΙΑΣ

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## **Egnatia Motorway and its effects in the Regional Development**

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## 1. Introduction

Investment in transport is not a mean to an end for development and it is not automatically bringing development, despite the general perception of the "public opinion" that each project creates growth. The relationship between transport investment and growth/development is examined in order to highlight the lack of deterministic relationship (Smith, 2007).

Even if traditionally transportation is considered as an infrastructure as it is an activity which is a key factor for economic growth, there are serious scientific questions about the required size and type of transport infrastructure and investment for both urban and non-urban areas in a country and a certain level of development. This is further exacerbated in cross-border and international dimension of the phenomenon. These trends along with environmental problems, energy diversification and substitution technologies such as telecommunications, show that transport is not necessarily compatible with sustainable development nor the proposed sizes and types of transport infrastructure investment is scientifically accepted unanimously (Oelman, 1994).

The transport sector was seen as a key to modern society dependent on:

- Geographic and demographic factors.
- Political, economic and social factors.
- technological factors.

The implementation, planning and design of transport infrastructure and investment is a difficult task, whether it comes to integrated intervention or to more traditional, local optimization. So, to begin with this paper, it is important to start with the study of transportation as an infrastructure and how it operates so as to link it with development. Special reference will be given on how this concept – the relationship between transportation and development – has been developed in European Union (Smith, 2007).

The thesis will examine the case of Egnatia odos. It is one of Greece's major motorways and an EU funded project. As part of the EU's ambition to support poor regions, Egnatia Odos and its vertical axes has been a significant investment which has leveraged the development in North Greece. The thesis will examine the impact in a number of variables such as GDP, tourism and population index.

Overall, the aim is to examine the related literature regarding the relationship between transportation infrastructure and development.

## **2. The concept of transportation in Europe**

### **2.1 The objectives of transportation**

A national transportation system and a national transport policy should answer the first and basic question: "Who is the main objective sought to serve the transportation system" question which unfortunately hardly ever arises from decision makers. When not set this objective, and then we are faced with the stark contrast of national and local interests which interrupt this relationship with the development.

Transportation is considered as a service which includes several objectives and goals. Some of the objectives are related to the support of national industrial and agricultural production or to the exploitation of natural resources, but there are also non-economic objectives such as strengthening of the coherence, continuity, homogeneity and national defense or serving the remote areas such as not to stay isolated. The financial and non-financial goals are not always compatible and in the same direction. We can see the example of Greece where transportation in the Aegean is the backbone not only of the development but also of its national defense, keeping the islands close with the central authorities and out of isolation during the winter time.

The fact that the objectives are often competitive or have a contrast on each other, creates serious problems in financial analyst when they attempt to optimize the transport system. Indeed, transportation becomes a more complex issue in international and cross-border transport, where the national interest contradicts those

interests of international or cross-border interest, it requires careful policies and valuations of the expected results. Often it is necessary to have compensatory policies both locally and nationally, for the success of a project in a relationship of mutual gain (win-win situation), with its international partners and local communities. So, when we have to deal with transportation as an international issue, on one hand there are some benefits related with development, such as to bring more trade but on the other hand there are some contradictions when we have to deal with countries that have different legislation or transportation systems (Oelman, 1994).

The level that a transportation system will create or support new activities in an economy depends on the existence of many other factors such as the quality of administrative structures, social organization, the educational system, the property, the legal environment and all those policies propensity of a country to develop. When we go on international transportation, issues such as the creation of an international border control and well-defined procedures should be regarded as a chance to bring more cash inflow on the countries and also to improve the procedures of having the cargo to go from one country to another. It is quite important to set the objective of having international transportation systems that do not harm a partner. In any other case either it should provide remedial or compensatory policies. For this reason there has been EU and other similar treaties which help the countries to develop better coordination and also to reduce the costs of international transportation, something that will bring more benefits and prosperity (Smith, 2007).

## **2.2 Economic appraisal of transportation projects**

Investment in transport is a mean for broader objectives and other economic activities, and it functions not as a catalyst in the development, but not sufficient as a sole agent. It is usually assumed for the least developed countries that transport development brings economic growth, which is not true for developed countries (ACT, IRPUD, ME&P, 1996).

Since it is difficult to assess with accuracy on how many transport investments are appropriate for any given situation, there is a tendency to overestimate the needs with projects which often are redundant or are generous and serve political purposes of national and international visibility. Undoubtedly transportation affects economic growth, but is also looking often undetermined if it can not attract other economic activities serving as a key cause of creation of new activities. For example, a port in an island will cost a considerable amount of money. It is expected that this amount of money will be depreciated from the usage of the port of commercial activities but also with any other activity that is going to take place near the port.

The financial analysts who deal with transport must recognize the different impact on the national and international development of transport systems. This is not an economic optimization problem, but a problem of high political decision for which no "unique" criterion is not sufficient. Decisions aimed at "maximizing" of national development are intertwined with intuition and faith that some goals are more important than others. The financial analyst is confronted with a large number of problems such as to use qualitative versus quantitative data, different goals, uncertainty and vague information, local and national competing objectives, policies and social orientations and visions. So, transportation is a case of having the ability to deal with different goals, interests and other issues which may have to be dealt with (Smith, 2007).

If we come back to reality, in an economy with a national planning, such as the Greek one and most decisions on such issues are taken from a central decision making authority, decisions may be more effective and have a long life. On the other hand, the ability of making an assessment of transport projects in underdeveloped countries is very primitive as there is a lack of statistics, data and disorientation of political interference. Often, those projects are drawn from simple financial assessments of individual projects without sense to integrate the overall transport system.

Before the actual assessment of a transport project or investment it is required to take two main steps: First, to make a research into the main economic activities and to identify transportation needs, but also the scope of operation and other requirements of the country, and secondly, a detailed investigation of the transport sector in order to

define priorities within the sector. Analyzing and evaluating a transport project is useful to analyze and each subproject separately to avoid shortcomings of some subprojects covered by other more efficiently. Monopoly, oligopoly and subsidize phenomena distort the estimates and the actual costing and pricing operation of a project (ACT, IRPUD, ME&P, 1996).

The cost measurement is always easier and more precise than the measure of benefits. Shadow prices, social costs or benefits and externalities are tools, concepts and techniques particularly useful for the evaluation of transport projects and investments. The financial analysis is to examine the project with regard to its ability to consistently provide its operating costs and provide an adequate return on invested capital (Jara-Díaz, 1986).

In international transport projects the economic evaluation has than the above and the objective range of national interests.

## **2.3 The European Union**

### **2.3.1 The development of EU and its community support policies**

The European Union is an economic and political union of 29 Member States. Since its beginning, which was the EU Treaty of Rome in 1958 and till today, it has grown into a major economic and political power. The last revision of the EU Treaty was the Treaty of Lisbon ratified in 2009. EU operates through a system of institutions that ensure the political integrity, as exemplified by the Commission but also by inter-governmental decisions and institutions like the Council of Ministers (Smith, 2007).

One of the most important developments in the history of the association was the creation of a common monetary union (EMU / euro area) leading to the monetary integration of Member States participating in EMU. The creation of EMU was a huge success for some of EU's key founders like Jacques Dellors, that took the view that in order to bring political integration there should have existed a primarily economic and monetary integration of the EU Member States (Archer, 2008). However a key

success factor for EMU was to ensure that there would not be a social and economical gap between the members of EMU. As a matter of fact along with the EMU policy EU developed the economic and social cohesion policies so as to bring an economic convergence of member countries through the Community Support Frameworks (Archer, 2008). Regarding the economic and monetary union, the mechanisms of the Community Support Framework (CSF) and the Stability and Growth / Growth Pact have been made to ensure the sustainability and survival of EMU zone.

If we look back in history, European Union began as a regional organization with members from Western Europe. But as EU developed and enlarged, both institutionally and geographically, there was concern about the growth rates and the economic predictors in the new countries. This created the question on how EU could advance the economic integration in a Europe that had the economically developed north and a south that had adequate resources but lacked of economic development. The result was a new wave of policies that started in the mid-80s, known as "euroscepticism" which had been affected from the impact of that time's economic crisis and the fact that the community seemed to be in a phase of inactivity. However EU since 1984 started out the implementation of a number of policies that pushed forward the idea of European integration through a number of initiatives that promoted European integration through CSFs (Smith, 2007).

To be able to work the single European market, EMU should be linked with the transfer of resources so as not to have a European community of two or three speeds which would actually result in the failure of the project before even start. For this purpose the Community Support Framework (CSF) was launched. The aim of CSF was the creation of such infrastructures that would enable the economically underdeveloped countries of the South to close the economical and social gap that they had with North Europe. The outcome was the three CSF frameworks from 1986 till 2006, and from 2007 till 2013 the National Strategic Reference Framework (well known in Greece as ESPA). The National Strategic Reference Framework is designed to converge the countries of South Europe with Northern Europe in terms of regional competitiveness by focusing on the guidelines of the Treaty of Lisbon (Chang, 2007). It should be mentioned that the CSF aimed at the convergence of



regions that were the less developed in EU. On the other hand, NSRF aims to support competitiveness, labor market and a series of innovative measures so as to make the EU more competitive, especially in areas related to knowledge, according to the strategic objectives of the Treaty of Lisbon (Smith, 2007).

### **2.3.1.1 The transport projects and their effect on regional development**

It is often assumed that each transport project creates its own economic development. The truth is that some transportation projects help and others do not, and even more it is justified that some are depriving funds from other projects with greater potential effect on growth.

It is important to mention, as claimed from McCormick (2007), that countries rely on a large extent to their ability to produce inter-state and inter-regional trade. In order to do this there is a need to develop transportation projects. The positive effect that a transportation project may have to regional development is:

- The creation of large projects, such as roads, railways and transportation hubs are the basis for the creation of jobs. On most of the cases local firms will be assigned with the creation of the project while the local community will be benefited from the jobs created.
- Transportation projects generate income from part of the tolls paid, while there is also income deriving from the maintenance of the project and from the vehicles and persons passing by from the region (Jin and Williams, 2000).

Development requires a key national and international design; otherwise it is like trying to drive a ship in a port without a rudder. In countries and regions where they are facing total lack of transport, the problem of maintenance or improvement works against new projects involved in benchmarking before any investment decision. The creation of a new transport infrastructure in the news always brings the *raison d'être*, but also stemming from the funding opportunities.

At point, it is important to stress that there are some key questions that authorities will have to answer:

- What means of transport should be developed?
- What should be the industrial spatial distribution, and other activities?
- What are the prohibitive relationships between growth and industrial or transport munitions?

(Jin and Williams, 2000)

The conditions of movement of goods and people show interest in the dominant process of European integration. The Maastricht agreement on the single market of 15 and today 27 countries, not only provides the basic framework of this building, but also accelerates the pace for the next few years. The historical development of Europe is a good illustration of the parallel between the development and transport infrastructure. The development of EU was generated as a combination of some basic principles of adding some free market and centralized control in order to create transportation hubs which would give value for the economy and it would lead the development (Smith, 2007).

The homogenization process is often difficult, practically achieved more with technological development rather than political dialogue and conciliation. For example, changes on the electronics have much more impact on transport, than any change in the media and in carrying capacity. Similarly it affects high speed trains, which practically restored the railroad to competing modes of transport for the next 30 years. In the transportation sector where technology seems to create real revolution and the development can come from the usage of such innovations which will trigger a number of benefits for the economy such as having more firms which will develop those innovations, while those who will use the transportation networks will benefit from the improvements made on the speed of trains. In the end, the combination of communication technologies, television, computer, internet and databases are creating an entirely new society where simultaneously 'education - information - work - communication – fun are combined in a new world in electronic form (Martínez and Araya 1998).

### 2.3.1.2 Transportation in Europe

From the multiple technical and technological changes in Europe, we selected two as the most significant for the foreseeable future:

- (1) The effect of both high-speed railway, and the car through highways, and
- (2) The European combined transport network.

Based on these and earlier studies DATAR (Forecasting Agency for Development) in France, you may assume that Europe is reconstructed in areas of competitive type (David Simmonds Consultancy, 1999):

- (1) The Regions' Financial competition
- (2) Areas of research and technological development,
- (3) Regions' tourism, and
- (4) Service Area.(Smith, 2007)

Overall, EU aims on having the ability to help its member states to deliver the transportation services fast and on good timing. At this point, it is important to understand that many member states of EU are close to each other. However, there are some other cases, such as Greece, where there are geographical obstacles that affect the use of transportation as a mean of development (David Simmonds Consultancy, 2002).

In the geographical area of Greece there are two main issues which affect transportation and development. First, it is the opening in the former Eastern European countries, and second, the ending of the isolation of Greece as being away from the core of EU (David Simmonds Consultancy, 2003).

Greece has been benefited from the insertion of Bulgaria and possible of other Balkans countries into EU. While this move does not reduce the problems of countries in the region it allows a number of co-development projects on transportation which are funded from EU. Removing this isolation leads into a

stronger and faster development of networks and economic development policy, dynamic neighbors and partners within projects such as Interreg and common development framework of EU.

The actual effect of an integrated infrastructure creates, as mentioned above, a field of possibilities without direct and necessary consequences in classical economic activities. Development comes from creating transportation networks which go beyond borders. At this point we can refer on the example of Egnatia Odos in Greece. This is a major motorway which links the borders with Turkey along with the West Ports of Greece. The outcome is tourism and cross-national trade has been developed from this activity. The socio-economic consequence of such major infrastructure projects and particularly traffic is often indistinguishable and studies of the effects are often those that the planners of the project have desired. In addition to this, although we cannot expected direct effects (5year or even 10 years ) in industrial and agricultural activities, it is very possible to have a direct impact on tourism (David Simmonds Consultancy, 2003).

It is particularly useful to know that in most of the cases, the issues of transport infrastructure investments are almost exclusively in the public sector. The European Union is funding a priority major transport projects, which can be characterized European feasibility of completing the European network. In the search for new sources and effort are placed private funding schemes, which of course require the sustainability of the project from a financial point of view, so as to cover every risk without neglecting the required profit. Private or mixed shapes do not have the infrastructure and / or the flexibility offered by other sectors, particularly because state intervention to the community is a structural element of conciliation and reduction of autonomy (Coombs, 2010).

### **2.3.2 Transportation and development in European Union**

Ever since its inception in the late 50s, the Economic Community was faced with the question of disparities in living standards between Member States. The differences in per capita GDP were at that time large, for example between Germany and Italy-But it was a still greater when comparing the regional-per capita GDP: for example between the regions of Baden-Württemberg and the regions Apulia or Sicily. This crucial issue

arose again in every enlargement of the European Union. On every new country which is being phased in EU (Greece, Spain, Portugal, Poland .) were, and are still there, regions with a per capita GDP of at least 15 times lower than in richer regions. Since one of the objectives of the European Union was a convergence in living standards between the states with of all, it was not possible to accept this situation or to leave the setting exclusively on immigration flows from poor to rich areas. One of the EU priorities was to enable disadvantaged regions to have significant economic SCAR- direction, preferably faster than that of the other regional rules. In this light, it is attributed to the transport infrastructure a primary role: to reconcile with economic-social cohesion (de la Barra, 2004).

Although this is not necessarily impossible to achieve, however, it is noted that the development of infrastructure is not a panacea. Although transport infrastructure redundancies are necessary for regional economic policy, only under certain conditions can contribute on social cohesion.

- Economic growth and convergence of EU
- The dual mission of transport and infrastructure

The growth in market economies is not based only on technological progress and on consequent increase productivity. As demonstrated by the founders of policy economy, Adam Smith and David Ricardo, from the early stages, the international division of labor is also of great importance. Even in a world without technological progress, facilitating communication between countries that have different production costs constitutes a priority. The work of contemporary economists concluded that the famous theory of «HOS» (Hecksher, Ohlin, Samuelson) concerning the free movement of goods and services can sufficiently compensate people for the problem of unequal distribution of production factors between different regions (David Simmonds Consultancy, 2003).

This is something that one cannot easily forget, as we experience it in practice everyday. Every time you drink a coffee or a tea, every time we use our car, we produce items which are not produced in our land (oil, cafe beans, etc) which is

almost nonexistent in Europe, but international division of labor makes available to us. In this light, the transport infrastructures are of crucial importance. These are enabling the movement of goods and the connection between areas. For example German cars, Swedish furniture or Finnish phones are sold throughout Europe, as well as the Spanish vegetables and Italian clothing. For producers, the development of efficient transport expands zones, disposal of their products, which allows mass production and consequently helps to reduce the cost of unit. Because this reduction is greater than the concomitant increase in transport-parties in, the people who will benefit mostly from this are the end-consumers. We live now in a diversified economy and it is very common to expect some intra national trade which is circulated through transportation hubs. For example, the German driver can buy Spanish and French cars and so on. The first task, therefore, of a transport infrastructure is to contribute to the downward trend in the cost and consequently to overall growth of the economy. Their role is not limited to it and must take into account the specific impact on each area. Experience shows that the centers of production and consumption are trending, for obvious reasons of accessibility, and they are found closer to the most efficient infrastructure. This has been demonstrated from the development of railways in the 19th century and highways and airports in the 20th century. Subgroups of transport structures have a significant impact on growth and prioritization of areas. The regions with good service of transportation do better than the excluded areas. For this reason, the design and financing of transport infrastructure are here been one of the main missions of many members of EU (Oelman, 1994).

One of the key issues of contemporary transportation, which has a critical effect into the development of further development for those countries, is the combination of different modes of transportation. For example, waterways, railways or roads that cross different countries can bring many benefits.

The European Union and many other countries, such as USA, have understood the need of developing different modes of transportation. As already mentioned MacDougall's report back in 1977, concluded that the key for lagging regions is to acquire modern transport infrastructure to connect markets, both for supplies and for the import of local products. The financing of infrastructures is one of the issues

which is providing evidence of intra solidarity. Since interpersonal solidarity remained largely the responsibility, the member States (social insurance, assistance social groups with the greatest needs), the permeation regional solidarity was the lever which Europe used to promote social cohesion through convergence of living standards. Thus, countries such as Greece, Spain or Portugal massively financed by the European funds (grants and ECB loans) were helped to improve road and rail networks. The same case exists today, although to a lesser extent, for the new ten Member States, but also for the candidate countries. The concept of Community solidarity is implemented in practice by improvement and interconnection of transport networks. This is demonstrated by the design of major European routes transport and from the creation of co-European funded projects (Coombs, 2010).

Based on the above, the key economic and social role of transport infrastructure and its impact on development relies on the implementation of mega-projects. Of course there is a need to remark the fact that some of those projects have been subject of criticism or their cost was too high compared on the benefits brought in relation with regional and national development. In recent years, many examples have shown that the predictions were too optimistic: Eurotunnel, the M1 motorway Hungary, the waterway of Rhine-Main-Danube and other similar investments whose results have not met the initial expectations. This result may be hesitant for the decision makers since there are many risks (actual of construction, real traffic flow) along with other factors such as delays, as in the case of the railway connection between France and Italy (Oelman, 1994).

The second doubt is environmental. The development of infrastructure, especially airports and highways may bring some development but it may also have a negative impact on the sustainable development of those areas. The third doubt is social and local. In this case we have to wonder over who will really benefit from the favorable results of a new transport infrastructure? For example a new road is intended to contribute to the isolation of a region which suffers by the loss of employment positions which leads to the movement of a portion of the population on more developed areas.

### 2.3.2.1 Regional disparities and spatial Inequality

Looking back at historical data after the 2nd World War period, particularly after 1985 until today, it was found that in many countries there is still the problem of spatial inequalities either in the form of visa courtesy or in economic terms (GDP, income, structure fields production, employment - unemployment, allocation of public - private investment, unequal conditions of competition, etc.), or social conditions (uneven distribution of population, social and technical infrastructure, conditions and quality of life, cultural, etc.), or by geographic and physical conditions (coastal - mountain areas, urban - rural areas, management, protection of natural resources, etc.). Usually inequality is expressed through the words' unequal inter-intra-regional disparities "and in this case the European Union makes an effort to eliminate mitigation through various national and EU policies (David Simmonds Consultancy, 2003).

Over the last 20 years the growth of urban centers has lead to urbanization, by both the expansion of these services (tertiarisation) and the location of production activities in the manufacturing sector operating in a metropolitan area and the diffusion of the housing sector (1st and 2nd house) to broader urban areas outside the cities (suburbanization).

Moreover in the last 40 years or so, tourism, in the southern European countries mainly in coastal and island areas in conjunction with the spatial diffusion of the urbanized areas has created serious environment management problems.

It should be noted that the increasing needs in new uses of secondary, tertiary production and housing nary agricultural, and often the forest area at the expense of diminishing primary sector and created uncontrolled speculative effects in land status (Smith, 2007).

Ultimately large urban concentrations has led to large metropolitan centers and regions, and a chain of smaller (depending on the country), but major urban centers, modular network transport-like nodes that create spatial development axes most of which are spatial rural interfaces. Certainly there are substantial differences between



the countries of the central and northern Europe, with historical tradition, due to the different degree of industrialization as well as within countries where spatial and regional inequalities are strong (such cases are the relations of the north and south part of Germany, France, England, Italy n.a.) (David Simmonds Consultancy, 2003).

In Greece, where the economy is based on a weak industrial sector and an oversized public sector, coupled with geographic peculiarities and a the highly centralized administrative system, there was an uncontrolled maximization of the Capital, while just after the 1960 Thessaloniki was transformed into a second metropolitan pole and after 1980 some cities are as urban regional scale (Patras - Larisa - Volos - Heraklion - Ioannina - Kavala), creating a spatial development 'S'.

From these regional centers wider areas were depending as economic areas "of national and international concern", while important areas were left at the "corner" without substantial intraregional interdependencies of a regional growth pole. Such "corner" locations on the mainland are the prefecture of Messinia and Laconia (Peloponnese), the prefecture of Thesprotia (Epirus), the prefectures of Rodopi and Evros (Thrace) and the Aegean.

[http://observatory.egnatia.gr/observatory/brochure\\_obs\\_201503\\_EN.pdf](http://observatory.egnatia.gr/observatory/brochure_obs_201503_EN.pdf)



### 2.3.2.2 Axes development and transport networks

Ensuring the infrastructures in the technical and social form, through the network of regional policy instruments is one of the key prerequisites. Securing terms of technical infrastructure in prioritized and integrated transport networks with energy, telecommunications, technological modernization, management of liquid and solid waste, water supply, have become some of the main ways of exploiting the productive resources of regions, and are creating a level playing field in the conditions and quality of life of society.

Focusing on the importance of transport networks indicated that terrestrial networks, road and rail, in combination with strong intermodal hubs, bring together aviation (airports) and maritime transport (ports) etc. and are the backbone respective axes of regional development and the flow of persons and goods in multidimensional spatial levels.

Villagers growth drivers are identified as supra - prefectural, regional, national - international. Hierarchies are the result of the productive hinterland and of the potential degree of integrated development or of the intensive production sector of the population densities of this hinterland. The expansion of trade in goods (imports - exports), the mobility of populations, the networking of cultural core, and the potential to create axis development competition is present in intra-and inter national level.

If a spatial development axis is not at the end of strong intermodal hubs, so as to create traction conditions of various economic activities and opportunities for convergence with the other axes concerning the development land, sea, air, instead of restricting their ability to finish at the national and international level, there's a chance of creating the opposite effect than the one intended. The end nodes of a spatial axis development can not be "terminals", but "nodes continuity" to other "nodes or beam" with others.

Creating spatial development axes is not necessarily in the form of linear or axial structure rather than in the form of a network with transport hubs. Axes' development

is based on transport networks. This is indicated because it is known that road transport networks mainly attract activities and affect adjacent land uses.

The land transport networks should be forked in the hinterland of spatial development axes. Certainly a national or inter-axle range, mainly concerning the road, can cover needs and services at lower spatial levels. But it should not be the norm. Contrary to the extent that the development needs may require the road axis that contains more than one industry. The development at all spatial levels determines the structure of land transport networks and the role of transport hubs.

Concerning the hierarchical land transport networks if some of them can be regarded as more serving than local villagers axes - or prefectural range is true for the national or international level minor for spatial but their level is essential. Therefore, the hierarchy does not predetermine its priorities in the planning and design of top-down but functional and spatial correlation. To better understand those analyzed in the previous reference is made here in the Greek area.

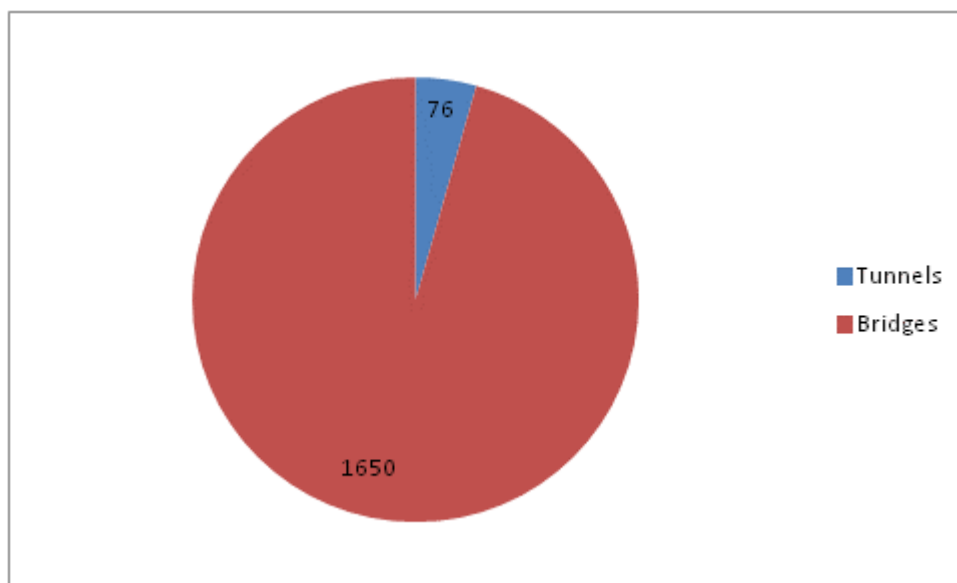
As it is well known in our country through the improvement of road transport and rail, the government attempted to create two trans-European scale peasants development axes: the existing PATHE road and Egnatia. These two axes are converging Thessaloniki. The ends of these axes will be developed as hubs for maritime transport (Patras, Igoumenitsa and Alexandroupolis).

It is clear that these axes are by international traffic, but on a national - regional level asymptotical. So the risk run is the enhance of the dipole Athens - Thessaloniki instead of regional poles of the country. In view of this risk, there is an effort to improve land roads of Western Greece by Rion - Antirion and a new road called the "Ionian road" from Patra to Ioannina. By this road axis and debated construction of railway lines Igoumenitsa - Ioannina - Ioannina Kalambaka - Antirion, it becomes clear that there are serious conditions creating a spatial "linking" of the first two axes of development. This spatial development axis in Western Greece reinforces PATHE, indirectly reinforcing the capital and Thessaloniki. Simultaneously, Kalamata, Patras, Igoumenitsa and Ioannina, are reinforced in an indirect way.

([http://observatory.egnatia.gr/observatory/brochure\\_obs\\_201503\\_EN.pdf](http://observatory.egnatia.gr/observatory/brochure_obs_201503_EN.pdf))

It is clear that the extent of Ionia Street and the development of the railway line in western Greece (along with the improved line of Kalamata - Pyrgos - Patras) will create an integrated development axis towards Western Greece with clear prospects for extroversions helping all acceding continental subregions, helping at the same time Thesprotia and southwestern Peloponnese while creating an organic, structural interrelationship with the Ionian islands and Crete at a regional level.

Regarding the infrastructures it has the following ones:



As we can see from the graph there is a high number of bridges, even for the European standards. In addition to this, there are 76 tunnels which cross mostly from Epirus.

It is also important to mention that the area served accounts for:

- 36% of the country's total population
- 33% of its total gross national product
- In the primary sector, 54% of total farmland and 65% of total irrigated land
- In the secondary sector, 41% of total industrial employment, and
- 51% of total mining activity.

([http://en.wikipedia.org/wiki/Egnatia\\_Odos\\_%28modern\\_road%29](http://en.wikipedia.org/wiki/Egnatia_Odos_%28modern_road%29))

### **2.3.2.3 European policies for the spatial development**

Three years ago, in the context of informal cooperation for spatial planning, the ministers of European Union formulated a committee of experts, where after continuous work for ten years came up with a final result on the "Draft European Spatial Development" (ESDP) where there were specific guidelines for joint planning policy of the European Union countries.

The implementation is not restrictive however, for a country; yet, the Ministry accepts and implements the regulations under the General Plan Land Use Planning and Sustainable Development at the national level, as well as the already established frameworks for Spatial Planning and Sustainable Development of the Regions of the country (David Simmonds Consultancy, 2003)

The very interesting ideas that this text sets out are based on the following guidelines for spatial development.

1. Polycentric spatial development and a new relationship between city - countryside.

1.1 Polycentric and balanced spatial development in the EU.

1.2 Dynamic, attractive and competitive cities and regions with high densities.

1.3 Self diverse and productive rural areas.

1.4 Partnership between city and countryside.

The aim of this part is to satisfy the huge demand for transportation which increases day after day. EU has used the polycentric spatial development in a way which will help her to use polycentric circulation between the cities and rural areas. The aim is to bring together the city and the country side; to allow the visitors to travel from one point to another with the most feasible and environment friendly way. (David Simmonds Consultancy, 2003)

2 . Equitable access to infrastructure and knowledge.

2.1. Improved transport links and access to knowledge.

2.2. Polycentric development to improve accessibility.

2.3. Efficient and sustainable use of infrastructure.

2.4. Dissemination of innovation and knowledge.

Transportation is not a static mean. Instead, EU and its partners aim on using the knowledge and innovation not only to develop new modes of transportation but also to improve accessibility so that all citizens have access on transportation. (David Simmonds Consultancy, 2003)

3. Prudent management of natural and cultural heritage.

3.1 The natural and cultural heritage as growth figures.

3.2 Conservation and development of natural heritage.

3.3 Management of water resources.

3.4 Creative management of cultural landscapes.

3.5 Creative management of cultural heritage.

(David Simmonds Consultancy, 2003)

The concept of sustainability does not include only the environment but it also includes the protection of the social values and of cultural heritage. The transportation systems must be made in a way where they will help EU citizens to come together and to discover new cultural landscapes and heritage. Through transportation they would be able to do this.

Besides of course the guidance of ESDP a number of other political aims among others is indirectly but decisively regulating the spatial structures and / or the restructuring. The trans-European transport, energy and telecommunications, community initiatives such as Leader, the Intereg, the Envireg, the CAP, for

technological modernization etc. have created significant opportunities for spatial restructuring of small and large scale.

Overall, as we can see from EU's policies started during the 90's and 00's by EU's decision not only to improve the quality of transportation networks but also to add value by focusing on new forms of transportation such as short-seas voyages and waterways. We can see that EU tries to shift from road transport to railway and other means of transportation. The motives of the above decision are obvious; EU wants not only to reduce the cost of transport but also to reduce congestion on the motorways. We see that EU wants to ensure the sustainability of its transportation system and that it does not pollute the environment. For this reason it has focused on low emissions modes of transport (David Simmonds Consultancy, 2003).

Furthermore, EU has liberalized the transportation market. The result is the improvement on the quality of services, the creation of new jobs and of course a wide array of offers and prices.

However, the recent economic crisis surely will affect Europe and till the moment that the assignment is written, is an ongoing situation where EU may decide to reduce the cohesion funds provided for infrastructures in South and Eastern Europe. For 2014-2020 EU seems to focus on poor countries but it is still early to judge what will be happen in the following years.

### **2.3.3 Transportation policies from 1996-2013**

According to Rifkin (2004) EU had to face a number of challenges regarding transportation policies. At the beginning, EU was made from a number of countries that shared common borders such as Belgium with Germany. At this case transportation could take place from waterways, motorways, and railway and even by airplanes. Nevertheless after the '80's and especially on the past years the enlargement of EU has created a number of issues. The key issue is how all those commodities traded will be moved from the one country of EU in the other in order to facilitate free trade. The aim was to move people and goods quickly and in a very low

cost. According to Pinter and Usherwood (2006) the transport sector accounts for the 10% of EU's GDP while it affects not only trade but other industries such as the tourism industry. Actually the abolishment of trade barriers increased the congestion and the number of moves from one country to another, while it also led to the increase of fuel consumption.

According to Marsch and Mackenstein (2005) one of the key concepts that EU had to consider was how to improve the transportation infrastructure without affecting the cost and times of transportation. One of the key aims of CSFs was the creation of motorways and railways based in a number of intra-European routes that would connect not only the key markets but also the secondary and peripheral markets. For example in 1997 the CSF supported the creation of a network of railway lines from Germany till Spain. The same network was expanded in 2002 in Poland in order to allow commodities and people to move from Poland to Spain, through Germany, Holland, Belgium and France, within few hours. In the case of Greece the second and third CSF funded a number of projects such as Athens Metro and Airport, Egnatia motorway and its expansion towards Istanbul and a number of secondary projects. Nevertheless in the case of Greece EU had to face a key challenge which was the lack of efficient railway network while there was not any waterway. Actually the war in the former Republics of Yugoslavia was a negative factor which cut the railway link between Greece and the rest of EU. McCormick (2007) argues that this had a negative effect for Greece's transport policy since it was left outside single transport policy of EU. In the case of Egnatia motorway it was a pivotal decision to support such a project but still EU has shifted towards sustainable ways of transport such as railways while Egnatia did not include any railway project.

After 2000 the transport policy of EU focused on the creation of a single transport infrastructure. Though that a number of decisions regarding transportation come under the national governments, EU wanted not only to create intra-European routes using alternative means of transportation, but also to change the market structure by opening the national transport markets to competition, especially in the air and road sector and in a lesser extent on railway. A key decision for the European Transport policy was the opening of the trucks market where they could operate anywhere they wanted within EU while in 2003 the long-distance rail freight market opened to



competition. Furthermore, EU liberalized the air transport market where the low fare airlines took advantage in order to offer cheap tickets all over EU. In 2005 EU followed the “open skies” agreement with USA where from 2007 any EU airline would be able to operate from any EU airport to USA and vice versa. Surely those decisions promoted the airline industry and allowed the expansion of Europe’s low fare airliners ([http://europa.eu/pol/trans/index\\_en.htm](http://europa.eu/pol/trans/index_en.htm)). Nevertheless in the case of Greece, this did not happen. Though there are several EU directives for the opening of markets, such as the truck market, it seems that Greece has not implemented them as it should. For example low fare airlines did not fly on Greece’s internal routes while the truck market will open this year on competition. The result is the very high prices of transport in Greece along with the lack of railway links with Northern Europe makes Greece to be the least competitive transportation market.

Besides the funding and promoting the opening of the transport markets, EU also aims on the creation of the Trans-European Networks (TENs) which are some key transport infrastructure projects. According to the official EU web site, those are:

- the removal of bottlenecks on the main east-west inland waterway linking the Rhine, Main and Danube;
- a programme to regulate traffic on busy shipping lanes off the EU coasts;
- several north-south and east-west rail upgrades.

([http://europa.eu/pol/trans/index\\_en.htm](http://europa.eu/pol/trans/index_en.htm))

On the strategic plan for 2007 -2013 EU has not concentrated only on the implementation of the projects but also on issues associated with sustainability. Indeed some targets are the reduction of the emissions of CO<sub>2</sub>, which create the greenhouse gas effect, and the shift towards alternative fuels. Also it has taken actions to implement ISPS code which is associated with the shipping industry in order to increase security and decrease the chances of ship accidents and the risk of oil spills. EU has focused on the protection of the environment from shipping accidents by enforcing a number of EU directives and adjusting ISPS (Archer, 2008)

Finally the National Strategic Reference Framework have revisited the targets set from the White Paper in order to focus on sustainability with greater concentration on the

railways, improving ports policy and introducing alternative means of transportation within the cities.

Regarding the finance of CSF the latest information is for 2000-2006 where the budget allocated in Greece was 25 billion €, while in 1994-99 it was 19,2 billion €, while for 2007-2013 it will be 17 billion €. ([http://www.3kps.gr/index\\_en.htm](http://www.3kps.gr/index_en.htm)). Regarding the costs for transportation in general in Greece the amount of 3,4 billion € was spent in 1994-1999 with emphasis on Athens Metro and Airport along with expansion of ports, over 4 billion € were given in 2000-2006 with emphasis on projects such as the expansion of motorways and the completion of Egnatia motorway , new ports and upgrades on railway infrastructure. Finally the 2007-2013 program predicts the amount of 2,3 billion € for some ongoing project such as motorways, Thessaloniki's metro and other projects.

Regarding the overall spending for transportation projects for 2000-2006 was € 859 billion which concentrated on railways and seaways all over Europe with focus on the countries of Eastern Europe. Regarding the TEN networks, Lisbon Strategy has mentioned their strategic importance and for this reason it aims from 2010 to 2030 to spend the amount of 1, 5 trillion € on such infrastructures. A large amount of money, which is 215 € billion is going to be referred to the removal of the main bottlenecks. The following tables indicate the funds for TEN's projects.

### Comprehensive Network EU 27, 2020 horizon

<b>Transeuropean Transport Network</b>	<b>1996 – 1999 EU 27</b>	<b>2000 – 2006 EU 27</b>	<b>2007 – 2013 EU 27</b>
<b>Cost (€ billion)</b>			
TEN-T Basic Network	106	302	390
- New Member States (EU 12)	5	27	72
- Old Member States (EU 15)	101	275	318
<b>Community contribution (€ billion)</b>			
Programme TEN-T	2.23	4.43	8.013
Cohesion Fund	8.23	16.50	34.8
ERDF (regions convergence )	7.51	8.6	9.4
EIB Loans and guarantees	26.50	41.4	53.00
<b>Total Community contribution (€ billion)</b>			
Grants	18.06 (17%)	29.53 (9.8%)	52.2 (13.4%)
Grants and Loans	44.56 (41 %)	70.93 (22.5%)	105 (27%)
<b>Other resources (national)</b>			
	63.4 (59%)	231.1 (76.5%)	285 (73%)

TEN-T Priority projects	1993/96 – 1999 EU 15	2000 – 2006 EU 27	2007 – 2013 EU 27
Cost (€ billion)			
TEN-T 30	32.65	93.7	154
- New Member States (EU 12)			16
- Old Member States (EU 15)			138
Community contribution (€ billion)			
Programme TEN-T	1.35	2.80	5.4
Cohesion Fund	3.83	7.0	12.3
ERDF	1.46	4.81	4.7
EIB Loans and guarantees	9.78	16.1	25
Total Community contribution (€ billion)			
Grants	6.64 (20.3%)	14.61 (15.6%)	22.4 (14.5%)
Grants and loans	16.42 (50.3%)	30.71 (32.8%)	47.4 (30.8%)
Other resources (national)	16.23 (49.7%)	63 (67.2%)	106.6 (69.2%)

Source: [http://ec.europa.eu/transport/infrastructure/funding/doc/funding\\_figs.pdf](http://ec.europa.eu/transport/infrastructure/funding/doc/funding_figs.pdf)

### 2.3.4 The transportation white paper

As we said earlier, the liberalization of the transport market increased the volume of transportation but it created a number of new problems. One of key aspects of EU was the dominance of the inland transportation through roads which made the 44% of transport against only 39% of transportation carried from short-sea shipping routes, 10% by rail and only a 3% from waterways. On the case of passenger transport things are even worse where the 81% of the transports occurs through car journeys and only the 6% through rail and the 8% through air. This was the situation in 2000. It was obvious that this in-balance on the means of transportation was leading into key problems such as congestion and waste of valuable time. The outcome was the transportation's white paper issued in 2001 aiming at a number of actions in order to bring a balance on transportation till 2010 but also to improve the competitiveness of EU through effective transportation systems. They key aim was to shift the commodities and passengers from the roads to alternative means of transportation such as rail and waterways and to encourage the integration of different means of transport such as road and rail or rail and sea elements. For this reason, based on the white paper, EU and its CSF actions have funded a number of projects including new rail lines, improvement of the existing ones and the encouragement of citizens to use sustainable means of transportation on cities like the bicycle and public transportation. On many cases, such as in London, local authorities supported those actions with parallel measures such as congestion charging, which was launched in London in 2003, where local authorities are charging motorists for using the city's roads.

EU through its investments on public projects has reduced the cost of transport. Indeed, if a country would have to fund the creation of a new railway line or a seaway, the cost of this project would have an impact on the cost of transportation. However the funding provided from EU allows those projects to be implemented without shifting the cost to the user of the transportation network. The White Paper set as a priority to set the rail networks as the key mean of freight transportation. A key issue was the creation of new lines which would be much faster than the existing ones and their expansion on EU's key commerce areas.

The following table is taken from EU's white paper and shows the key indicators.

Table 3: Illustration of results of approaches

EU 15	1998			2010 Anticipated trend			2010 –Option A			2010 –Option B			2010 –Option C		
	Bn	Bn	Mio Tonnes CO <sub>2</sub>	Bn	Bn	Mio Tonnes CO <sub>2</sub>	Bn	Bn	Mio Tonnes CO <sub>2</sub>	Bn	Bn	Mio Tonnes CO <sub>2</sub>	Bn	Bn	Mio Tonnes CO <sub>2</sub>
Cars	3776	2221.2	434.2	4650	2735.3	453.4	4650	2486.6	412.2	4650	2486.6	412.2	4559	2438	404.1
Bus-coach	415	24.4	18.7	441	25.9	19.8	441	25.9	19.8	441	23.6	18.0	501	26.8	20.5
Metro-Tram	50	0.5	0	53	0.5	0.0	53	0.5	0.0	53	0.5	0.0	61	0.5	0.0
Railway	290	1.5	6.4	327	1.7	7.2	327	1.7	7.2	327	1.5	6.5	400	1.8	8.0
Air transport	241	1.9	59.3	458	3.7	112.7	458	3.7	112.7	458	3.3	102.4	408	3.0	91.2
Total Passengers	4772	2249.5	518.6	5929	2767.1	593.1	5929	2518.4	551.9	5929	2515.5	539.1	5929	2470.1	523.8
Growth 1998-2010				24%	23%	14%	24%	12%	6%	24%	12%	4%	24%	10%	1%
Road	1255	313.8	271.1	1882	470.5	406.5	1882	427.7	369.6	1882	427.7	369.6	1736	394.5	340.9
Railway	241	1.3	1.9	272	1.5	2.2	272	1.5	2.2	272	1.4	2.0	333	1.7	2.4
Inland waterways	121	0.3	3.6	138	0.4	4.1	138	0.4	4.1	138	0.4	3.8	167	0.4	4.6
Pipelines	87		1.0	100		1.0	100		1.0	100		1.0	100		1.0

EU 15	1998			2010 Anticipated trend			2010 –Option A			2010 – Option B			2010 –Option C		
	Bn	Bn	Mio Tonnes CO <sub>2</sub>	Bn	Bn	Mio Tonnes CO <sub>2</sub>	Bn	Bn	Mio Tonnes CO <sub>2</sub>	Bn	Bn	Mio Tonnes CO <sub>2</sub>	Bn	Bn	Mio Tonnes CO <sub>2</sub>
	Pkm- Tkm	Vehkm		Pkm- Tkm	Vehkm		Pkm- Tkm	Vehkm		Pkm- Tkm	Vehkm		Pkm- Tkm	Vehkm	
Short sea shipping	1166	0.3	23.3	1579	0.4	31.6	1579	0.4	31.6	1579	0.4	28.7	1635	0.4	29.7
Total Goods	2870	315.76	300.9	3971	472.8	445.4	3971	430	408.5	429.8	405.1	3971	3971	397.0	378.6
Growth over 1998				38%	50%	48%	38%	36%	36%	36%	35%	38%	38%	26%	26%
Total		<b>2565.2</b>	<b>819.5</b>		<b>3239.9</b>	<b>1038.5</b>		<b>2948.4</b>	<b>960.4</b>	<b>2945.3</b>	<b>944.2</b>			<b>2867.1</b>	<b>902.4</b>
Growth 1998-2010					26%	27%		15%	17%	15%	15%			12%	10%
Growth in GDP 1998-2010					43%	43%		43%	43%	43%	43%			43%	43%

More precisely the Commission proposed approximately sixty actions to create a transport system that will allow its citizens to use different modes, to reorganize the railways, to promote maritime and inland waterway transport and to increase air transports. In this case, the White Paper responds to the sustainable development strategy adopted by the European Council in Goteborg in June 2001.

The European Community has had difficulties in implementing common transport policy as dictated by the Treaty of Rome. The Maastricht Treaty strengthened then the political, institutional and financial bases by introducing the concept of trans-European transport network (TEN).

The first White Paper on the development of common transport policy was published in 1992 and it emphasized the opening of the transport market. Ten years later, the road cabotage has become a reality, air traffic has the highest level of security in the world and the mobility of citizens from 17 km per day in 1970 reached 35 km in 1998.

With these data, the Community Support Framework programs have developed the most modern techniques to achieve two major challenges: the trans-European high speed railway and the satellite navigation system GALILEO. However, more or less rapid implementation of different modes of EU decision leads to certain difficulties, which are (White Paper, 2001):

- The uneven development of different modes. Road transport accounts for 44% of freight while rail transport for 8% and inland waterways 4%. Road passenger transport accounts for 79% and 5% air and rail for 6%
- The congestion on major roads and railways in major cities and airports
- Environmental problems or health problems of citizens and insecurity on the roads.



These trends are expected to increase with economic growth and enlargement of the European Union. For this reasons EU has taken the following actions:

### **Infrastructure in Road transport** (White paper, 2001)

Target: To increase the qualities of the road, to better apply the existing legislation with a strengthening of sanctions and inspections.

-Figures: From 1970 to 2000 the vehicle fleet in the Community tripled from 62.5 million cars reached 175 million

-Proposed Measures: The Commission proposals are designed:

- to harmonize driving time to 48 hours on average per week maximum (excluding self-employed drivers)
- to converge the national rules on curfew truck on weekends
- to establish a driver attestation which allows to check if there is irregularity in employment status of the driver
- to develop training
- to promote harmonization in the legislation for road transport
- to harmonize the penalties and the conditions for immobilizing vehicles
- increase the number of checks
- to encourage information sharing
- to improve road safety in order to halve deaths by 2010
- To ensure harmonized taxation of commercial road transport fuels, while reducing distortions of competition in the liberalized market for road transport.

### **Infrastructure in Rail Transport** (White paper, 2001)

Target: To reorganize the railways by creating an integrated European railway area, competitive and secure and to implement a network dedicated to cargo.

-Figures: The share of rail freight transport market decreased from 21% in 1970 to 8.4% in 1998 while in the United States remains 40%. Meanwhile, rail passengers

from 217 billion passenger / km in 1970 reached 290 billion in 1998.

-Proposed measures: The European Commission has approved a second package in 2006 with five measures of liberalization and technical harmonization of railways in order to reorganize the railways due to the rapid creation of an integrated European railway area. The five new proposals aimed at:

- developing a common approach to security to be completed progressively national security systems
- supplementing the measures for interoperability so as to facilitate cross-border movement and reduce the cost of high-speed network
- creating an effective management tool: the European Railway Safety
- expanding and accelerating the opening of the rail freight market to open up the national freight market
- promoting the use of railways among consumers

This "railway package" is expected to be complemented by other measures proposed in the White Paper which have as their object:

- to ensure high quality rail services
- to eliminate barriers to market entry of rail freight services
- to improve the environmental performance of rail freight
- to promote the transfer of goods from rail lines
- to open the market for passenger rail
- to improve the rights of rail passengers.

### **Infrastructure in Air Transport (White paper, 2001)**

Target: To check the growth of aviation, combat congestion of airspace and to maintain the level of security while protecting the environment.

-Figures: The share of air passenger transport is expected to double between 1990 and 2010, rising from 4% to 8%. Air transport accounts for 13% of CO<sub>2</sub> emissions from transport while delays are causing the 6% of fuel consumption.

-Proposed Measures: The “open skies” is a priority today due to the following measures:

- regulatory framework based on common rules for the use of airspace
- common political / military air traffic management
- dialogue with social partners to conclude agreements between the organizations
- cooperation with Euro control
- system monitoring, inspection and sanctions to ensure effective enforcement.

In addition to the restructuring of the airspace, the Commission wants to harmonize the technical level of auditors with the creation of a Community air traffic controller license. Along with the creation of the open sky, more efficient use of airport capacity depends on creating a new regulatory framework will include:

- amending the allocation of slots.
- modification of airport charges so as to encourage the concentration of flights during the day
- environmental standards in order to reduce the harmful environmental effects.

### **Infrastructure in Sea and River Transport** (White paper, 2001)

Target: To develop infrastructure, simplify the regulatory framework by creating common points and to incorporate social norms in order to create real motorways.

-Figures: Compared with early 1980, EU has lost 40% of the potential of seafarers. Maritime transport represents 70% of all trade between the Community and the rest of the world. From European ports pass every year about 2 billion tones of different types of goods.

Maritime and inland waterways are a real competitive alternative solution with land transport. There are still some obstacles to infrastructure, such as bottlenecks, inappropriate size, the height of the bridge, lack of transshipment equipment, etc.

-Proposed Measures: Maritime and river transport is a key element through the modality, allowing in particular to avoid bottlenecks between France and Spain in the Pyrenees or between Italy and the rest of Europe in the Alps, between France and the United Kingdom and future between Germany and Poland.

The Commission proposed a new legislative framework that is:

- to introduce new rules and clarify the areas of navigation, maintenance, handling, etc.
- simplify the rules governing operation of ports and to collect all the factors of supply chain (shippers, ship owners, carriers, etc.) into a single information center.

On river transport objectives are:

- to eliminate bottlenecks
- be uniform technical standards,
- to harmonize navigation licenses and conditions for rest time
- to establish systems to aid navigation.

### **Using multiple modes of transportation**

Target: To restore the balance between different modes with a proactive policy to support interoperability and the promotion of rail, sea and river transport. In this case, the main role will be the EU support program «Marco Polo» replacing the program PACT (pilot actions for combined transport).

-Figures: The program PACT, which was developed in 1992, led to the implementation of 167 specific projects between 1992 and 2000. The new program modality «Marco Polo» has a budget of 115 million euros for 2003-2010.

-Reasoning: The balance between modes suffered from the lack of close connection between sea, inland waterways and railways.

-Proposed Measures: The «Marco Polo» is open to all proposals to be diverted goods from road to other modes of transport more environmentally friendly. The challenge is interoperability a really competitive and economically viable, particularly the promotion of motorways

## **Impacts from improving the Transportation System**

Target: To have passengers and other stakeholders such as transportation firms at the heart of transport policy in order to reduce accidents, harmonize sanctions and to encourage the development of safer and less polluting technologies.

-Figures: In 2000, road accidents killed over 40,000 people. One in three people will be injured in the course of his life in an road accident. The total cost of accidents represents 2% of GDP.

-Reasoning: The first issue for users of transport is road safety. However, the financial instruments do not meet the seriousness of the situation. As for charging, users are entitled to know what they are paying and why they are paying. Ideally, the cost of infrastructure is the sum of maintenance and operating costs and external costs such as accidents, pollution, noise and congestion. Finally, the lack of harmonized fuel tax is seen as another obstacle to the proper functioning of the internal market.

-Proposed measures:

Regarding road safety, the Commission proposes:

- a new action plan on road safety for the period 2002-2012 in order to halve the number of deaths in road transport
- to harmonize penalties, signal and alcohol rates
- to implement new technologies such as electronic driving license, speed limiters for cars and intelligent transportation systems in the e-Europe. In this matter the advances in the protection of passenger cars, strengthening the protection of pedestrians and cyclists, and better speed management.

Regarding the charging infrastructure, the Commission proposes:

- a) In road transport, charges will vary depending on the environmental performance of vehicles (emissions and noise), the type of the used infrastructure (motorways, national and urban roads), the distance traveled, weight and level of congestion.
- b) In rail transport, charges will vary depending on the lack of capacity of infrastructure and environmental damage.

c) In maritime transport, the proposed measures relating to maritime safety. As regards fuel taxation, the Commission proposes:

- the separation of fuel taxation for commercial use than fuel for private use (Directive on excise duty)
- defining a harmonized tax on fuel for professional use. Other measures for improving the modality with the introduction of ticketing machines and the best baggage handling.

Overall, the impact from improving the measures taken will include a reduction in the number of accidents but also better operation of the motorways. Those impacts will result into less cost for the health security system. It is important to note that accidents are affecting the health care system. Hence measures taken to tackle with accidents will also have a positive impact on the performance of the health care system.

### 2.3.5 Transportation policies for 2014-2020

Before we provide an analysis for the future policies in transportation we must emphasize the fact that EU is still in negotiations for its 2014-2020 budget. For EU this is a crucial point since the economic turmoil in the South and in Ireland and other issues like the unstable political environment in Belgium may reduce the available funds of EU or even force EU to abort a number of projects. Also there is a relocation of the cohesion policy towards the poorest regions of East Europe and not any more on the countries of South Europe.

Some key facts for the policies of 2014-2020 are:

- Regarding the convergence over the 75% of the cohesion fund's budget will be allocated for the poorest regions which are those who have a GDP per capita lower than the 75% of EU's budget. A total of 100 regions are estimated to receive help from 2014 to 2020 which are mostly from Eastern Europe along with regions from Greece, Spain, Italy and Portugal. The measures will affect 170 million people and they will include a number of initiatives such as the expansion to TEN networks in the countries of Eastern Europe but also in candidate countries like Turkey and Croatia.
- On the issues of Regional Competitiveness and employment the 16% of the budget, which is 8 billion Euros per year, will be shared among the 170 regions on projects that include also the improvement of the existing transport links.

<http://www.euractiv.com/en/regional-policy/eu-cohesion-policy-2014-2020-links-dossier-501653>)

For Greece we still do not know what project will be funded in 2014-2020 but we expect that due to the financial crisis and the shortage of funds that Greece is entitled to receive there will be a limited number of transportation projects that Greece can develop. However EU aims to promote inter-regional cooperation, hence Greece can work together with its neighboring countries in order to develop new projects.

### **3. Transport and development**

#### **3.1 Introduction**

The case of regional development has been a multidimensional concept. Indeed, if we have a thorough look over the case of development on certain regions, this is a quite complicated case which may involve many different forces, such as economics, infrastructure, human capital, legislation, current economic status, clusters and other variables affecting development in a given region. Richardson (1969) has noted that many authors have concentrated their efforts into analyzing the case of regional development based on variables such as employment, production and income indicators. On most of the cases of regional disparities were used as the key indicators in order to make comparisons between the various regions. Hence the role of the central governments or even of the institutions such as EU, as to reduce the various gaps which existed between the various regions which comprise a nation, a region or a union of countries such as EU.

The fact that there are regions with different mix of production means but also with different indicators means that a government will have to take decisions so as not only to bring a balance between the different regions but also to avoid having inequalities. Also, there is the case of having set objectives on each region but not to meet them at the end of each development program. On most of the cases, it is accepted that in order to develop one region there is a necessity to develop also the necessary infrastructure. This includes major transportation projects. For example, London's M-25 has being one of the most important points for the development of London not only as the British Metropolis but also as one of the most important logistics and transportation point for trade in Western Europe. In general, the construction of major transportation projects, such as ports, roads, railway systems, etc. have a significant impact on regional development ( Folmer and Oosterhaven 1980). However, it is not just the project itself which will bring prosperity. It must be accompanied from other forms of awards for those who will invest into those projects including tax reliefs, subsidies and other motives for those who will invest or use the transportation facilities.



## **4. The case of Egnatia**

### **4.1 Transportation and development in Greece**

The development of transportation in Greece has been accused as being made without vision and underestimating the new directions within the European Union. Fixing a real strategy would focus in activities in a national level which would be saving resources. The lack of strategy is obvious and the network proposals were made in the European Union.

In the Balkan Peninsula, commercial, productive and transport data have not been developed and are in full swing. The estimated effects on the economy of the region by a road or rail network consist key activities that should be determined. However, after 2004 and the introduction of central Europe and in 2007 of Bulgaria and Romania, several efforts have been made towards this.

Regarding the case of Greece, it has been a country which has taken advantage from the funding given from community support programs which started during the mid 1980's and they continue till today. A key issue for Greece was the geographical disperse of its islands and the fact that over the 70% of the mainland is made from mountains which have tiny villages which are isolated from the rest of the country. Till the mid 1990's many villages were still isolated. At that time the construction of Via Egnatia and also several minor transportation projects, included regional airports and motorways along with improvements on the existing networks. Surely this was a major movement forward for this country which did not have the resources to construct such networks. During the 2000's the expansion continued with other major projects that included the airport of Athens along with its ring road while during the 2010's the focus has been given on the ports of Greece. Especially the case of Piraeus and the acquisition of the port authority from the Chinese conglomerate COSCO and the expected acquisition of Greece's railways from Russian or Chinese firms, is another movement forward and it can bring more development upon a troubled country. It is important to note that COSCO's investment generates the 1,5% of

Greece's GDP while the 25% of Greece's GDP is generated only from two industries; tourism and shipping. Both industries depend on the infrastructures found on transportation. This is a clear evidence of the value that transportation has for the development of Greece (OLP, 2013).

#### 4.2 Egnatia as a mean of transportation and development





Egnatia Motorway (A2 motorway, A2) is the largest motorway in Greece with length of 670 km. It crosses the entire northern Greece, from west to east: starts from Igoumenitsa in Epirus, passing through many major cities of Macedonia, with the main Thessaloniki, the second largest city in Greece, continues east to Thrace, passing from Alexandroupolis, and ends at Greek-Turkish border at Kipoi of the River Evros. Its name comes from the ancient Via Egnatia that crossed almost the same area. The Egnatia is part of European route E90.

The construction of the Egnatia began in 1994 and was completed to the main part in January 2009 and in May 2014 formally completed in its entirety, with delivery to the circulation of the Bridge of Peristeri in the region Metsovo. The modern Egnatia Odos constructed on Highway 2.

The highway has two traffic streams, one towards Igoumenitsa and one towards Kipi Evros, separated by a dividing strip in the middle. Each stream has two traffic lanes and an emergency lane and the main hubs three lanes. The maximum speed is 140 km. / hr.

Powered by four ports and six airports and full of tunnels, bridges and interchanges. Management and maintenance of highway is undertaken by Egnatia

Odos SA , which manufactures alongside five vertical road axes linking Egnatia with the northern border of the country.

The Egnatia unites many Greek cities. Being a highway , does not pass through them, but through detours, passing a few miles out of them, to maintain its technical features and most importantly, to allow drivers to continue their journey with utmost speed.

The Egnatia Odos is the Greek part of the trans-axle E90. Te **Egnatia Road** project cost almost up to 6 billion euros. Only the tunnels cost close to 1.8 billion euro. More precisely the project includes:

- 63 connecting nodes with roads
- 177 large bridges with a total length of 40 km.
- 350 upper and lower input read - out
- 73 tunnels maximum length of 4.8 km. and a total length of 50 km.
- 43 river crossings
- 11 railway crossings

The area of influence and service gathers:

- 36% of the total population.
- 33% of the total gross national product.
- In the primary sector, 54% of total agricultural land in the country and 65% of irrigated land. In the secondary sector, 41% of total employment in the country's industry-crafts.
- 51% of the country's mining activity.

Egnatia Odos has 42 kilometers of bridges, which constitute 6% of the total length of the shaft, as approximately 12% of total expenditure. This is mainly due to the variety of terrain, combined with environmental conditions. This twin bridges, with independent operators per traffic branch, according to the practice of German motorways. For the construction of bridges, have been applied, almost all modern manufacturing methods

The Egnatia Motorway is one of the axes with more tunnels in Europe . It has 73 twin tunnels with a total length of 50 km which means that constitute 7% of the road length

are tunnels, while the cost of construction is about 30% of the total construction cost of the Road. The tunnels are designed with 21st century standards. A key element of the design is the prediction of transverse escape routes between the tunnel tubes in case of fire. Also, special attention is given to the installation of high quality monitoring and control system generally safe operation of tunnels. The cost of tunnels ranging from 8,000 euros per meter length to 30,000 euros per meter length . The most significant built tunnels:

- Tunnel Driskos (*4.600m.*)
- Tunnel Metsovo (*3.500m.*)
- Tunnel Dodona (*3.360m.*)
- Tunnel S10 Kastania (*2.225m.*)
- Tunnel minor (*2100*)

A significant impact has been the changes on the travel time. Egnatia Odos has contributed to major changes on travel time, which has affected other variables, as seen later, such as the GDP, costs and tourism. The travel time now is the following:

## Travel Time

From	To	With the pre-existing network	With the Egnatia Odos
Igoumenitsa	Kipoi	11 hours and 30 minutes	6 hours and 10;
Igoumenitsa	Ioannina	1 hour and 45 '	45 '
Ioannina	Thessalonica	5 hours	2 hours and 15 '
Thessalonica	Komotini	2 hours and 15 '	1 hour and 15 '
Komotini	Alexandroupolis	2 hours and 20;	1 hour and 15 '
Alexandroupolis	Kipoi	25 '	15 '

Obviously, the study area is characterized by apparent existence of Thessaloniki which is on the epicenter of the road. It is on the middle of Egnatia Odos but it is also the key trade center. In addition to this, the motorway goes from other key town such as Ioannina and Komotini, while Kipoi is the border control with Turkey.

The Egnatia Motorway is considered to be, on average, five times safer than the alternative road network, taking into account the exposure to danger. The following tables show the road accidents and safety indicators in Egnatia Motorway (2000-2004) and in the alternative to Egnatia Motorway network (1998-2004), concerning the section from Grevena to the border station of Kipoi (Greek-Turkish borders). (Egnatia odos ,2007)

ROAD ACCIDENTS AND SAFETY INDICATORS IN EGNATIA MOTORWAY 2000-2004										
TOTAL										
Year	Length (km)	Accidents data				Indicators				
		Number of accidents	Deaths	Heavy injured	Light injured	Accidents per 10 <sup>9</sup> vehivles* km	Deaths per 10 <sup>9</sup> vehivles* km	Accidents per 100 km	Deaths per 100 km	N+BT per vehivle
2000	74	5	2	4	6	58.5	23.4	13.6	5.4	1.20
2001	162	16	4	10	19	52.4	13.1	13.6	3.4	0.88
2002	226	28	10	10	30	58.6	20.9	14.5	5.2	0.71
2003	307	39	8	19	54	56.6	11.6	14.6	3.0	0.69
2004	312	39	10	16	46	38.5	9.9	12.6	3.2	0.67

ROAD ACCIDENTS AND SAFETY INDICATORS IN THE ALTERNATIVE ROAD NETWORK OF EGNATIA 1998-2004										
TOTAL (Alternative network - length: 513 km)										
Year	Accidents data				Indicators					
	Number of accidents	Deaths	Heavy injured	Light injured	Accidents per 10 <sup>9</sup> vehivles* km	Deaths per 10 <sup>9</sup> vehivles* km	Accidents per 100 km	Deaths per 100 km	N+BT per vehivle	
1998	382	97	115	518	276.6	70.2	73.9	18.8	0.55	
1999	367	90	130	492	253.1	62.1	71.0	17.4	0.60	
2000	269	67	88	336	189.5	47.2	52.0	13.0	0.58	
2001	243	64	80	363	180.5	47.5	47.0	12.4	0.59	
2002	179	52	50	232	150.1	43.6	34.6	10.1	0.57	
2003	171	61	42	241	178.7	63.7	33.1	11.8	0.60	
2004	159	49	53	210	172.4	53.1	31.5	9.7	0.64	
Difference 98/99 - 03/04	-56%	-41%	-61%	-55%	-34%	-12%	-55%	-41%	8%	

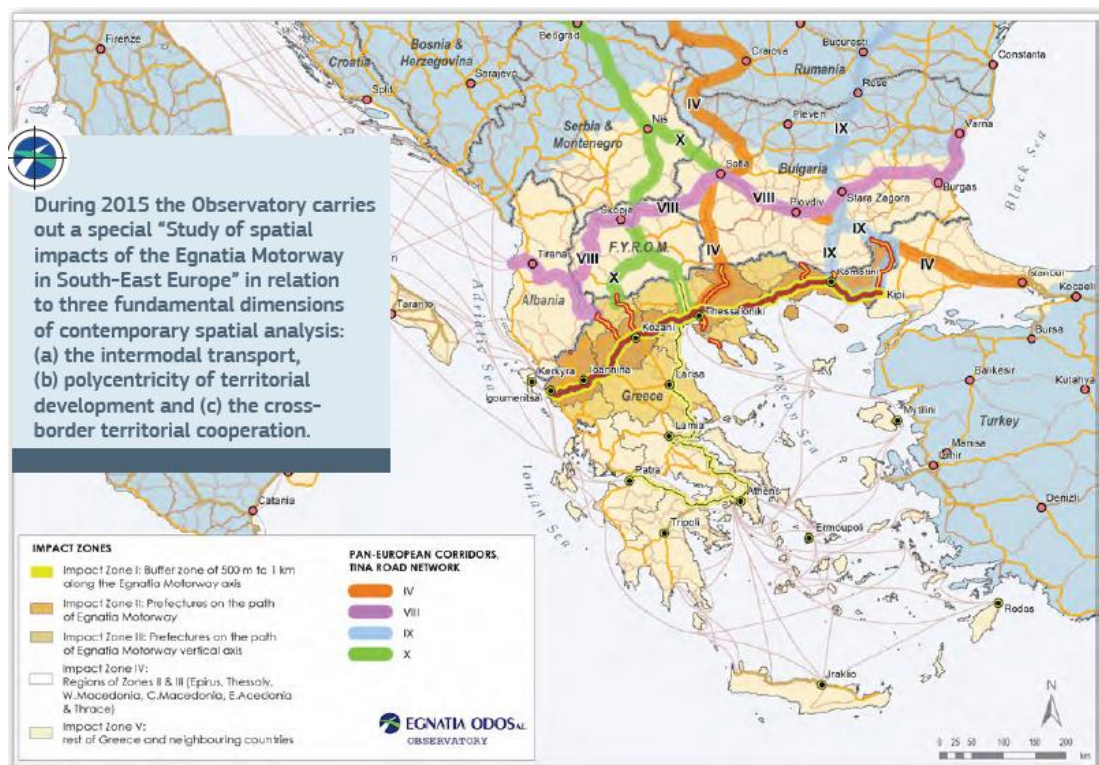
The level of risk on Egnatia Motorway depended on the exposure to danger (vehicle km) has reduced in 2004, but it was stable until 2003. The safety indicator shows that Egnatia Motorway is as safe as the European Motorways. The average gravity of

accidents is lower than the alternative to Egnatia Motorway network because of the fact that the speeds developed in Egnatia Motorway are significantly high. (Egnatia Odos, 2007)

### **4.3 Economic impact**

As regards GNP, there has been a research which analyses a number of indicators related to Egnatia. The indicator "primacy rate" for Thessaloniki has value 6.217 in 1997 and increased to 6.30 in 2006. That means that the intra-county trade increased during the period 1997-2006. The same research indicates that there has been a significant increase on the GDP per capita in Thesprotia and in Ioannina. Especially for the case of Ioannina there has been a significant boost on tourism, especially on conferences and on other similar activities where Ioannina has been the epicenter of sustainable tourist activities due of the Egnatia Odos. For counties with smaller population, the growth of GDP is significantly higher than the population growth, which is an indication that improved more as "financial centers", despite the lag on population on those areas (<http://www.aeihoros.gr/article/el/diereunisi-tis-epidrasis-tis-egnatias-odou-kai-ton-katheton-aksonon-stin-polukentriki-xoriki-anaptuksi-tis-voreias-elladas>).

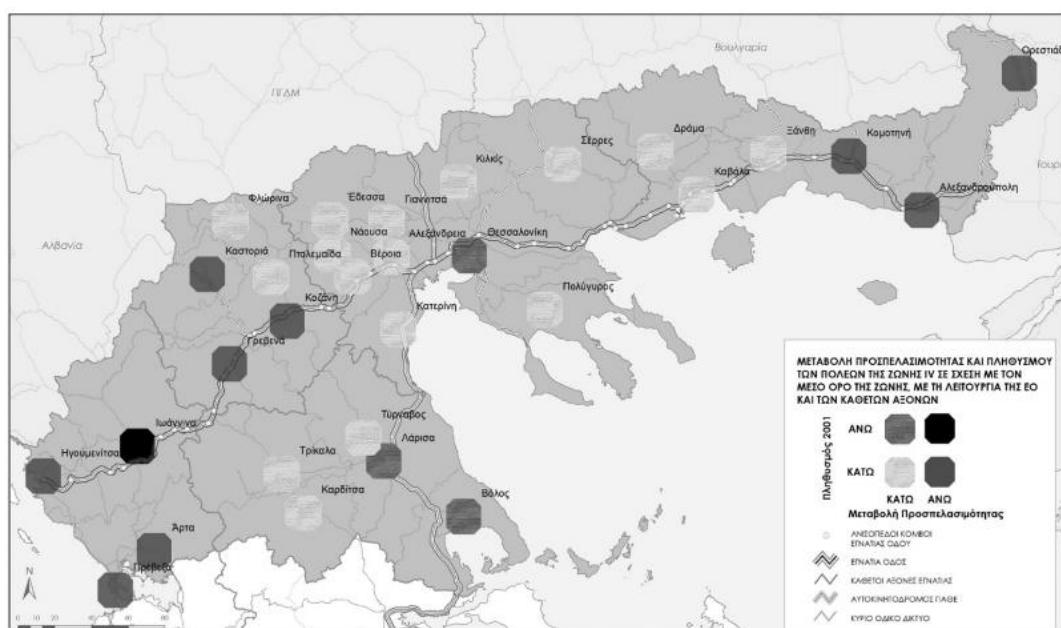




#### 4.4 Impact on population change and accessibility

In terms of the location index, Egnatia Odos and its Vertical Axes altered the population residing within 50 km. The research indicates that there is a shift of population towards cities and villages which are close to the motorway. Another interesting point is that the property rates have increased during the past years, even though that the general index in Greece did not increase. However, it is important to mention the fact that the property rates in the areas affected from Egnatia, especially in Epirus and in Thrace were quite low, compared to South Greece.

More information is given on the following figure:



As seen from the above figure, given from Egnatia Odos (2013), with black and deep colours are the areas where the population and accessibility have increased. We can see that Ioannina has benefited along with all of the major towns found within Egnatia and its vertical axes, such as Orestiada. On the other hand, towns which are not upon the Egnatia axes, such as Trikala, Karditsa, Edessa and other towns have decreased in terms of population and of accessibility. Of course, it is not easy to claim that Egnatia has been the only factor affecting those figures, but surely this is an indication of progress made from Egnatia.

The improvement of transport infrastructures affects the mobility of population. The table below shows the changes of the permanent population from 1991 to 2011 in the examined study area:

Permanent population rate shift per Region, 1991-2011										
NUTS	Region	1991		2001		2011		Rate shift (%)		
		Population	Percentage (%) on the total population of the country	Population	Percentage (%) on the total population of the country	Population	Percentage (%) on the total population of the country	1991-2001	2001-2011	1991-2011
EL11	Eastern Macedonia & Thrace	570.442	5,58	607.162	5,55	608.182	5,62	6,44	0,17	6,62
EL12	Central Macedonia*	1.711.880	16,74	1.876.558	17,16	1.881.869	17,40	9,62	0,28	9,93
EL13	Western Macedonia	288.636	2,82	294.317	2,69	283.689	2,62	1,97	-3,61	-1,71
EL14	Thessaly	729.505	7,14	740.115	6,77	732.762	6,78	1,45	-0,99	0,45
EL21	Epirus	327.300	3,20	336.392	3,08	336.856	3,11	2,78	0,14	2,92
EL22	Ionian Islands	189.430	1,85	209.608	1,92	207.855	1,92	10,65	-0,84	9,73
EL23	Western Greece	695.391	6,80	721.541	6,60	679.796	6,29	3,76	-5,79	-2,24
EL24	Sterea Ellada	548.170	5,36	558.144	5,10	547.390	5,06	1,82	-1,93	-0,14
EL25	Peloponisos	574.434	5,62	597.622	5,47	577.903	5,34	4,04	-3,30	0,60
EL31	Attiki	3.594.817	35,16	3.894.573	35,62	3.827.624	35,39	8,34	-1,72	6,48
EL41	Northern Aegean	201.390	1,97	205.235	1,88	199.231	1,84	1,91	-2,93	-1,07
EL42	Southern Aegean	255.192	2,50	298.462	2,73	308.975	2,86	16,96	3,52	21,08
EL43	Crete	536.805	5,25	594.368	5,44	623.065	5,76	10,72	4,83	16,07
znIV	Impact Zone IV *	3.627.763	35,48	3.854.544	35,25	3.843.358	35,54	6,25	-0,29	5,94
EL	Greece *	10.223.392	100,00	10.934.097	100,00	10.815.197	100,00	6,95	-1,09	5,79
EU27	European Union (EU27) **	471.967.435		483.797.028		502.477.005		2,51	3,86	6,46

Primary Data Sources: National Statistical Service of Greece (ELSTAT), Censuses of 1991, 2001, 2011, Eurostat, 4/2012

\* Population of Mount Athos is included

According to the census 2011 data, 35.54% of the permanent population of the Country dwells in the Regions of Macedonia-Thrace. During the decade 2001-2011, the population was reduced by 0.29%, while in the previous decade 1991-2001 there was an increase. The population increased in general during the period 1991-2011 and this increase was higher than the national one. In 2011, Central Macedonia concentrates almost half of the population of the Region of Macedonia-Thrace. The population of Western Macedonia is the lowest. During the period 1991-2001, the population in all Regions of the study area increased and the Region of Central Macedonia presented the higher increase because of the dynamics of the metropolitan area of Thessaloniki. (Egnatia Odos, 2013)

An important issue is the transportation and the special functional of polycentricism. The total number of annual average daily trips between the provinces of Egnatia Odos that have urban centers, are estimated at 49 113 for 2006. The same indicator for the same provinces in the National Survey of Destination 1993 was 22.381. In 2006, the sample movement presents slightly less dispersion than in 1993. There are namely large contrasts and the values are taken by the movements for various origin-

destination zones. In 2006, movements are more concentrated among specific areas of origin and destination in greater extent than in 1993. Looking at the records of origin and a destination, resulting appears that the change was due to large increases in absolute values and from Thessaloniki. However, the above does not mean that mobility has been moved to the "center" of the transit area of the Egnatia Odos, namely to Thessaloniki and Central Macedonia. Note that the highest growth rates movements occur in interregional movements and even in movements of destinations between Thessaloniki and the cities of Thrace and Epirus. Regarding the density of movements, increased largely during the period 1993-2006 (resulting in the ratio of the specific functional polycentricity) despite the reduction on movements (Yiannakou and Tasopoulou 2007).

From the data movement between the urban centers we have the following data

- Movements between cities Xanthi- Komotini-Alexandroupolis increased greatly both in absolute and percentage values. This increase in annual average daily movements by 370% (310 movements per day) observed between Alexandroupolis and Xanthi in 270% (980 movements per day) between Alexandroupolis and Komotini and 81% (798 movements per day) between Komotini and Xanthi.
- Movements between Thessaloniki and urban Igoumenitsa, Ioannina, Grevena, Kozani, Kavala, Xanthi and Alexandroupolis, doubled during the period considered (1996-2006). Networking Veria both westward to Kozani (229% percentage increase of 495 movements per day) and Grevena (258% percentage increase and 59 movements per day) and to the east with Kavala (195% percentage increased to 21 movements per day)

<http://www.aeihoros.gr/article/el/diereunisi-tis-epidra-sis-tis-egnatias-odou-kai-ton-katheton-aksonon-stin-polukentriki-xoriki-anaptuksi-tis-voreias-elladas>)

On the case of the impact on the regions around Egnatia, some figures are given on the following figure:

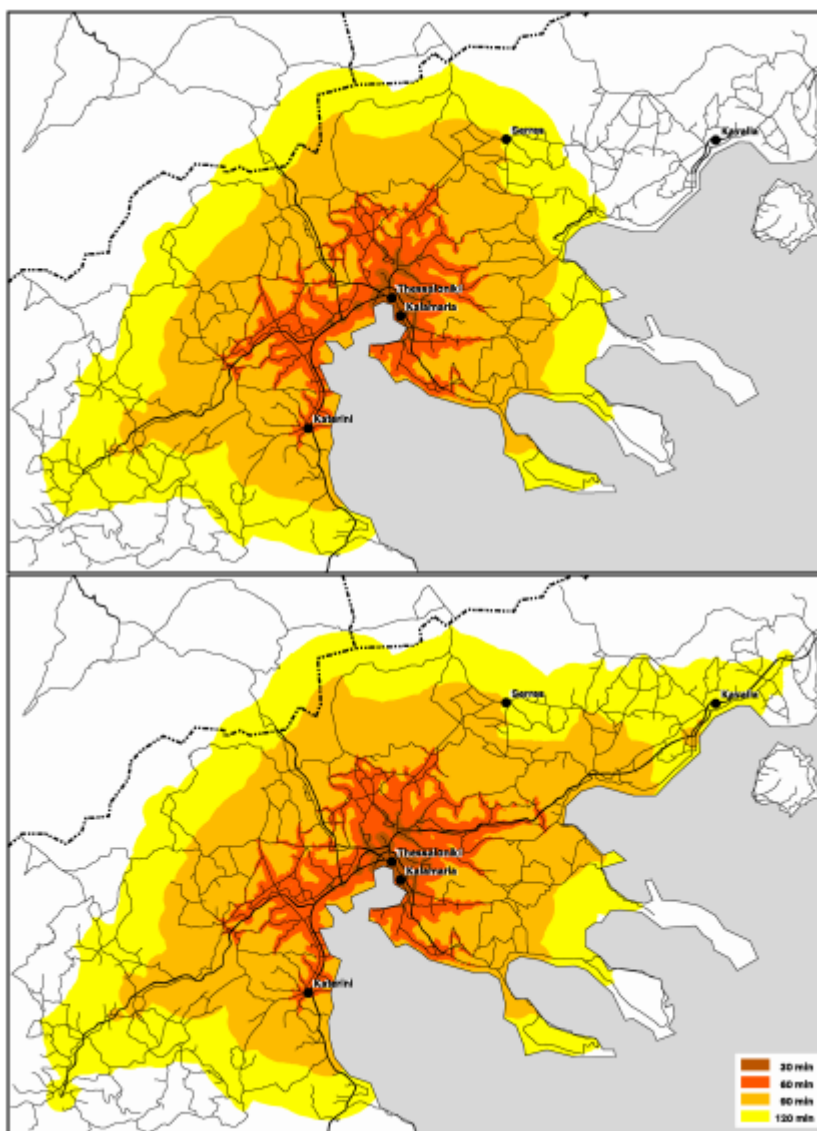


Figure: Isochrones prior (top) and after (bottom) the full implementation of the Egnatia motorway

It seems that Egnatia is a road which is able to affect the core of North Greece but also areas which were isolated such as the villages of Komotini and Epirus.

#### 4.5 Impact on work force and employment

The industrial economy of the impact zone of the Egnatia Motorway is based on a number of industrial areas of the Regions. In Central Macedonia Region, the most

important national and international zone of business activity development is the metropolitan area of Thessaloniki. The development zones of Naousa-Veria-Edessa-Giannitsa are also of great importance. The smaller poles of the Prefectures of Serres and Katerini need to be encouraged. (Egnatia Odos, 2008)

The existing industrial areas of Kastoria and Kozani-Ptolemaida are the two basic industrial poles of West Macedonia Region. The pole of Ioannina, an area of intensification, is the most important activity area of the Region of Epirus. Here, it must be taken into consideration the potential pole of Igoumenitsa. (Egnatia Odos, 2008)

As far as the Region of Thessaly is concerned, the main zone of development is the area of Larissa-Volos, which should be enforced. There is a possibility of development for a new industrial zone to the area of Karditsa-Trikala, in the direction of the Egnatia Motorway. The development of handicraft businesses in the mountainous areas must be supported. (Egnatia Odos, 2008)

It is known that the improvement of transportation infrastructures results to the improvement of the labor market accessibility. In 2012, the economically active population in the above industrial areas was 1.678.400, while in 2011 amounted to 1.683.100. During the period 2010-2012, there was a decrease of the economically active population in all Regions. The greatest decline was observed in the Region of Eastern Macedonia & Thrace at 4.15%. The Regions of Epirus (-3.00%), Thessaly (-2.93%), Western Macedonia (-2.13%) and Central Macedonia (-2.11%) experienced major reductions. (Egnatia Odos, 2013)

The basic element of an area's economy is the composition of employment and is affected by the improvement of the mobility of the employees. After the construction of the Egnatia Motorway, the 64.78% of the employees were occupied in the tertiary sector, while the secondary sector and the primary sector followed with 18.39% and 16.83% respectively. Compared to the country (primary sector 11.57%, secondary sector 18.18% and tertiary sector 70.25%), the Regions of the impact of the Egnatia Motorway had higher rate in the primary sector, a slight difference in the secondary sector and the lowest percentage rate of employees in the tertiary sector. (Egnatia Odos, 2013)

The table below shows the composition of employment:

COMPOSITION OF EMPLOYMENT PER REGION, 2010 (EMPLOYEES in thousands)								
NUTS	REGION	TOTAL NUMBER OF EMPLOYEES	PRIMARY SECTOR		SECONDARY SECTOR		TERTIARY SECTOR	
			EMPLOYEES	PERCENTAGE (%)	EMPLOYEES	PERCENTAGE (%)	EMPLOYEES	PERCENTAGE (%)
EL	GREECE	4.711,7	545,0	11,57	856,6	18,18	3.310,1	70,25
znIV	ZONE IV	1.584,8	266,7	16,83	291,4	18,39	1.026,7	64,78
EL11	East Macedonia & Thrace	242,1	58,0	23,96	38,4	15,86	145,7	60,18
EL12	Central Macedonia	783,4	93,4	11,92	148,8	18,99	541,2	69,08
EL13	West Macedonia	109,6	18,8	17,15	29,2	26,64	61,5	56,11
EL14	Thessaly	302,7	69,2	22,86	48,4	15,99	185,1	61,15
EL21	Epirus	147,0	27,3	18,57	26,6	18,10	93,2	63,40

The development status of a region is indicated by the unemployment rate. The economic crisis has affected the development of the industrial zones of the Egnatia Motorway. The unemployment rate has increased as shown in the table below: (Egnatia Odos 2013)

UNEMPLOYMENT RATE (%)									
NUTS	ΠΕΡΙΦΕΡΕΙΑ	2005	2008	2010	2011	2012	CHANGE (%)		
							2005-2008	2008-2010	2010-2012
EL11	East Macedonia & Thrace	11,90	8,70	14,20	19,90	22,50	-26,89	63,22	58,45
EL12	Central Macedonia	11,10	8,30	13,50	19,50	26,00	-25,23	62,65	92,59
EL13	West Macedonia	18,00	12,50	15,50	23,20	29,90	-30,56	24,00	92,90
EL14	Thessaly	9,50	8,40	12,10	16,80	22,60	-11,58	44,05	86,78
EL21	Epirus	11,50	9,90	12,60	16,70	22,90	-13,91	27,27	81,75
Zn-IV	ZONE IV	11,42	8,83	13,39	19,08	24,82	-22,71	51,70	85,33

In 2012, the unemployment rate in the whole region was 24.82%. The higher percentage was recorded to West Macedonia Region and the lowest to East Macedonia and Central Macedonia. During the period 2010-2012 there was an increase in the unemployment rate in all Regions. During the period 2008-2010 the highest increase unemployment rate was recorded to East Macedonia & Thrace Region (63.22%), as opposed to the period 2010-2012. During the same period compared the other Regions presented lower unemployment rates.(Egnatia Odos, 2013).

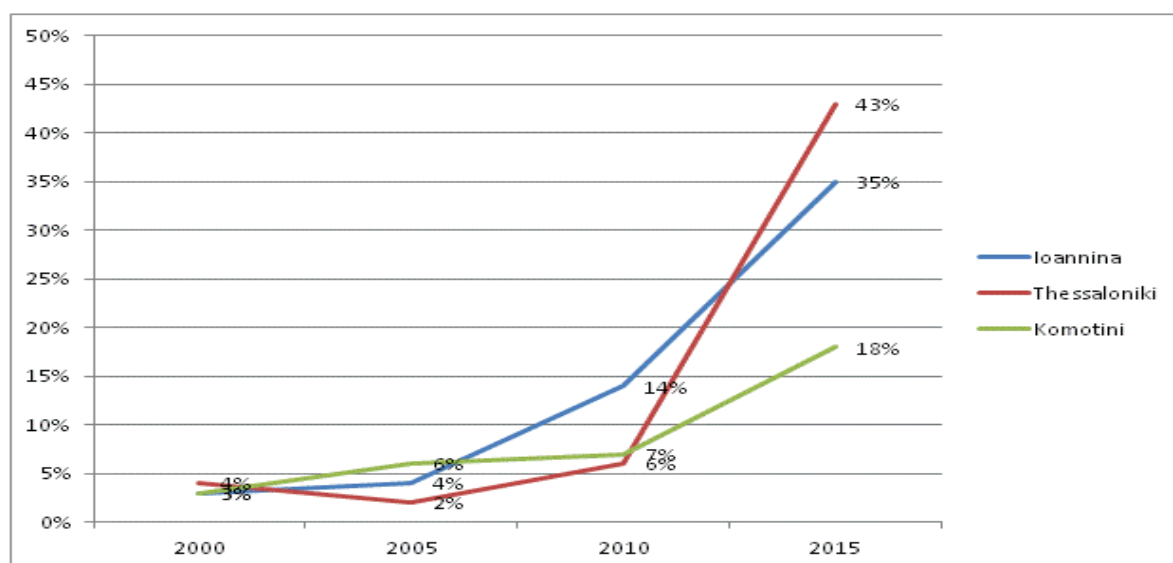


It is understood that Egnatia has contributed also on the increase of GDP and on reducing unemployment in a region which has high levels of unemployment. According to Egnatia (2013) Odos' annual report the contribution of Egnatia in the poorest region of Greece and of continental EU-17 are the following:

- The construction of the motorway created thousands jobs and helped many local firms which supplied the project
- Isolated regions are on the trade and tourist map of Greece
- The population near the motorway increased
- Foreign trade, especially with neighbor countries increased
- The maintenance of the road along with the operation of toll posts will ensure several jobs but also will contribute on the revenues made from taxes paid on the toll posts.

#### 4.6 Impact on tourism

Regarding the case of the impact on tourism, we have to following data based on data given from SETE. The data for 2015 are projections based on the estimations made from SETE (2014).





The statistics are based on the year 1996 when Egnatia provided the first operational part. Till 2010 we can see some slight changes, but the data given for 2010 and 2015 is very positive. According to SETE (2014) surely the crisis has affected internal tourism, but Egnatia has been a key motivator for the development of destinations especially for the major towns and for Evros region as well: More precisely:

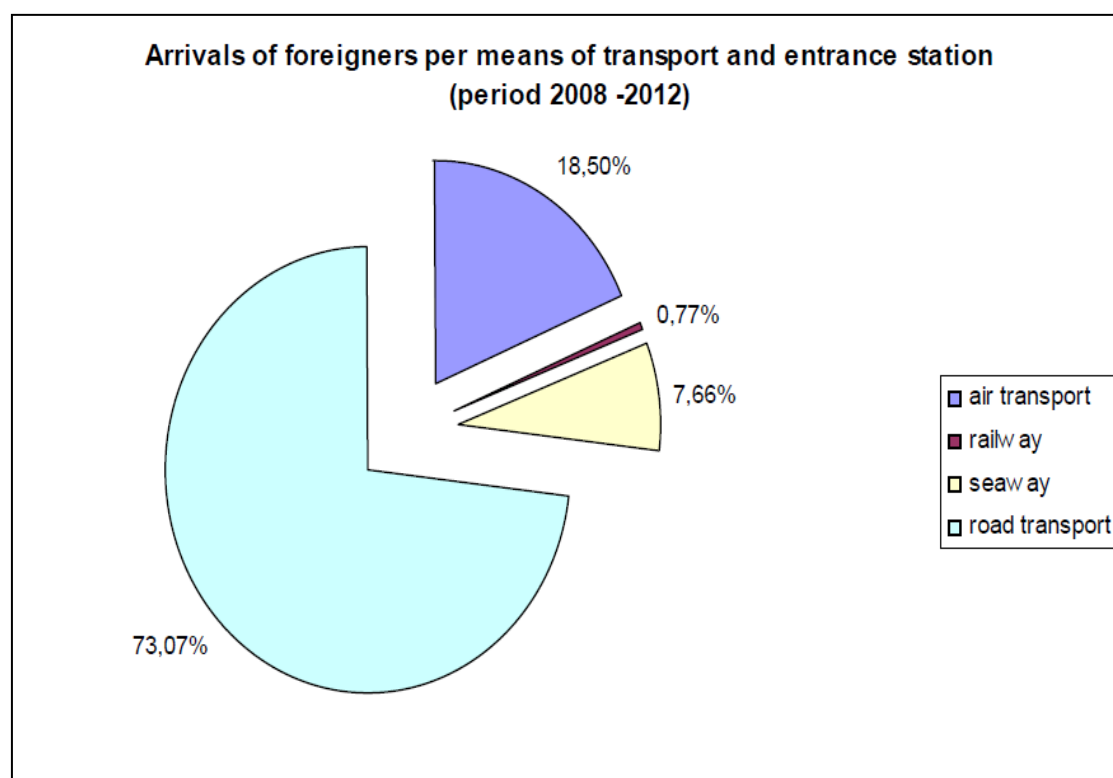
- The town of Thessaloniki has been benefited from the tourists coming mostly from Turkey. Having the Egnatia Odos ready but also the upgrades made on the Ipsala – Istanbul motorway, someone can reach Thessaloniki from Istanbul within 5 hours. Before the project this would take the double or even triple time. In addition to this, the highway which starts from Istanbul and reaches Thessaloniki has adopted international standards so it is much secure, something that motivates Greeks and Turkish tourists to use Egnatia for their travels, since the old road was pretty bad.
- The town of Ioannina and the Epirus / Western Macedonia region has benefited from Egnatia. This is a mountainous region which has one key town (Ioannina) and several small villages into the mountains of Epirus. This area is not only the poorest area of Greece, and one of the poorest areas of EU along with Western Macedonia, but it has been also the case of a region where it is very hard to reach the villages especially during the winter with all passages blocked from snow. This is the area where Katara passage is found, which used to be closed for several weeks each year due to snow-storm. Egnatia road has managed to overcome this problem and to provide the local area with a permanent solution which is to ensure that tourists would be able to reach the area no matter if it is winter or not. The area includes several ski centers and major winter resorts. The operation of Egnatia Odos has allowed the free flow of tourists and commodities from and to Epirus and Western Macedonia. Ioannina has also benefited since two 5 star hotels with conferences rooms have been developed, something that has attracted premium tourists along with the development of quality driven tourist resorts in Epirus' villages.

- The area of Thrace has been also developed. For example, Evros region which has many natural parks has managed to become a key destination for sustainable tourism. Till the late 2000's this region did not exist on the tourist maps. However the construction of Egnatia Odos along with the Axis which goes to the Greek-Bulgarian borders have contributed on the emerge of the area as a destination for premium tourism but also for those who seek to explore the natural beauty of Evros. Furthermore, Komotini and its local villages have benefited from Egnatia. This is a very special case, since this is an area inhabited from a large number of Greek Muslims. This area has been isolated for many years. The operation of Egnatia Odos along with several other legislative changes has opened this region for tourists and trade. Many relatives of the native people of Rodopi are coming from abroad to see their relatives while many other Greeks are coming to visit the virgin forest of this area.

The arrival of the foreigners should not be mainly attributed to tourism, but it also includes arrivals related to work. The arrivals of foreigners using the road or the railway are connected with the use of the Vertical Axis with the Egnatia Motorway. Regarding the arrival of foreigners using all transport means during the period 2008-2012, air transport reached the rate of 71.64%, while road transport rate was higher 73.07%. The road arrivals through the Egnatia Motorway and Vertical Axes represent 21.89% of the arrivals of the country. The lowest rate with 0.23% for the country and 0.77% for the region examined is observed in the railway transport, as shown in the table below (Egnatia odos, 2013):

ARRIVAL OF FOREIGNERS PER TRANSPORT MODE, 2008-2012						
	TOTAL OF 2008-2012		PERCENTAGE (%) 2008-2012 ON THE TOTAL (all means)		PERCENTAGE OF ZONE (%) IV 2008-2012, ON GREECE	
	ZONE IV	GREECE	ZONE IV	GREECE	PER MODE	ALL KINDS OF TRANSPORT MODE
AIR TRANSPORT	4.312.005	55.741.124	18,50	71,64	7,74	5,54
RAILWAY TRANSPORT	178.756	178.756	0,77	0,23	100,00	0,23
SEA TRANSPORT	1.784.047	4.857.694	7,66	6,24	36,73	2,29
ROAD TRANSPORT	17.028.124	17.028.124	73,07	21,89	100,00	21,89
TOTAL BY ALL KINDS OF TRANSPORT MODE	23.302.931	77.805.697	100,00	100,00	29,95	29,95

Source: ELSTAT, 9/2013



Overall, it can be said that Egnatia Odos has been a vehicle of development for the whole region. It has contributed on all variables, including tourism, trade, population index and other economic and development factors.

## 5. Conclusions

This thesis examined the contribution of transportation into the regional development, with the case of Egnatia. It is understood that the regional development is a complex issue and that the development of one region is a matter of many and different variables and fields. However, there is always one common objective which is to close the inequalities and gaps between the various regions of EU. Also there is a case of creating infrastructure which will have two aims. The first one is to create transportation hubs and infrastructure which will satisfy the needs of citizens, such as to move from one place into another one. This is one of the key and most important aims. A second, also important, aim is to create transport infrastructure which will allow a region to develop in terms of economic and social indicators. For example, the use of Ports or of airports and motorways is not only to help the local residents to move into other areas, but it is serving also the scope to help local businesses to trade commodities with other countries or regions.

The last aim is being the focus of EU's regional policies but also of many countries. The transportation networks must be part of a wider international network. For example when we have to work upon the construction of a railway, this must not start only from one city and end up to another city within the same region or country. Instead, it must be part of a wider network which will include many different cities and regions. This will help not only the mobility of persons but also of commodities which is necessary for the development of a region.

We must not forget one thing, which is that today we have to deal with globalised markets. This means that the regions cannot be isolated and not to act as being in the middle of nowhere. They must consider themselves as being members of a wider community, such as of European Union, where trade is promoting through the transportation networks, which also promote wealth and bring prosperity for regions, especially those who need to develop their economies much further.

In order to have an effective transportation policy, there is a need to consider the membership of the region or of the country into a political or economical organization

that will promote trade and mobility, such as European Union. Indeed, as mobility increases in today's societies, the EU transport policy focuses on specific issues related to all Member States, such as traffic congestion (road and air), the oil dependency and greenhouse gas emissions. The applied strategy and the proposed funding aimed at upgrading the quality of transport infrastructure across the EU, and in finding ways to support the European transport sector in order to maintain its competitiveness in the rapidly growing global market.

Regarding the future, the major challenges for the transport sector in the EU as mobility increases in the societies of today, will be many. The EU policy aims to support transport systems and to enable them to meet the major challenges they face, such as:

- Two trains of high speed signals various European railway companies
- The new high-speed lines in the EU provide Europeans with secure, fast, comfortable and eco-friendly transport.
- Congestion: there is both road and air transport. Costs Europe about 1% of annual GDP, while both freight and passenger transport is expected to increase in the future.
- Dependence on oil: although modern transport consume less fuel, though the transport sector continues to supply oil for 96% of its energy needs. The oil will be increasingly scarce in the coming decades, and should recognize that increasingly comes from unstable regions of the world. By 2050, the oil price is projected to more than double compared to 2005.
- Greenhouse gas emissions: by 2050, the EU needs to reduce emissions from the transport sector by 60% (and 80-95% overall) compared with 1990 levels, if we want to limit only 2 ° C rise in global temperatures.

- Infrastructure: they have developed unevenly across EU countries. For example, in most of the eastern EU countries there is no special network for high-speed trains and conventional rail systems are usually in poor condition.
- Competition: the transport sector in the EU is facing ever stiffer competition from fast-growing transport markets in other regions of the world.

([http://europa.eu/pol/trans/index\\_el.htm](http://europa.eu/pol/trans/index_el.htm))

Hence, in the future we will expect more policies on transportation, which are going to be linked with regional development.

On the case of Egnatia, there are only positive signs. The project has been funded from EU and it constitutes a case of a successful investment from EU aiming at the increase of the welfare of its citizens. The 6 billion euro project which links North Greece with the rest of the world has contributed on many ways, including transnational trade with lorries coming from Europe and continue their trip to Turkey or to Eastern Europe, local trade, tourism and above all the chance to raise the standards of living in a very poor region.

The project has been made with the most effective environmental standards so to protect the virgin forests of North Greece and the species living there, including bears and eagles. At the same time, the project has overcome some of key difficulties such as the mountain terrain and the frozen passages in Epirus. This has contributed on the development of the area as a winter destination and the overall leverage of the area.

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