

## ON THE QUESTION OF LIMITS

The role of ecotones in the management and reintegration of transforming urban environments.  
Urban ecotones as territorial indicators and interfaces of urban reconfiguration.

*An applied study of the urban regional mosaic of the city of Thessaloniki, Greece*

*BOOK II - ANALYSIS ATLAS*

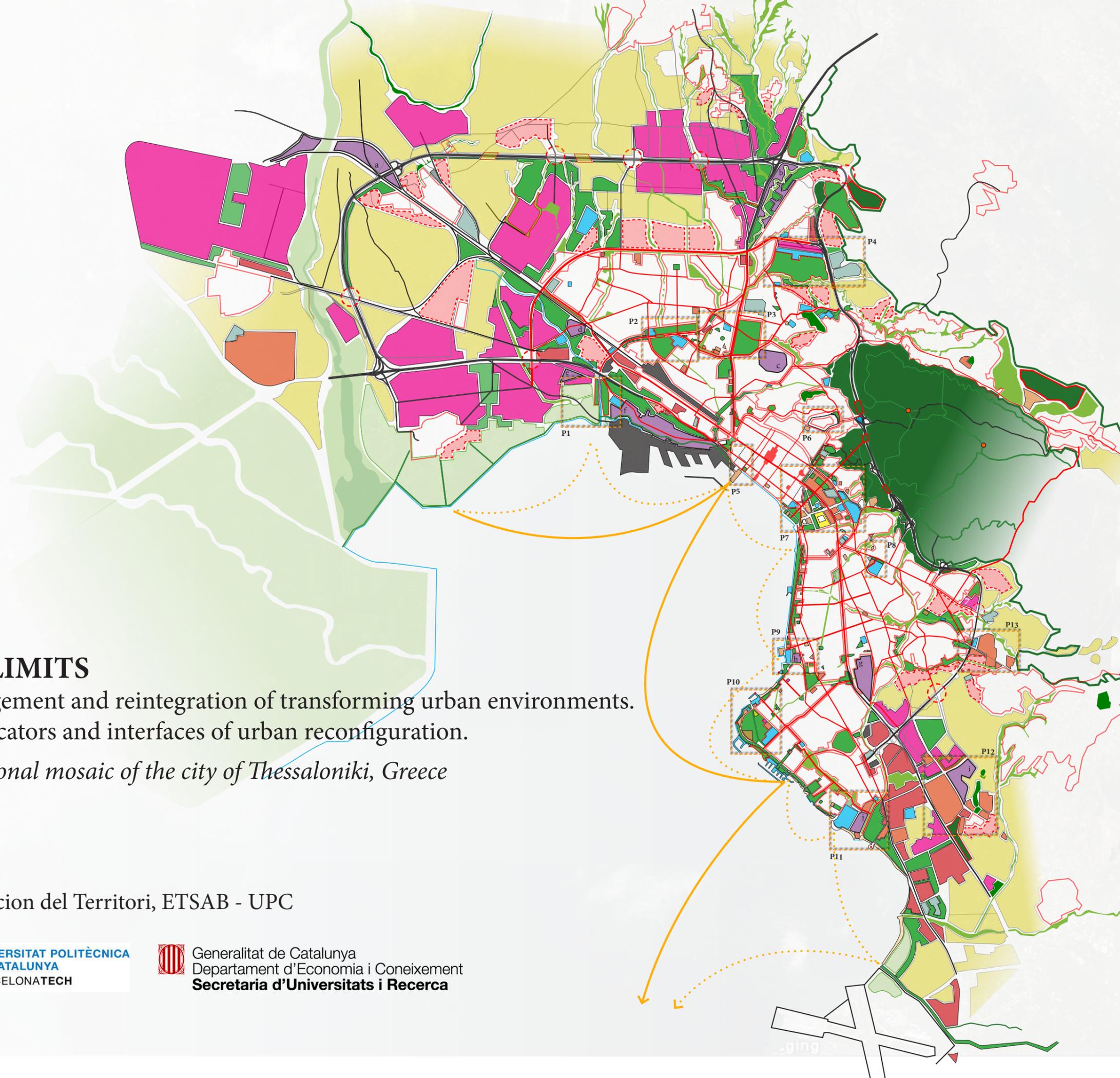
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## Doctoral Thesis - Tesis Doctoral

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*title* **ON THE QUESTION OF LIMITS**  
The role of ecotones in the management and reintegration of transforming urban environments. Urban ecotones as territorial indicators and interfaces of urban reconfiguration. An applied study of the urban regional mosaic of the city of Thessaloniki, Greece

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# Contents (book II)

Regional Contextualisation	4	Ecotone Analysis	62
<b>A. Southeastern Europe: <i>The Emerging Balkan Mosaic</i></b>	5	<b>I. Re-imagining the central axis of Thessaloniki</b>	64
i. The Balkans as a geographic & cultural Region	6	<i>An emerging metropolitan centrality</i>	
ii. Thessaloniki and its Balkan hinterland	7	i. Historical presentation	68
iii. Regional Dynamics: Present and future	9	ii. Transitions and transformations	72
<b>B. The Region of Central Macedonia: <i>Latent regional mosaic dynamics</i></b>	11	iii. The Central Axis area under consideration - uses & activities	74
i. The natural region	13	iv. Biophysical Matrix & Ecological Functioning	80
ii. Land Use Patterns	22	v. The inheritance of the Hébrard Plan & the planning dimension	84
iii. The Regional Urban Network	28	vi. Flow Analysis - Mobility assessment	96
iv. The emerging regional mosaic	36	vii. Updated conditions along the axis	99
v. Natural Regional Structure / Scales of opportunities	38	viii. Situations Detected - Risks and Opportunities	104
vi. Exploring the diversity of the regional mosaic	41	ix. General Conclusions on the Central Axis Area	109
<b>C. The Thessaloniki urban region: general characteristics</b>	44	x. Re-structuring the Central Axis	111
<b>D. Earlier &amp; contemporary plans for the city and the urban region of Thessaloniki.</b>	48	.....	
<b>E. First conclusions: <i>The Past as the Blueprint for the future</i></b>	56	<b>The West Double Arch - <i>A double arch for the larger regional structure.</i></b>	116
<b>F. Chronogramme of key historical events</b>	60	The Western expansions in the Hébrard Plan	121
		<b>II. The Inner West Arch</b>	124
		<i>The western walls as a diachronic city membrane</i>	
		i. The NW walls - The city walls as a city membrane	128
		ii. The Biophysical Matrix	138
		iii. Habitability - Indicators and conditions	141
		iv. Activity Assesement Fields and forces present in the urban fabric	143
		v. Mobility Assesement Flows and Nodes	151
		vi. The Ecotonal space of the Western Walls	152
		vii. The Western Walls - The planned dimension	156
		viii. National & International Competitions & studies	158
		ix. Situations Detected - Risks and Opportunities	164
		x. The Inner Arch Mosaic Restructuration	168

<b>III. The Exterior Arch</b>	<b>172</b>
<i>The latent structure of west Thessaloniki</i>	
i. Analysis Structure	174
ii. The Exterior Arc in the 1997 Cultural Capital Context	177
iii. The Biophysical Matrix of West Thessaloniki	188
iv. Habitability Assessment	191
v. Activity Assessment	199
Military Installations Analysis & Assessment	202
vi. Mobility Assessment	209
vii. Western Thessaloniki - The planned dimension	218
viii. Situations Detected - Risks and Opportunities	226
ix. Conclusions - The emerging structure & mosaic	230
x. The update Exterior Arc - Reprogramming the western fabric	238

<b>IV. The Peri-urban Canal</b>	<b>240</b>
<i>An urban spine for the entire east Thessaloniki</i>	
i. Spatial Structure & land use in East Thessaloniki	245
ii. The East Thessaloniki & Pylea Area in the past	250
iii. The biophysical matrix and habitability conditions in the area	252
iv. Contemporary regional urban structure	262
v. Flow Analysis - Mobility / Activity assessment	265
vi. The inheritance of the Hébrard Plan & the planned dimension	270
vii. Situations Detected - Risks and Opportunities	280
viii. Re-structuring the Regional Canal and the eastern Thessaloniki area	284

<b>V. The city Ring-Road</b>	<b>290</b>
<i>The contemporaneity of a limit</i>	
i. The ring road as a limit	291
ii. the ring road as an infra-structure	294
iii. Analysis by sections	
• first section: the west exterior ring-road	296
• second section: the Seich-Su forest edge	300
• third section: The East Inner Ring Road	304
iv. The emerging peri-urban structure	310
v. Situations detected - Risk & Opportunities	314
vi. Emerging Mosaic Synthesis: From edge area to urban interface	318

<b>VI. The seafront</b>	<b>322</b>
<i>An ecotone in flux</i>	
i. Thermaikos Bay - Presentation and Analysis	328
ii. The Thessaloniki Bay - Biophysical matrix	340
iii. Habitability Assessment	346
iv. Activity Assessment	348
v. Mobility Assessment	351
vi. Edge / Ecotonal areas	354
vii. The Transformation of the seafront: Projects & Processes	360
viii. Redesigning Thessaloniki's waterfront: The 1997 Competitions.	389
viii. Situations Detected - Risks and Opportunities	402
ix. A Seafront Synthesis	408
x. The Emerging Seafront Mosaic: From rigidity to resilience	410

<b>VII. Sources Cited</b>	<b>414</b>
<i>Case-study references</i>	

# 0. Regional Contextualisation

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This first chapter serving as a wider regional contextualization of the city of Thessaloniki includes parts of the project-thesis titled *ON THE QUESTION OF LIMITS: Reticulating the emerging city; urban ecotones, spatial networks, and ecological structure as instruments of configuration. A contemporary lecture of the territorial mosaic of the urban region of Thessaloniki, Greece*, presented by the author in April 2010 and approved for the posterior development of this research work on ecotones. The information in this paper is presented summarized and is not an exact copy of the original document.

The analysis looks at the general conditions and dynamics in 3 broad scales ( 4 in the initial work), first the Southeastern Peninsula, also known as the Balkan peninsula; the region of Central Macedonia, understood as an administrative and functional area; and lastly the urban region of Thessaloniki, the last zoom in this multi scalar approach in understanding the contemporary fabric of the city before entering in the specific analysis of the ecotonal areas. Before reaching the end of the chapter, some first results and conclusions are reached, pertinent to this scales but at the same time relevant for the subsequent levels and the intrascalar methodology set forth.



source: Google Earth, Black Marble dataset

## A. Southeastern Europe: *The Emerging Balkan Mosaic*

Initially, the second level of analysis in the project-thesis paper, this chapter covers the analysis of the wider Southeastern Europe, commonly denominated as the *Balkan peninsula*, and examines the position that the city of Thessaloniki holds within this particular diverse and complex broad mosaic context.

This chapter is presented in a summarized form, a synthesis that excludes particular and more outdated data, outphased now by the contemporary political and socioeconomic conditions and developments. Nevertheless it aims to understand the conditions, both natural (geomorphology, hydrology etc.) as well as anthropogenic (urban development, sociopolitical factors etc.) that have given rise to the contemporary mosaic. It also serves as an important scale of analysis, providing a wider reference contextual frame to base subsequent analysis, and comprehend in-depth past and present dynamics.

### CONTENTS

	page
i. The Balkans as a Geographical Region	6
ii. The Balkans as a cultural region.	6
iii. Thessaloniki and its Balkan hinterland	7
iv. Regional Dynamics: Present and future	9

## Thessaloniki in the Balkans



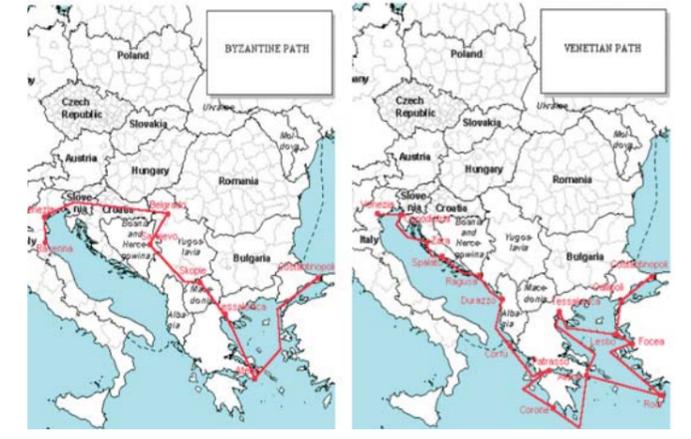
Corine Land Cover (source: EEA)



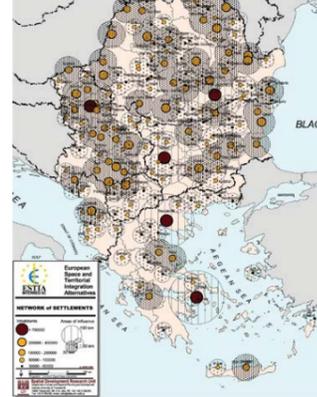
Geo-physical features\*



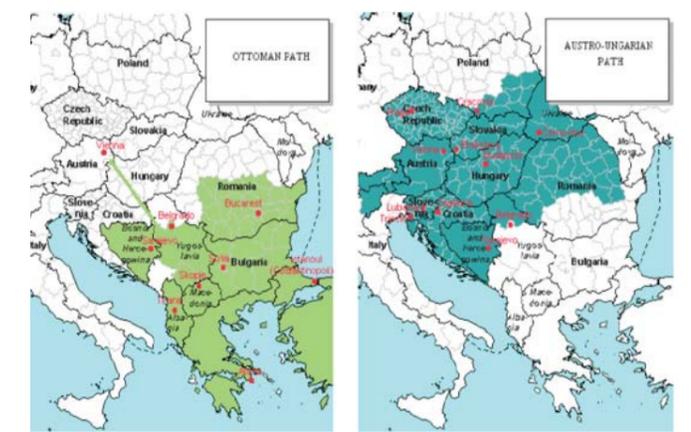
Cultural traits (source: Costa, R. & Bradaschia, M.)



Urban settlements\*



Balkan Metropolitan Constellation\*



source: (ESTIA - INTERREG IIC)

### i. The Balkans as a geographic & cultural Region

The Balkans, or often referred to as the Balkan Peninsula is a geopolitical and extended cultural region of southeastern Europe. The region takes its name from the Balkan Mountains, which run through the centre of Bulgaria into eastern Serbia and dominate the regional landscape. The Balkan Peninsula can also be defined as the area of southeastern Europe surrounded by water on three sides: the *Adriatic Sea* to the west, the *Mediterranean Sea* (Ionian and Aegean seas) to the south and the *Black Sea* to the east. Its northern boundary is established by the Danube, Sava and Kupa rivers. The region has a combined area of 550,000 km<sup>2</sup> and an estimated population of about 55 million people. The word *Balkan* comes from a Turkish word meaning “a chain of wooded mountains”<sup>1</sup>. The ancient Greek name for the Balkan Peninsula was the “Peninsula of Haemus” (*Χερσόνησος τοῦ Αἴμου*, *Chersónēsos tou Haímou*). Southeastern Europe is a relatively recent political designation for the Balkan states. Because of the negative connotations of the term *Balkan* (*balkanization*) and in an attempt to extend the wider regional limits, the use of the term Southeastern Europe has been suggested and adapted in many cases instead to avoid negative connotations<sup>2</sup>.

Most of the area is covered by mountain ranges running in a north-west to south-east direction. The main ranges are the *Dinaric Alps* in Slovenia, Croatia and Bosnia, the *Pindus mountain range* (also an *alpine formation*), spanning from southern Albania into central Greece, while in Bulgaria there are ranges running from east to west, the Balkan mountains on the east and the Rhodope mountains along the border with Greece. The extended mountain line formed by the Dinaric and the Balkan Mountains also mark an important water divide between the Danube basin and Mediterranean Basin. The highest mountain peak of the region is Rila in Bulgaria, with Musala at 2925m, Mount Olympus in Greece, being second at 2919m and Vihren in Bulgaria being the third at 2914m. This pronounced geomorphological features also mark distinct climatic zones. On the southern coasts the climate is mild Mediterranean, with mild winters and hot summers, while in inland one finds a more moderate continental climate with a weak Black Sea influence in the east coast. In the northern part of the peninsula and on the mountains, winters are frosty and snowy, while summers tend to be hot and dry. In the southern part and on the coast there is evergreen vegetation. In the inland there are woods typical of Central Europe (oak and beech, and in the mountains, spruce, fir and pine). The tree line in the mountains lies at the height of 1800–2300 m. The soils are generally poor, except on the river plains and valleys where areas with natural grass, fertile soils and warm summers provide favourable conditions for agriculture<sup>3</sup>. Elsewhere, land cultivation is mostly unsuccessful or low-

intensive given the mountainous geomorphology, hot summers and poor soils<sup>4</sup>. Nevertheless, certain types of cultivations, such as olives and grapes, flourish having adapted through the time to the regional conditions.

The Balkan region was the first European area to experience the arrival of farming cultures in the Neolithic era. The practices of growing grain and raising livestock arrived in the Balkans from the Fertile Crescent by way of Anatolia, and spread west and north into Pannonia and Central Europe<sup>5</sup>. The identity of the Balkans is dominated by its geographical position; historically the area was known as a crossroads of various cultures. It has been a juncture between the Latin and Greek bodies of the Roman Empire, the destination of a massive influx of pagan Slavs, an area where Orthodox and Catholic Christianity met, as well as the meeting point between Islam and Christianity<sup>6</sup>. In pre-classical and classical antiquity, this region was home to Greeks, Illyrians, Paeonians, Thracians, Dacians and other ancient groups. Later the Roman Empire conquered most of the region and spread Roman culture and the Latin language but significant parts still remained under classical Greek influence. During the Middle Ages, the Balkans became the stage for a series of wars between the Byzantine, Bulgarian and Serbian Empires and by the end of the 16th century, the Ottoman empire had become the controlling force in the region and up to the beginning of the 20th century. In the passing of these centuries the frequent Ottoman wars with European powers fought in and around the Balkans, and the comparative Ottoman isolation from the mainstream axes of economic advance (reflecting the shift of Europe’s commercial and political centre of gravity towards the Atlantic), the Balkans had been rendered as one of the least developed areas of Europe<sup>7</sup>.

The Balkan nations began to regain their independence in the 19th century (Greece, Serbia, Bulgaria, Montenegro), and in 1912–1913 a Balkan League reduced Turkey’s territory to its present extent in the First Balkan War. After the Second World War, the Soviet Union and communism played a very important role in the Balkans when during the *Cold War*, most of the countries in the Balkans were ruled by Soviet-supported communist governments. Greece remained the only country that was non-Soviet affiliated, but was also the only country in Europe to which the cold war culminated in a civil war, with numerous of the defeated soldiers

4. EC, Institute of Environment and Sustainability - Joint Research Centre: Organic Matter in European Soils.

5. Jelavich, B (1983)

6. Sowards, S. (2008)

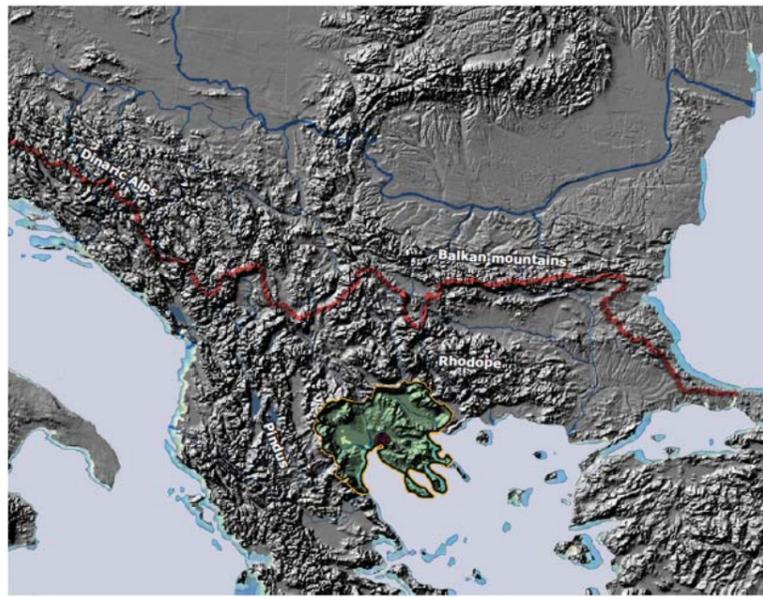
7. Ibid.

1. Jelavich, B (1983)

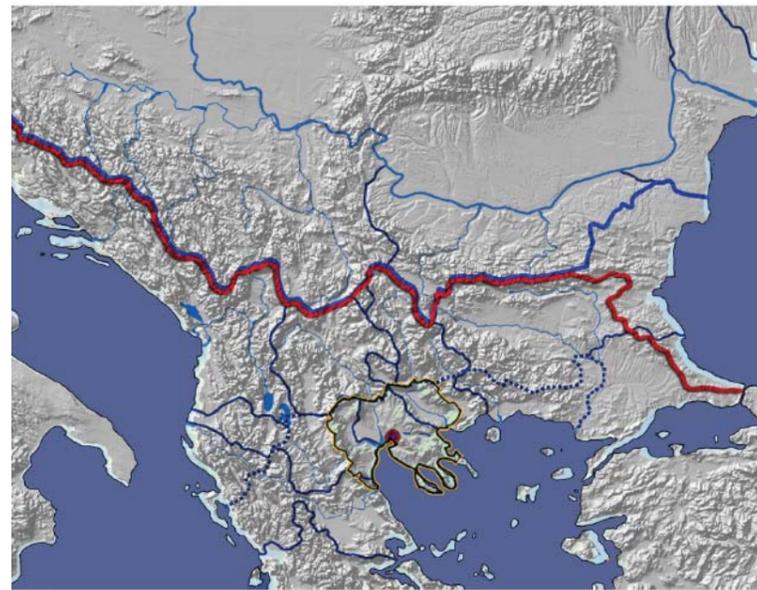
2. Ibid.

3. EEA, Agricultural Areas based on EUNIS habitat classification, 1998

**Geomorphology** (data source: EEA)



**Hydrology** (data source: EEA)



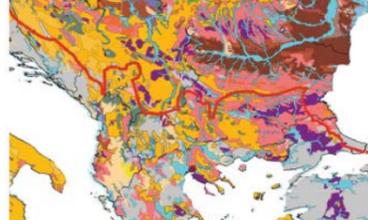
**Ecological Network** (data source: EEA, ECNC)



**Geo Formations** (source: Mountrakis, 1994)



**Soil Map of Southeastern Europe** (source: European Soil Data Center)



**Main geomorphological features**



**Hydrological divisions**



**Ecological regions**



**Mird migration routes** (source: ECNC)



seeking refuge in eastern European communist states<sup>8</sup>. However, despite being under communist governments, Yugoslavia (1948) and Albania (1961) soon fell out with the Soviet Union. Albania on the other hand gravitated toward Communist China, adopting an isolationist position. The only non-communist countries were Greece and Turkey, which were also members of NATO. In the 1990s, the region was gravely affected by armed conflict in the former Yugoslav republics, resulting in a controversial military intervention by NATO forces, and the subsequent fragmentation that took place with the emergence of new nation-states. The status of Kosovo and ethnic Albanians is still mostly unresolved, while disputes still exist in between Greece and FYROM on the name of Macedonia.

As far as European membership goes, Greece has been a member of the European Union since 1981; Slovenia and Cyprus entered in 2004 while Bulgaria and Romania joined in 2007. It is also important to stress that with the 2007 expansion a new perspective reopened in the Balkan, Black Sea and Mediterranean that could potentially create new and re-establish old links within the new context<sup>9</sup>. The new situation is expected to promote the deepening of cooperation and integration of the different national and regional economies. The region of central Macedonia and the city of Thessaloniki are affected by the aforementioned changes to a great extent. The new geopolitical order taking form today in the regions is not sufficient to upgrade the city and the regions status. Certain actions, especially projects related with transport and information networks, connectivity need to be prioritized and completed, before more accurate and reliable speculations can be made about a possible future development on a regional level<sup>10</sup>. In 2005, the European Union decided to start accession negotiations with various candidate countries in an attempt to gain greater access to the Black Sea and promote cohesion efforts along its eastern frontiers. The Balkans today is a very diverse ethno-linguistic region, being home to multiple Slavic, Romanic, and Turkic languages, as well as Greek, Albanian and various others. Through its history many other ethnic groups with their own languages have inhabited the area, among them Thracians, Illyrians, Romans, Pechenegs, Cumans, Avars, Celts and various Germanic tribes-folk. The Balkan countries are now found along land respective energy routes between Western Europe and Russia, the Middle East and South West Asia.

## ii. Thessaloniki and its Balkan hinterland

Following the presentation of the general conditions and dynamics present in the Balkan peninsula and Southeastern Europe in general, this next part will try to put into context the city of Thessaloniki, and the region of Central Macedonia, in relation to the wider region.

### The geophysical features

The connection of the city of Thessaloniki with the Balkan hinterland can be understood better, if viewed in relation with the local geomorphology and the routes that have developed historically adapting to regional conditions. The city of Thessaloniki, is situated in an extended valley formed in the crossing of the neo-alpine formation on the west (featuring the Pindus mountain range and the Dinaric Alps) and the Rhodope-Balkan mountain-range on the north. This continuous mountain line forms one of the major territorial geomorphological features of the region, the Danube-Mediterranean Basin divide limit. The mountainous land relief characterizing the region has historically made communication difficult and only possible through the river valleys. The valley of Axios, together with that of neighbouring Strymon are the main crossings from north to the Greek territory, and known historical communication corridors. These same valleys have historically provided fertile land for intensive agricultural purposes.

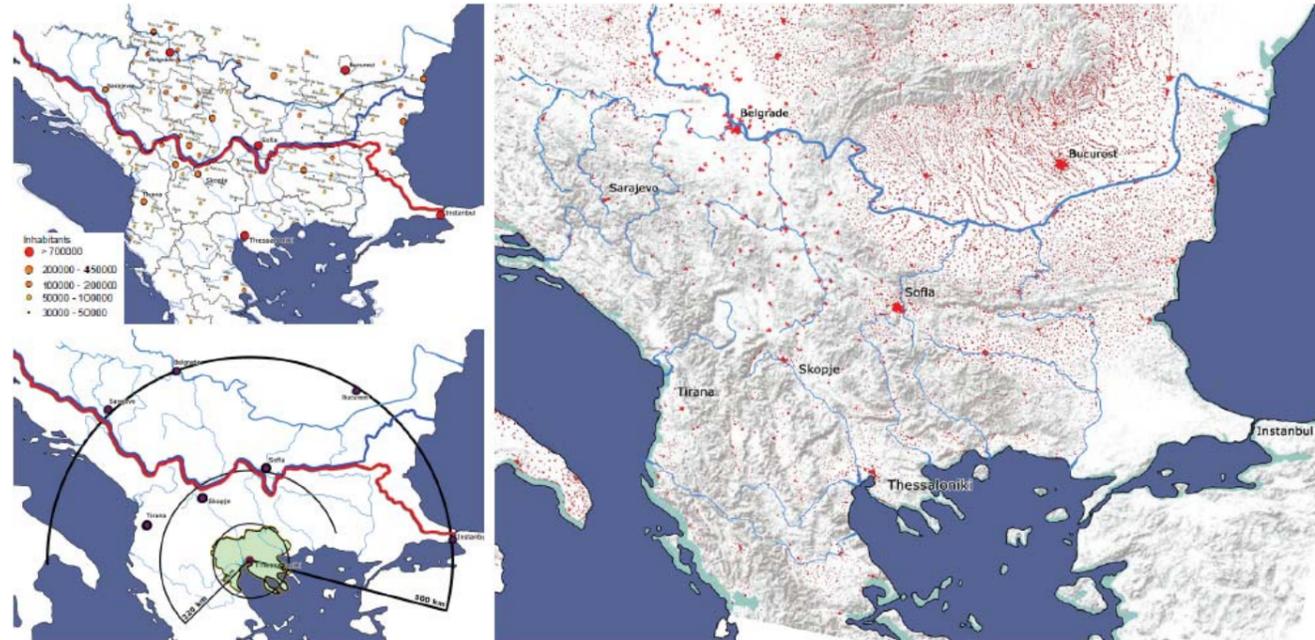
### The hydrological features

The hydrological features of the area, same with the geomorphological features tend to be quite pronounced. The present landscape is sculpted result of the river action over time. The main rivers crossing the region of Central Macedonia, are the rivers of Axios, Strimonas y Aliakmonas, each river presenting special characteristics. Even more, the first two rivers, Axios and Strimonas flow from the northern borders, serving as important ecological corridors, and international ecological management cooperation areas.

The *Axios River* is the largest river that runs through Central Macedonia and the second largest in the Balkans (after Ebro river), with a length of 380 km, of which only 76 km are in Greek territory. The width varies from 50 to 600 meters and reaches a depth of 4m. It flows from Mount Skardos (*Sharm*) at the Serbo-albanian borders, crosses the valley of Skopje, enters the Greek territory, crosses Central Macedonia to reach the Thermaikos Bay. The delta of the river in previous times was about 10 km northeastern from its present location. By the 5th century, the present plain of Thessaloniki was extensively covered by water and Pella the ancient regional capital, was a coastal city on the Thermaikos bay. Vardaris is also the name of a powerful prevailing northerly ravine wind which blows across the river valley in Central Macedonia. At first it descends along the corridor formed by the river valley, usually as a breeze, but when it encounters the high mountains that form at the height of the Greek borders, and starts descending

8. Ibid  
9. Kafkalas G, (1998)  
10. Ibid.

**Urban area cover** (source: EEA, World Resources Institute)



on the other side, it gathers a tremendous momentum and brings cold conditions to the city of Thessaloniki and the entire Axios delta area. This tends to occur when atmospheric pressure over eastern Europe is higher than over the Aegean Sea, as is often the case in winter. *Strimonas River* is a river of almost equal length, a total of 392km, of which 274 are located inside Bulgarian territory and 118 in Greek. In the Greek territory, the river flows only within the prefecture of Serres and belongs to a to the drainage basin of eastern Macedonia. The Aliakmonas is the longest river in Greece, with a total length of 322 km, its entirety in Greek territory. It rises in the northern Pindus mountains on the border with Albania, before flowing southeast and then northeast through the Greek peripheries of West and Central Macedonia through the artificial lake *Polifitou*, then entering the plains briefly before discharging into the Thermaikos Gulf. The river provides irrigation for an extensive area on a regional scale, making it of great importance for the agricultural sector. The river forms the western portion of the plain delta area, an extensive delta area created by the rivers of Axios, Loudias, Aliakmonas and Gallikos, an important water habitat and landscape feature for the extended region.

**The Ecological features**

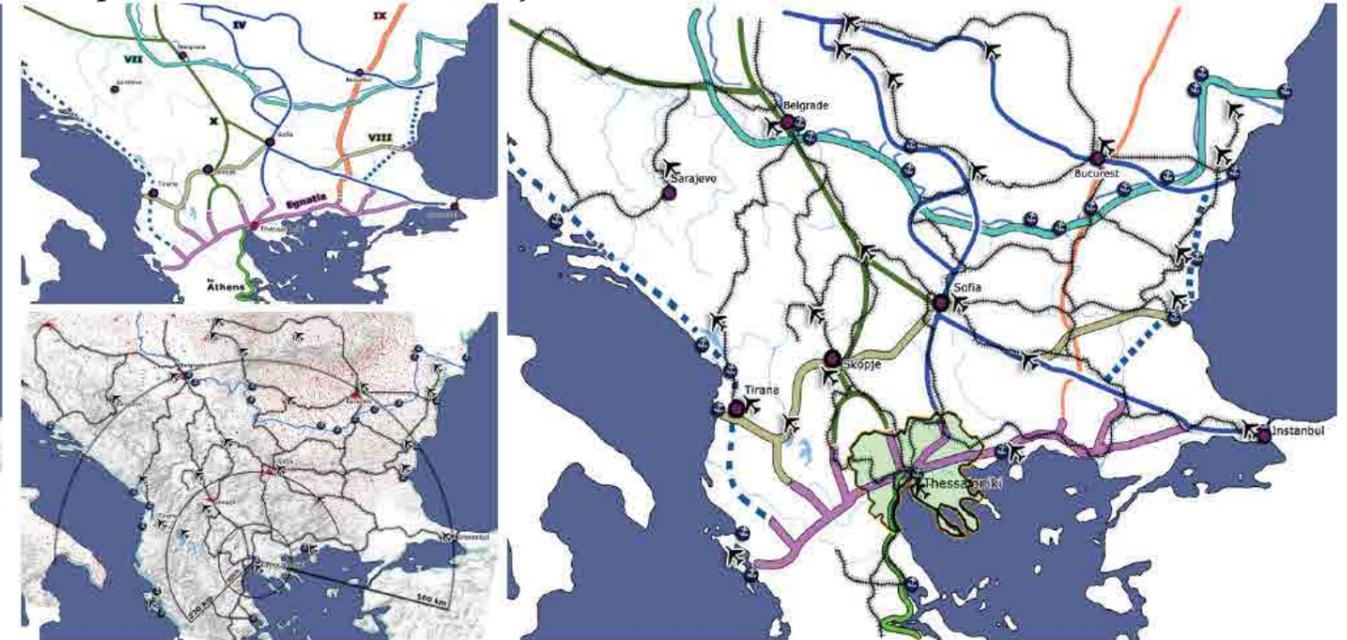
The indicative map of the Pan-European Ecological Network for the South-Eastern Europe in the previous page shows the key areas that are vital for biodiversity in the area, identifying core nature areas of European importance, existing corridors between these areas, and where new corridors could and should be established to meet the connectivity requirements of key species. The map illustrates the relevance of national and regional biodiversity within a European context; The map also draws attention to the changes in land use and infrastructure development that can have an impact on biodiversity, even when core nature areas are not directly affected<sup>11</sup>. Observing the map, it can be resumed that the principal ecological corridors form along **a**) rivers and river valleys **b**) continuous forested mountain areas **c**) along the route of certain important eco-habitats, especially with regards to bird species diversity. These corridors seem to have a north-south tendency, especially with respect to Central Macedonia. The region is situated in the extended ecoregion of the southeast Balkans. This extended region could be divided logically in two parts on the Danube/Mediterranean limit, and perhaps an additional zone on the southern strip along the coast (due to climate variations and proximity to the coast). The region then presents considerable connectivity **a**) along the Axios/Bardar river to the north past the national borders and into the FYROM, **b**) towards the east and south, following the coastal ecosystems and the influence of the sea, **c**) limited connectivity on the west through the mountains.

**The Urban Constellation features**

The city of Thessaloniki is located on the south coast of the Balkan peninsula, a location that holds certain strategic value, being the closest Balkan port to the Aegean Sea. Using the city of Thessaloniki as a base point three important radius/ranges emerge: **a**) the *regional range* (~90km), **b**) the *proximate Balkan range* (~220km) that includes 3 capital Balkan cities: Tirana (616,396 inh.) Skopje (616,396 inh.) and Sofia (1,404,818 inh.) **c**) the *far reaching range* (~500km), that includes Sarajevo (305,242 inh.), Belgrade (1,182,000 inh.), Bucharest (1,944,367 inh.) and Istanbul (12,697,164 inh.)<sup>12</sup>. The Balkan part south of the Danube basin line, seems to have a slower urban demographic development compared with cities north of that same line. The geomorphology is a major

11. ECNC, 2006  
12. INSTAT 2008

**Transport Networks and connectivity** (source: EEA, ESTIA INTERREG)



factor in the location and density of human settlements. Naturally, the plains and valleys have historically served as preferred sites for settlement, with climate and connection factors also playing an important role. An effect of the mountainous landscape is the natural subdivision of the region into small units, within which distinct ethnic groups have been able to sustain themselves in relative isolation, forming distinct local differentiations and peculiarities. Evenmore, the mountains have subdivided every sub area into vertical ecological zones, ranging from more valuable lowland farming areas to less valuable wooded or rocky uplands. This variety of ecological niches results in a greater variety of cultures in close proximity, but characterized by a common territorial fragmentation.

**The Transportation Network**

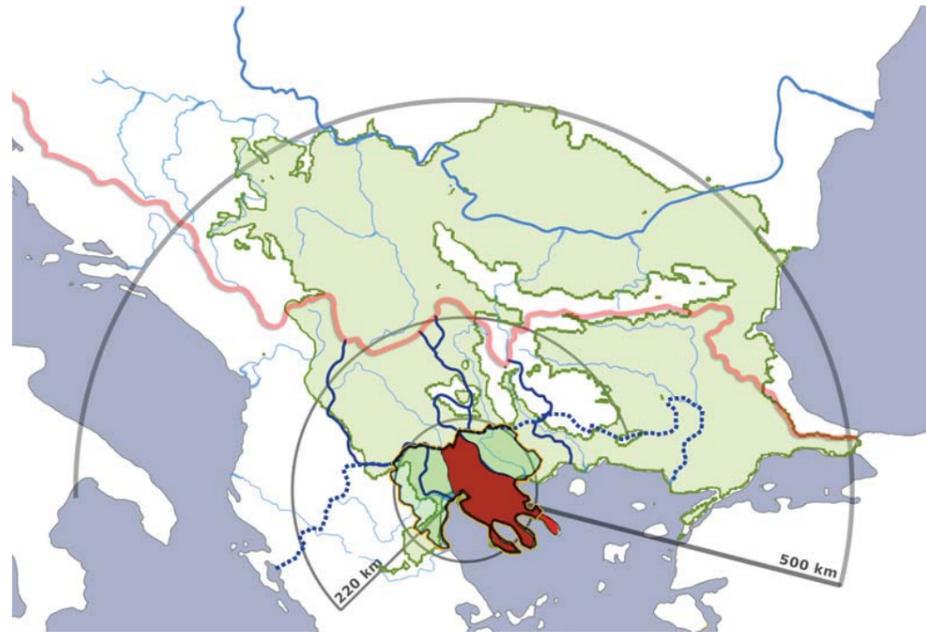
Historically, the mountains have served as physical obstacles, hampering communication efforts at regional level, whether political, economic or cultural. The ten Pan-European transport corridors were defined at the second Pan-European transport Conference in Crete, March 1994, as routes in Central and Eastern Europe that required major investment over the next ten to fifteen years, precisely to overcome the mentioned fragmentation. The tenth corridor was proposed after the end of hostilities between the states of the former Yugoslavia. These development corridors are distinct from the Trans-European transport networks, which include all major established routes in the European Union, although there are proposals to combine the two systems, since most of the involved countries now are members of the EU. Thessaloniki is situated on the crossroad of various important corridors.

- **IV**- Dresden/Nuremberg - Prague - Vienna - Bratislava - Győr - Budapest - Arad - Sofia - Thessaloniki
- **X** - Salzburg - Ljubljana - Zagreb - Beograd - Niš - Skopje - Veles - Thessaloniki
- **Egnatia motorway** - From Alexandroupoli to Igoumenitsa
- **IIAΘE highway** - Patra - Athens - Thessaloniki - Euzonoi

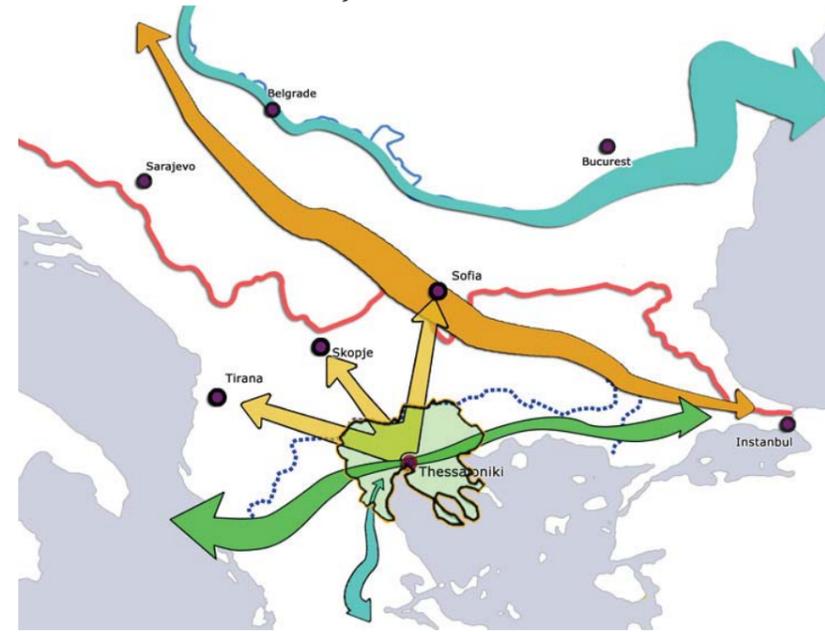
The port of Thessaloniki presents a shrinking overall activity, especially the passenger traffic, while the cargo and container traffic presents a slight increase over the years<sup>13</sup>. The airport of Thessaloniki with a total capacity of four million passengers, has demonstrated an increase in all passenger flights, while the cargo traffic has reduced, except international imports<sup>14</sup>, with a potential to take on a regional role, transforming into a major transport hub. The annual airport traffic for Balkan airports in 2008 was<sup>15</sup>: Tirana (1,267,041 pass.), Skopje (652,815 pass.), Sofia (3,230,696), Belgrade (2,650,048), Bucharest (1,768,000). The airport of Thessaloniki is the third airport in Greece in traffic after Athen's airport (16,466,491 pass.), Heraklion Airport in Crete (5,438,369 pass.) while the nearby airport of Kavala has a passenger traffic considerably low of about half a million passengers.

13. Thessaloniki Port Authority S.A. (2008), *Statistical Data 2008*  
14. Hellenic Civil Aviation Authority, Statistical data of Thessaloniki airport Makedonia for the period 1990-2007  
15. Tirana Airport, Facts and Figures About Sofia Airport, Traffic Statistics (2007 & 2008) Belgrade Airport, 2009 - Traffic Figures *World Airports Worldwide website*

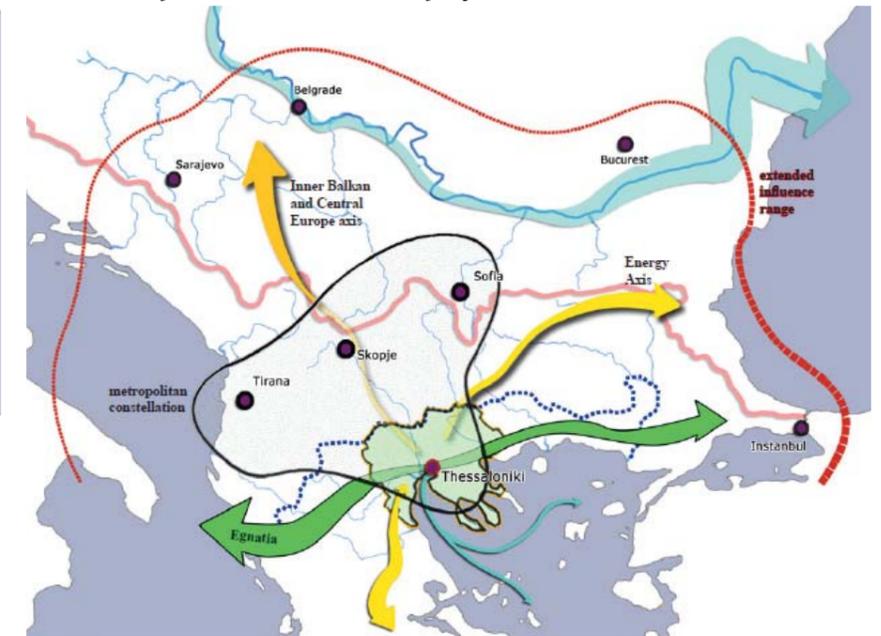
*Territorial conditioners* (data source: EEA)



*Corridors & connectivity*



*Balkan Dynamics and the city of Thessaloniki*



### iii. Regional Dynamics: Present and future

As demonstrated from the prior analysis the city of Thessaloniki is presented with certain relative advantages which can be summarized as: **a) geographical**; its strategic place in the Balkans and a key point in European planning **b) cultural**; a rich historical heritage, the multi-cultural structure of the population and a traditionally strong tourist industry, **c) economic**; skilled labour force with a strong scientific base, strong economic base in trade and services, and a growing number of small businesses<sup>16</sup>. While the disadvantages are **a) infrastructure related**; bad quality or lack of public infrastructure, with traffic jams in rush hours, uncontrolled urban growth of the city and lack of quality in urban planning, **b) social**; high unemployment, corruption and serious social inequality within the city limits **c) administrative**; inefficient administration, combined with political instability and a weak economic base.

The city of Thessaloniki, due to reasons explained, seems to have developed two level of interactions with its neighbouring regions. Firstly a first level of interaction due to proximity with the neighbouring capital cities of Tirana, Skopje and Sofia and a second more extended front of interaction with an inner-Balkan, Europe perspective. On the first level, between the four cities of metropolitan constellation mentioned, Thessaloniki has the highest percentage of the population not having any contact in any of the other three cities and the lowest percentage of people having one or two contacts in the other three cities. This can be explained by the fact that traditionally, contemporary Thessaloniki was orientated towards Western Europe, and especially after WWII and the subsequent *Cold War era*. With the introduction of Greece in the E.U. these orientations became even more pronounced, and remained so after the new political situation in the Balkans changed. The opening of the borders did not have as much effect for Thessaloniki as for the other three cities, since people from Thessaloniki were already enjoying free access to European capitals. In general, people from Thessaloniki have more contacts with Sofia and less with Tirana<sup>17</sup>. The political changes of the 90s found the four cities without any recent structure of sound economic cooperation among them. The new situation, though, in the Balkan Peninsula, and the development prospects of the area as a whole, encouraged initiatives with a steady growth. In the cases of Sofia, Skopje and Tirana, the attitudes in these urban centres also reflect the national attitudes, since they are the capitals and driving forces of the equivalent countries. In the case of Thessaloniki, things are more complicated, since it has been overshadowed by Athens a national capital and epicentre, but it is struggling to develop a character of its own, as a metropolis of the Balkans<sup>18</sup>. On the second level, a more extended radius comes to demonstrate the extended range of influence the city can have on the inner Balkan core and the corridor leading to Central Europe. On the eastern front, this outreach is influenced by the *Energy* routes, especially gas and oil pipelines, and the emerging markets of Bulgaria and Romania that have recently entered in the common European market. While on the west, the city influence opts for a more cultural outlook, in an attempt to establish economic and cultural cooperation with Central and East European countries, overcoming geographical constraints.

Tourism has been important for Thessaloniki for the most part of its recent history. This was facilitated by its character as a transport centre, served by all means of transportation (road, rail, air, sea), its rich Macedonian, Byzantine and Orthodox Christian heritage and the proximity to the beaches of Halkidiki and Pieria. The last years there is also a dynamic but still limited entrance of foreign capital invested in tourism especially from Eastern European and Ex-Soviet countries as well as other newcomers.

16. RIMED Report 16, p.14

17. RIMED Report 15, p.43

18. RIMED Report 15, p. 40

The potential opportunities arising for Thessaloniki in this updated Balkan context are: **a)** Implementation of needed European policies for urban and regional development **b)** Preparation of adequate proposals for regional projects to achieve a favourable treatment in the allocation of European Union funds **c)** Use international and regional connections to promote further cooperation establishing stable and peaceful relations with neighbouring countries, **d)** Establish a coherent road, train and air network with other metropolitan areas in South-eastern Europe, **e)** Take advantage of European know-how to propose adequate planning for the regional development of the Thessaloniki urban region, **f)** Attract quality foreign investments in services, cargo and commerce, **g)** Export high quality products to international markets, **h)** emerge as a multicultural cohesion node in the region.

In the contemporary debate about urban development the role of creating synergies seems to be a significant factor. A type of this territorial collaboration is usually achieved through the creation of clusters and networks. Clusters can be important constituents for regional economic integration. The first is the theory-based assumption that regional specialization in interlinked activities of complementary firms creates synergies, increases productivity and lead to economic advantages. In terms of policy interventions, regarding all metropolitan cities both in the proximate and in the extended Balkan region in order to jointly strengthen their advantages and face their weaknesses is the participation in cooperation in regional programs launched and funded by the European Union. Secondly, enhance their trade relations, while focusing on their exports. Then, another cooperative policy could be the establishment of joint ventures by private firms in order to build communication and diffusion canals, through which the cities could gain by synergies in investment, research, knowledge and expertise. Related to this last point is also of great importance the scientific cooperation among universities and research centers of these cities in order to enhance the research and scientific base. Environmental issues such as river basin management, is another important and critical area in which trans-regional and trans-national cooperation will be needed and may prove crucial in resolving many ongoing points and areas of conflict.

The analysis of the Balkan territorial and the city of Thessaloniki, will be useful when continuing with the next chapter of the analysis of the region of Central Macedonia, and trying to correlate patterns and dynamic across different levels. Both spatial data and specific conclusions will serve as point of reference and departure for the next and subsequent levels of analysis.



(right) Regional and macro-regional structure  
 (left page) *Macedonia Landscapes* by Franz Johann Joseph von REILLY,  
 Vienna 1789  
 (source: National Map Archives)



## B. The Region of Central Macedonia

### *Latent regional mosaic dynamics*

Initially, the third level of analysis in the project thesis paper, this chapter covers the analysis of the regional level of the administrative region of Central Macedonia, located in northern Greece, of which the city of Thessaloniki is the capital. This chapter examines the position of the city of Thessaloniki within the regional structural and functional scheme, understanding the diverse and complex mosaic dynamics.

This chapter is included and presented in this paper as a base for the subsequent analysis. The regional scale chosen serve as a point of connection with the previous scale (*Balkan*) but also as a reference when performing the specific ecotone analyses. It aims to understand the conditions, both natural (geomorphology, hydrology etc.) as well as anthropogenic (urban development, socio-political factors etc.) that have given rise to the contemporary regional mosaic by looking at the regional scale but also by performing intended zoom-ins. It also serves as an important scale of analysis providing an ecological structure contextual frame to base subsequent analysis, and comprehend in-depth past and present dynamics.

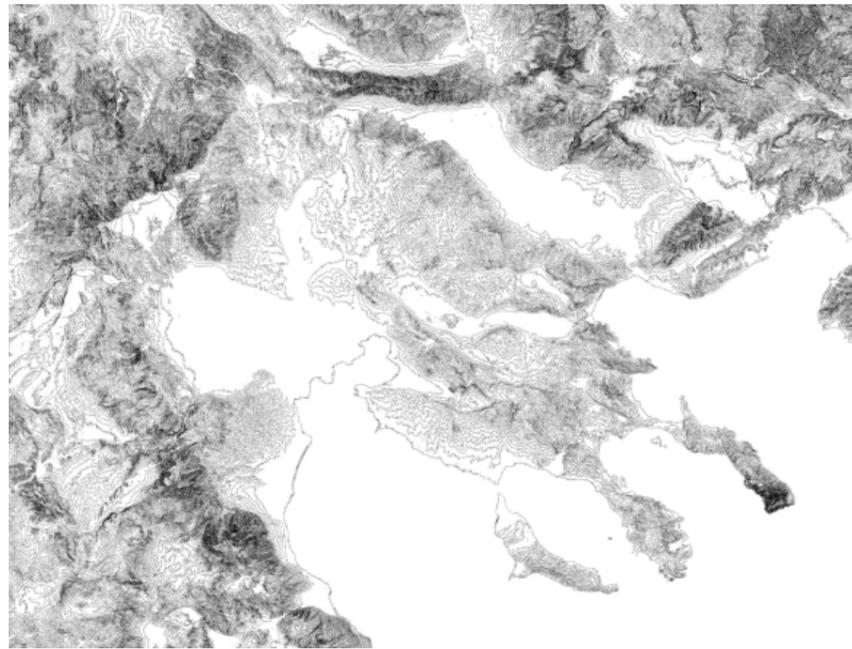
### CONTENTS

	page
o. Introduction / contextualization	12
i. The natural region	13
ii. Land Use Patterns	22
iii. The Regional Urban Network	28
iv. Natural Regional Structure / Scales of opportunities	38
v. Exploring the diversity of the regional mosaic	41
vi. The Thessaloniki urban region.	44
vii. Attempts to spatially organize the urban region of Thessaloniki.	48
viii. The Past as the Blueprint for the future	56

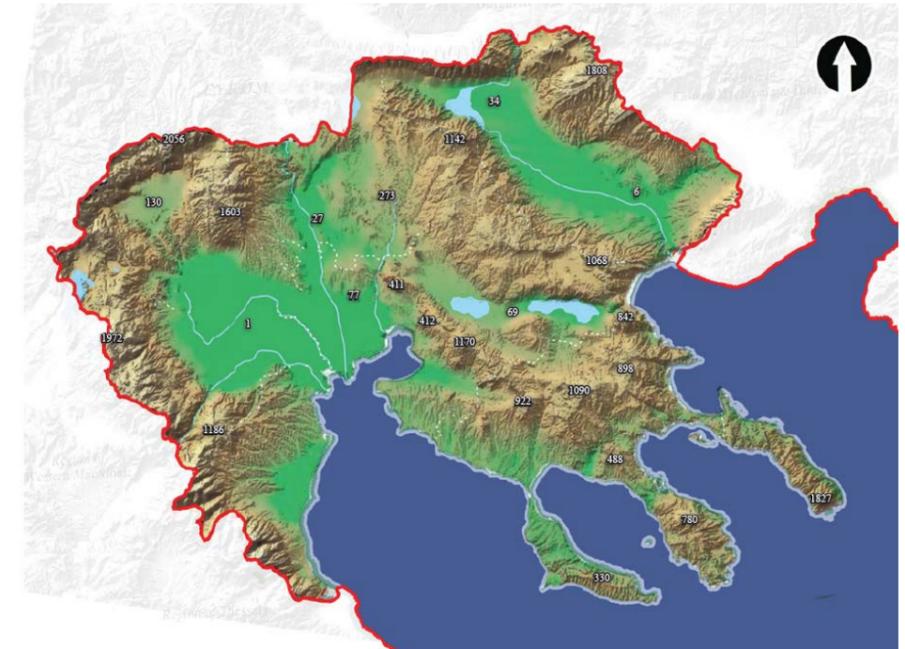
Aerial Photos (source: Bing maps)



Topography / contour lines (source: EEA)



Topography / ground relief (source: Region of Central Macedonia)



## Introduction / contextualization

Following the previous analysis of the wider territorial dynamics (*Balkan level*) that affect the city of Thessaloniki, this next part will focus exclusively on the region of Central Macedonia and its capital city. At first the geomorphology of the region will be analysed, in order to identify the natural processes (e.g. hydrological, geological) and their influence on the local landscapes. Next, land use and emerging patterns are identified and correlated, seeking to outline the regional urban network and its corresponding transportation network.

As far as location and territorial integration goes, the region of Central Macedonia is a region that combines elements of centrality with elements of periphery both at country, as well as European level. In all respects it is the predominant region in Northern Greece and the second most important in the country, after Attica. Undoubtedly, the main advantage of the region is its advantageous geographical location that has permitted the development of significant Greek investment activity in the nearby Balkan area. Still latent is the role of the region as a centrality, with the promotion of quality products and services to the markets of Eastern and even Central Europe<sup>1</sup>. This chapter will try to highlight the key features of the region that define it and offer its relative advantages but at the same time mark certain problems and obstacles that need to be tackled.

To achieve this goal the analysis of the regional level takes the following structure: First the *natural region* is analysed in order to detect and highlight the key elements that give form to the biophysical matrix and the structure the natural regional mosaic. Thus natural vegetation areas (forests, herbaceous areas, pastures etc) are considered in conjunction with water related areas (rivers, lakes, wetlands etc.) and the rest of the potential bioproductive areas of the region. The analysis performs selected zooms in key identified areas but also considers the sum of the region in its totality.

In continuation follows the analysis of the *land-use patterns* present in the contemporary mosaic. The land uses and related patterns provide useful insight into the spatial relations and production of space within the regional context and the respective anthropogenic activity. Agricultural activity is a key element to be considered, given the weight it has held traditionally as a productive and regional economic activity. Nevertheless

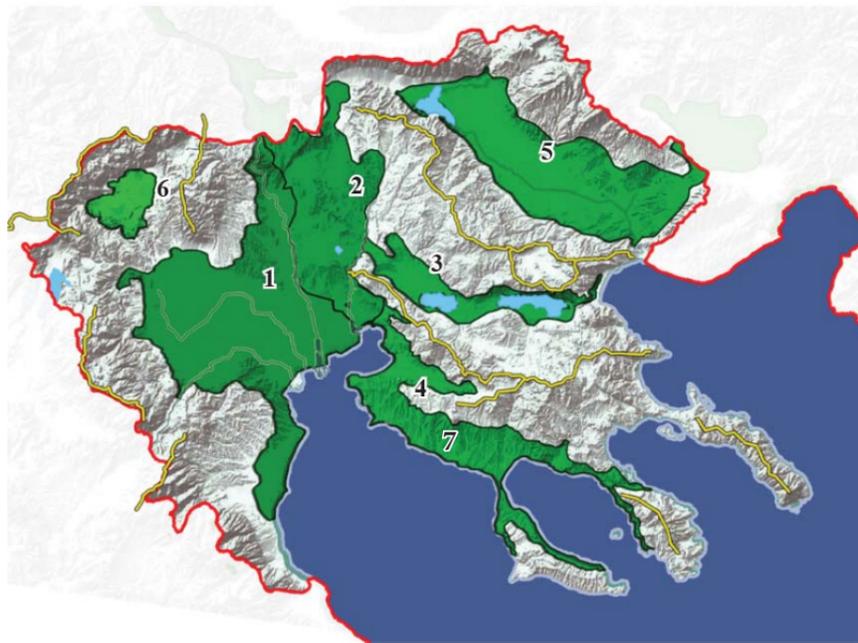
the diversity of landscapes and situations present in the region of Central Macedonia have created an equally complex and rich mosaic of activities, that need to be considered as well.

Next comes the analysis of the *regional urban network* understood as the expression of the ekistic logics present in the regional and national context. Thus the regional network and patterns of human settlements are examined in conjunction with the mobility networks that have developed over the years to give form and structure to the current urban / settlements network. The role of the city of Thessaloniki has been a key centroidal element in the region that has accordingly influenced past and contemporary dynamics and patterns. In this step a review of past plans or planning attempts is also undertaken, in order to examine the planned vector of the region, the logics behind planning decisions as well the physical outcome of these attempts as seen in the contemporary mosaic. Through this analysis some first conclusions / points can be made with regards to opportunities and problems present in the region. Their identification and classification is necessary before passing to the next section.

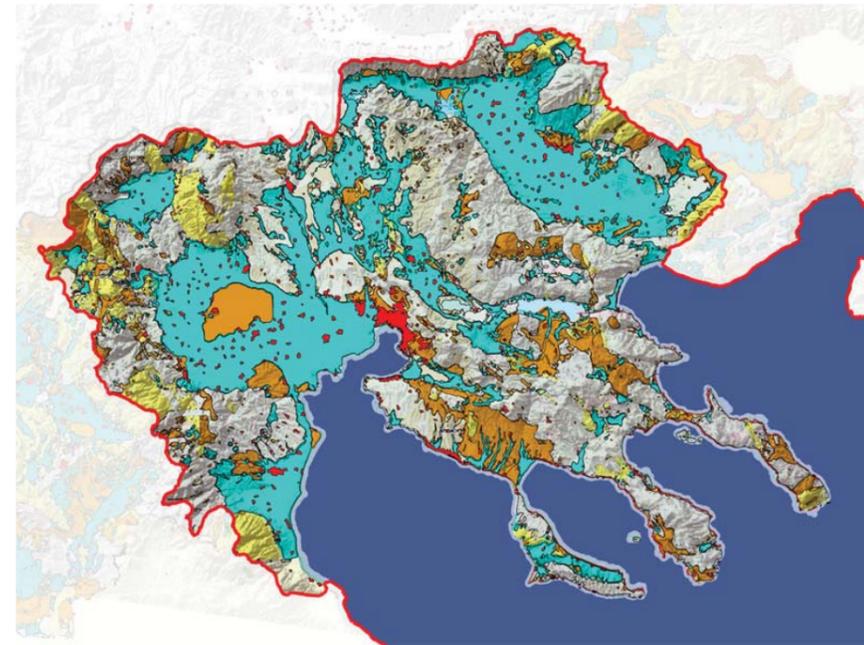
The last section in this chapter is the synthesis of the regional mosaic as it emerges through the analysis and the respective conclusions that were produced. The effort of producing a mapped out impression of the regional mosaic is vital for understanding the regional dynamics and for understanding and potentially taking advantage of the latent potential present in the region. A proactive vision of looking at the territory, eliminating mental and physical barriers in order to sow a vibrant and coherent mosaic that promotes synergy, encourages diversity and maintains a healthy ecological and human function. An identification of territorial ecotones is also performed at this stage, as a first step before passing to the specific analysis of the selected ecotonal areas.

1. RCM (2013)

Plains configuration



Hydrogeology (source: Region of Central Macedonia)



Protected areas under the Ramsar treaty (source: Region of Central Macedonia)



## i. The natural region

The observation of the regional geomorphology can provide the basis for the further analysis since it can provide important insight into ecological and ekistic processes that have taken place over time in the region. On first observation, it can be seen that the delimitation of the region of Central Macedonia, is consistent to a great extent with natural regions' limits, and the same could probably be asserted for the socio-cultural regions hosted in the region. Looking at the local geomorphology the following points can be made:

- A. The extended presence of the alluvial plains and valleys on the lower altitudes, with their fertile land and fragile ecology. These plains form the structural backbone of the regional landscape. The principal areas would be: **1&2.** the plains on the west of the city. **3.** the area north-east of Thessaloniki with the Lakes of Koronia and Volvi. **4.** The Anthemountas river valley with direction south-east. **5.** The valley of the Strimonas River with Serres in its center. **6.** The plain of Aridea on the north-west of the region. **7.** The seafront stretch starting from Thessaloniki with a south east direction towards Chalkidiki. The majority of these plains contain even today important surface water elements ( rivers, wetlands, lakes) and their respective ecosystems.
- B. The mountain ranges are an important feature of the regional landscape serving a double role of **a)** traditional natural barriers for human communication **b)** important core areas of flora and fauna. These mountain ranges are the continuation of larger mountain formations of the Balkan Peninsula, as seen in the previous chapter, and thus also hold an important ecological value of a wide territorial character.
- C. The coastline, that presents a great length due to the geomorphology that creates various peninsulas and smaller or bigger bays / gulfs. Thermaikos and Strimonas gulf are two important points, because they receive the affluent of big rivers but are also recipients of considerable industrial and urban runoff that compromises their ecological integrity.

The city of Thessaloniki is situated in the centre of the region, but at the same time it is located on the epicentre of various important converging ecological corridors, that will be highlighted in the analysis. On the other hand the valley of river of Strimonas, coinciding approximately with the limits of the Prefecture of Serres, is a region with distinct characteristics, *a bioregion*, and it can be clearly asserted from the beginning of this analysis that relations and dependency with the Thessaloniki urban area, should remain practically unchanged compared to the present situation.. This point should be clearly demonstrable by the end of this analysis.

For the purpose of this analysis, a thorough analysis of the whole region of Central Macedonia would be excessive and out of the point of focus of this study. Instead *four* distinct subregions were chosen, **A.** The Thessaloniki Plain with the Tri-delta Area as point of ecological focus **B.** The valley of the lakes Volvi and Koronia **C.** The river valley of river Strimonas. **D.** The Anthemountas river valley. The first two, serve for enhancing the analysis of the urban region of Thessaloniki, especially concerning its territorial ecological integration, . The third for supporting the earlier claim about the Strimonas river valley and its impact on the Strimonas gulf, and the fourth for presenting another case of a river valley of distinct characteristics.

Although it seems like the analysis has chosen traditional regional planning elements, e.g. the river basin, as elements of analysis, nevertheless it aims to understand these four corridors not in the traditional form, but instead as dynamic corridors with extended ecological zones that span a considerable part or the region, structuring it and thus are related to the urban expansion patterns of the city of Thessaloniki. Apart, water as an element, in all its form, is ever-present in the region, and an element threatened on various levels by human-related activities. An integral management of this resource provides opportunities for regional and transregional cohesion and organization. In continuation the analysis of the aforementioned areas, with reference to the geomorphology, hydrology and ecological features of each one is presented.

Tri-delta area (source: google maps)



## The Thessaloniki Plain and the Tri-delta Area

The Thessaloniki Plain is characterized by the presence of the diverse rivers and wetlands that have created an extended plain of alluvial deposits, and a resulting fertile plain after the reclamation works, that has traditionally served as farm ground for the city of Thessaloniki. The Axios River on the west of the city is known since the ancient times and is a key structural natural macro- element of the area. It is known today as one of the most important bird areas in Europe<sup>1</sup>. The site encompasses coastal wetlands and small lagoons in the Axios Delta, and alluvial forests dominated by Tamarix, Alnus and Salix trees. The area is important as a breeding ground for waterbirds and for this reason it is included on the Important Bird Areas list. More than 20, 000 waterbirds gather here during winter, covering over 109 species, many of which are endangered at Greek or European level<sup>2</sup>. The main human activities are rice production, cattle raising, fishing and aquaculture (mussel farming). Some of these activities pose a threat to these habitats, as is the case with illegal housing and intensive agriculture. During the early 20th century, up to 70% of the original wetlands were destroyed in the construction of the irrigation and drainage projects, as well and due to industrial and urban pollution and illegal sand extraction for the construction industry<sup>3</sup>. Ongoing conservation projects (by the Hellenic Ornithological Society and WWF Greece) focus on bird protection: wader species, the slender-billed curlew (*Numenius tenuirostris*), and the Pygmy cormorant actually one of the biggest colonies of its kind in Europe. It is designated as a Special Protected Area, Natura 2000 sites and included on the Ramsar list as wetland area of international importance<sup>4</sup>.

The site is located approximately at 20km southwest from the city of Thessaloniki. It is a natural ecosystem intensively modified by human interventions. The area is a complex wetland consisting of the Axios Delta in the east, the mouth of Loudias and the delta of the River Aliakmonas to the west, flowing into the gulf of Thermaikos and includes the lower

1. Hellenic Ministry of Environment, Physical Planning and Public Works, (1998)

2. Ibid.

3. Mylopoulos, G. (2006)

4. Hellenic Ministry of Environment, Physical Planning and Public Works, (1998)

river beds of the rivers and their estuaries with predominant salt marshes and extensive mudflats. Natural vegetation areas are crisscrossed by drainage ditches delineating the arable land. In spring and summer the neighbouring extensive rice fields are flooded, creating a unique and impressive landscape. The geomorphology of the area is almost flat, with alluvial layers on older formations due to the sedimentation of the rivers. Soils are mostly dominated by clay and silt. In the near estuary zone, soils are intensively saline and alkaline. The mean total volume of the sediments in the delta rises up to 14,260,000 m<sup>3</sup>/year<sup>5</sup>.

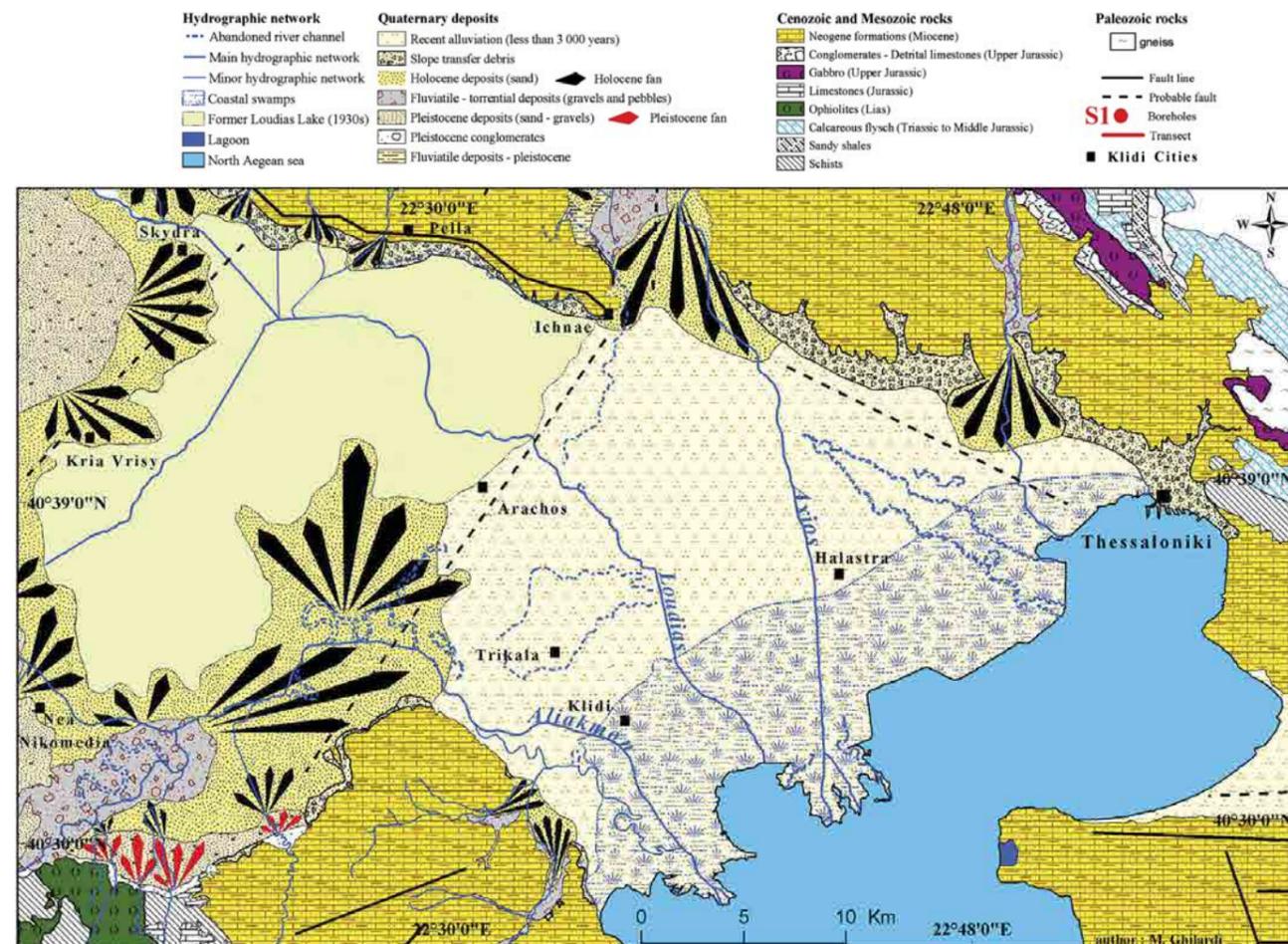
The river of Axios is the second largest river (380km) of the Balkan Peninsula after the river of Ebro (480km). The river of Axios is entering Greece from North from the neighbouring FYROM. Flood incidents do not occur in the Greek territory and all three rivers have been embanked. A diversion dam was constructed 28km upstream the river mouth, during the 1954-1958 period. The water reservoir behind the dam contributes to the daily water discharge regulation in the Axios irrigation projects. Downstream of the dam the river discharge can be less than 1 m<sup>3</sup>/sec, during peak irrigation period in dry summer seasons. During the 1961-2000 period Axios river experiences a 57% decrease in its discharge volume<sup>6</sup>. Next, Aliakmonas is the longest Greek river (320 km) having its origins on the north of the Western Macedonia region and crossing into the region of Central Macedonia to reach the tri-delta area. In 1974, a reservoir and a hydroelectric power plant were constructed and until today three successive smaller reservoirs were built downstream the main reservoir, mainly for hydroelectric power production. The Aliakmonas river is used for irrigation of a total area of 130,000 ha, as well as drinking and industrial purposes<sup>7</sup>. Loudias River is of a distinct character, as it functions more as a drainage channel, the outcome of drying out of the extensive lake and marshes of Giannitsa drained in the 30's, while in 1990, a dam was constructed, 9 km far from the mouth of the river. The river discharge fluctuates considerably during the year, depending on the season, while tides exist but with a very narrow range.

5. Ibid

6. Skoulidakis, N. (2009)

7. Mylopoulos, G. (2006)

## Hydrogeologic formations in the Tri-delta area (source: M. Ghilardi)



As far as water quality is concerned, from the three rivers Loudias is the most degraded one with the highest microbiological, organic and inorganic loads, originating from the agriculture industry. The levels of dissolved oxygen are low whereas heavy metals have often been detected in the sediments. Axios river experiences a considerable cross-border industrial and urban run-off contamination which is burdened even further by agricultural runoff and the increasing rate of industrial activity along its banks and especially the area span between the city of Thessaloniki and the delta area. River Aliakmonas nevertheless has the best water quality index among the three rivers mentioned<sup>8</sup>.

The aquatic ecosystem of the plain has a high hydrological value that has been compromised to a great extent by the extensive reclamation works. These works, changed the river route, redirecting its delta to the south-east, to avoid over-sedimentation of the Thessaloniki Bay by the river deposits. Before the construction of the dams, the wetland had important sediment trapping and water purification values, characteristic properties of wetlands. Today, there is still a value for groundwater recharge as groundwater from Axios and Aliakmonas rivers is used for drinking purposes. Moreover, surface and groundwater from the rivers is used for irrigation of the plains of Thessaloniki, Imathia and Pieria. The delta area is also directly connected with the wider ecosystem of the Thermaikos Gulf, bringing in a significant quantity of deposit material, rich in nutrients and dissolved material but also charged with contaminating loads originating from agricultural, residential and industrial use. The fresh water introduced by the rivers is an important factor for the general movement and renewal of sea water mass in the gulf of Thermaikos. Apart from the contamination from the rivers, the gulf receives a constant amount of contamination along its coasts from urban and industrial runoff<sup>9</sup>.

The climate is of Mediterranean type with hot and dry summers and cold humid winters. The average annual temperature is 14°C. The hottest month is July with maximum temperature 25°C, while the coldest is February with a minimum

8. Ibid.

9. Ibid

## Salonica Plain reclamation works (source: National Map Archives)



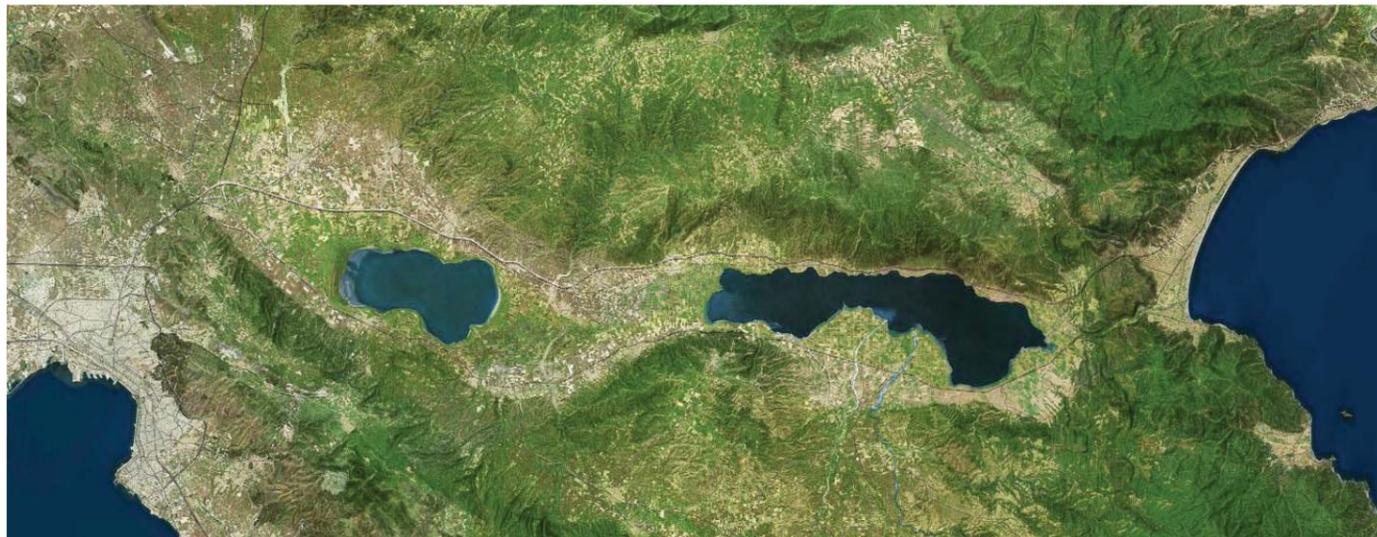
temperature of 5°C. The contribution of rainfall has high variations (The mean precipitation is 400mm). Winds of N/ NW direction predominate the plain, characteristic especially of the winter season<sup>10</sup>. The habitat diversity is the principal characteristic of the Delta area: Sandbanks which are slightly covered by sea water at all times, estuaries, mudflats and sandflats, not covered by sea water at low tide, large shallow inlets and bays. In more detail, six distinct vegetation zones that can be recognised are the following<sup>11</sup>:

1. The *halophytic vegetation*, which predominates the Delta.
2. The scrubland with tamarisk, which is found mainly at the edges of the river, but also further inland.
3. Rush meadows, which are found mainly in areas protected from the effects of salt water (this type of vegetation has shrunk as the meadows have been reclaimed for farmland)
4. Reed beds (with *Phragmites australis*, *Bolboschoenus maritimus* and *Typha latifolia*), which are found at the mouth of the river and along the riverbanks and drainage canals.
5. Hydrophytic species that flourish wherever there are shallow expanses of fresh water - irrigation canals, drainage ditches, rice paddies. Riparian forest is found along the banks of the river and on the many islets formed in the river bed. The principal species are poplar, alder and willow.
6. Rich communities of mussel beds that colonise the coastal sea water at depths of 1-10 m.

The area supports diverse bird populations including endangered and rare species. Rice fields occurring in the delta are used as feeding ground by birds. Parts of the estuaries and the rivers as well as sea water of less than 6m depth serve as spawning ground for fish populations of Thermaikos gulf and the N. Aegean Sea. The concentration of nutrients and the small water depths favour shell aquacultures.

10. Hellenic Ministry of Environment, Physical Planning and Public Works, (1998)

11. Ibid.



### Volvi & Koronia valley

Similar to the Thessaloniki Plain, the Volvi and Koronia valley is a natural ecosystem intensively modified by human intervention. The two freshwater lakes Volvi and Koronia are connected with a narrow strip of land by an open channel. The lakes are fringed with reed-beds (*Phragmites communis*) and patchy riverine woodland. The strip of land between the lakes supports mature plane trees which are used by nesting heron colonies. Both lakes are situated in the Mygdonian basin, which has a west-east orientation with a natural exit to the sea (Strymonikos Gulf) by Rihios river, running through the Redina gorge. The two lakes now occupy the deepest parts of the former Mygdonian Lake, which covered the basin a few million years ago<sup>12</sup>. Several petrographic formations contribute to the geology of the area, such as gneiss, granites, phyllites, amphibolites and very sparsely, limestone. The hydrology pattern of the valley consists of many intermediate torrents that flow into the lakes and Richios river which as the natural exit to the sea of Lake Volvi, with a constant flow of 0.2-0.3 m<sup>3</sup>/sec. This discharge volume is has dropped considerably compared to that of the previous decade<sup>13</sup>.

In the lowland coastal zone the soils are alluvial, fine-grained, with high nutrient concentration, considerable depth and high fertility. The brown forest and the acid brown forest soils predominate in the wider area. As far as water quality is concerned, Lake Koronia is nutrient-rich and murky, freezing for several weeks in the winter, and with a shortage of oxygen during summer. Volvi is poorer in nutrients and more clean, does not freeze in winter and is well oxygenated even in the hottest months. Indicatively to demonstrate the contrast the pH of Lake Koronia is 0.65 and of Lake Volvi is 9.4<sup>14</sup>.

Lake Koronia lies at 75 m above sea level, a little higher than Lake Volvi which lies at 37m. The two lakes were connected in the past through a natural channel, remnant of the Mygdonian Lake. During the last 10 years the volume of Lake Koronia has decreased dramatically due to the decrease of the precipitation and to the over-consumption of the lake water, reaching a 90% loss of its hydrological potential. The low water level of Lake Koronia in the later years resulted to the interruption of the natural intra-connection between the two lakes, which was artificially restored by a channel, constructed in 1980<sup>15</sup>. Koronia is shallow (1-4 m at the shore, and

up to 6 m at the centre) while Volvi is deeper (10-23.5 m). Lake Koronia has a bigger catchment area of 1,308 km<sup>2</sup> and Lake Volvi has a catchment area of 782,5 km<sup>2</sup>. The primary hydrological functions of the lake group basin are water storage and enrichment of the aquifer.

The climate of the subregion can be described as mesothermic with a dry hot period during the summer, whereas uplands, harsher weather conditions predominate year around. The air temperature fluctuates, January being the coldest month (mean temperature of 4°C) and July the warmest (mean temperature of 25°C). The mean air temperature is 14,9<sup>0</sup> C. The mean annual precipitation around the lake is approximately 415 mm. Winds of N, NW and NE direction predominate in the area<sup>16</sup>.

The lakes and their extended area present a high biological diversity at the species and habitat levels. On the hills south of Lake Volvi there are hard - leafed Mediterranean maquis followed by remnants of the ancient lakeside riparian forest of Apollonia, on the estuary of Melissourgos torrent. The other riparian forest of Redina, is situated in the valley of Richios river. Particularly valuable are the shallow waters with high primary productivity (which host an impressive number of aquatic plant species), and the reed-beds. At the edge of the lakes, large areas are covered by submerged aquatic vegetation and reeds, where a large number of fish species feed. The next outer zone includes semi-aquatic plant species (particularly at the eastern and western sides of lake Koronia). The outermost perimeter of this zone is the limit of the wetland that is surrounded by man-made habitats, particularly by cropland. The vegetation in the valley ranges from the beech zone on the mountaintops down to the zone of oak and chestnut<sup>17</sup>.

12. Mylopoulos, G. (2006)

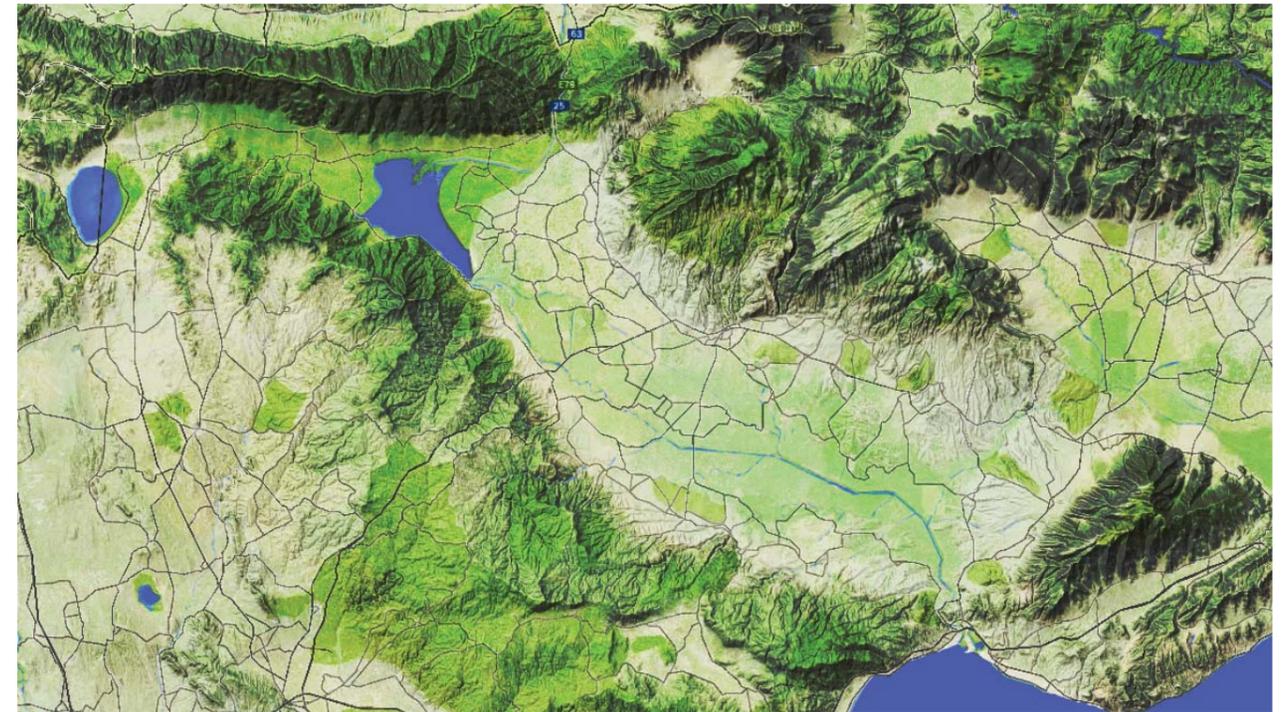
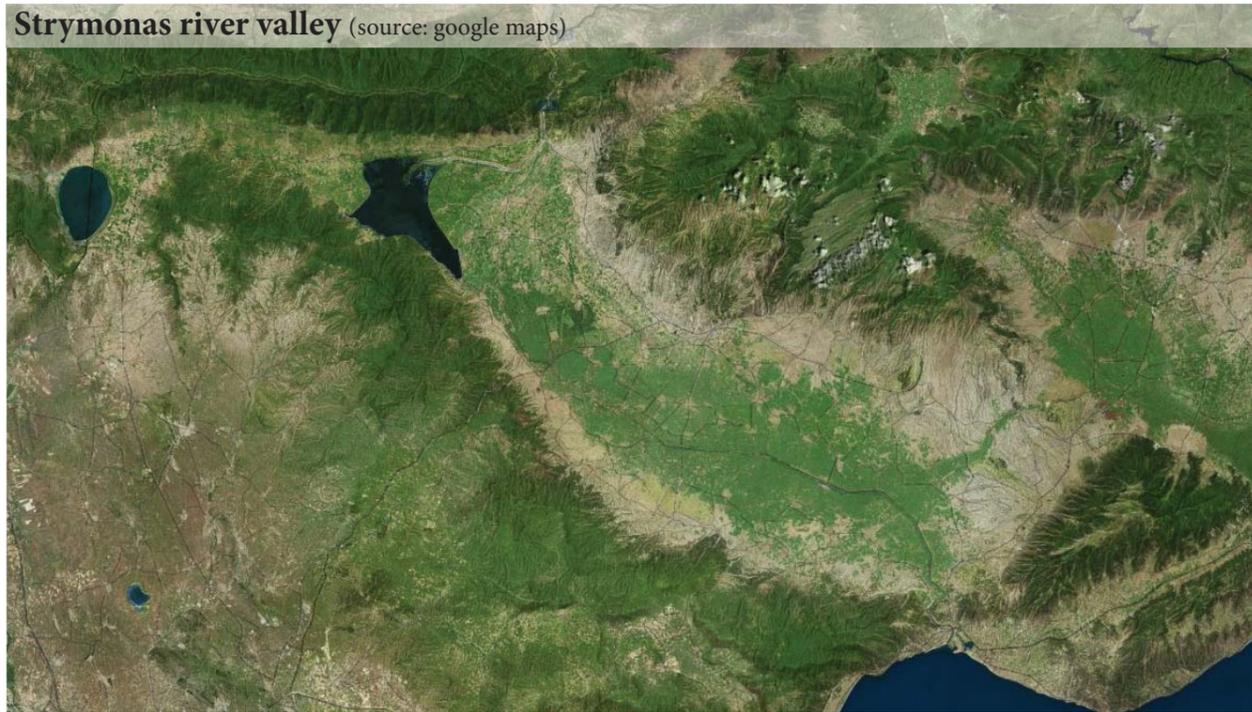
13. Hellenic Ministry of Environment, Physical Planning and Public Works, (1998c)

14. Ibid.

15. Mylopoulos, G. (2006)

16. Hellenic Ministry of Environment, Physical Planning and Public Works, (1998c)

17. Ibid.



### The Strimonas valley.

The Strimonas valley is formed by the alluvial deposits of the former natural swamp that used to occupy the area. Nowadays, its principal natural elements are the Strimonas river, crossing the valley with its respective vegetation, the Kerkini lake on the north-west side of the valley, and the pronounced surrounding geomorphology that marks the subregion limits.

Kerkini is a large, artificial freshwater lake located at the place of a former swamp. It is used for irrigation and flood control purposes, and it is fed by Strymonas river flowing in Greece from Bulgaria, which forms an inland delta at the mouth of the lake. It is surrounded by well forested mountains (Kerkini, Mavrovouni) and it supports a very interesting aquatic vegetation and rich ornitho-fauna. The town of Serres, which is the administrative centre of the Prefecture of Serres, lies south-east from the lake at a distance of about 20 km. A smaller town, Sidirokastro, with six thousand inhabitants, lies east from the lake at a distance of 10 kilometres. Lake Kerkini occupies an alluvial plain between the two mountain massives of Kerkini and Mavrovouni. It receives a large quantity of sediments from the river Strymon which drains a large area in southwestern Bulgaria. The eastern, south-eastern and western sides of the lake are diked. The artificial lake was created on the site of a former natural swamp, after the construction of a dam across the Strymon river in 1932. Following siltation by river sediments, which led to a loss of 61% of the Kerkini storage capacity, and an increase in the surface of irrigated land, it proved necessary to build a new, higher dam and a new dyke on the west of the lake<sup>18</sup>.

The area consists of alluvial soils. Concerning water quality, the lake has a high alkalinity and the water is turbid. The artificial lake Kerkini is considered to be eutrophic. In the area of the Strymon industrial activity in the Bulgarian section is relatively strong. Nitrate concentrations near the border are high. The Greek territory partially treated domestic and industrial wastes (mainly from industrial food production) in the waters of the Strymon<sup>19</sup>. Kerkini is a shallow lake with a maximum depth of 10 m, characterized by large fluctuations in water level (more than 5 m), caused by the current irrigation-oriented water management. The water level in the Kerkini reservoir falls to a minimum each year between September and February and rises to a maximum

level between early May and early June<sup>20</sup>. The Kerkini catchment coincides with the River Strymon catchment. The main hydrological values of the hydrologic region are flood control, and irrigation-water storage. Other values are the recharge of groundwater aquifers and conservation of water quality indices.

The climate of the sub-region is an intermediate between Mediterranean and Mid-European climate. The maximum difference between the mean monthly temperatures among seasons is greater than 20°C and the driest period coincides with the warmest one. The driest month is September (average precipitation 21mm) and the wettest month is November (average precipitation 51,9mm). Precipitation during the year is not high (average 444,6 mm) and has two peaks, the main one in the cold period of the year and a second in May-July<sup>21</sup>. In the site main habitat types identified include<sup>22</sup>: Magnopotamion type vegetation, *Salix alba* and *Populus alba* galleries, Residual alluvial forests (*Alnion glutinosae*), Eastern (*Galio-Carpinetum*) oak-hornbeam forests, and mixed oak forests among others. The adjacent to the river plain area is occupied by extended crop cultivations.

One of the most important ecological features of the wetland is the riparian forest at the *N/NE* of the lake. It is the most important habitat of the wetland not only for birds but also for reptiles, amphibians and fishes. It is the nesting and feeding habitat for a great number of bird species during extended periods of the year and it is used as spawning ground for fish species. The reedbeds which occupied a large area (1,200 ha) up to 1983 and consisted a valuable reproduction and feeding habitat for bird, reptile, amphibian, mammal, and fish species are now of limited ecological value due to their shrinkage. The *nuphar* formation, mainly with *Nymphaea alba* in the deeper parts and *Nymphoides peltata* in shallow waters, replaced the reeds at the NW part of the lake and is now dominating, having the largest registered surface area in Greece (300 ha in 1990 and almost 50 ha in 1997). It is also one of the most important feeding and nesting habitats for bird and fish species. Other important flora species like *Marsilea quadrifolia*, *Nymphoides peltata*, *Trapa natans*, *Salvinia natans*, *Polygonum amphibium* create extended aquatic beds which are valuable habitats for a big number of fauna species<sup>23</sup>.

18. Hellenic Ministry of Environment, Physical Planning and Public Works, (1998b)

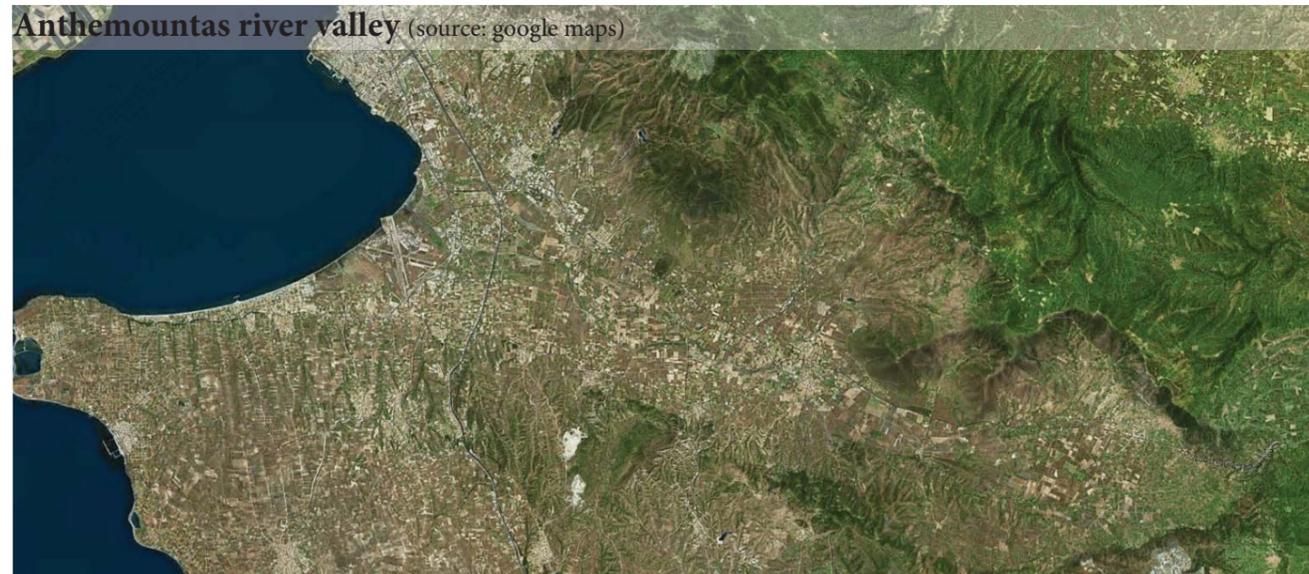
19. Ibid.

20. Ibid.

21. Ibid.

22. Ibid.

23. Ibid.



Anthemountas river valley (source: google maps)



### Anthemountas valley

The catchment area of the river Anthemountas is located on the southeast of the city of Thessaloniki, geographically belonging to the peninsula of Halkidiki and covering a total area of 320 km<sup>2</sup>. The Basin of Anthemountas receives intense pressures from urbanization due to its proximity to the urban region of Thessaloniki, in the municipality of Thermi and less in the other two municipalities (Basilika and Anthemountas). The city of Thermi has respectively experienced the greater population increase. The population in the 2001 census counted 40.469 inhabitants<sup>24</sup>. From this population 2.012 were employed in the primary sector, 3.310 at the secondary sector ( of which 2.189 in construction). At the same time there was a strong shift of economic activities in the tertiary / service sector, employing a total of 7.080 citizens. Nevertheless, and especially in the eastern municipalities of Vasilika and Anthemountas, the primary sector remains one of the leading sectors of economic activity<sup>25</sup>. As far as land use is concerned the catchment area is principally covered by agricultural (53%) and forest areas (43%) and very small percentages by urban cover and pasture land (3% and 1% respectively.)

The river basin has experienced significant changes and impacts in the recent history. Most significant being the disappearance of the natural wetlands by the Thermaikos bay, where the city's airport was constructed, as well as the altering of the rivers natural course with the respective fluvial ecological areas and ecosystemic functions. The main problem related to water management in the basin is the fact that the demand exceeds by far the available renewable hydric resources, thus putting extra pressure on aquifers<sup>26</sup>. At the same time the pumping from private wells is not adequately controlled nor measured systematically, while the same problems often occurs in municipal wells as well. he water usage by area is: 77% for irrigation, 15% drinking, 7% industry and 1% livestock<sup>27</sup>.

24. WATERinCORE, (2012)

25. LIFE, (2008)

26. WATERinCORE, (2012)

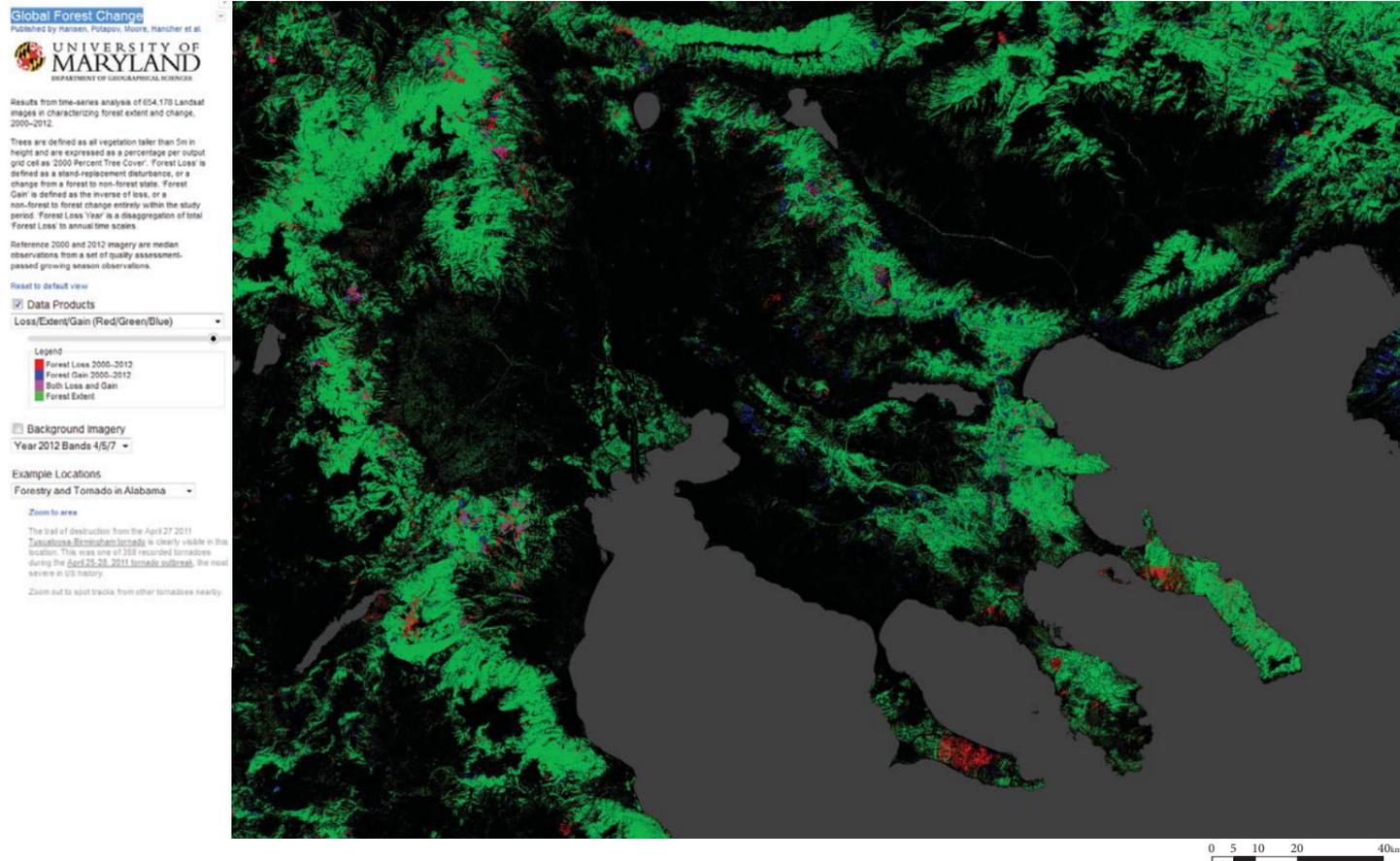
27. LIFE, (2008)

### Extended region

The regions analysed in this section, cover the majority of natural conditions and habitats present in the region. Special attention needs to be paid also to the mountainous areas of the region. The majority of these are found on the western end close to the border with the region of Western Macedonia, and the mountainous areas of Chalkidiki, especially around the forest of Cholomontas. These mountain areas, isolated and protected from human activity concentrated in the plains, now function as important ecological core areas and even more as critical ecological corridors. The combination of the presence of local flora in a natural state, along with the relative isolation offered till today have favoured the presence and movement of various species. Also these areas contain the majority of land in a natural state and the greatest part of natural vegetation in the region. Given those facts, conservation efforts have not done enough to define and justify the need for an extended conservation plan. The majority of these efforts only identify isolated locations, failing to identify natural corridors (except in the river of Axios and the Delta Area) where movement and exchange between ecosystems can be achieved, and even further away from proposing the creation or conception of a network of ecological areas. Infrastructure development (in the form of drainage works in the past, and more focused on transportation nowadays) is another factor that has influenced and altered the regional mosaic. On many point, this development has significantly altered or compromised the state of natural ecosystems of the region. The next section will analyse land use patterns and their overall impact.

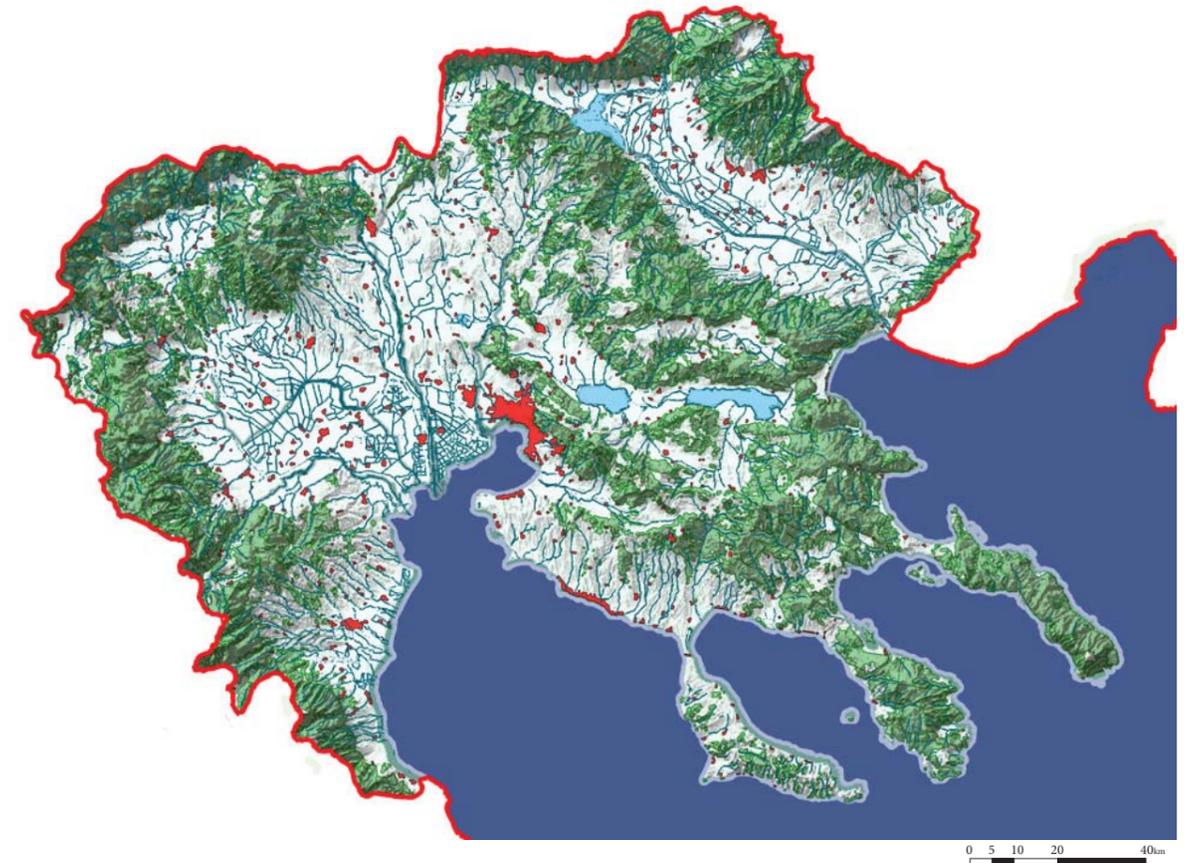
## Forest cover & change

(data: University of Maryland)

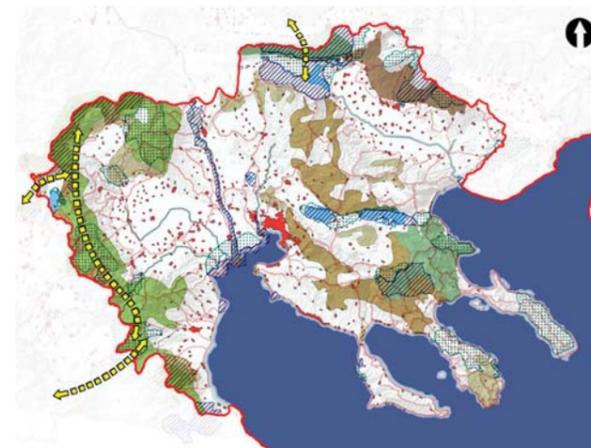


## Regional Hydrological Patterns II

(data source: Region of Central Macedonia)



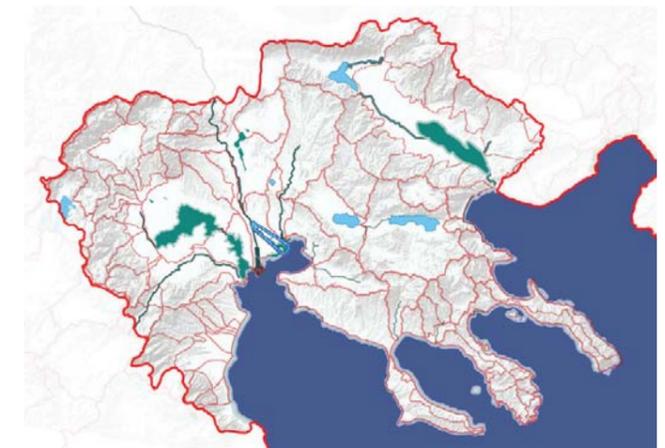
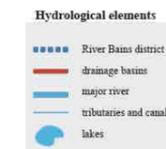
**Drainage basins**  
 (data source: EEA)



**Regional Ecological Networks**  
 (data source: EEA, ECNC)



**Hydrology & catchment areas**  
 (data: Region of Central Macedonia)



**Hydrological History**  
 (data source: EEA)



1. Aridea



2. Axios river



10. Mt. Kerdylia



3. Loudias river



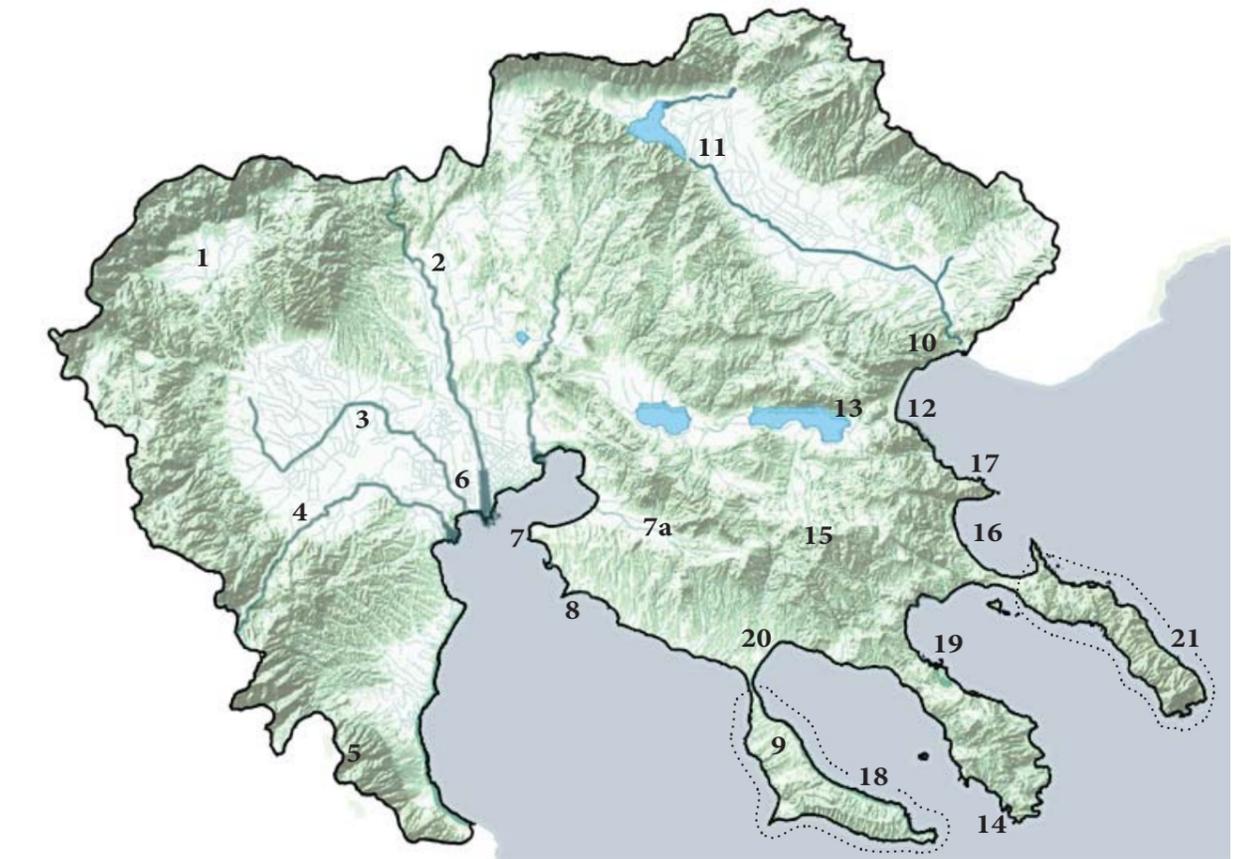
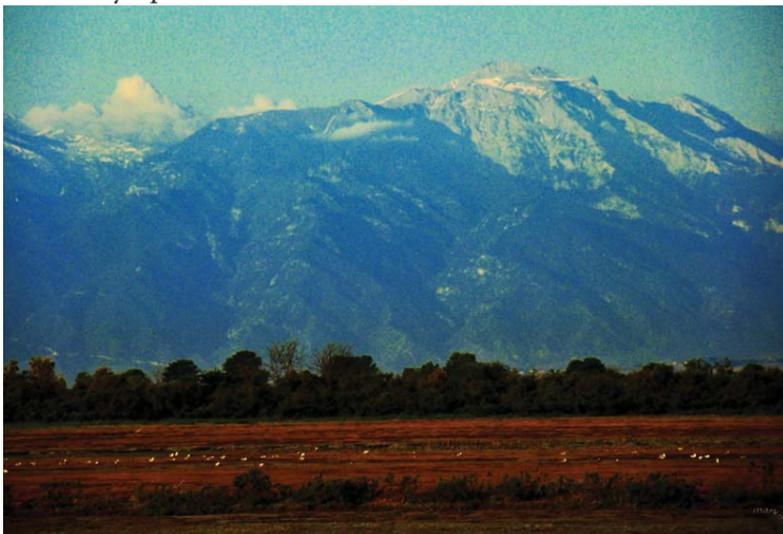
4. Aliakmonas river



6. Tri-Delta area



5. Mt. Olympos



7. Aggelochori



7a. Anthemountas



9. Kassandra



8. Epanomi



11. Kerkini Lake and Strymonikos river valley



12. Strymonikos bay / Asprovalta



13. Volvi



14. Porto Koufo



15. Mt. Cholomontas



16. Ierissos bay



17. Olympiada



18. Kassandra



19. Vourvourou



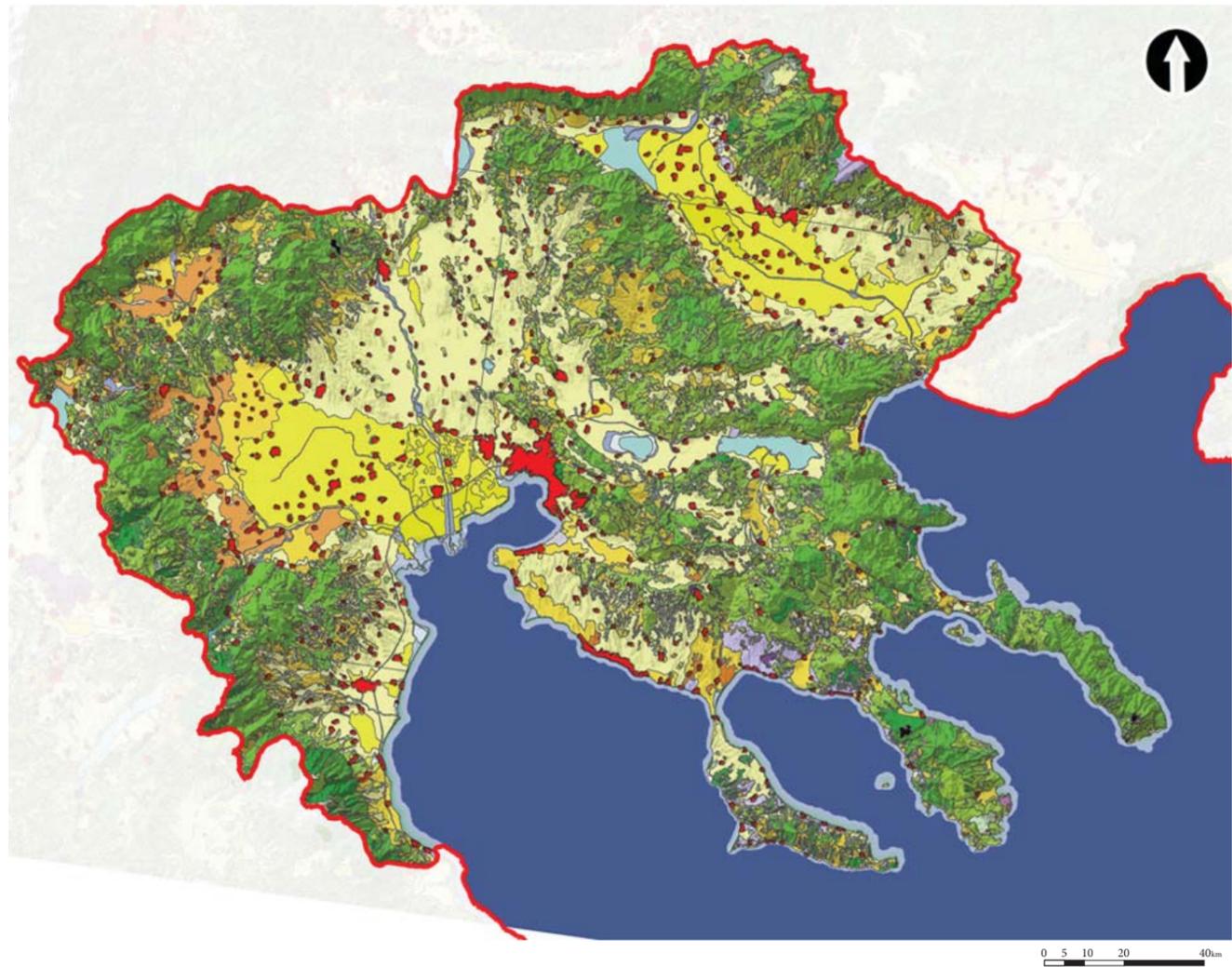
21. Mt. Athos



20. Olynthos



(source: airphotos.gr, panoramio.com)



**Regional Land Use Mosaic**  
(source: EEA)



## ii. Land Use Patterns

After observing and recording the natural region's characteristics, this next part will cover the current land uses and patterns present in the region. Relating these factors, overlaying and comparing different layers, points of conflict and opportunity can be highlighted and identified. The analysis will first cover the subregions covered in the previous section, and in continuation the entire regional context.

### Tri-Delta Area

Most of the plain is agricultural land, allocated in the past by the state to the local municipalities and communities for agricultural use. The strip area closer to the delta is state property except for the cultivated land which is privately owned. The dominant uses are fishing and grazing as well as agricultural activities mainly rice-cultivations. The controlled extraction of sand from the riverbed satisfies most of the requirements of the construction industry in the Prefecture of Thessaloniki.

The dams and the irrigation networks constructed since 1925 have reduced the amount of water of River Axios reaching the delta, especially during the summer period. Three dams have also been constructed along the River Aliakmonas. Despite this intensive use of water, there is no serious evidence of salinization of surface and groundwater in the site. Even though the water demand is very high both for drinking and irrigation, there is an increasing effort to manage water use. Another problem related to the operation of dams is that the amount of alluvial deposits has been reduced, and thus is expected to have an impact on the future formation of the coastline. Also the zone appears to be in a high risk of desertification, a phenomenon that is accelerated

by intensive and damaging water-use patterns. In relation to this data and the various environmental projections, a series of studies have been carried out in order to estimate the possible environmental impact of human activity on the delta and the wider ecosystem of the Thermaikos Gulf<sup>1</sup>.

Since 1979 no further drainage works have been carried out in the area, reducing in this way the effect of the principal threat of further land use reclamation by agriculture, while the authorities also have denied permits for the development of various projects in the vicinity of the area. Consequently, the water quality in Thermaikos Gulf has demonstrated relative improvement and many areas have been recolonized by fish and benthic organisms although levels of contamination still remain alarmingly high<sup>2</sup>. Although human activities are very low within the Ramsar site, urban wastes, agricultural and industrial effluents from the entire catchment, both in Greece and in FYROM and drained by the river Axios end up in the Delta and the Thermaikos bay.

In order to deal with trans-boundary pollution incidents, on-line monitoring of water quality is being conducted along the Axios River and any exceeding values are automatically communicated to the Prefecture and the Ministry of the Environment. Bilateral discussions between the two states involved have been carried out on this issue. The sources of pollution of Axios river in the Greek territory have been identified since 1988 and measures have been since taken for monitoring and minimizing pollution by industrial units<sup>3</sup>.

1. Hellenic Ministry of Environment, Physical Planning and Public Works, (1998)

2. Mylopoulos 2006

3. Hellenic Ministry of Environment, Physical Planning and Public Works, (1998)

Extensive fishing and aqua-culture takes place principally in the marine area, both by professionals and amateurs. A project for the removal of litter as well as the management of empty mussel shells, deposited in quantities by the aqua-cultures has been enforced. Although cattle raising units do not exist in the site, free grazing of cattle takes place extensively. Sand extraction from the river bed of Axios was considered a major problem, because an sand islet, heron colony, was destroyed in 1988. However, since 1990, sand extractions are permitted only after examination of the natural features of the site of the extraction spot. Aiming to holding back the further loss and degradation of the site, all relevant planned works have been examined by the Environmental Authorities. The majority of projects concerning animal farms, and/ or agricultural improvement were rejected whereas only the absolutely necessary and less disturbing ones have been permitted<sup>4</sup>.

The wider plain area has enormous economic significance, with agriculture being the main activity, and most of the plain of Thessaloniki being irrigated by the water of Axios river. The surrounding area produces more than 70% of the entire national rice crop production, a major source of income for the local population. Of secondary importance is the activity of grazing which appears sporadically and is not well organized nor monitored. The shallow waters of the Delta and the adjacent coastal area provide shelter to the majority of fries of most of the fish in the Thermaikos Gulf. Thus, the site has tremendous importance for maintaining the fishing grounds of the North Aegean Sea. Mussel farming in the Delta accounts for 90% of the country's total mussel harvest production and is one of the most important and profitable local activities<sup>5</sup>.

The site is not far from important archaeological sites, of which the most visited is the tombs of Vergina, capital of the ancient Macedonian Kingdom, and Pella among other. The social value of the site as a protected area is increasing and has led to the development of a value for eco-tourism, environmental education and bird watching, although relevant facilities and infrastructure are of relatively low standards. Moreover the area is of great scientific value for all fields of environmental sciences serving as an on-site laboratory for all types of ongoing researches.

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4. Ibid.

5. Ibid.

### **Volvi & Koronia valley**

The lakes are state property while the surrounding area consists of private cultivated lands and of public use land (highways & roads, canals, arid land). Both lakes are primarily used for irrigation purposes as they are surrounded by irrigated cultivations (mainly vegetables and corn). As grazing fields of the wider area have been seriously degraded. during the last years, the area around the lakes is being grazed with an increasing intensity. Around Lake Koronia grazing pressure is more intense, while around Lake Volvi grazing fields are under less pressure. Net fishing activities occur during the whole year except for the fish spawning period. Within the catchment area, there is a population of about 83,215 people distributed in 70 small communities. The 90% of the lowland is cultivated mainly with cereals, corn, tomatoes and tobaccoas well as irrigated crops such as corn and alfalfa. Other current land uses are forestry, grazing and manufacturing, which has become increasingly important in the western part of the region, near the town of Lagkadas, providing and a considerable source of income for the area<sup>6</sup>.

Water quality in Lake Koronia had been gradually degrading due to the development of manufacturing units and the lack of sewage treatment units within the catchment area. Agricultural run-off and discharge of effluents from the numerous animal breeding farms and industrial units of the area has been quite high, especially with respect to Lake Koronia. Environmental authorities have imposed restrictions in the operation of the manufacturing units and have undertaken control measures for its implementation, but without having success in adverting the ongoing processes/trend<sup>7</sup>. Water quantity issues have been related to the lowering of the water level, due to serious droughts experienced during the last 10-year period and the increased water uptake, by direct pumping or drillings, from the surrounding agricultural lands and industrial activities. The decrease in water level has also had a further intensifying effect on pollution and eutrophication. The combination of these two problems, resulted in a number of cases of mass fish mortality (August 1995 and May 1997) in Lake Koronia, caused mainly by the high concentrations of industrial and domestic effluents. Measures taken to remedy this situation similar with pollution control, has had little effect with water quality levels still low and the population of birds and especially ducks, feeding on fish, declining along with their respective habitats, and resulting in the eventual extinction of the local ecosystem (and consequently of fishing as an economic activity). It can be then asserted that the majority of problems that the lake faces today are a result

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6. Hellenic Ministry of Environment, Physical Planning and Public Works, (1998c)

7. *ibid.*



of the economic centric model and approach applied to natural resources management in Greece, whereas the development of sites and their respective planning is done ignoring its corresponding natural capacity<sup>8</sup>.

Lake Volvi on the other hand, even though being exposed, to a certain degree, to similar pressures, it is found in a more natural state. The riparian forest of Apollonia was under pressure for poplar plantations and unauthorized felling, while in the riparian forest of Rendina, pressures included land reclamation for agriculture and tourist development. These pressures have been gradually removed since 1990. Aiming to hold back the further loss and degradation of the site, all relevant projects have since been examined under this procedure by the Environmental Authorities. The majority of projects concerning animal farms, drainage and/or agricultural improvement was rejected whereas only the absolutely necessary and less disturbing ones have been permitted. Remaining pressures to be dealt with include improper waste disposal, grazing and sand extraction<sup>9</sup>. Even though an important factor in past decades, today the commercial value of the fish production is low, constituting only a supplementary source of income for locals. Two projects in the wider area of the site that have potential negative environmental impacts are the construction of the Egnatia Highway and the construction of a Sanitary Landfill for the solid wastes of the city of Thessaloniki, whose real impact still has not been evaluated.

The lake valley has significant archaeological importance. It was crossed by the Ancient Roman road called Via Egnatia, along the southern coast of both lakes. There are remnants from the Byzantine period like the well preserved castle of Redina and the tower at Agios Vasilios village. In the village of Apollonia, there is a tree under which, according to a local tradition, St. Paul the Apostle has preached in his first visit to Europe. Since the target-oriented awareness project was carried out an increased social value of the wetland itself was noted amongst local users and authorities.

However, due to its numerous management problems, the site has not yet developed a strong trend for ecotourism, environmental education and bird watching, and develop its potential as for environmental education and research.

8. Ibid.

9. Ibid.

### The Strimonas valley.

The area surrounding lake Kerkini and the majority of the valley is agricultural land, privately owned except for forest-land which is of public property. The lake is public property with fishing rights ceded to private local fishing companies periodically. The management of the reservoir is mainly utilized for irrigation and flood control purposes for the entire valley. No settlement or activity is permitted within the Ramsar site while fishing activity is allowed in certain parts of the site. Grazing and agriculture are other land uses of the site, however more limited in space. Hunting also occurs inside the wetland area, but it is regulated. Twenty-one villages lie within a radius of 10 km from the lake, with 66% of the population earning a living from agriculture, livestock rearing (cattle and sheep), and fishing. At the wider area the principal land uses are agriculture (29%) (consisting by 27,819 ha of arable land, 820 ha of horticulture, 1,223 ha of tree cultivation, 90 ha of vineyards, and 3000 ha of abandoned farmland) grazing (24,1%) (grazed by 20,822 cattle, 49,988 sheep, 26,116 goats, and 8,485 pigs) and forestry (34%)<sup>10</sup>.

As mentioned earlier Lake Kerkini was created in the place of a earlier marshland through a dam construction in the bank of River Strymonas in 1932. However, the high quantity of sediments carried by River Strymon to the lake gradually decreased the volume of the reservoir. This process created the demand for raising the dykes, in order to increase the irrigation capacity of the lake and increase protection against potential overflooding. Finally, in 1982 a new dam was constructed and the dyke to the east was raised up to 39m whereas a new dyke was built to the west, leading to the increase of maximum water level from 33m above sea level in 1982 to 36m today. Further proposals to raise the dykes for flood control were examined by the environmental authorities and the environmental terms imposed from the Ministry of Environment in 1995 defined the maximum water level at 36 m<sup>11</sup>. The 1982 raise of water level and the management of irrigation water caused several changes to the aquatic vegetation and the fauna of the site. Many trees of the riparian forest died due to prolonged inundation, followed by a significant loss in plant biodiversity. Some of the breeding bird populations have been affected by the degradation of the riparian forest which is an important nesting area. Since 1990, conservation efforts by the Forest Service in co-operation with the Department of Biology of the University of Thessaloniki and the Hellenic Ornithological Society intended to identify and protect important species. Mud flat habitats have also shrunk since 1982 and a big number of waders which used them

10. Hellenic Ministry of Environment, Physical Planning and Public Works, (1998)

11. Ibid



(source: airphotos.gr, except A by A. Sfiridis)

for feeding and nesting appear now in the wetland only during the migratory period<sup>12</sup>. The coincidence of the breeding period with the period of highest water level is another factor of pressure for some species. The same changes induced in 1982 caused changes in fish species representativity in the reservoir, in favour of species of low or no market value thus leading commercially important species to extinction<sup>13</sup>. Agricultural run-off has contributed to a further increase of the eutrophication state of the water. Since 1981, a decision at a prefectural level defines the use of the water of River Strymon as well as the terms of disposing effluents and industrial wastes<sup>14</sup>. An important threat was identified with the increased levels of radioactivity in the sediments of the lake as well as of pesticides in the river despite their prohibition since 1972<sup>15</sup>. This persisting factor originates upstream from cross-border industrial activity while downstream from partially treated industrial effluents and residential wastes that are introduced along the river course. In order to deal with trans-boundary pollution incidents, online monitoring of water quality is being conducted and any exceeding values are automatically recorded.

Lake Kerkini has one of the highest commercial fish production among the inland lakes in Greece. As mentioned fish production has shown negative trends mainly due to inappropriate management practices utilized and conflicts among the multiple water uses<sup>16</sup>. In the wider area there are considerable sites of religious and archaeological importance (e.g. Monastery of St. George of 19th century, the school building in N. Petritsi community, various examples of local vernacular architecture and urban planning). Since 1993, the social value of the site near the lake, being a protected area, has increased giving incentives for the development of eco-tourism, environmental education and bird watching, although relevant facilities are small and uncontrolled visits to the flooded forest and the bird colonies is another factor disturbing the site.

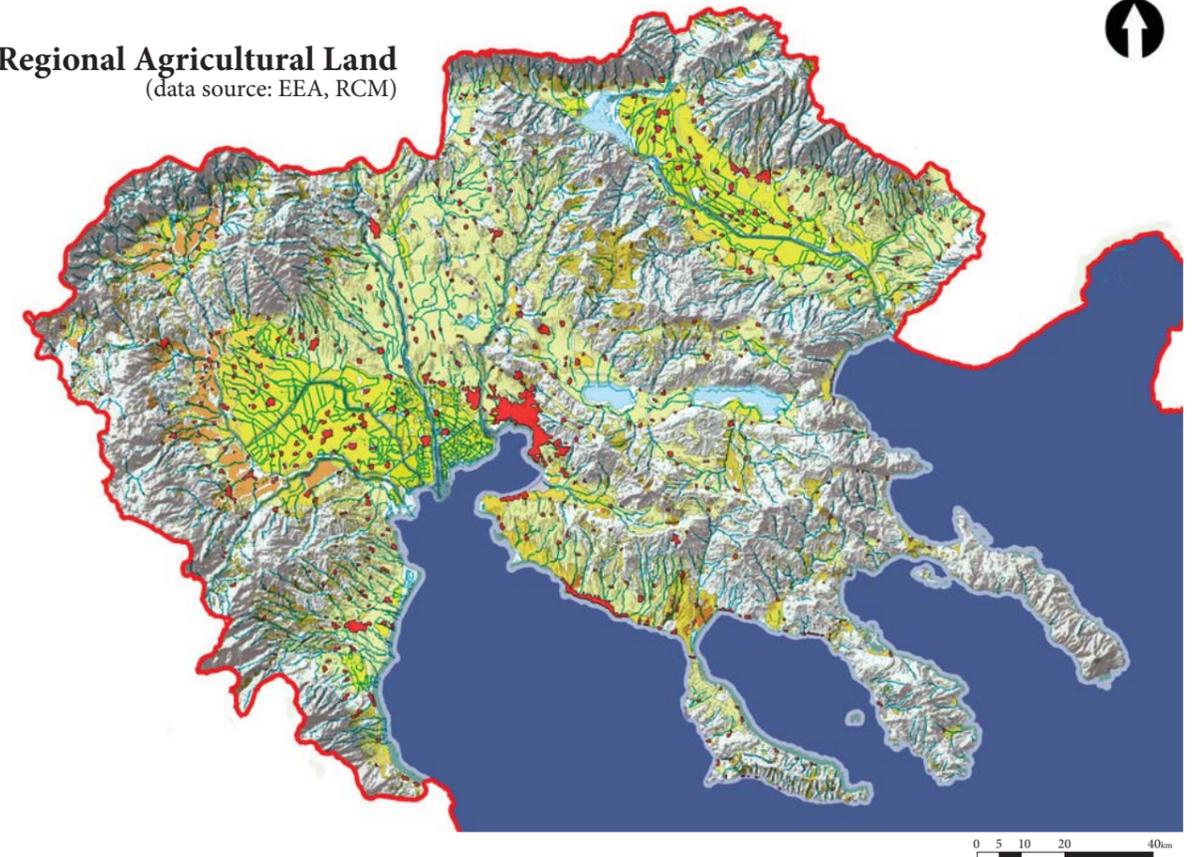
### Extended Region

Following the individual analysis of each subregion this part will point out the land use patterns that emerge out of the entirety of the region, and how these patterns affect, and are affected by the city of Thessaloniki. In terms of production patterns, the region of Thessaloniki presents similarly to other aspects, a monocentric

12. Ibid.  
13. Ibid  
14. Ibid.  
15. Ibid.  
16

### Regional Agricultural Land

(data source: EEA, RCM)



structure. This is due principally to traditional relations between the city its hinterland, which encompasses the entirety of the Thessaloniki Plain and the area close to the urban core. The transformation of the city especially in the second half of the 20th century did not challenge the existing model. The intense edification and outward expansion of the city, following a mixed use land-use model, permitted the outward cohesion of the urban fabric and its function, for example tertiary services. The diffusion of these services across was relatively easy, following along the development axis of urban infrastructure.

#### Primary Sector

The primary sector in the region holds a key role in the economy and development of the region. The region contains five of the most developed agricultural regions in the country, and is the centre of production of important national agricultural products like fruit crops, cotton and tobacco among others. At same time it is the principal centre of cattle breeding in the country, while presenting activity in all sectors of animal breeding<sup>17</sup>. The prefecture of Thessaloniki and Chalkidiki are the main centres of fishing activity, while favourable natural conditions have allowed the appearance of various fisheries throughout the coast. The main weaknesses of the agricultural/primary sector of the region are: *a*) the great dependence on highly subsidized types of cultivations, *b*) The concentration of manufacturing in terms of products and space. *c*) land use structure *d*) the ineffective management of water resources *e*) the intraregional cohesional disruptancies with the presence of mountainous or peripheral zones of low development *f*) the dependency of rural economies on agricultural activity *g*) weaknesses related to the regional human resources and employment patterns.

#### Secondary Sector

The region of Central Macedonia is characterized by a high percentage of employment in the manufacturing sector. The region holds the 21.9% of the industrial activity of the area, while the 68% of the previous percentage is concentrated in the prefecture of Thessaloniki. The region is thus presented as one of the most dynamic areas of the new industrial space of Greece<sup>18</sup>.

17. Papamichos N. (2009)  
18. ESA (2005)



The secondary-sector type of activity is concentrated on the western part of the city of Thessaloniki, predominantly the industrial zone of Sindos and similar zones such as the one in the area of Lagadas on the north-east and Kilkis on the north. On a regional level exist various secondary activity zones but all lack the gravity and importance of the Thessaloniki zone. In more detail in the sector of food processing (16.3% of total employment) specialize the prefectures of Thessaloniki, Serres, Chalkidiki, Pella, Imathia and Pieria. In the textiles sector, the specialized regions are Thessaloniki, Kilkis and Imathia while in the clothing sector (26.3%) the prefectures of Serres, Kilkis, Pella and Thessaloniki. Lastly concerning wine production the principal areas are Chalkidiki, Thessaloniki and Imathia<sup>19</sup>. The majority of this activity is being undertaken by small to medium size companies. The activity of these regional centres has an inherited interconnectedness given the monocentric structure present. Nevertheless, following the decline of the secondary sector in the city of Thessaloniki, activity in these centres did not mark a considerable increase, since most of the capital moved outside the region. This process of des-industrialization, characterizes the entire region, with the relocation of many of these companies to the neighbouring countries of FYROM and Bulgaria. This process has impacted in many aspects the manufacturing sector, and principally the textile / clothing sector.

The principal problems facing the sector are *a)* the absence of a “branding” for local products that can add value and open access to international markets. *b)* the small-medium sized companies that dominate the production system of the region, have a low level organization and management, with a low number of employees per company (average 6,5 employees)<sup>20</sup>. Another point to be made is the proximity of these zones, and especially ones of industrial character to protected zones, or zones of ecological importance. Today, 5 official zoned Industrial and Entrepreneur Zones exist in the area: In Sindos (Thessaloniki) Leykona (Serres), Stayroxwri (Kilkis) in Petraia (Pella), and in Edessa<sup>21</sup>.

### *Tertiary Sector*

The recent years a certain transformation has taken place that has also impacted drastically the urban forms and corresponding land uses. Firstly the disappearance of traditional production forms, or their displacement in nearby urban centres or across the border, with the concurrent appearance of new forms of services, usually of a transnational character. This slow urban expansion, an idiosyncratic type of sprawl followed by

the increase in car ownership indices changed the mobility patterns and the way that people perceived and utilized the urban space. The increased influence of the city in the Balkan region, contributed even more in the shift towards a service oriented local economy<sup>22</sup>. The majority of this type of activity is centred along the south eastern part of the city in the peri-urban zone. Development of similar activity in regional centres again stays behind compared to the centre, primarily due to lack of incentives and poor infrastructure.

Tourism on the other hand presents a more pluralistic face, even though not developed efficiently or harmonically all over the region. The region of Central Macedonia even though has the potential advantages for the development of a multifaceted touristic activity, it still has not achieved in forming a distinctive tourism programme. The coastal front of the region receives the majority of the tourist traffic. Chalkidiki and especially the first peninsula of Kassandra is a traditional destination for the residents of Thessaloniki, while its proximity allows same-day and more recently commuting trips. Recently, the opening of the borders and the relative economic rise of eastern economies have resulted in a significant flow from the Balkans towards Chalkidiki as well as Pieria. These coastal areas receive the majority of the hotel bookings from international tourists. Summer tourism although quite considerable in size, lacks the supports of any corresponding infrastructure, contributing in constantly increasing car traffic towards these destinations. Winter tourism on the other hand is significantly smaller in size, with small ski resorts on the west, close to the city of Veroia, and various initiatives of eco-tourism developed throughout the region, still limited in numbers, and not adequately organized. The region has many points of cultural interest spread throughout its area span. Sites include ones of archaeological interest like the remnants of the ancient Macedonian capital cities of Pella and Aigai, Stageira - birthplace of Aristoteles - or the temple of Dion on the feet of Mt. Olympus or the various dispersed Macedonian tombs among others. Thessaloniki and the extended region host a great number of examples of Byzantine architecture, especially when it comes to churches and monasteries. These attract a lot of religious related tourism, with Mt. Athos, the third peninsula on the southeast of Chalkidiki, and the numerous monasteries that reside in its territory, being an important attraction of international level.

It can be said then that there are many options for the development of alternative modes of tourism in the region, evenly spread over the region. The development of these options could balance the current summer-based tourism scheme that is characterized by seasonal use, overexploitation and downgrading of available natural

19. Ibid.

20. Ibid.

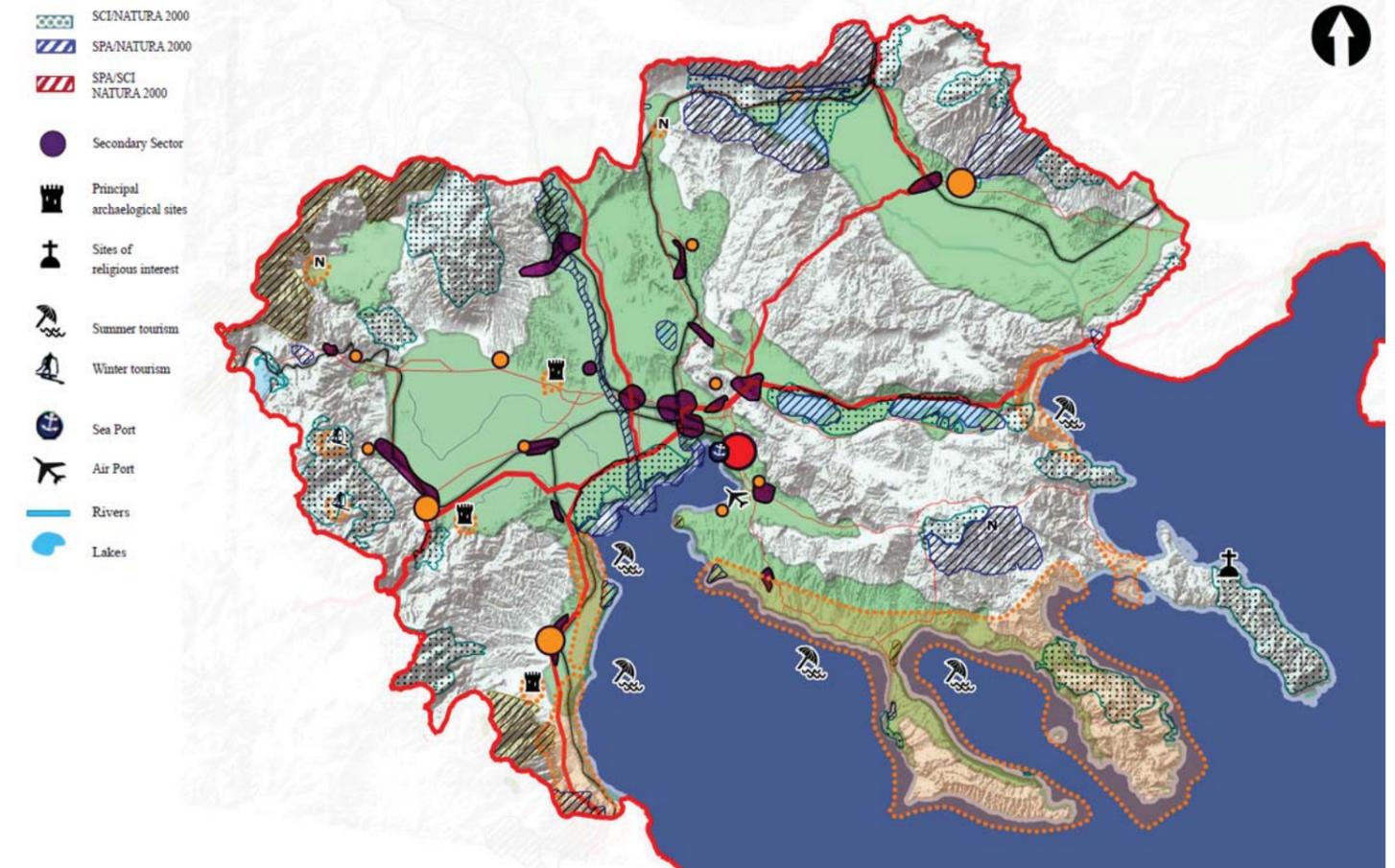
21. ETBA BI.IIE

22. Ibid.



(source: airphotos.gr, except A by A. Sfiridis)

## Regional Land-Use Patterns (data source: EEA, Egnatia Observatory, O.R.Th)



resources<sup>23</sup>. It can be described as a massive type of tourism supported by an extensive network of hotels, travel agencies and charter flight companies. The principal problems for tourism in the Region can be summarized in *a*) Inflexibility in dealing with fluctuating international demand *b*) the singular development of one type of tourism, namely summer vacational tourism *c*) the relatively low-level of quality in the various services offered. Apart from the formentioned sectors, Thessaloniki is the second largest urban centre of the country that has demonstrated considerable development in the sectors of health /welfare, education, research and development, as well as productive services.

The city of Thessaloniki is the principal transportation centre of the region, having the only international airport and by far the most important port of the region. In the recent years, the air and sea transport and trade has increased, indicating the potential role the city could play in the extended Balkan region. Parallel to the development of these flows, a considerable employment sector has developed along, dealing with transport issues. The working human force of the region amounts to 695.524 people<sup>24</sup>. The des-industrialization process that took place, has had a great impact on the region. The unemployment rates tend to be higher than the average, (11% in 2001). Unemployment is higher for women than men (16.7 and 6.8% respectively for the year 2001) even though women are less represented in the employed workforce (36.7% women to 63.7% men)<sup>25</sup>.

The basic characteristics of the region have been described up to now as well as its relative advantages and potential points for future development. Nevertheless, the region is presented with serious challenges and problems, when considered in its entirety, that can be summarized in the following points:

- a.* The cheap working force in the neighbouring countries of FYROM and Bulgaria, that favors the relocation of local industries to the north.
- b.* The decrease in the number of people employed, the educational level of this workforce can be described as relatively low.
- c.* Decrease in the percentage of companies that have internal R&D departments.
- d.* Lack of a spatial plan for the industry
- e.* Downgraded or obsolete industrial zones.
- f.* Centralized national planning, with inadequate decentralization
- g.* Delays in the restructuring of the rural areas and the management of the natural resources
- h.* Lack of adequate urban infrastructure that results in the subsequent degradation of urban centres
- i.* Instability of the industrial system and its dependence on exterior factors
- j.* Traditional industrial structure
- k.* One sided development of tourism, focused on massive summer tourism.

The next part will examine in more detail the transportation / mobility networks that exist in the area, and the way that they have influenced the respective urban growth patterns in the past and the development of the respective regional ekistic network. The urban network of the region, the linking of transport corridors and urban settlements and the resulting interactivity, presents certain signs of polycentricity, contrary to the apparent dominating monocentric model. Polycentricity and networking is an important element to have in mind, given the emerging metropolitan patterns in the city of Thessaloniki. In this way, regional potential can be explored more thoroughly throughout the analysis, and develop more significant conclusions when evaluating the potential future city prospect.

23. Ibid

24. Ibid.

25. Ibid.

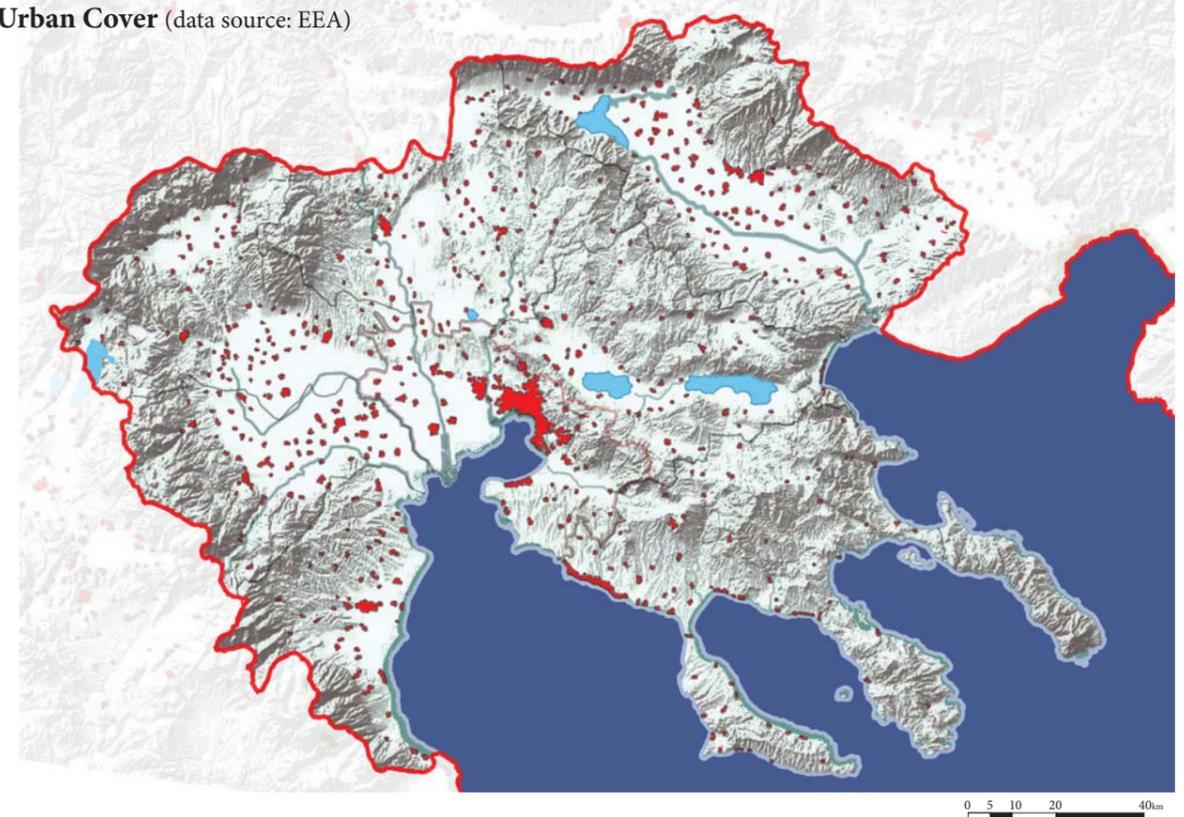
**Aerial Photo**  
(source: EEA, Landsat)

-  region limits
-  extended urban area
-  urban cover



**Regional Urban Cover** (data source: EEA)

-  urban cover
-  rivers
-  lakes



**Prefecture delimitation**



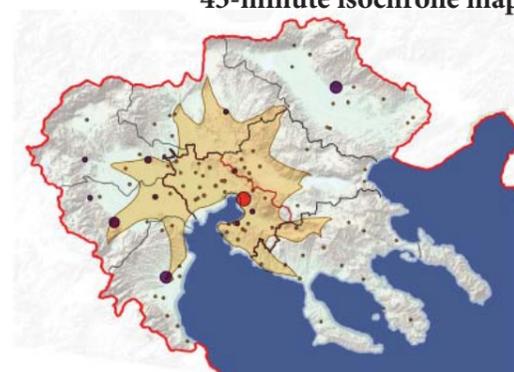
**Prefecture capitals**



**Municipal delimitation**



**45-minute isochrone map**



(source: Egnatia Observatory)

### iii. The Regional Urban Network

Interregional/transnational networking of Thessaloniki and the wider regional urban system is an issue that has only recently been put on the policy agenda, as a result of the influence of the European policies, and the new geopolitical conditions created in southeastern Europe. Therefore, it remains an open agenda issue that has still to be defined, both at the interregional and at the transnational level. The forms it should take, the level of networking, as well as the type of relations that such a policy can promote are issues yet to be decided and tested for the case of the urban region of Thessaloniki and the region of Central Macedonia.

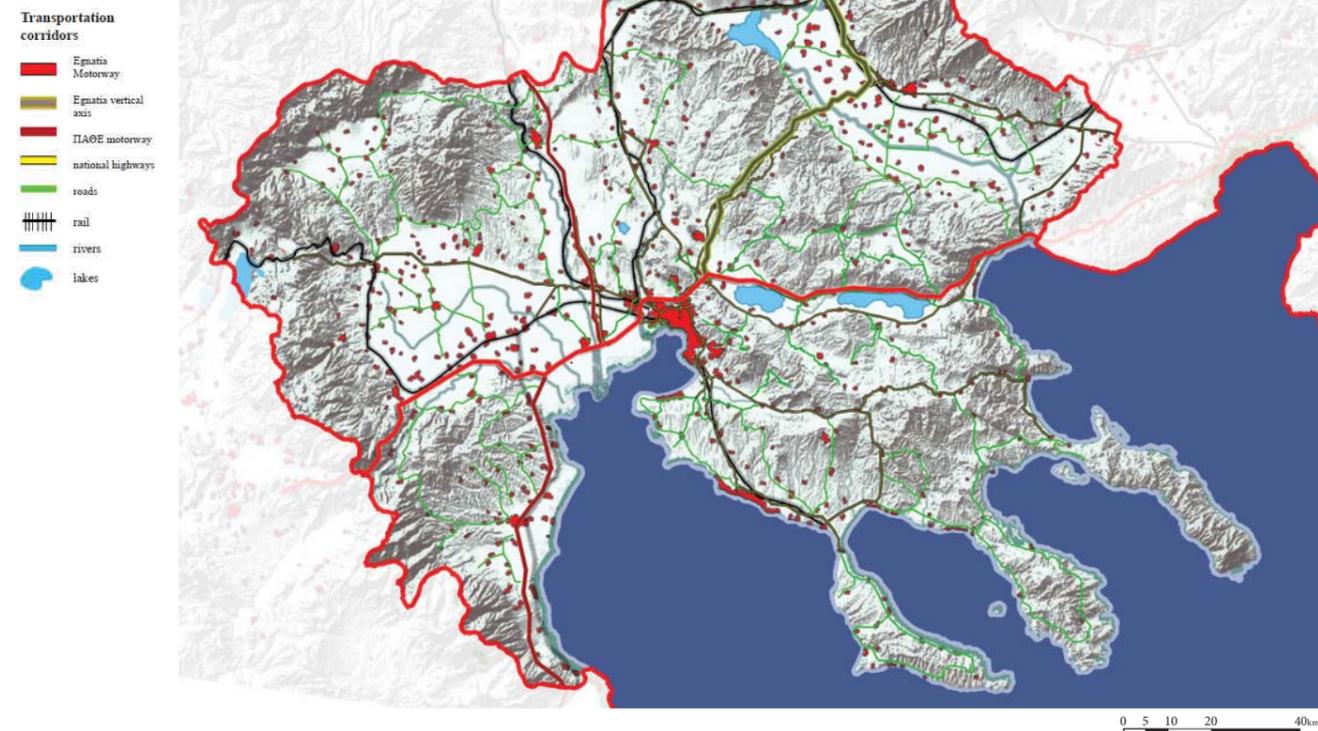
One of the apparent characteristics of the national spatial structure is the dominance in the urban hierarchy of two cities, principally the capital city of Athens and following Thessaloniki, and a wide gap with the next group of cities in the hierarchy. An additional feature of the national urban system is considered to be the lack of large rural centres, or at least vibrant ones, that can take the role of regional centralities. On the basis of these features, Greece as a whole is categorized among the countries with low degree of polycentricity, and on a NUTS-1 Northern Greece presents a lower polycentricity compared to the rest of the country<sup>1</sup>. From the spatial policy point of view, and having the urban network notion under consideration, the city of Thessaloniki is identified as a monocentric functional urban area, of a national/transnational importance with a classification of Cluster typology 2, corresponding to the size effect – large size and an over-representation of all functions<sup>2</sup>.

Intending to identify the urban structure of Northern Greece (NUTS-1) in particular, in terms of population size, it can be easily observed that the northern national territory is dominated by the Greater Thessaloniki Area, whereas only a few other cities (urban centres, with more than 10.000 inhabitants) have a population of more than 50.000 inhabitants and only Ioannina, in the west, exceeds the size of 75.000 inhabitants. Despite their small size, the majority of the centres of the distinct regions of Northern Greece, achieved high growth rates in the 1991- 2001 period ( Kozani, Xanthi, Komotini: 5-30%, while Ioannina 30-50%), to a large extent due to the rising concentration of important regional service functions and improvement of local and national infrastructure. For the 2001-2006 period, the prefecture of Ioannina had the highest growth rate (of 0.8-1.6%) followed by the prefecture of Xanthi ( 0.2- 0.8%)<sup>3</sup>. The prefecture of Thessaloniki for the same period presented a similar growth rate as Xanthi. This latter process gradually led Thessaloniki

1. ESPON (2004), p.7, 77  
 2. ESPON (2004) p.15-16, 162  
 3. Egnatia Observatory (2009)

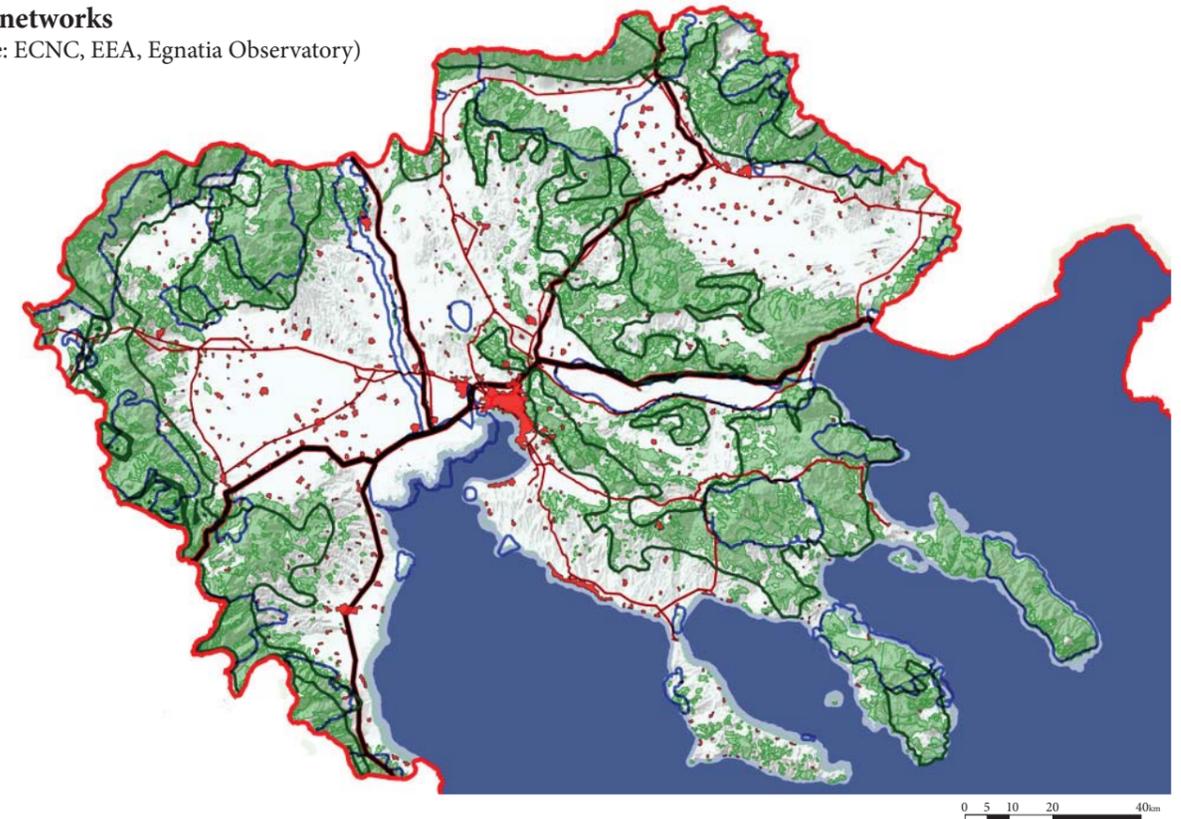
## Regional Transport networks

(data source: EEA, Egnatia Observatory)



## Regional networks

(data source: ECNC, EEA, Egnatia Observatory)



to exert less interregional influence than it had done in the past, despite its high growth rates in the same time period. These trends took place alongside an observed transformation of the rural-urban relationships reflected in the changing economic functions of the rural areas and their increasing interdependence with the regional urban centres<sup>4</sup>.

Thessaloniki, as mentioned, is the capital of the Region of Central Macedonia, a region that has demonstrated quite dynamic growth trends, precisely because of the changing role and the national and transnational significance of the Greater Thessaloniki Area, that was presented in the previous sections of this paper. With Thessaloniki representing 52% of the region's population, one of the most striking features in the contemporary metropolitan system is the rapid and uncontrolled urban sprawl, and the resulting fast growth of the suburban area, which has led to a very large expansion of the city, in terms of both residential and commercial use. During the 1991-2001 decade, the Greater Thessaloniki area achieved high growth rates (11,5%), these being much higher than the average national rate (6,7%). The suburban area, in particular, recorded among the highest growth rates in the country exceeding the figure of 3.5% per year<sup>5</sup>.

Besides the Greater Thessaloniki, the urban system of the Region of Central Macedonia includes eight other small-size cities, with a population of 15.000 to 55.000 inhabitants and a total population of 242.648, in other words 13% of the region's population<sup>6</sup>. All these cities are situated at a distance range of 50-100km away from Thessaloniki, or time-distances of between 45 up to 60 minutes. Thus, observing only the population size and distribution, the regional system would be categorized as a typically monocentric, with one dominant metropolitan centre surrounded by a number of smaller and weaker cities and towns. However, the recent trends over the last 10-20 years indicate an intended shift away from this image of a traditional monocentric region.

Contrary to traditional metropolitan growth patterns these regional urban centres have never functioned in the past as satellite towns, having a "work-to-home" relation. The linkages with Thessaloniki are multifunctional and relate principally to the service and administrative sector, since Thessaloniki performs all higher scale functions, many of which have interregional/transnational significance. There is not a linear relation between a strong metropolitan centre and a number of satellite towns, a feature that was also the same in the past when many of these centres experienced

4. Yiannakou, A. (2006), p.4

5. Ibid.

6. RCM

low growth rates or even stagnation. Upon a more thorough examination certain features of a more polycentric urban structure can be identified that can help estimate and project the future regional potential.

However small, the cities mentioned play an important role in the spatial organization of the region. This regional character can be traced back to the 1980s with the first intends of decentralization and has become more evident and critical for the regional economy and for the spatial structure of the entire Region of Central Macedonia over time. Most of these cities function as local centres for their rural hinterland serving as regional nodes with a direct rural-urban economy. This spatial relationship results in the creation of strong connections with a large metropolitan system, that can serve as critical regional cohesion forces. Some of these either specialize in a specific sector or are situated near important regional industrial/enterprise zones, while others host service functions of regional scale such as university departments<sup>7</sup>.

As far as growth is concerned, most of these cities have seen a relative fast growth of their own local commercial centres over the last years, which has in turn has removed their inherited dependency on the traditional commercial centre of Thessaloniki. With a few exceptions, between 1991-2001, almost all these cities enjoyed growth rates higher than the national average, whereas, as a total, the annual growth rate increased by higher rates compared with the regional average. It is worth noting that, in the 1991-2001 decade, the four cities nearest to Thessaloniki (Kilkis, Veroia, Katerini and Giannitsa) recorded higher population growth rates than the urban Thessaloniki Area<sup>8</sup>. Irrespective of the above trends, the level of competitiveness of these small-size cities in the interregional and, more so, in the cross-border area, remains very low, a problem that, in many respects, characterizes the region as a whole. The overall level of competitiveness of the Greater Thessaloniki in the extended cross-border region and in the European area is as demonstrated still an open issue, with important prospects not only for the city of Thessaloniki but the regional centres as well.

### 3. Prospects for interregional/transnational networking

Mobility within the Region of Central Macedonia is another important indicator for understanding the intra-regional urban structure between these cities. Based on the 1993-94, *National Origin-Destination Survey*, the number of journeys recorded between Thessaloniki and the small cities of Central Macedonia (including their surrounding areas) were

7. Egnatia Observatory (2009)

8. Ibid.



Map of Ancient Macedonia, showing the route of the ancient Egnatia by Edward Holdsworth, London 1742 (source: National Bank Foundation)

among the highest in the country<sup>9</sup> (although significantly in numbers lower than the ones corresponding to the greater Athens area). The number of journeys between the smaller regional urban centres cities was also high, and recent sample data shows that the traffic along those routes has increased according to earlier projections<sup>10</sup> 51. More importantly, a higher increase is expected in the immediate future as a result of the improvement of the connectivity/transport corridors between many of these centres, and principally due to the completion of the Egnatia Odos motorway, as well as by a number of notable improvements and new proposals for the regional road and rail networks.

The profile of road journeys in 1993 shows that cross-regional links were relatively restricted. Cross regional links of some significance were recorded in the case of Thessaloniki along with the nearest cities to the west (Kozani), east (Kavala) and south (Larisa). The local geomorphology seemed to strictly dictate the establishment of corridors of communication over the past, due to the limited and antiquated infrastructure. The Egnatia highway and its vertical axes have redefined the *carta* of regional mobility, undermining the notion of monocentricity. As mentioned, despite that Thessaloniki is the largest city in Northern Greece, cross-regional functional links have not been very strong, partly because of the increasing importance of the regional centres as service centres on a regional scale and an increasing interregional scale. Although this feature indicates a positive dynamic trend for the peripheral urban centres, however, this dynamic trend has an internal cohesion effect limited within the regional boundaries, that hardly contributes to the upgrading of the national urban structure and thereafter of the interregional/transnational competitiveness. Nevertheless the access pattern for the city of Thessaloniki has changed drastically, opening a rapid gateway to the east and north-east direction, with travel times decreasing considerably towards all directions<sup>11</sup>.

Having in mind this new access to the east, its interesting to note that the 1993 study indicated that the areas that attract the highest suburban character-type movements (commuting), are the province of Lagada, the southern suburbs and the province of Halkidiki, all areas that lack railway access and infrastructure. With the actual infrastructure upgrades, these numbers are bound to increase. For these areas, the establishment of a rail system connection could take a considerable burden off the traffic load, and promote further development. Overall, the highway situation in the region of Central Macedonia, especially after the construction of Egnatia Highway and its vertical axes, is found with a quite improved and modernized infrastructure, but still with an mono-centric outlook, lacking still coherent regional interconnections.

9. Yiannakou, A. & Natsinas, T. (2005)  
 10. Egnatia Odos Observatory (2005)  
 11. Yiannakou, A. (2006)

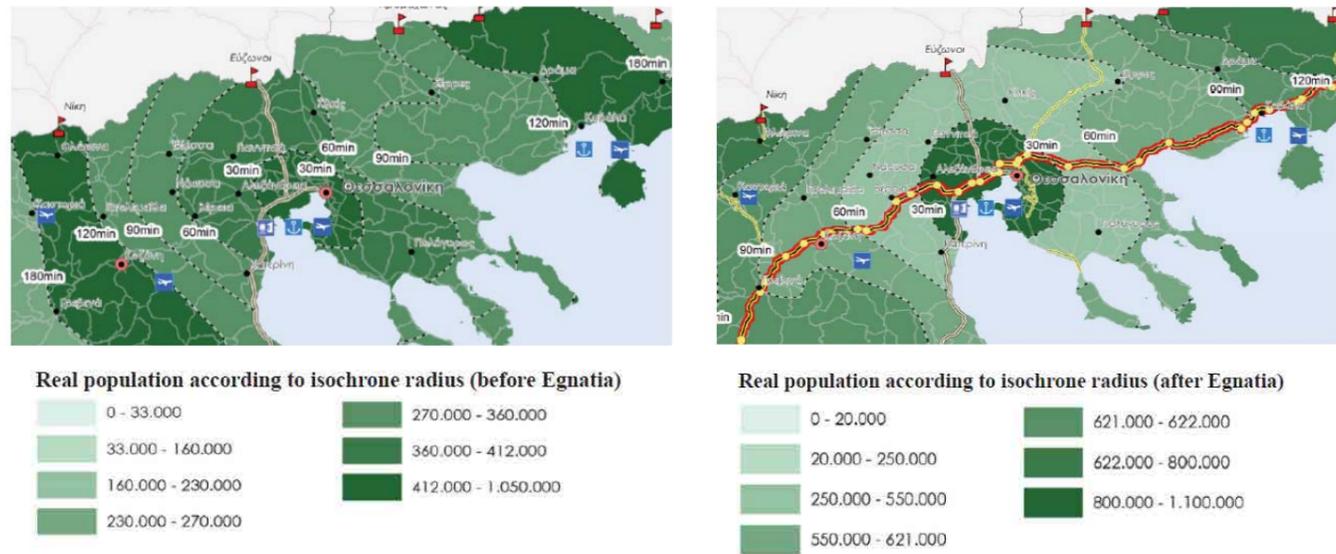
#### A renovated regional rail perspective

Proposals for the creation of new lines or a regional railway network in Thessaloniki date back at least a decade in the form of guidelines, a small number of individual studies and surveys<sup>12</sup>. In 2002, the Technical Chamber of Greece first recorded all of these proposals and made an estimate viability and feasibility study<sup>13</sup>. On the part of the official transport policy, an effort to synthesize all proposals was attempted with the document entitled *Road-Map for a Suburban Railway in Thessaloniki* made by a scientific working group under the supervision of the *Urban Transport Council of Thessaloniki* (S.A.S.TH) a few years later, in 2005. The urban growth trends, and the desired planning policy at regional level and at the level of the urban region of Thessaloniki, are favourable to the functioning of a modern and fast rail that can have considerable environmental gains.

From a traffic point of all studies seem to agree on the type of service offered by the rail network serving the region<sup>14</sup>. The main characteristics of the service need to consider: *a*) travel times of less than 1 hour between regional urban centres and less than 90 minutes for regional destinations. *b*) provide service, primarily for destinations related to work, education, industry and markets, and in some cases, recreation. *c*) service to urban and peri-urban centers, which can be receive the pressure of urban development of the extended Thessaloniki region and develop additional urban functions. *d*) Completion of interconnection and coordination with all modes of transportation. *e*) calls for the creation of a single entity/organization in charge of transit coordination /stations public transport services, pricing, parkings, information. *f*) improvements and upgrade in infrastructure (electrical trains) *g*) Promoting the visibility of the new offer of transportation service, designed to ensure the suburban-regional rail as an alternative means of public transport in the minds of the travelling public. The user should be aware that the operating characteristics (frequency, safety, reliability, comfort, information) provided by the suburban railway resemble the characteristics of a metro system and less to those of conventional rail.

In the region of Central Macedonia, the distance between urban centres that could share a regional rail service are between 50 km (Alexandria) to 110 km (Edessa). The relatively short distances, therefore, make it possible to connect these centres in relatively short times. The city of Thessaloniki has developed a train network only on the west side of the town with four long distance lines: ( *i*. Thessaloniki - Alexandroupolis - Ormenio, *ii*. Thessaloniki - Athens, *iii*. Thessaloniki - Kozani - Florina, *iv*. Thessaloniki - Idomeni). The same lines provide access to 7 of 8 regional urban centres: Alexandria, Veria, Naoussa, Edessa, Katerini, Kilkis and Serres. The only urban center that has no rail service is Gian-

12. Yiannakou, A. & Natsinas, T. (2005)  
 13. TEE /TKM, (2002)  
 14. S.A.S.TH (2005) p.25, Natsinas, T. (2006)



source: Egnatia Observatory (2007)

nitsa while Serres is the urban center with the largest distance from Thessaloniki and other regional centres, setting it outside regional rail objectives. The last 3 years saw the introduction of the first 2 lines of the regional rail, **i. Thessaloniki - Alexandria - Veria - Naousa - Edessa** **ii. Thessaloniki - Katerini - Litochoro - Larisa**, this second line functioning on an upgraded electric line.

The regional/suburban rail network proposed in 2005 by the Urban Transport Council of Thessaloniki consisted of 9 lines (see next page). From a technical point of view the forementioned proposals can be divided into two broad categories: **i)** Proposals based on the use of the existing rail infrastructure with small extensions in some cases (proposals 1-8) **ii)** Proposals that require construction of new railway infrastructure. However, the major difference between the two categories does not involve technical aspects but instead lays in the type of spatial planning in the areas of service<sup>15</sup>: The first group (lines 2-6) serves (at relatively low cost) serving more dense areas of the extended Thessaloniki area (Municipalities of Evosmos, Menemeni, etc.) and coherent and autonomous regional urban centres with distinctive functions (administrative, education etc.) or even important parts of the rural hinterland of the region. Line 1, at the same time, has a more distinctive suburban character, serving concentrated employment focal points such as the industrial area of Thessaloniki, TEI of Thessaloniki, and possibly in the future the projected new Expo Center.

In the second category (lines 7-9), the main characteristic of this group is that the service area corresponds to the zone of urban sprawl towards the southeast side of the city, municipal uses characteristic of diffused growth (suburbs, cinemas, shopping centres, etc.) and summer tourism area (eg. Chalkidiki). This particular urban form and growth pattern, with the diffused character of home and employment, poses serious problems in the design of public transport, since it has an inherent and increased dependence on car culture, especially given the uncontrolled pattern and growth rate that it has developed in the case of the city of Thessaloniki. The connection of the city's airport to the public transportation grid, is an issue of key importance for any future development plans, but still the completion of this task seems to be set as a distant target. Currently the airport is served only by bus connection. The future completion of the metro system, that will resolve the issue of crossing the city centre and connecting with the railway station, will work in favour of speeding up the connection on the southeast front. As mentioned earlier lines 7-9 are to serve areas that lack any present rail infrastructure, and at the same time represent a quite important quota of the daily car traffic to Thessaloniki. The construction of these line could have quite a potential positive impact on traffic and environmental indicators.

15. Yiannakou, A. & Natsinas, T. (2005)



(source: A & E by Egnatia.eu, B & D by airphotos.gr, C by panoramio.com)

The Egnatia Railway, still in proposal phase, is another project that has the potential to reshape the regional mobility map considerably. First, it can reconstitute Thessaloniki as an important rail node in a macro-and meso scale and at the same time it would improve significantly current connections and travel times. The proposal for the Egnatia Railway, although similar conceptually to the Egnatia Highway, follows a different route<sup>16</sup>. As part of this new Egnatia, it has been proposed the connection of Thessaloniki with the city of Giannitsa (and in continuation with Edessa), creating an important connection and increasing the rail network coverage considerably. Also, the extension of Egnatia to the East of Thessaloniki, would also speed up connection considerably, although it would be advisable, given the actual data, to reconsider the regional line and the Egnatia line delineation in an combined route to reduce the potential impact on the lake zone of Volvi and Koroneia<sup>17</sup>.

Observing the present and future/proposed rail network, its coverage pattern and the relevant studies, the following conclusions can be made: **a)** the regional railway structure until today has been dictated considerably by local land relief, as well as official centralized policies. **b)** Consequence of these factors is the monocentric structure of the rail network with Thessaloniki at the core. Future extension proposals although could potentially increase the connection with the regional centres, they do not preoccupy themselves with interregional connections or the potential regional development. All patterns indicate a traditional metropolitan monocentric rail structure with planning priorities that do not cater for the updated land use data and current traffic patterns. **c)** A need to differentiate service between suburban and regional infrastructure. **d)** The above analysis shows the need for integrating the railway network in the broader spatial context and policy, with a polycentric urban development model in mind, thus reconsidering new and existing routes. **e)** Finally, the necessity to overcome bureaucratic obstacles in order to speed up the studies and execution of the forementioned projects.

### Sea Transport

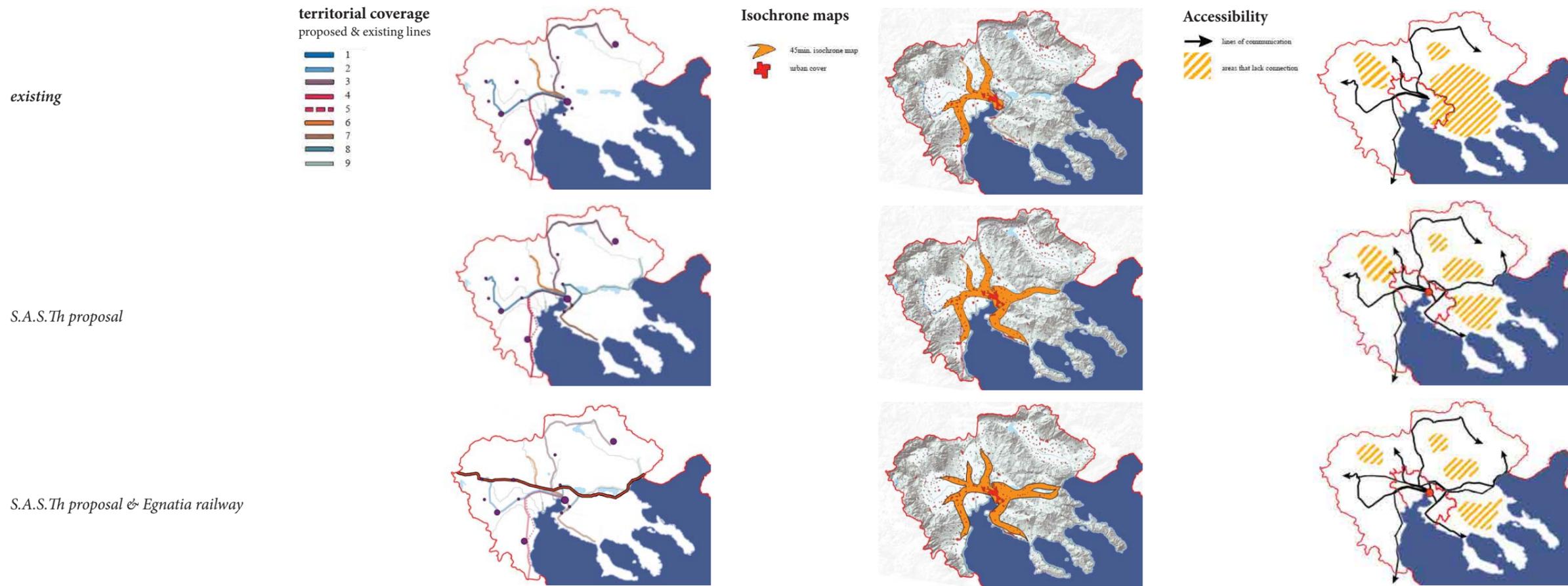
Another mode of transportation that has been considered by the region of Central Macedonia is the option of *Sea transport*. Although initially thought as a mode of urban transportation the idea was soon dropped, to be replaced by a more regional approach<sup>18</sup>. The initial line was to connect Thessaloniki with the southern parts of the region, like Perea, Neoi Epivates, and Nea Michaniona with future extensions extending to Chalkidiki. Other proposals included the connection with Pieria and the southwester extensions of the region. The reason sea transportation seemed like an attractive

16. TEE/TKM, (2006)

17. Ibid.

18. S.A.STH (2005)

**Regional Lines proposed by Roadmap** (data source: OSE, S.A.S.TH, TEE/TKM)



option was due to the fact that it offered easy and fast solution for the urban transport situations that the region faced<sup>19</sup>, *a)* the rapid growth in traffic volumes on the main axis of the city and especially the axis City center - Kalamaria, the large increase in the index of private cars, and a preference towards car usage as opposed to public transport. *b)* The significant residential development on the eastern suburbs, with the focus of the city beginning to shift towards the east to the Municipalities of Thermaikos, Epanomi and Michaniona, leading to increased travel to/from the city centre. *c)* The increased importance of Katerini (on the west) and Chalkidiki (on the east ) as tourist destinations with the increased seasonal traffic loads that they correspond.

Marine transport had the potential to provide fast, reliable and comfortable travel on specific routes, of regional reach to help reduce the environmental burden of the emissions of cars, and promote an integral development model for regional urban centres and tourist destinations. Nevertheless, the state and the region could not allocate the necessary funds to support financially this proposal and the whole idea was left to be reconsidered at a later date. The first line between Thessaloniki and Peraia was inaugurated in 2014

**Observations**

The first and most obvious conclusion that can be made following the previous analysis is the necessity for the creation of a single institution in charge of region wide transport planning. The city is required to directly promote the necessary transport infrastructure and mechanisms for the coordination of local actors in order to ensure a high level of service and enhance the overall quality of service. To this end, the creation of S.A.S.Th., was a first step towards this direction, with some considerable early successes. In cooperation with the Ministry of Transport and local agencies the organisation needs to play a key role in advancing to a single integral regional transport planning and administrative agency. Another key point is the necessity for actions to support the various stakeholders in order to coordinate for a rational planning model of urban transport. Approaching and changing the local car-dependent habits is another

19. Ibid.

important factor and challenge for planning authorities, that is to attract car users by offering competitive and quality public transportation services, a reliable alternative. In the following years the public transport system has the potential to convert into an shifting force for the city of Thessaloniki and the wider region. An integrated intermeddle transport system, aimed at all serving indiscriminately all citizens of the region, would include bus, subway, tram, suburban rail and marine transport as components of its regional infrastructure.

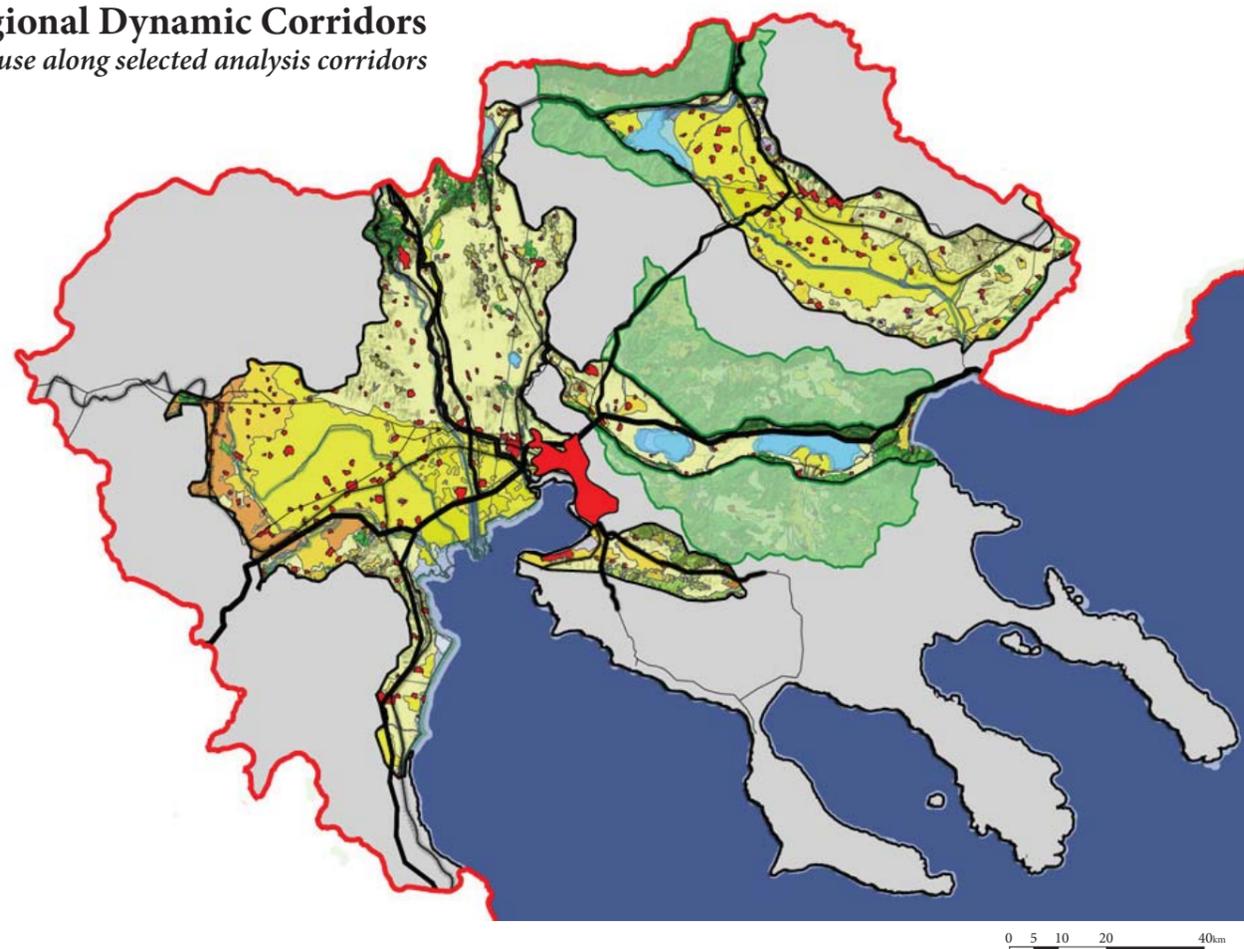
However, all policies that have been applied over time seem to be lacking a spatial dimension, where they barely consider the regional centres as part of a wider urban network. Most policies as demonstrated even repeat the monocentric model, ignoring any signs of polycentricity. Regarding Thessaloniki, all policy documents consider the role of the city in the wider Balkan territory as of a high priority. All the relevant plans such as the Regional Spatial Plan, on the one hand, and the Development Plan which accompanies the Community Support Framework, expect the future role played by Thessaloniki to be the cornerstone for the successful development of the city and the region as a whole<sup>20</sup>. The Strategic Plan for the Sustainable Development of Thessaloniki summarizes these policies and suggests priority strategies that envision Thessaloniki as a metropolitan centre on a international level serving as a node of cohesion and development for the wider northern Greece region. Although the most recent of the official documents released it still lacked a more spatial approach. Thessaloniki is still not treated as an integral component of a polycentric urban network within the wider interregional and transnational territory<sup>21</sup>. If the regional urban centres were to be considered as parts of the wider urban network, that would eventually lead to different policy priorities, ones that would reinforce interregional and transnational connectivity, and the development of organisational networking forms that enhance trade and co-operation among participating areas. From the various proposal and plans that Thessaloniki seems to participate, only a small number of these policies have been or are being implemented, namely those related to the Pan-European road networks infrastructure seen earlier.

20. Yiannakou A. (2006)

21. Ibid.

## Regional Dynamic Corridors

Land-use along selected analysis corridors

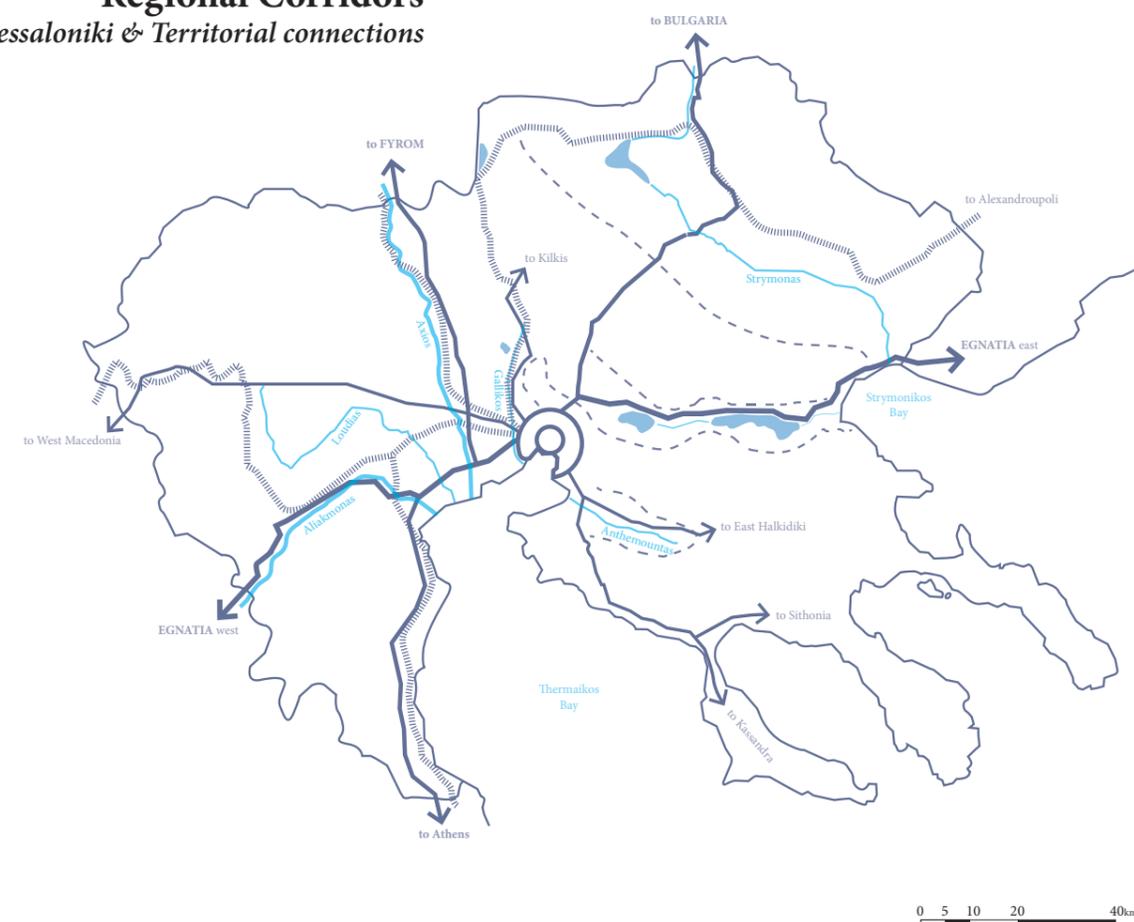


In reference to the sub regions-chosen and analysed in the earlier section of this analysis, some important patterns seem to emerge, that given their important ecological status, convert these areas of conservation into areas susceptible to transformations. The path that these transformations will follow and the impact they will have is linked to the immediate urban growth of Thessaloniki and the chosen regional development strategies. As the analysis demonstrated, and is presented summarized in the above map, these subregions include or form themselves important natural and artificial corridors, presenting along their route significant ecological, and transportation flows as well as hosting human and animal habitats. In the plain of Thessaloniki we encounter: 1) *The Axios corridor*, a regional and transnational axis, that includes the river, the Π.Α.Θ.Ε. highway and the parallel railway line. 2) *The Aliakmonas corridor*, of trans-regional character, and the largest on greek ground, present an opportunity for connection and cultural cohesion for the extended Northern Greece Area. 3) *The Volvi & Koronia lake corridor*, a traditional communication corridor, now upgraded with the passing of Egnatia, and planning of the Egnatia Railway. Realized and future projects compromise the local ecosystem's stability considerably. 4) *The Anthemountas valley corridor*, on the south-east of the city, provides connection to the south-east and the Halkidiki area and is found still in a relatively lowly impacted state by the adjacent urban activity. 5) *The Strimonas Corridor*, a sub-region of distinct characteristics, that lies on the limits of proximity to city of Thessaloniki.

A more in-depth analysis of the ekistic network of Central Macedonia would need to take a historic look at the evolution of the settlements in the area, through the review of historic cartography and written sources / archives. Another point which is important is the identification and mapping of historic communication and trade routes and their respective transformation or perseverance within the contemporary regional context. Nevertheless the previous combined analysis following the H.A.M (Habitability, Activity & Mobility) triptych to collect sufficient knowledge on the territory under question to construct a mental image of the compositional structure of the region as it is presented today through its spatial characteristics. The central role of the city of Thessaloniki is made evident, but at the same time a certain polycentric potential is recognized. This polycentricity following this paper discourse also has the potential

## Regional Corridors

Thessaloniki & Territorial connections



for a network / nodal configuration taking advantage of the key territorial mobility corridors present within its area. In this was a better efficiency can be reached in terms of mobility as well as a significant improvement of territorial cohesion through the even distribution of mobility opportunities. The series of cities (Veria, Naousa, Edessa and Giannitsa) situated at the west side of the region forming a conceptual regional West Arc, have a traditional relationship with agricultural activity and a special mountain-plain relation being situated on the mountain-Thessaloniki plain ecotone, and have accordingly developed a proper identity as well as intrarelations between them and their surrounding settlements. Respectively one can observe similar situations in other parts of the region (Strimonas valley, Aridea etc), accentuated also by the pronounced local geomorphology. Subsequent plans and regional policies should aim to preserve and promote this local biodiversity by paying special attention to the particularities as well as common points shared by these distinct sub-regions or bio-regions.

Before passing on to the conclusions and synthesis part of this section, a brief overview of the urban region is performed to provide a more detailed zoomed-in impression of the urban fabric. The distinct parts of the urban fabric will be analysed in detail in the next section of the ecotone analysis, that will intend to dissect and resow the fragmented impression of the urban mosaic. Before entering into the urban fabric analysis, the next two pages showcase aerial photos of urban and rural settlements in the region of Central Macedonia, highlighting the diversity and ekistic richness present within the region.

1. Arnissa



2. Seli



3. Aridea



4. Giannitsa



5. Kria Vrisi



6. Naousa



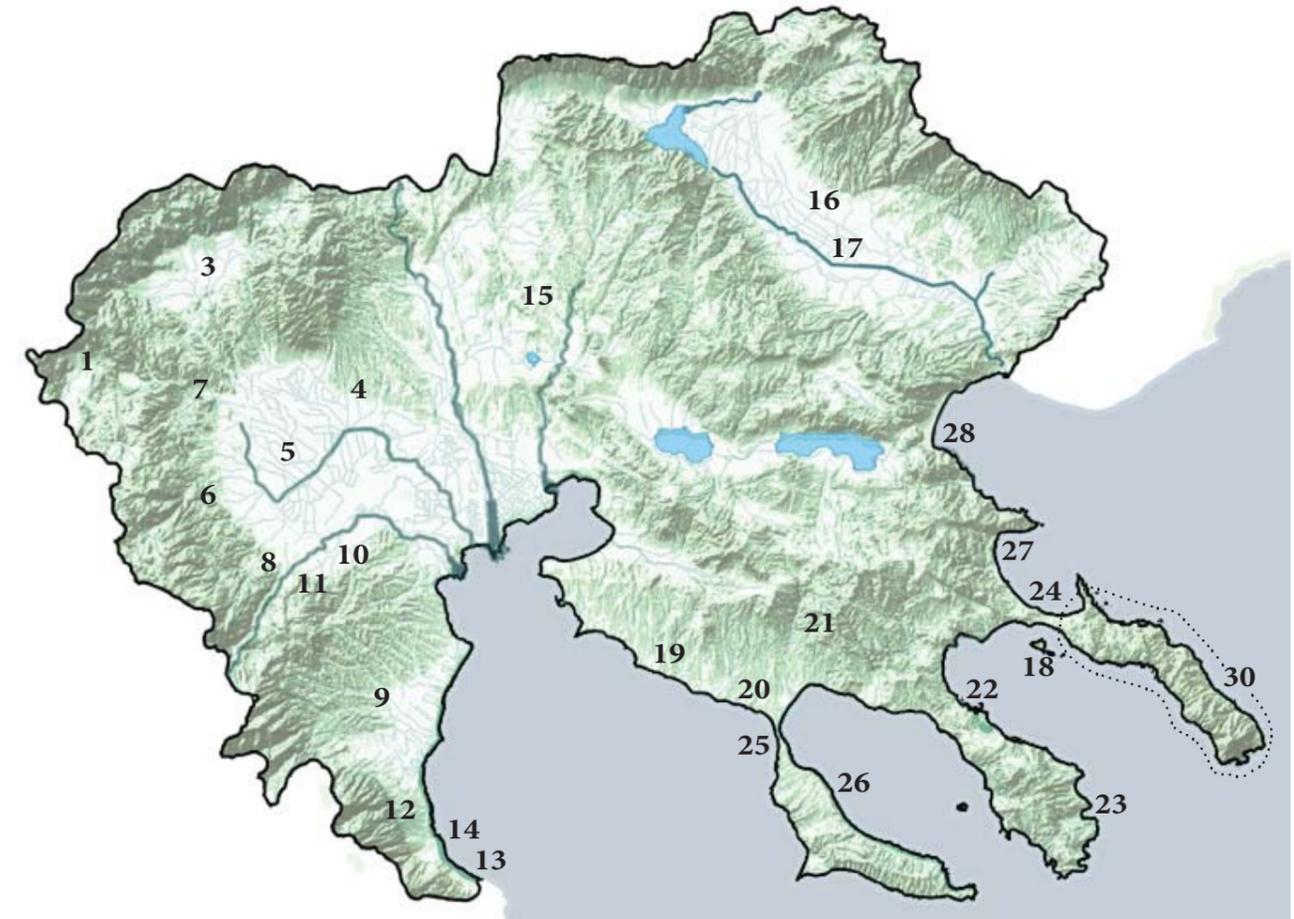
7. Edessa



8. Veria



9. Katerini



10. Meliki



11. Vergina



12. Litochoro



13. Platamonas



14. Skotina



15. Kilkis



16. Serres



17. Skoutari



18. Amouliani



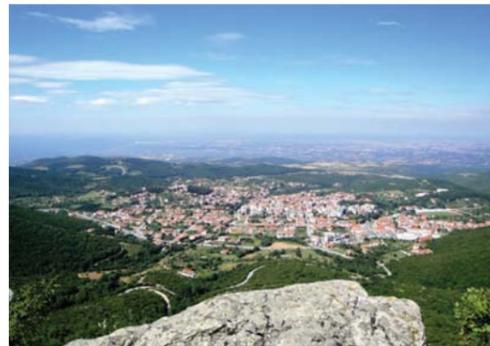
19. Nea Kalikrateia



20. Nea Moudania



21. Polygyros



30. Agion Oros



22. Vourvourou



23. Sykia



24. Nea Roda



25. Potidea



26. Athytos



27. Stratoni



28. Stavros



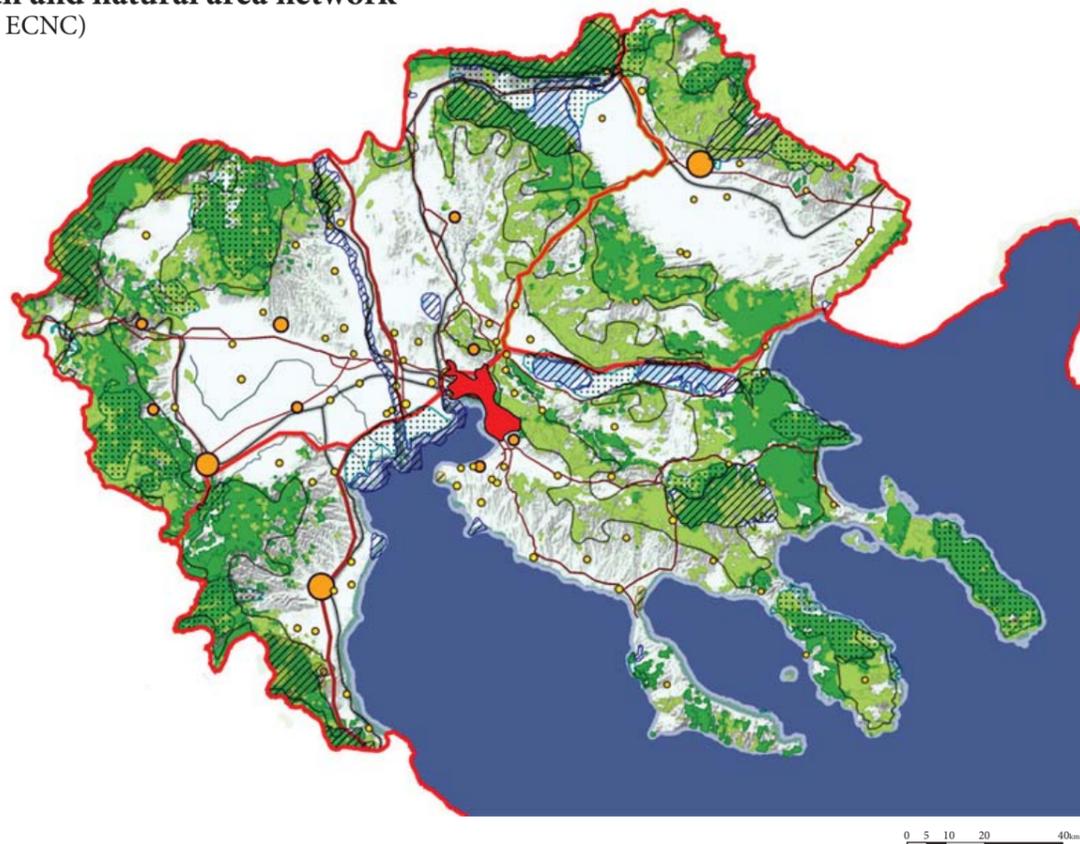
29. Ouranoupoli



(source: airphotos.gr)

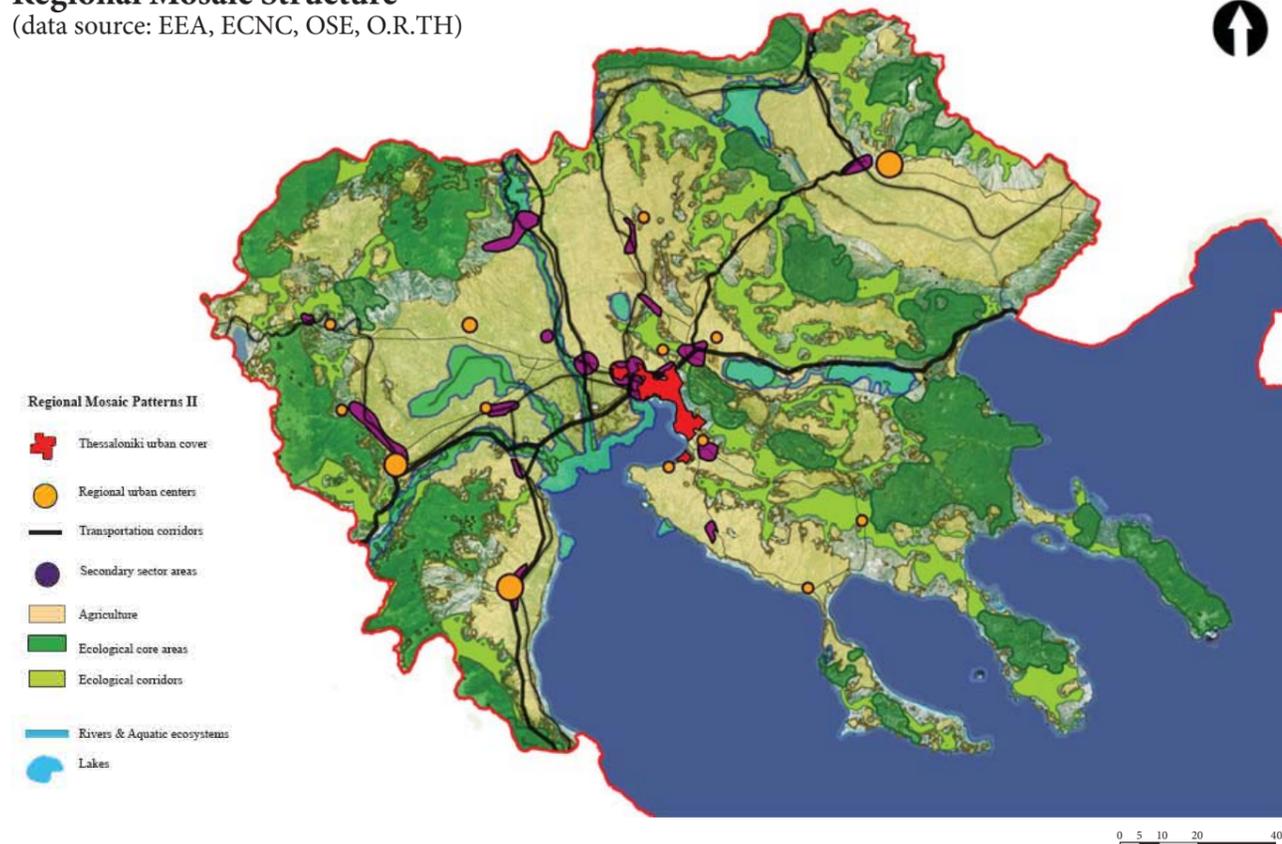
## Regional urban and natural area network

(data source: EEA, ECNC)



## Regional Mosaic Structure

(data source: EEA, ECNC, OSE, O.R.TH)



### iv. The emerging regional mosaic

The territorial unit of the Region of Central Macedonia presents a strongly differentiated natural and built environments.. The region is dotted with significant infrastructure, still in a development state, that provides important regional national and international links / connections. The region's general characteristics are diverse: an important and diversified agricultural production, principally in the fertile valleys with rich water resources; The beautiful and mixed landscape (coast-mountain) that presents substantial and diversified tourist potential although a stronger emphasis has been given traditionally on summer tourism; There is a significant number of higher education institutions and research centres, principally in the areas of Thessaloniki, and with new centres slowly establishing on a regional level (e.g Veria, Serres). Also the region is ground for a economic activity in all sectors with significant presence of capital and intermediate branches (e.g manufacturing and services sector). In all the factors mentioned above, the region is favoured by the strategic geographical position that it holds and the common borders and proximity with four Balkan countries with a short distance from the rest emerging markets of Southeast Europe.

In more detail as far as land use is concerned urban land seems to be expanding at the expense of agricultural land, an effect that is more pronounced in the peri-urban area of Thessaloniki. At the same time, during the period (1990-2000) an almost doubling of the length of the urbanized coastline has taken place. The total length of the urbanized coast in 2000 reached about 94km. over 51km in 1990<sup>1</sup>, with increasing trends in the future. At the same time a decrease is observed in the ratio of rural / urban land by 25%: in 2000 in the Region Central Macedonia corresponded 6.7 acres of agricultural land less per each acre of urban land, in relation to 1990. It should be noted though that at the same period there was a slight increase in wetland area by 0.35%. Aggregate and for the sum of the region, changes in land cover reached a 4%<sup>2</sup>.

In the case of Thessaloniki, a very rapid transformation of the residential structure has been observed, due to diffusion of productive activities and services, development of new centres of mass consumption and leisure, growing trends of suburban-type residences, etc. This ongoing transformation has had cumulative negative effects on the urban fabric, like the dispersion of urban activities outside the urban space, a significant depletion of territorial reserves, depreciation and shrinking of agricultural land, intense pressure on ecosystems, and as mentioned a major disruption of the urban

fabric, with the effect further intensified by the deficiencies in infrastructure. The urban area of Thessaloniki in particular presents problems of certain identified areas with low environmental and habitability levels, inadequate social infrastructure, lack of public spaces and green areas, as well as a constant strong pressure on the traditional and historic commercial centre, a phenomenon that can be observed in the majority of regional markets<sup>3</sup>.

The extended region of Thessaloniki during the 1981-2001 years has demonstrated strong population growth, serving as a major attraction for new population. In the same are spatial redistribution of the population has been observed, with an increased emphasis in particular municipalities situated in the east. It is estimated that the present growth trends will lead to further development of the formentioned municipalities located in the east and in continuation the municipalities in the north. The western Municipalities are expected to present relatively small increases in population. The urban area of is not expected to experience significant population change. The rest of the regional centres have demonstrated larger growth rates than the Thessaloniki, urban areas and are prone to continue in a similar manner. The Mountain areas and especially those parts which are characterized by a decrease in population and reduction of activity are identified as the most disadvantaged areas of the Region<sup>4</sup>.

The Thessaloniki region has the characteristics of a modern and developed regional economy with a structure of a metropolitan centre. The problems in the economy are generally structural, and inherent as part of the Greek economy. In spatial terms, there is a clear economic empowerment of the pole of Thessaloniki, accompanied by moderate to almost stagnant performance of neighbouring prefectures. The majority of the plans/proposal see as the principal challenge the development of Thessaloniki, that will in continuation contribute in a diffused manner to the further regional development. Few attention is put on the alternative prospect of increasing regional coherence and development, in order to achieve an improved position for the regional capital and the entire region consequently.

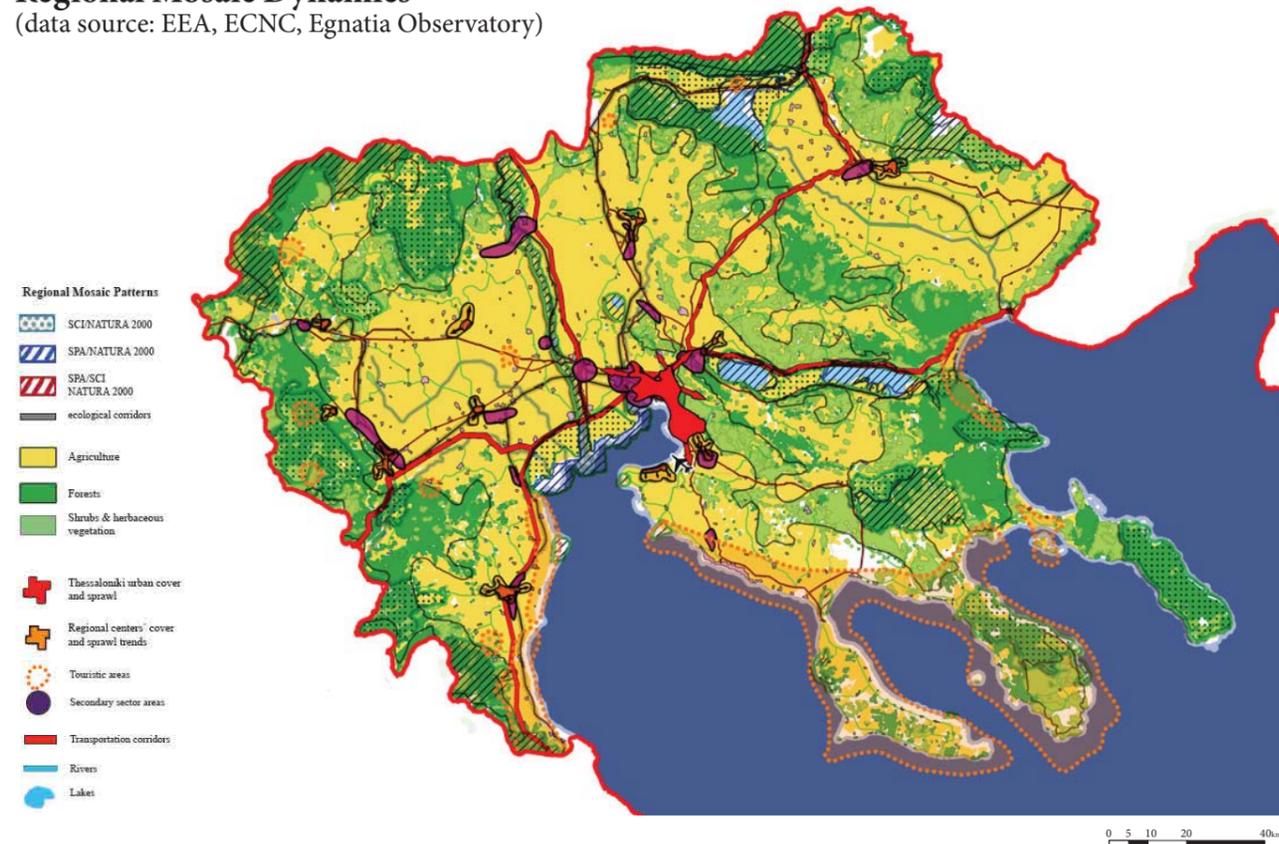
The agricultural sector has a very high specific gravity based on *i*) a strong regional tradition and *b*) a great availability of land, that hasn't created until today considerable conflicts with other land uses. The industry is based on medium and large-sized units, covering a good range of needs of local and regional markets and with an outward orientation in the wider national, Balkan and international markets<sup>5</sup>. There is a substantial stock of industrial knowledge and tradition in

1. EPEM (2007)  
2. Ibid

3. Hellenic Ministry of Environment, Physical Planning and Public Works (2008)  
4. EPEM (2007)  
5. Ibid

## Regional Mosaic Dynamics

(data source: EEA, ECNC, Egnatia Observatory)



labour intensive sectors, are expected to fall in industrial output and employment, while an export dynamism is manifested mainly in food and intermediate goods, and new investment destination in the Balkan hinterland, especially in intermediate goods. The tertiary sector, on the contrary is more dynamic than the formentioned, of a more innovative character and a supra-national character. This services are focused on trade, financial services, recreation - culture - tourism, health - education, research, information technology, logistics and transport etc. The epicentre of this sector is again the area of Thessaloniki.

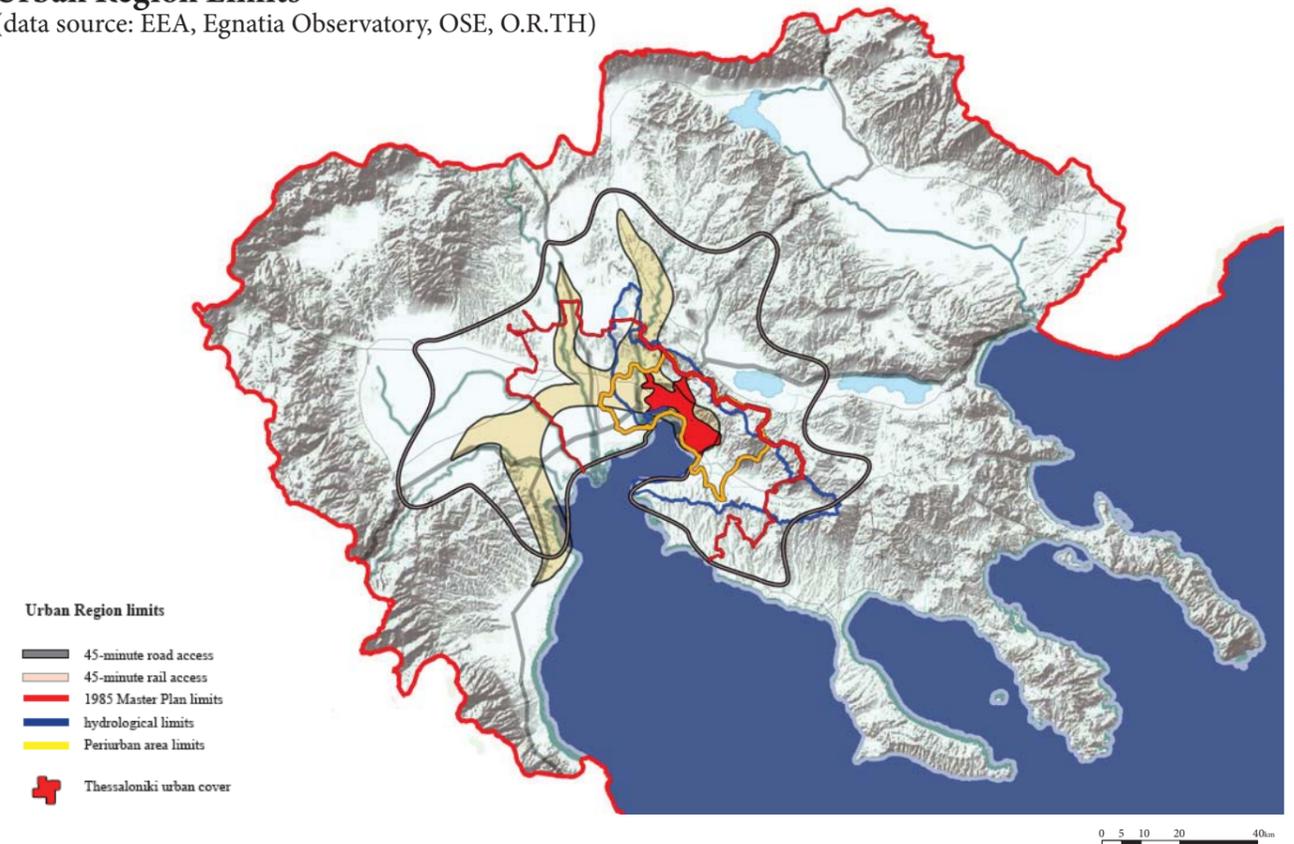
The spatial problems that the city faces also affect the various sectors of the economy. Many of these problems have a spatial dimension, while other are more related to deficiencies in sectors such as policy measures and regulation. Nevertheless, these problems affect adversely the productive capacity of the city, where the primary sector is under pressure from urban expansion and related infrastructure activities. Lack of economic incentives and market imperatives many times act as deterring factors for rural development. The secondary sector is mainly in unorganized and located in areas with poor or inadequate infrastructure. The wider Thessaloniki area is characterized by a saturation of space and absence of potential new receptor-areas for new development. The service sector due to the accumulation of all these factor cannot take advantage of the new prospective that are being opened. Similarly key metropolitan infrastructure points like universities, culture related centres, expo centres, etc. are locked-in, in poorly selected areas, without opportunities for growth or special development.

The spatial implications of urban development as demonstrated has had a negative effect on the natural as well as the urban environment. In natural areas a severe deterioration of ecosystems (wetland, forest, coastal, territorial) is observed with multiple consequences. The areas under a protection regime, in the region, cover a considerable area and geographic range, but are not organized in functional or interconnected networks. Functional in the sense, that no protected ecological corridors or buffer-zones have been set, thus connectivity is not ensured and organisational in the sense, that there is a lack of plans for integral development of these areas, or a true ecological perspective envisioned for these areas.

As far as hydrological resources go, the water district of Central Macedonia (including 75.1% area of the region of Central Macedonia) has been estimated that the available water resources are sufficient to meet the needs on an annual

## Urban Region Limits

(data source: EEA, Egnatia Observatory, OSE, O.R.TH)



basis, given that in these go included the water entering the country in the river Axios<sup>6</sup>. This creates a given uncertainty when it comes to the estimation of hydrological balances because *a)* the largest amount of surface waters comes from the FYROM, and thus will depend upon the water management policy and usage of this country, *b)* large amounts of water extracted for irrigation purposes from the Axios and Aliakmonas rivers are eventually drained in the basin of Loudias and *c)* the management of water resources of the department is quite complex and still not adequately monitored that it only allows for an approximate assessment of the hydrological components and their behaviour<sup>7</sup>. The region in first valuational sight, presents a quite rich and diverse mosaic, one also characterized by structural deficiencies that creates points of conflict for ekistic or natural development.

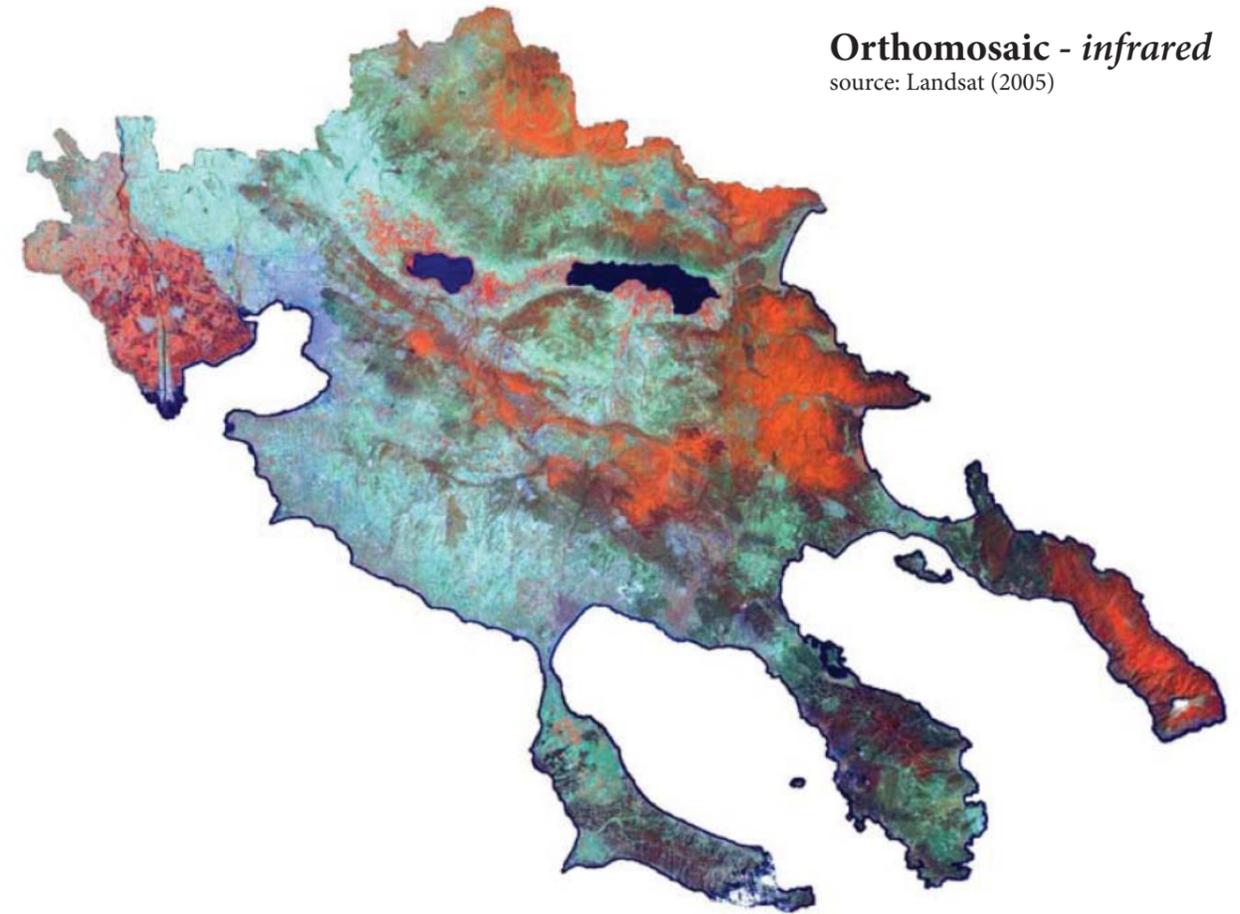
### v. The Urban Region limits. A first approximation

The urban region as a question-in-mind and as a theoretical definition finds a challenging situation in the case of Thessaloniki. The subject has preoccupied recent studies and plans, leading up to the expansion of the urban region's territory with the 1985 Master Plan, and the recent procedure for its revision. Defining a rigid urban region as demonstrated by earlier analysis and methodology cannot be an objective for this paper. Indeed, as seen in the introduction, the notion of a rigid delimited urban region, is out of current scholar usage, and instead a more dynamic, diversified definition is starting to emerge as a more dominant model.

The city of Thessaloniki presents trends of metropolitan growth according to the traditional definitions of metropolitanism (*urban sprawl, suburbanization, traffic axes, diffused economic structure*). The idea of a metropolitan governance has been a hot topic of local authorities' discourse in the recent years. But thinking in the Thessaloniki's urban region as a metropolitan delimitation, or a potential point of departure for a future metropolitan expansion would be a failure to recognize the true regional potential, while at the same time endangering even more regional ecological integrity and quality. If its not a question of semantics, but instead more of a marketing scheme, then again the metropolitan question excludes the ecological question in its economic rhetoric. In particular for Central Macedonia, urban development and particularly development of the epicentre of Thessaloniki, should firstly be based on the integration and expansion of urban transport and the strengthening of operational links between urban centres and the immediate and wider region in order to ensure a balanced relationship and between urban-rural, a conservation of geographical features and a careful consideration of sites currently under transformation.

6. Ibid

7. Ibid



## v. Natural Regional Structure / Scales of opportunities

Following the analysis of the natural region of the previous chapter, the basic structure of the regional mosaic can now be identified. Establishing the structure, and thus the main components that compose it, is important for the following reasons: *i)* It allow for a better understanding of ecological processes on a variety of scales *ii)* It permits to define and coordinate conservation efforts based on ecological hierarchy of the given place *iii)* It provides a more complete impression of the multi-level effects of human intervention on the regional mosaic *iv)* It outlines sites for environmental remediation and potential future development. Starting with the wider scale, there are four natural structural elements, that stand out when considered in conjunction with city of Thessaloniki and its hinterland. Accordingly, each element presents different opportunities for development and spatial organization, and equally of research-related issues. In detail these elements are:

### *i. The Aliakmonas River / Watershed*

The Aliakmonas river has a long recorded presence in local history and culture. The variety of landscapes created along its course and its tributaries are indeed a real but not officially recognized cultural landscape of the region. More recently it has served a key role in providing irrigation water with the construction of a number of dams along its course. The river and the numerous cultural/historical elements along its course, present an interesting opportunity for the creation of a cultural/natural park that could provide an excellent opportunity for a natural route to the core of the region of West Macedonia from the City of Thessaloniki encouraging transregional cooperation and management. The Tri-delta area is a common point of connection with other ecosystems and for accessibility purposes. The issues of water management and ecological integrity as well as cultural coordination are issues that could aid in enhancing intra-regional cooperation and accountability.

### *ii. The Axios River/ Corridor*

The Axios River is another important river corridor that presents numerous opportunities for integral management. The rivers presents two distinct parts, firstly the part in FYROM, crossing mountainous areas along river valleys, and the second in Greek territory where the river crosses the plain until it reaches the Tri-delta area. Pollution issues is a long recorded problem that affects the ecological integrity on a larger scale but more pronounced downstream approaching the estuary area. The Axios River presents an promising opportunity for coordinating environmental management not only on an intra-regional level but even more of a trans-national level. It can evenmore serve as a common ground for communication and cultural exchange between the two nations aiding in the direction of resolution conflict. The river of Axios symbolically is a connection axis between Skopje, the capital of FYROM, and the city of Thessaloniki, an allegoric prop for enacting transnational dialogue.

### *iii. The Lake Corridor*

The natural corridor formed by the lakes of Volvi and Koronia is another element of proximity to the city of Thessaloniki, that has experienced a considerable environmental impact due to local activity and urban sprawl

and diffused activity coming from the city of Thessaloniki. Its importance lies in the cross-regional access that it provides to the east. Apart it is characterized as a landscape of noted beauty and ecological importance. The overall state of the site is steady but of a low/degraded level. A management plan for this corridor will be key for the regional development as well as the future of the City of Thessaloniki.

### *iv. The Forest Reserves*

The forest masses principally in East Halkidiki as well as the ones in South-East Halkidiki, the strip starting north of the lakes of Volvi and Koronia and stretching northwest to lake Doirani, and the ones on the western front, represent important ecological core and corridor areas, thus holding a key role in maintaining ecological cohesion and integrity on a regional scale. The forest landscapes in proximity to the city of Thessaloniki, offer relatively close access to natural areas for urban and regional users. As viewed in the analysis part, exist a number of protected areas in the region. But what can be easily assessed from the current situation is the absence of any sort of network or linking of existing protected areas. An updated reassessment of the region would potentially identify new additional areas and provide a more detailed and varied characterization of each area. Furthermore it should promote the creation of a network of natural areas, that could comply with the basic notions of connectivity and networking present in natural patterns and ecosystems.

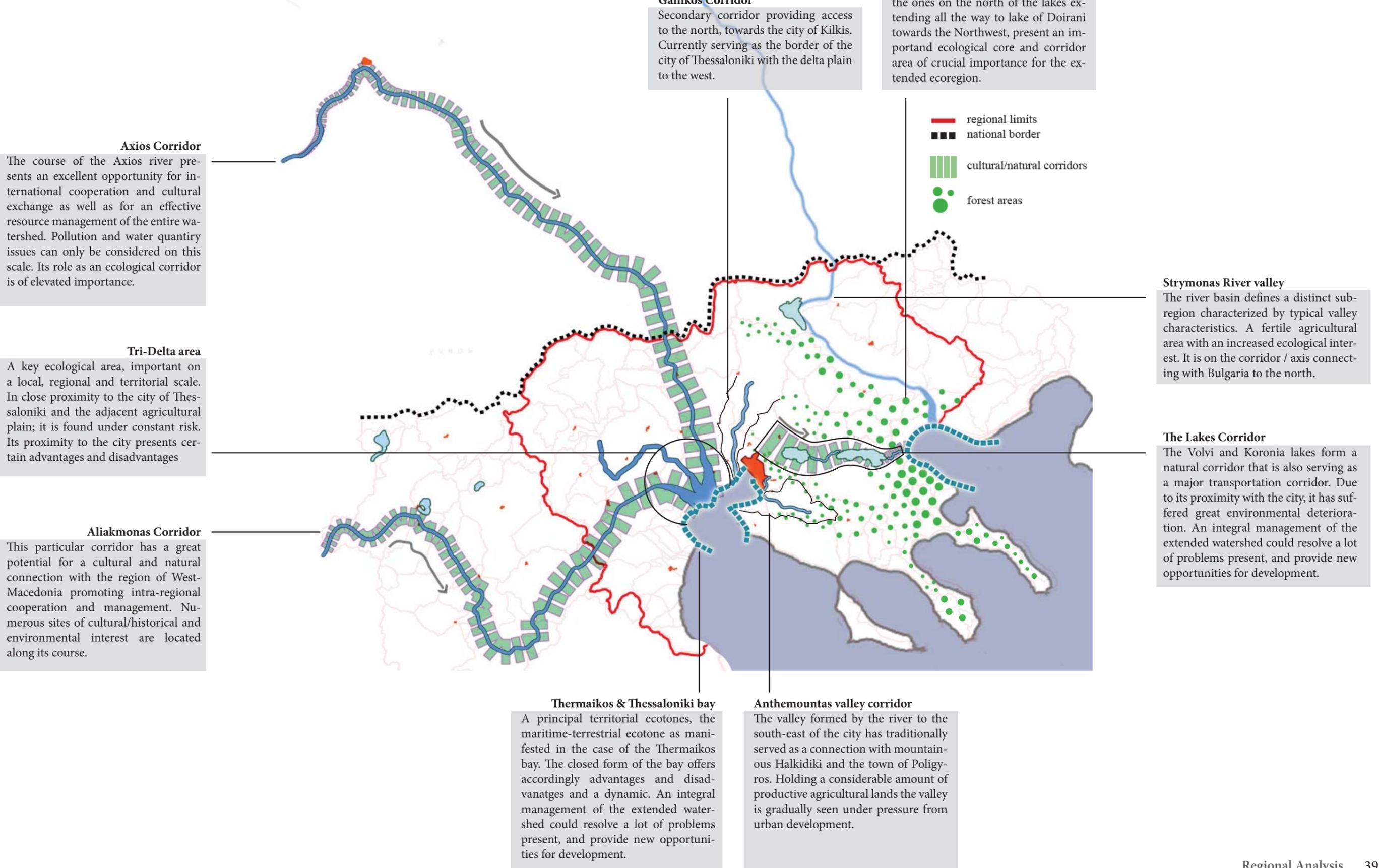
Apart from the three corridors and the forest area, there are a couple more sites that are crucial both to the mosaic function as well as the future development of the city of Thessaloniki. These are:

### *v. The Tri-Delta Area*

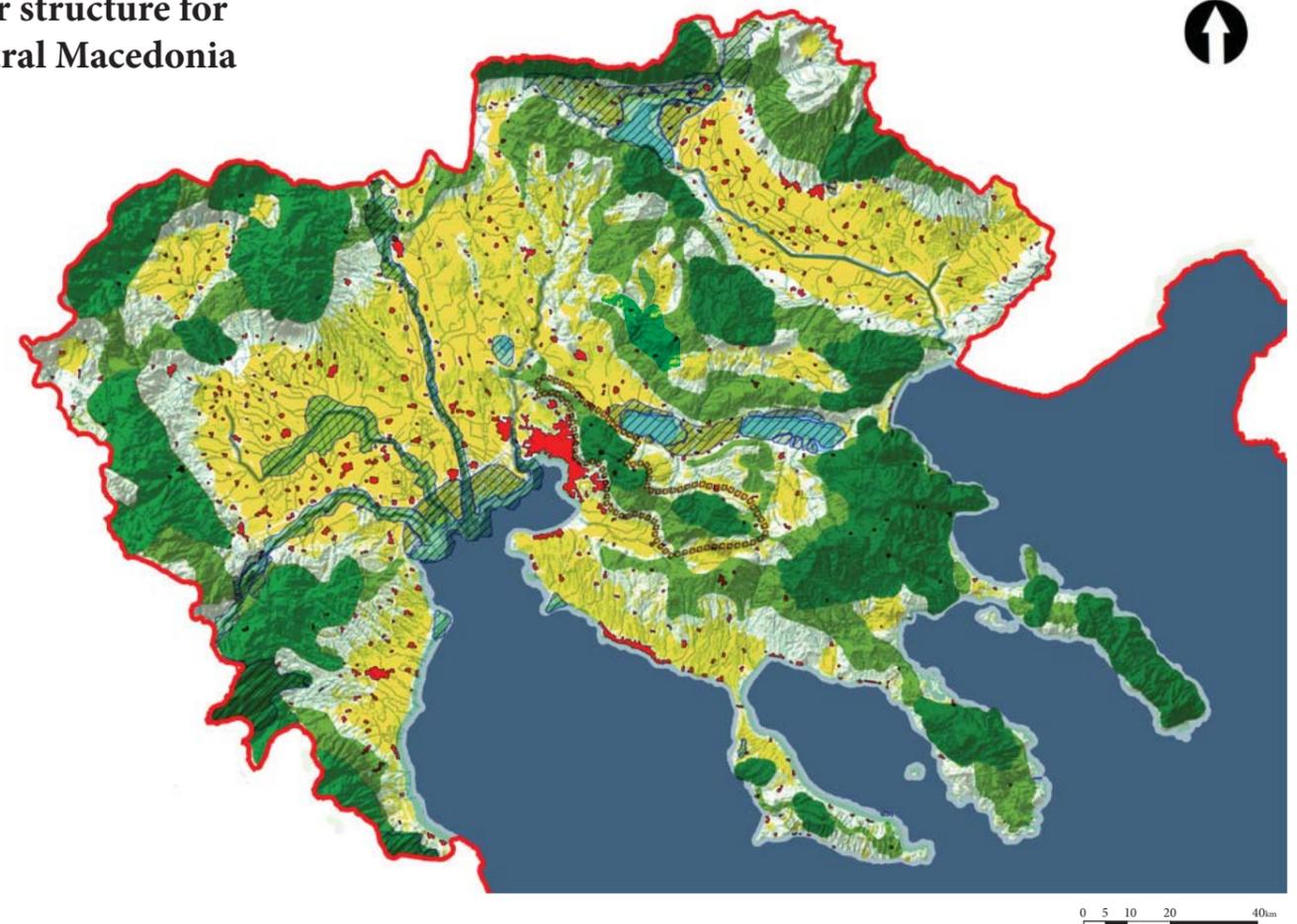
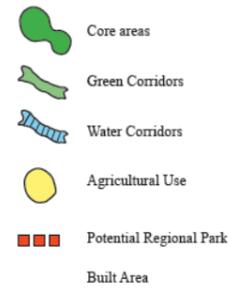
The map on the right page, demonstrates the estuary area in its current state, as well as the actual delimitation for the areas under a protection regimen and under the supervision of the Axios-Loudias-Aliakmonas Management Authority. The estuary area is protected under both the Natura and Ramsar treaties, and includes principally the part of the estuary situated south of the national highway. From the three rivers, the only one that is under protec-

## Regional Natural Structural Elements

Natural spatial elements that have a key role in maintaining ecological integrity on a regional scale. The city of Thessaloniki is situated close to numerous of these sites, affecting and being affected considerably by their functioning and state.



## A Patch - Corridor structure for the region of Central Macedonia



tion is the river of Axios. The current park, located in a close distance from the city of Thessaloniki which has offered the opportunity for the creation of various educational/cultural/recreational activities, with a considerable success in terms of participation and creation of citizen awareness. Nevertheless, the park suffers some serious drawbacks, due to uncontrolled or illegal activities still taking place within the controlled area; incapability to monitor and implement management at an appropriate scale to maintain ecosystem balance; the incapacity to create a self-funding capacity, resulting in its constant dependency on national and primarily european funds for its functional needs. Without going into great detail, its can be assumed that the current management and form of the park do not present the necessary ingredients for a future sustainable management of the site. Various decisions need to be made soon regarding various aspects of the site. The protected area coverage is one of the issues are key to the solution of the problem. The expansion of the protection to areas north of the highway, covering in greater extend the real natural estuary area. Stricter regulations should be applied to agricultural and other human activities within and enforce an efficient monitoring system. The Delta area is of enormous ecological importance, serving as rich bio-habitat, but also affecting the state of the Thermaikos bay, the city Thessaloniki and numerous ecosystems in the vicinity. The Gallikos river on the west side of city of Thessaloniki, can undertake the role of a lineal buffer zone, an interface absorbing negative dissipation effects and protecting natural functioning of the delta area.

### vi. A Regional Park for Thessaloniki

As seen through the analysis, the issue of lack of green space in the city of Thessaloniki is quite evident and alarming. Many proposals have been made regarding the creation of a Metropolitan park within the city fabric, but many of these proposals would opt for the creation of a park of a small size ; ( as for example in the current location of the International Expo) small when contemplated in relation with the new metropolitan reach projected by the Regulatory plan revision. The current geomorphology and vegetation patterns in the proximity provide the conditions for the creation of a larger park, of regional scale and access (seen in the diagram above). The forest of Seich-Su in Thessaloniki would act as a major hub in this elongated new park. In this greater scale, conservation and planning efforts can be reconsidered, having in mind the possibilities for regional access, recreation, and ecological restoration that can be achieved.

### vii. The Anthemountas valley

The river valley of Anthemountas on the south-east of the city is expected to receive increased pressure from urbanization in the following years, given its relative proximity to the urban fabric as well as the availability of space. The valley has historically served as a corridor of communication with the inland Chalkidiki, developing

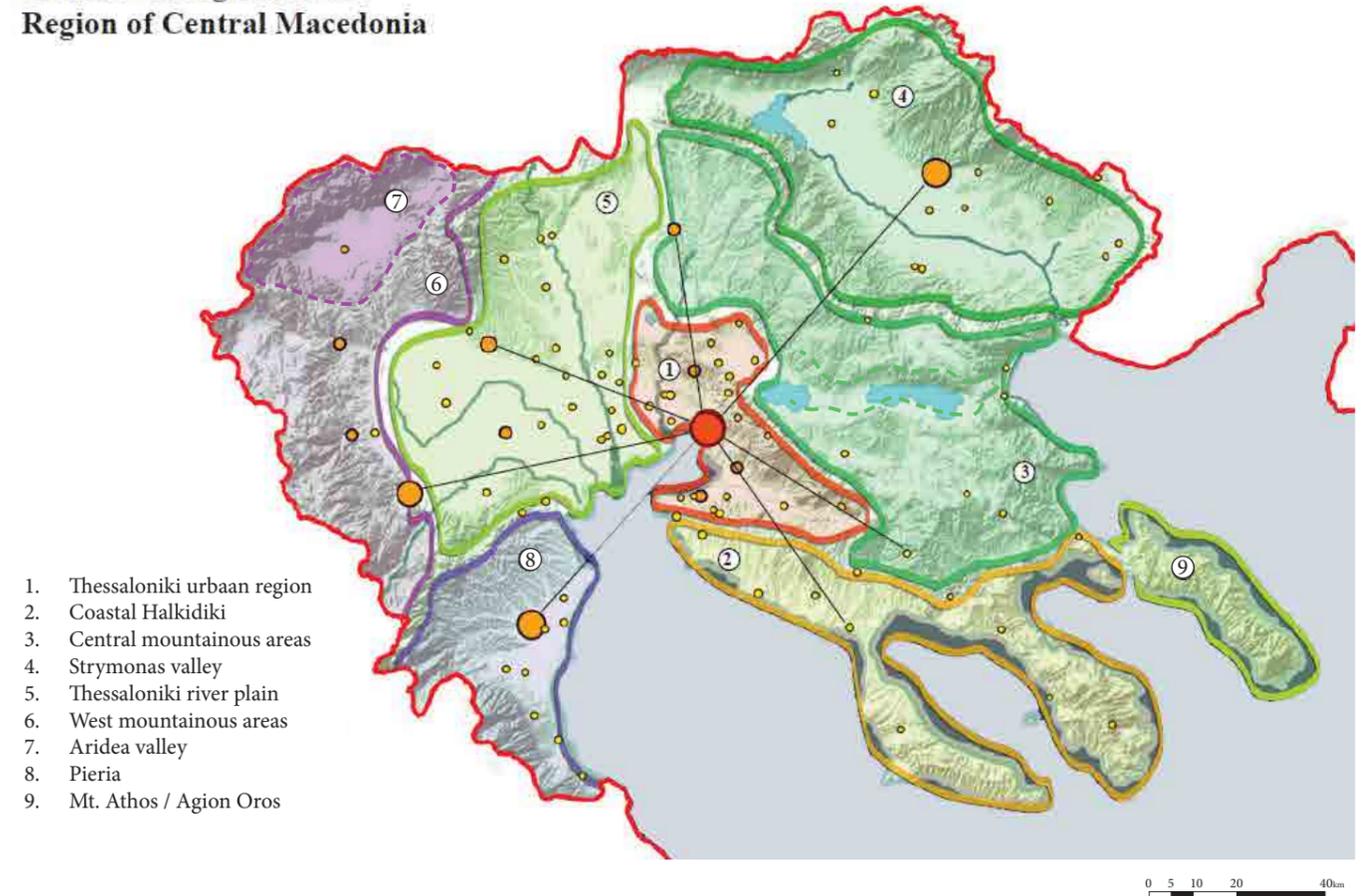
a strong agricultural character along its course. The valley presents the potential to develop a vibrant corridor of characteristic agricultural landscapes, intervened by small settlements and manufacturing activities, and at the same time present / propose a coherent plan for the protection of the natural resources and functioning of the valley. Furthermore there is a great opportunity for ecological restoration projects, aiming at the restoration of the wetlands area by the coast as well as overall hydrological capacity of the catchment area. Participative attempts initiated recently are a positive step towards the desired direction, but the discourse should be enriched by additional considerations regarding social metabolism and emerging networks, introducing elements of innovation and complexity in the planning process.

Human settlements in this updated context can be reevaluated comparing their historical development with contextual spatial arguments. In this way the current state of the urban region, can be analysed critically and help re-establish a point of departure for future decisions, establishing an organic connection with history, which although many times unconsciously is woven, but is less often contemplated in a practical/analytical way. The city of Thessaloniki as demonstrated is located in the proximity of a series of natural elements, of key ecological importance. The way that the city interacts with these elements is still not well defined. On one side, connection with these sites, is problematic or not explicit. Following the patch-corridor theory and available resources, an exemplary ecological network for the Region of Central Macedonia can be defined and formulated, demonstrated in the diagram above. This network would include already protected areas and the addition of new ones, as well the establishment of ecological corridors where necessary. A detailed and accurate definition of this network would require considerable amounts of work, but nevertheless could serve as a crucial regional mosaic lecture. The preparation of a regional landscape catalogue and a proposed ecological structure as part of an integral Regional Ecological Management Plan would be a welcoming step towards this direction.



(source: airphotos.gr)

### Distinct Bioregions in the Region of Central Macedonia



## vi. Exploring the diversity of the regional mosaic

The region of Central Macedonia, presents a great variety of geomorphological and natural features that have in turn influenced the historic development of human settlements over the course of history, thus forming distinct sub-regions, *bioregions*. Changes and advances in infrastructure affecting access and connectivity have influenced the perception of territorial limits. Predominant factor in establishing these limits, apart from natural features are spatial relations established over time. In an intend to identify these subregions present within the extended region, (searching for regions that comply with the definition of a bioregion) would be a useful exercise in identifying and making a synthesis of regional patterns, diversity, natural and social wealth. The respecitve bioregions that can be identified can be seen in the map above and are the following:

1. Thessaloniki urban region
2. Coastal Halkidiki
3. Central mountainous areas
4. Strymonas valley
5. Thessaloniki river plain
6. West mountainous areas
7. Aridea valley
8. Pieria
9. Mt. Athos / Agion Oros

These delimitations are not binding as far as planning is concerned but instead are orientative, searching for an identity of place, that planning and design could adjust accordingly harmonically. The limits of the Thessaloniki urban bioregion do imply certain suggestions of a proposed delimitation of the urban region, taking under consideration both natural considerations as well as current dynamics in the area. Accordingly the rest of the region is not presented or consider as subordinate to the city of Thessaloniki, but instead the city region is seen as an integrated piece of the regional mosaic, presented with more opportunities for connection and interaction with the rest of the region. The city of Thessaloniki however as expected maintains a certain amount of weight in the regional equilibrium, due to past and present develop-

ment, decisions as well as historical evolution. Each of the bioregions can be associated with a certain kind of activities (eg, Coastal Halkidiki with sea-mountain tourism and agricultural production) but do not by any means imply a regulation mentality. Again, it should be considered as a mechanism to boost regional diversity and identity and eventually the capacity to satisfy regional needs. Each bioregion has its own needs and potentials and thus different strategies and logics need to be applied respectively. Furthermore identifying the strong and weak points of each region, development opportunities can become obvious, as ways for dynamizing and showcasing regional diversity.

The classic notion of polycentricity can be reinterpreted in this case as poly-centrality implying that focus is not shed solely upon human settlements but also on the sum of all factors present in the regional mosaic. Natural areas and important ecosystems can serve as important focal points for a special kind of development including ecological restoration/normalization, as well as recreation and educational facilities. According human potential and development opportunities are considered in relation with natural conditions and capacity. A more detailed impression of the regional mosaic can be formed and can be seen in the map on the next page. The mosaic as it emerges from the previous analysis and lecture of the region, presents a number of distinct subregions that similarly as in a puzzle compose the greater mosaic. This early depiction of the regional mosaic is solely a lecture of regional dynamics, representing both past and future impulses. The identified bioregions can be seen in the map above and are the following:

#### i. The Thessaloniki Urban Region

The delimitation of the urban region is influenced by the following factors: **a.** Continuous urban built-land and sprawl **b.** Urban-related uses and activities **c.** Local watershed limits. The city expands towards Lagada connecting with the lake corridor of Volvi and Koronia. Nevertheless the region connects with the Axios corridor to the west that offers a fast access to the north. On the east it has the lake corridor and on the south direct access to Chalkidiki. On the north it borders with the Kilkis dynamic production area. A prominent element that borders but could also form part of the region is the Thessaloniki Regional Park. A key objective for the urban region would be to restrain and control urban sprawl and propose specific punctual actions/interventions taking advantage of present urban empty spaces and discontinuities to create a more coherent and vibrant urban region.

### ii. Dynamic Activity / Production zones

These include areas that have demonstrated substantial manufacturing/production activity in the past and present the potential for a future development of a dynamic nature, in the sense that it implies a reconsideration of present production patterns and proposing new or adapted uses that are characterized by innovation, ecological consideration and competitiveness. The respective regions are responsible for planning and designing of these zones. These are:

- **Kilkis.** A traditional neighbouring production zone on the north of the Thessaloniki urban region. This zone is planned to receive a considerable amount of industrial/manufacturing activity from Thessaloniki, and for this region it should be planned accordingly to ensure ecological integrity and future economic sustainability.
- **West Arc.** The Arc is comprised of the cities of Veria, Naousa, Edessa and Giannitsa. An extended area traditionally related with agriculture (fruit, wine) and manufacturing activities. The coordination in planning among these cities can create a dynamic arc on the west side of the region that can receive considerable load from Thessaloniki. The form of the region is also dictated by another factor, which is the resolution of the water management issues principally concerning canal 66 as well as the extended regional hydrological scheme, as the arc connects with both Aliakmonas and Loudias river, offering the unique possibility for a solution for an integral management of regional water resources.
- **Serres.** The valley of Strymonas as already demonstrated is a subregion that deserves an individual and distinct management plan. The city of Serres with its manufacturing zone and agricultural capacity has the potential to form another dynamic production zone with vicinity to the borders of Bulgaria. The water management issue related with the watershed of the Strimonas River and human and natural uses need to be coordinated.

### iii. Corridors

These are lineal spatial elements that can incorporate different kinds of flows along their course. These are:

- **Volvi & Koronia lake.** An important corridor that includes the Egnatia highway and maybe the future rail Egnatia. The lake corridor and the extended watershed are in need of a detailed management scheme that can resolve the current ecological problems of the site.
- **Aliakmonas.** Is a potential natural corridor of transregional character that presents opportunities for cultural and ecological awareness and protection.
- **Axios.** Is a dynamic type corridor that includes the Axios river, the national/international highway and rail along its course. It is of a transregional and transnational character, and presents an excellent opportunity for international cooperation and cultural exchange.

- **Anthemountas & Gallikos.** Both important regional corridors, in the peri-urban area of Thessaloniki, providing access to and from the city to the south-east and north accordingly.

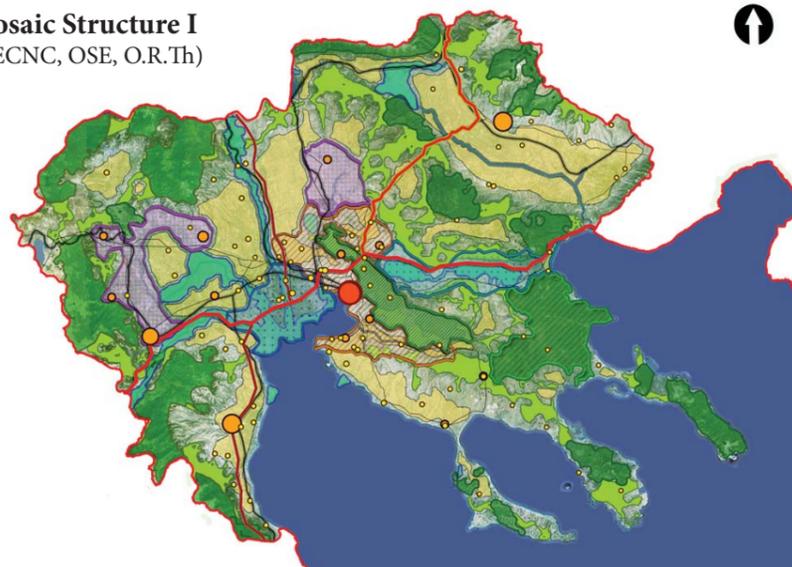
### iv. Natural Parks/Protection Areas Network

It refers to a network of natural areas that includes existing protected areas as well as added areas to fill in the patch-corridor scheme for the regional mosaic. From the sum of these areas a number of sites are highlighted due to their key functional character in the wider ecological structure. These are:

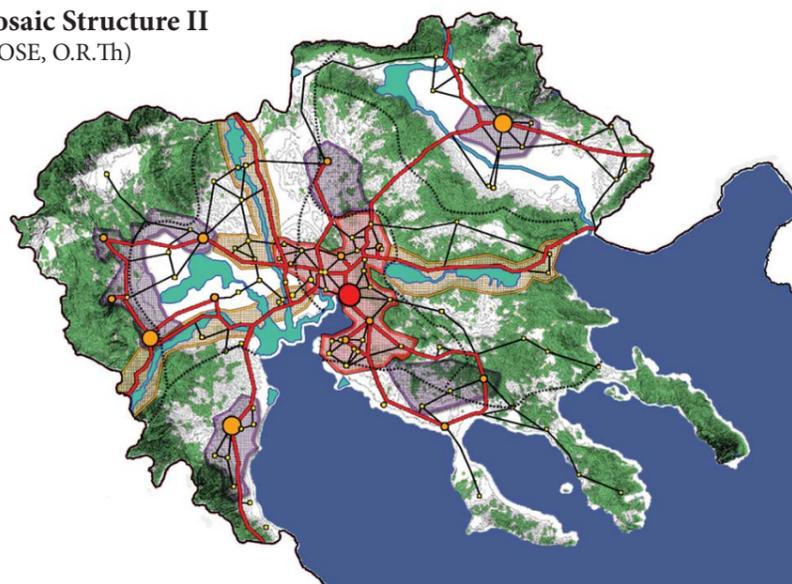
- **Thessaloniki Regional Park.** The park could serve as the backbone for regional development for the Thessaloniki urban region, hosting a wide variety of activities, along the urban-natural ecotone with a wide regional outreach. It could also serve as a natural corridor connecting with the Cholomontas natural Park.
- **Cholomontas Natural Park.** Situated on East Chalkidiki it represents an important and significant natural reserve with special ecological and cultural characteristics. It is a protected area of an impressive biodiversity.
- **The Thermaikos Bay & the Estuary Area.** The extension of the delta protection area has come to cover a greater part of the natural estuary area and implement a stricter supervision and monitoring of on-site activities. Cultural/Educational activities can be encouraged and further enriched. Accordingly the issue of the management and protection of the Thermaikos bay is a long unresolved issue for the region. The management of the regional hydrological scheme is of key importance for the bay of Thermaikos, in conjunction with the regulation of coastal activity and developments along the coast.

The first analysis of the regional Mosaic for the region of Central Macedonia is an initial lecture of the regional context, in order to identify the primary structuring and functional elements of the region. Further research and on-site visits would be necessary in order to proceed with a more detailed and accurate depiction of the regional mosaic. That would enable the identification of subregions in new secondary categories making the existing mosaic definition even richer. Another important element that has been highlighted through the analysis is the factor of scale, both in terms of research as well as when it comes to planning and design. The mosaic theory encompasses scale as an integral idea, identifying and paying attention at relations in-between scales. In fact scale exploration is a basic prerequisite for discovering mosaic diversity. A last important element that has been discussed and is directed related to the scale factor is the question and the debate on limits, whether applied to urban regions or natural ecosystems. Searching for limits either regional or subregional is a useful exercise in understanding human-nature interactions and in planning accordingly. The resulting mosaic that comes out of the analysis, is composed of individual pieces that fit in, both in terms of boundary limits as well as ecological continuation. The pending ecological issues are correlated with similarly pending social/economic, to form a more representative mosaic where solutions are also sought with the same denominator.

**Regional Mosaic Structure I**  
(source: EEA, ECNC, OSE, O.R.Th)



**Regional Mosaic Structure II**  
(source: EEA, OSE, O.R.Th)



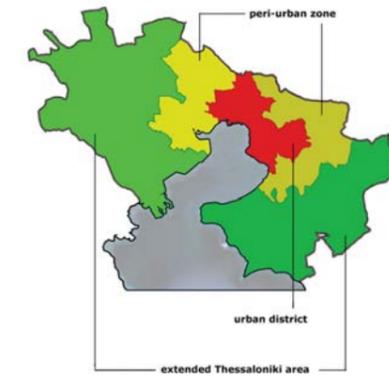
On the issue of metropolitan governance, this paper presents objections on the mere addition of another hierarchical organisational structure on top of the existing territorial structure, but at the same time agrees with the need for a territorial perspective and management that it implies; a task that could be undertaken by the regional plans for the region of Central Macedonia. The mosaic theory can be applied equally in a typical metropolitan structure, as it could with the case of the city of Thessaloniki, but it would not be able to extract its maximum potential or guarantee its undisturbed functioning since the considerations and priorities would vary significantly. Although it is usually aspects of the social mosaic that get affected the most by the implementation of such metropolitan / monocentric structures, in the case of Thessaloniki the ecological mosaic could also be affected severely by a metropolitan type growth, by subduing natural areas exploitation and management to the urban function, affecting quality of living accordingly. Lastly, the territorial vision towards the Balkan hinterland that has been presented as synonymous to a metropolitan model for Thessaloniki, can also be considered without the presence of such a structure but under an updated mosaic perspective, as such presented here, that takes advantage of the full potential of the region. The creation of a network, polycentric and interconnected, as a model regional development presents even richer possibilities for re-connecting and establishing further connections with the lost Balkan hinterland.

## REGIONAL MOSAIC STRUCTURE

*Areas of potential & interest*



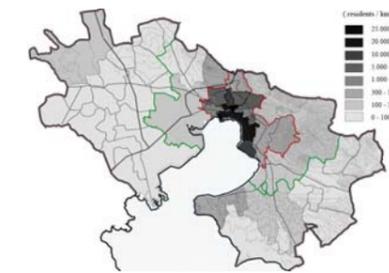
Delimitations (source: O.R.Th)



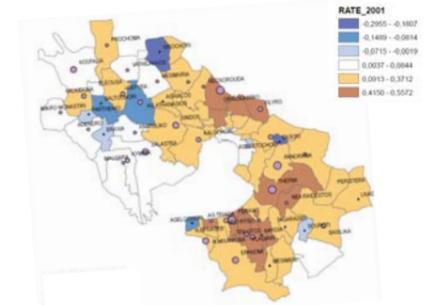
Administrative areas (source: EMXA)



Population Density (source: O.R.Th)



Population Growth (source: A.U.Th)



## C. The Thessaloniki urban region.

This next part will provide a brief closer focus on the Thessaloniki urban region, as delimited by the 1985 Master Plan and in vigor since, waiting for the revision of the Regulatory Plan to conclude. Originally the fourth level of analysis of the project-thesis paper, its purpose was to present a brief and more focused analysis of the area within the contemporary urban region limits, providing respective analysis diagrams and maps. At the same time it also served as a preparatory step for the subsequent analysis, that was to be concluded with this thesis paper, by detecting and identifying the pertinent urban ecotones for realizing and supporting the current research hypothesis.

### General Characteristics

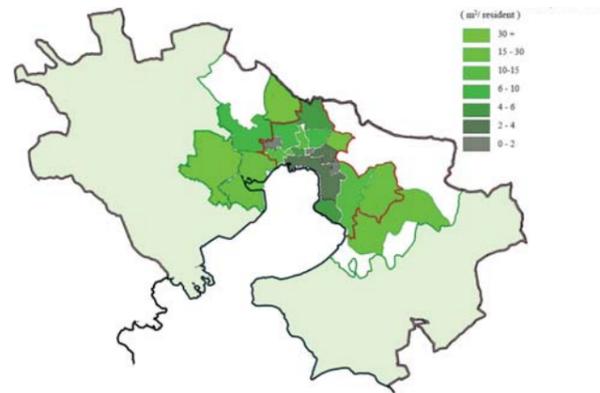
As seen in the map above the Thessaloniki urban region as defined today, contains three distinct official delimitation zones. First on the interior is the Thessaloniki **Urban District** (ΠΣΘ) that includes the majority of the urbanized land and highest population density of the urban region. The Urban district apart from the municipality of Thessaloniki, it also includes other adjacent municipalities, the majority of them of a high density. Right outside the urban district lies Thessaloniki's **Peri-urban zone** (ΠΖΘ) that contains a more varied land-use scheme: Residential, manufacturing, agricultural administrative, services etc. The east and the west parts of this zone, symmetrical on each side, each presents distinct growth and activity patterns but in a total the two receive the majority of new developments in the urban region. Outside the peri-urban zone and all the way to the outer limit, lies the extended area of Thessaloniki or the **Greater Thessaloniki Area** (ΕΠΙΘ). This zone is characterized principally by the extensive agricultural lands on both sides, and the delta area of the Axios River with the extensive irrigated agricultural surfaces. Significant residential development is taking place in the south in the area of Nea Michaniona, the coast area in general as well as diffuse expansion along the principal transportation axes, mainly highways. When viewing the urban region based on the local geomorphology and biophysical characteristics a number of key points can be highlighted:

- The **gulf of Thermaikos** is a closed coastal ecosystem that has demonstrated a dynamic behaviour in terms of coastline, ecosystem functioning and biodiversity. The relatively recent interventions on the extended delta area and management of related rivers within the catchment area have altered significantly its function, stability and ecological quality indicators. The historic connection of the local population with port and marine activities have accordingly been affected by the consequent alterations, natural or anthropogenic.
- The **local geomorphology** with the presence of parallel mountain ranges on the north-east creating pronounced plains, the litoral and the pre-litoral one accordingly, that have conditioned the urban development patterns historically and more precisely during the last century. The tri-river plain on the west and the Anthemountas valley on the south-east open up the space towards the two extremes of the city.
- The **agricultural lands** that persist in the peri-urban area and the extended area. These productive lands, some of high productivity, are often found unprotected and under pressure from surrounding urbanization or change of use.
- The key **ecological areas**, protected or not, that are located within the urban region, (eg. the forest areas on the north, the estuary area on the west, the local streams) the majority of them experiencing great pressure and stress from anthropogenic activity. The absence of a protection and management coherent plan on a wider but also on the urban level perpetuates the tendencial scenario of degradation and uncertainty.

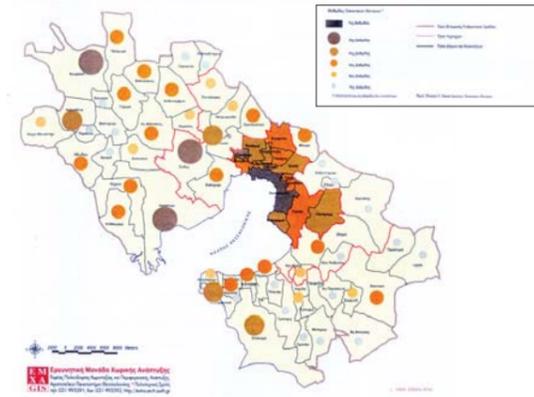
### Land Patterns

The twin graph on the top shows the land use percentages for the Extended Thessaloniki Area (ΕΠΙΘ) on the left column and the urban district of Thessaloniki (ΠΣΘ) on the right column. When viewed on the level of the extended Thessaloniki area, the region is characterized by the large percentage of agricultural lands that extend on the west and the southeast of the city of Thessaloniki. In the Extended Area the greatest of agricultural land

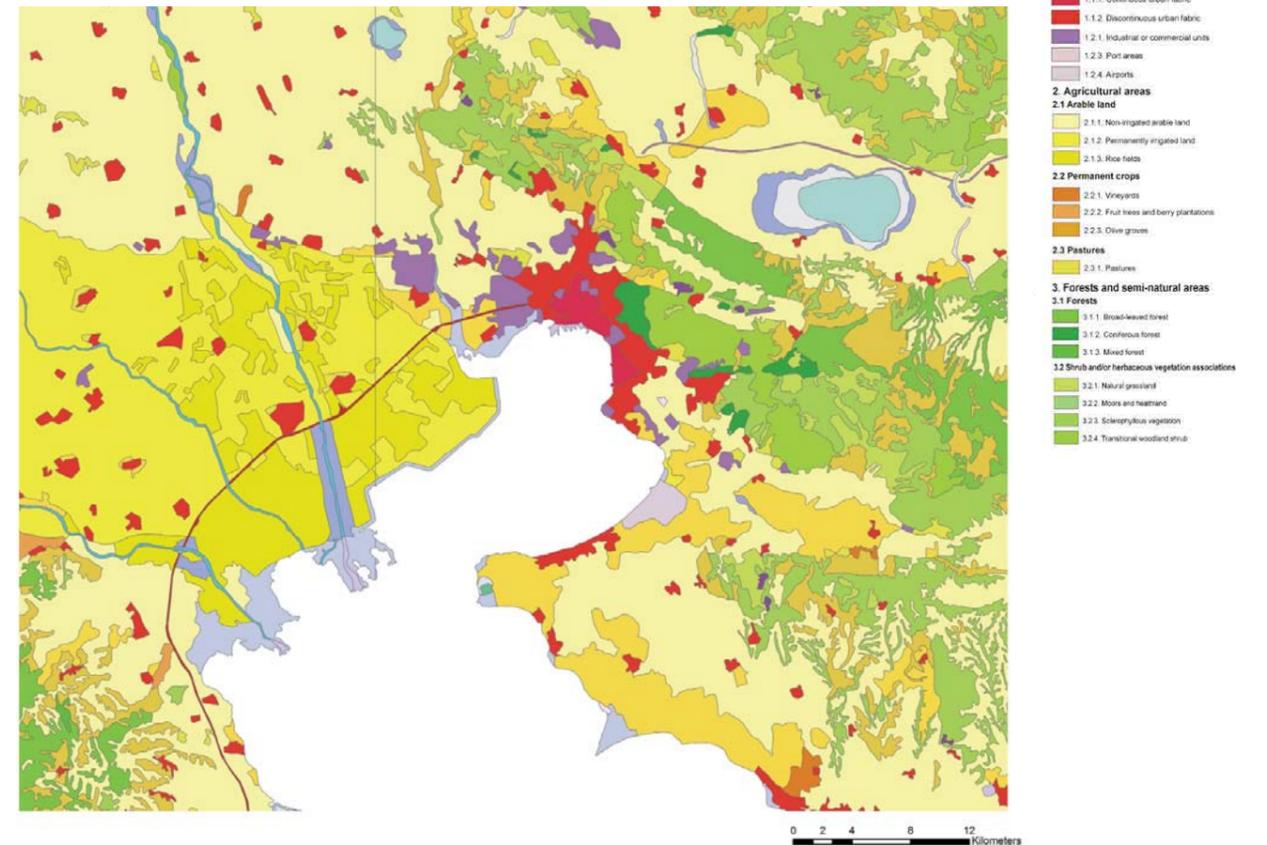
Urban Green Cover (source O.R.Th)



Ekistic hierarchy (source: EMXA)

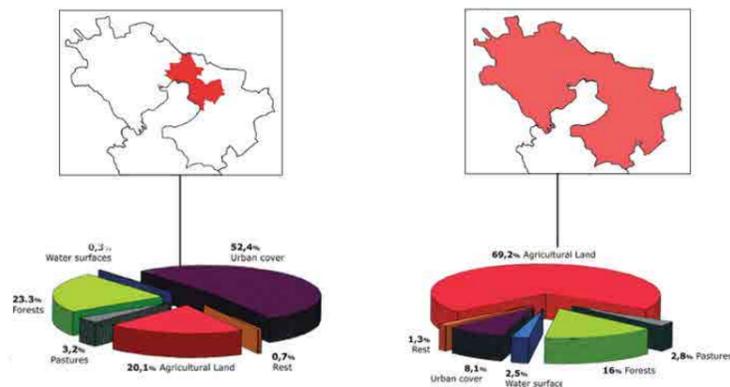


Land Use and Patterns (data source: EEA, O.R.Th)

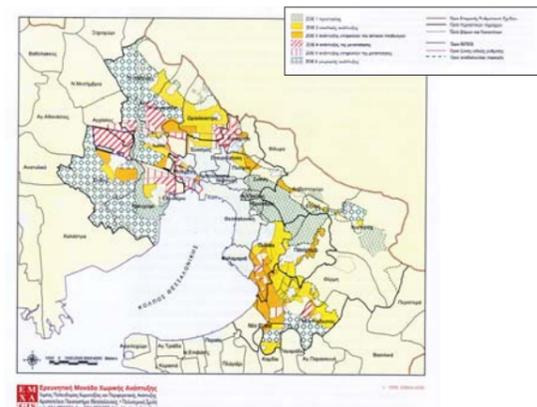


Land Use Statistics by Area

(source: O.R.Th - Environmental and Sustainability Indicators, 2008)



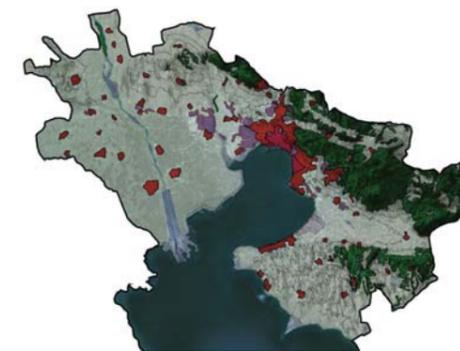
Ekistic zones classification (source: EMXA)



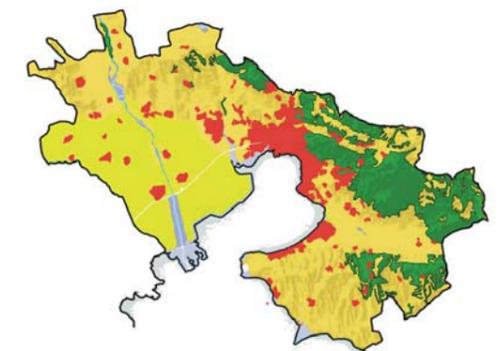
(69,2%) followed by forests (16%). Urban cover accounts to a 8,1% of the total cover, of which the majority is buildings (75%) and a 16% industrial and commercial zones (transport related infrastructure occupies a 5%). The rice fields along the Axios River and the whole estuary area create a unique landscape of high bio-productivity in a close proximity to the city. In the Urban district zone, the situation is different, with a high occupation by urban cover (52.4%) and a considerable smaller presence of agricultural lands (20.1%). Even inside the urban district, the variations in percentages are considerable, with urban cover reaching an almost 100% coverage in municipalities like Stavroupoli and Ampelokipi, or as low as 22% as in the municipality of Pylaia. The greatest of the urbanization is centered in and around the Thessaloniki urban district where the highest densities are found and with an outward gradient often appearing as sprawl with distinct characteristics on each extremes. The natural areas and especially the forest areas bordering the city to the north are under constant pressure directly or indirectly, and have to a great extend conditioned past urban development directions. The gulf of Thermaikos is a prominent but often not adequately stressed natural element, and whose coast has experienced an increased development rate along with considerable and variable environmental alterations.

The lack of a monitoring record for land use changes is a major problem both for planning and research purposes, since it would allow for more accurate conclusions to be made. The Corine land use maps have offered a helpful insight into regional land-use processes and patterns, but the lack of continuity in the production of these maps on a national level, has halted the potential benefits that could come out of such analysis. At the same time the system of environmental indicators developed by O.R.Th although a step forward remains too generic and cannot convey the intensity of use in spatial terms. Nevertheless the future and more systematic monitoring of the land-use related indicators could provide useful feedback on the evolution and transformation of land use in the urban region of Thessaloniki.

Urban coverage ( data source: EEA)



Land use generic (data source: EEA)



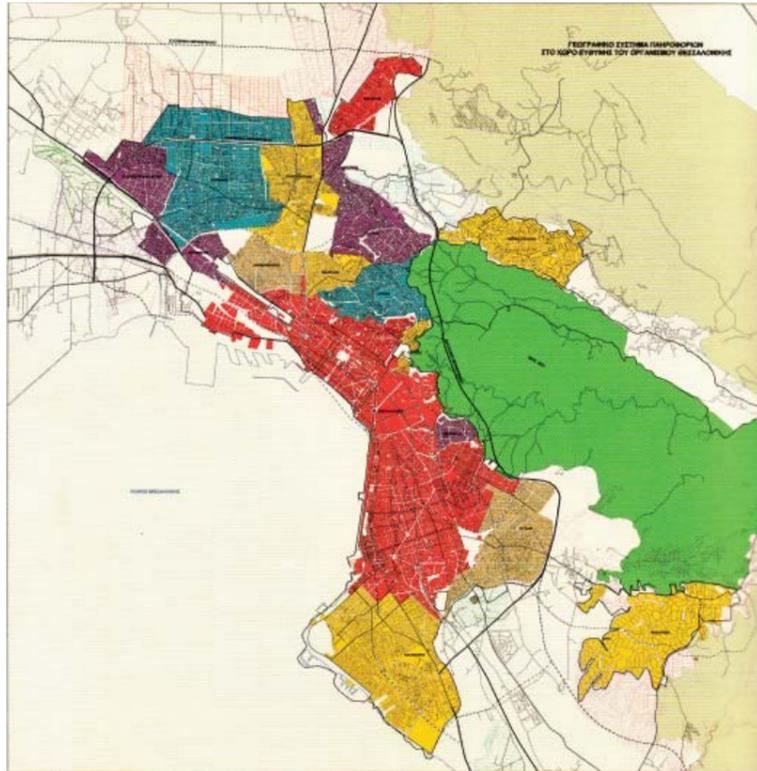
Natural Elements and Coverage ( data source: EEA, RCM)



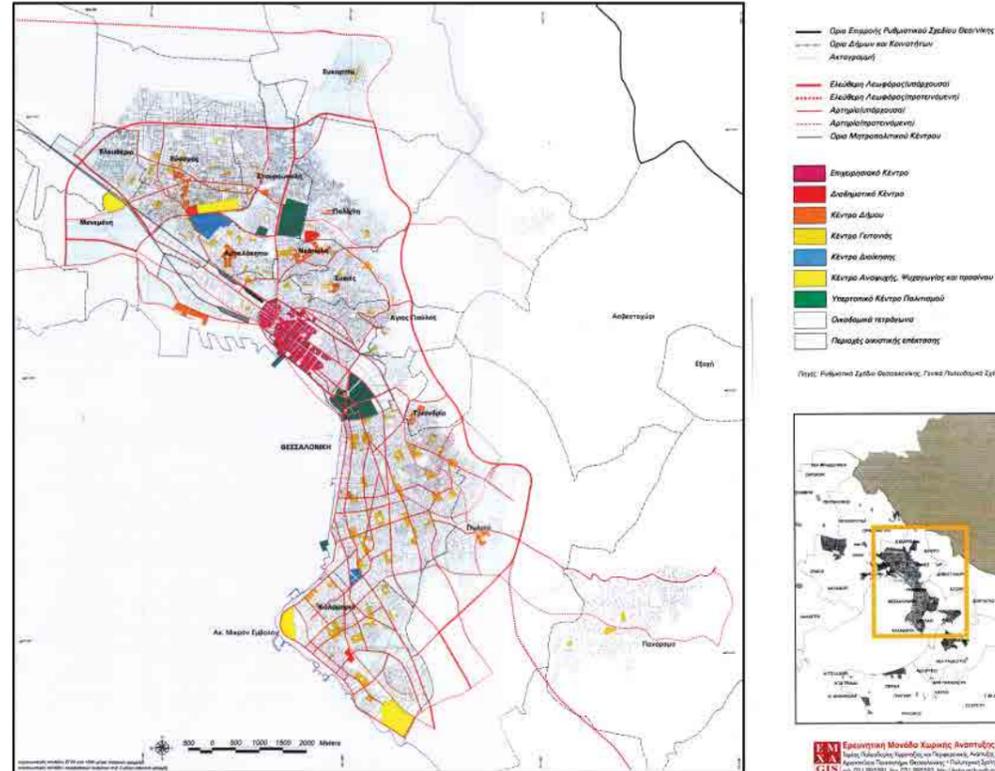
Urban networks (data source: EMXA, EEA)



Urban district & district plans (source: O.R.Th)



Urban district & local Centralities (source: E.M.X.A)



Strategic Transportation Plan (source: O.R.Th)



Strategic Green Plan 2000-2003 (source: A.U.Th)



As noted the city's evolution patterns appears to be dictated by the natural geomorphology giving it a lineal form. Observing the evolution of the city certain characteristic forms & typologies can be distinguished in the contemporary urban fabric: **i)** the compact and consolidated urban fabric product of the Hebrard plan, **ii)** The compact fabric of adjacent and nearby municipalities, **iii)** the lineal developments along the principal urban axis of activity and **iv)** the urban sprawl in its diverse manifestations on the outskirts of the city. The problems caused by the present sprawl on the outskirts of the city is further emphasized by the lack of infrastructure and firm regulation.

**Ecotones detection and identification**

The purpose of this first chapter, and of the project thesis paper as a point of departure, was to perform a multi-scale analysis of the regional context of the city of Thessaloniki in order to be able, posteriorly, to detect and identify the adequate ecotones for the analysis. This zoom-in analysis of the urban fabric will be further enriched in continuation in the respective special analysis of each selected ecotonal area. As seen in the theoretical part of this paper, the detection of the ecotones is dependent on the scale of analysis as well as the criteria / elements under investigation. Accordingly for the purpose the selection of the ecotones was done according to the following criteria :

- **transition characteristics**  
the spatial geometry of adjacency and the adjacent systems that form the ecotonal area.
- **function**  
the function of the ecotonal area (barrier, filter, permeability etc.) with respect to natural and anthropogenic flows in the urban region as well as in terms of interaction between the adjacent systems
- **edge activity characteristics**  
the special and exclusive characteristics attributed to the ecotonal area that make it emerge as an area of special interest and focus of analysis.

- **territorial situations / latent dynamics**  
taking the regional and urban analysis under consideration, consider the territorial situations that the ecotones are found in, and the scientific interest of each case for demonstrating and expanding on the definition of the urban ecotone.
- **restructuring potential / projectual logics**  
Consider the potential that each ecotonal area holds in terms of capacitating and structuring significant territorial projects, considering the inherent projectual logics and their coherence with the impression produced on the regional and urban mosaic.
- **coherent analysis scheme**  
One final consideration for the overall selection is that the resulting analysis scheme forms a coherent and complete structure in terms of including major urban flows and dynamics as well as diversity of territorial situations.

**List & Characteristics**

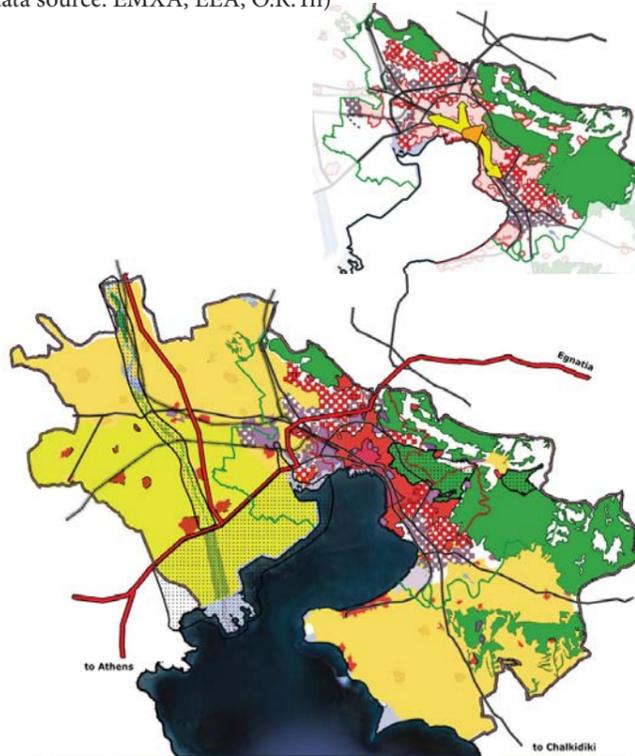
Following the criteria presented before, six ecotones were selected. Their description and explanation for being selected follows in continuation:

**1. Central Axis**

An urban ecotone formed between the urban fabric of the historic centre and the eastern expansions, formulated by the eastern city-wall fortification as well as planned elements such as the central axis, emergence of areas ( university campus, expo, sport facilities ). With the passing of time the area has acquired a latent character of centrality due both to its location with respect to the rest of the city as well as the concentration of certain activities within and close to the ecotonal area.

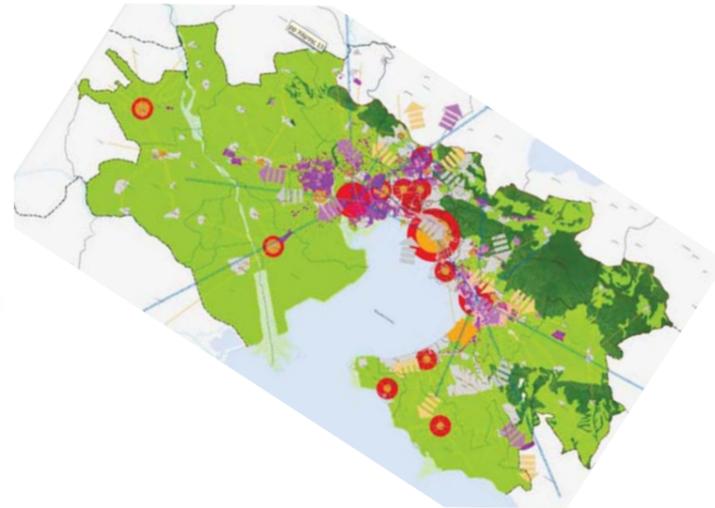
## Urban region dynamics

(data source: EMXA, EEA, O.R.Th)



## Urban region dynamics II

(source: Papamichos)



## Ecotone detection & identification



## LIST

1. Central Axis
2. Western Walls
3. West Arc
4. Periurban canal
5. Ring-road
6. Seafront

### 2. *Western Walls*

Respectively, along the western city-walls an ecotone of distinct characteristics has formed, in this case between the fabrics of the historic centre and the western expansions. Traditionally the commercial gate of the city it contained numerous important functions, which with the passing of time and the development of the urban fabric got constrained, progressively weakening its character. The presence of the city walls and their intrinsic function as a city membrane is a key element both in understanding and reconfiguring this particular urban ecotone.

### 3. *West Arc*

Further out to the west, another urban ecotone has formed along the course of the old Dendropotamos river, now crossing the western municipalities of the city and their respective fabrics. Formerly an object of an international design competition and various studies, the West Arc holds a latent potential for re-structuring a great part of the western area and improving considerably habitability conditions and services for the extended area.

### 4. *Peri-urban canal*

Respectively on the east side of the city, an ecotone of different characteristics has formed along a flood protection canal constructed on the east side of the city, replacing the pre-existing streams and hydrology scheme of the area. For a long time it has marked the city's eastern limits and the contact line with the peri-urban agricultural area. Today, the area is found in an unconsolidated state, and with a poor edge activity intensity. Nevertheless the peri-urban canal as an urban ecotone presents a great potential for improvement on multiple levels (landscape, ecological, social) by interconnecting the now disperse green areas whole rethinking the hydrological management of the east part of the city and providing vital space for the introduction of services, quality urban space and soft mobility infrastructures.

### 5. *Ring-road*

The ring-road structure in its current state, encompasses the greatest part and density of Thessaloniki's urban fabric. As a mobility infrastructure it has altered and improved urban region flows and has accordingly attracted diverse types of activities looking for a better accessibility. Along the ring road multiple ecotonal areas have developed according to the distinct territorial situations encountered. The integration of this large-scale infrastructure in functional (ecological, accessibility, landscape) as well as structural (road network, public transportation, natural mosaic) offers many possibilities for rethinking its contemporary role and spatial character within the region.

### 6. *Seafront*

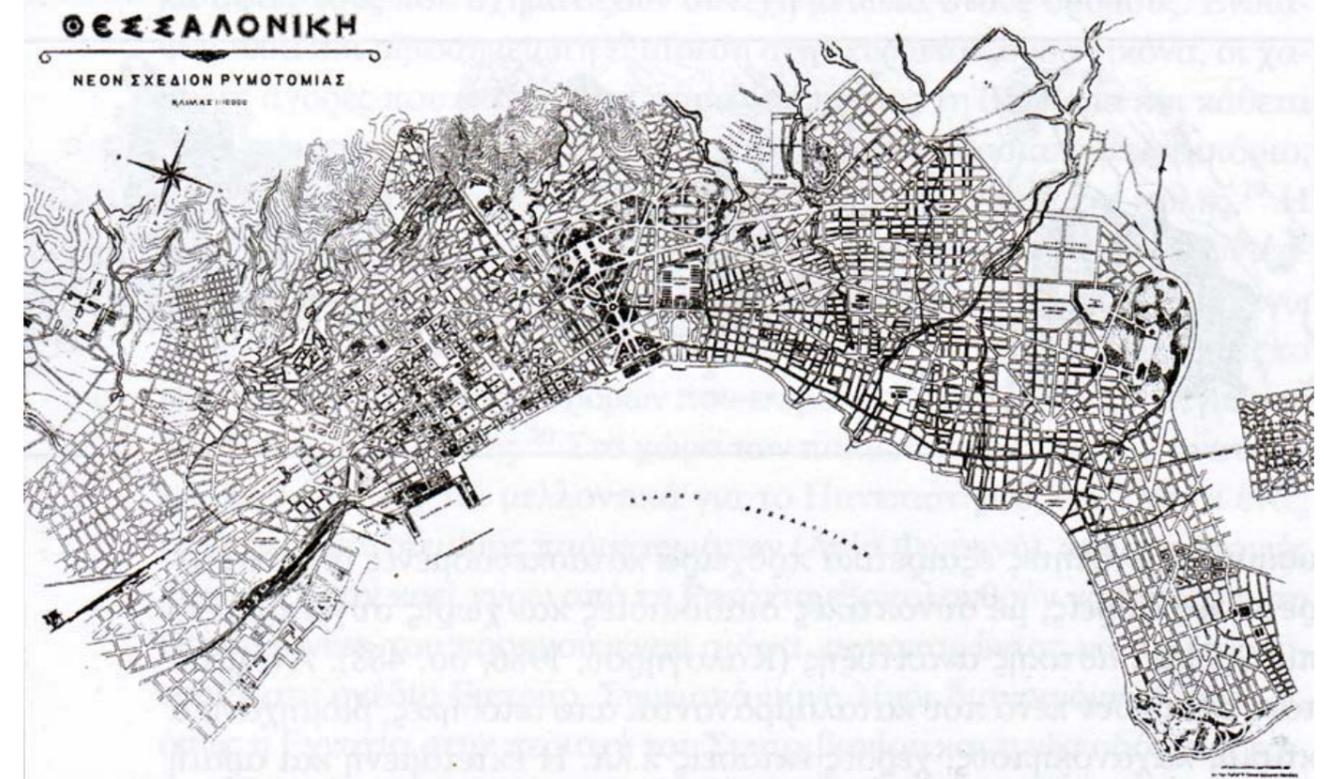
The last ecotone in the list is the seafront, understood as an extended and dynamic interface between the terrestrial and maritime systems and as an area that naturally attracts human activity in diverse forms. The closed nature of the Thermaikos and Thessaloniki bay create a special and fragile ecosystem that is seen under continuous pressure from anthropogenic sources. An adequate restructuration satisfying the ecological and social needs of the region is necessary and a possibility for increasing significantly territorial efficiency.

The complete analysis structure can be seen in the diagram above. As noted in the considerations earlier, the final structure fulfils the requirement of formulating a coherent scheme, by opting for one that is closed and interrelated as well as taking into consideration the restoration of territorial continuities. This last chapter was meant to serve as a link between the regional and the following section of the analysis of the detailed presentation of the six urban ecotones case-studies. Each ecotone is presented in an individual chapter, containing the analysis and specific conclusions for each case.

First expansion plan (1889) (source: Municipality of Thessaloniki)



Hebrard Plan (1918) (source: Municipality of Thessaloniki)



## D. Earlier & contemporary plans for the city and the urban region of Thessaloniki.

### Early attempts

Thessaloniki is a city of a long and multifaceted history. It is located on the course of traditional trade and communication routes that have connected mediterranean cultures with neighbouring regions, and has hosted numerous and important civilizations. Since antiquity the city has experienced intense transformations on its fabric, result of important events of national, european and international history, products of specific times. Equally through time, the city has demonstrated an important activity in all sectors, influenced by the various religions and cultures that have passed through. The city seems to be functioning on the edge of eastern tradition and western modernization, absorbing diffuse influences from both sides. The spatial history and development of the city then corresponds with the local history, where the urban scape carries signs of many years of prosperity, disasters and decay, while its population is set under a constant reorganization, as distinct cultural groups are installed, rooted and uprooted from its fabric. In that sense, Thessaloniki is emerging as a city extremely old but at the same time impressively new<sup>1</sup>. In this ongoing process of transformation and regeneration the signs of these changes can be seen in the spatial organization and human group dynamics.

The process of modernization for the city of Thessaloniki, begins while under the Ottoman rule. Starting in 1869 the Ottoman empire begins a modernization process, in which Thessaloniki will play a major role, demonstrating the modernized European side of the empire. For the first time expansion outside the city walls is allowed, first attempts of public infrastructure are made, and new modern functions are introduced. In 1912 the city has managed to double its population and its surface, as well as demonstrating a special multicultural dynamic, that seems divided between the old and the new<sup>2</sup>. When the city passes under Greek rule, the government instructs the Greek architect A. Zachos to redact a new plan for Thessaloniki. The effort was interrupted in 1915 by the First World War and the plan was never concluded. The effort was restarted a few years later, due the Great Fire of 1917 that burned 120 hectares of the historic centre, along with a great part of its cultural heritage. The plan that produced the International Planning Committee (under the guidance of French architect Ernest Hébrard) was an intend to adapt the modern planning techniques on the local geomorphology, introducing a rational organization of uses, a hierarchical street grid, the creation of a monumental administrative/political centre, the promotion of important monuments and the conservation of certain

“picturesque” neighbourhoods (like *Ano Poli*). Special plans were also made for the University campus, State housing projects, industrial areas and the seaport<sup>3</sup>. These plans, were mostly preoccupied with the modernization of the centre of the city of Thessaloniki, and indeed little or no attention was given on a regional scale. Many years had to pass, and new conditions to be formed for Thessaloniki to realize or begin to conceptualize its spatial condition. Most precisely the post-war status imposed on the area, with the closing of the border, through this restriction, stripped from its hinterland, the city realised its need for a spatial plan.

### The 1968 Spatial Study

The first comprehensive attempt to regulate the space of Thessaloniki in the post-war period, was the Spatial Thessaloniki Study completed in 1968, under the supervision of Professor I. Triantafyllidis. The prevailing concept of the time of the modern movement, that all the components of urban development can be organized in a rational manner is reflected in the depth planning and organization of land uses. The study had a 25 and a 50-year horizon with the 50 year horizon ambitiously predicting that in 2016 the city would have reached the number of 1.4 million inhabitants, covering a total area of 35,000 ha<sup>4</sup>.

Special attention was paid on the location of residential units, based on a rational distribution of the population in units of low-to-medium density, designed using the principles of contemporary urban planning. The plan proposed a model, that although apparently far from the current reality of the urban region of Thessaloniki, in theory and in practice it has influenced urban development and subsequent plans significantly. Evenmore, the proposed urban expansion towards the west, with the construction of medium income residential areas, turned out to a goal quite incompatible with later population and activity trends in the area<sup>5</sup>.

Nevertheless, the study made a series of points in forms of proposals that still continue to be hot topics of discussion/ debate for the extended region, or reappear periodically. The proposal surprised at the time with its radical nature and proposals that it put forward and the possible effects they could have had in the spatial organization and form of the city.

1. Karadimou Gerolimou, A. (2008)

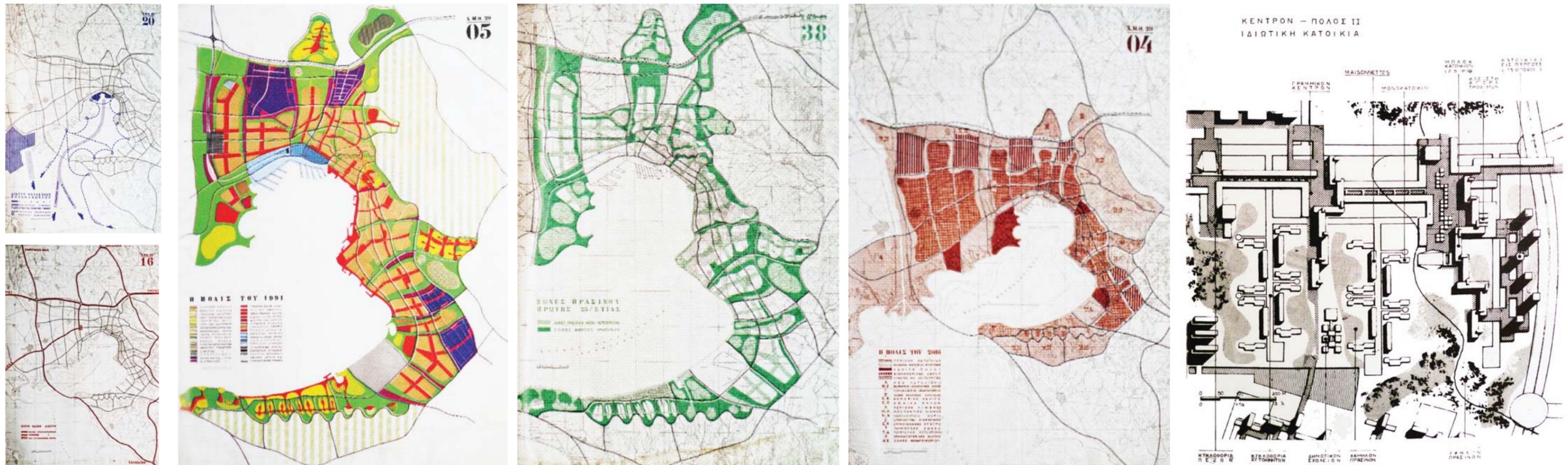
2. Ibid.

3. Yiannakou, A. in Kafkalas, G., Lamprianidis, L. & Papamixos, N. (ed.) (2008)

4. Aleksandropoulou A. & Makraki Chr. (2009)

5. Ibid.

**The 1968 Triantafyllidis Spatial Study** (source: Kafkalas 2007, Centre of Architecture of Thessaloniki)



Most of them remained unfulfilled but latent expectations. In more detail, these points are<sup>6</sup> :

- i. The Study proposed the relocation of International Expo site, recognizing the need for freeing up the space occupied by the Expo up till today, with traffic congestion and the inability for future expansion.
- ii. Suggested the creation of three centers: the heart of administration part of the existing position in the centre, transfer of industrial exhibitions (the main part) in the west in Kalohori and zoning of a third zone in Mikra.
- iii. The green areas in the city were judged to be completely inadequate and proposed an increase by a factor of six, so that in 2016 green areas would account to as much as 1 / 5 the size of the city, an unfulfilled prediction given the current state of green areas.
- iv. Highlighted the rapid growth of vehicles and proposed the creation of regional highway closed circular form, which would unite underwater the south peninsula with the delta area of Axios, away from the historic centre and seaside facing. In parallel to the highway, the study proposed the creation of a metro system also of a circular form, crossing the formentioned underwater tunnel.
- v. Proposed to transfer the main flow of cargo and commercial flights to a new location in the west close to the river Axios, and the maintenance of the current airport to serve private planes and the Air Sports activities.
- vi. Identified the prospect and potential of creating new ports and new flows; The port of *Evrolimenas*, as it came to be know, were to be located in the area between Axios and Aliakmonas , making possible via Loudias and Axios the connection with Central Europe, setting Thessaloniki as the largest station on the route between Central Europe and Africa - Indian Ocean. The existing port would continue to serve the passengers and part of the commercial traffic, while the new port would meet the needs of goods handling and shipbuilding. The creation of the new port, *Evrolimenas*, continued to occupy the central and local government for at least fifteen years, until the idea was finally abandoned.

6. Yiannakou, A. in Kafkalas, G., Lampranidis, L. & Papamixos, N. (ed.) (2008)

Finally, the study envisioned the establishment of an institution that would undertake the implementation of the study, and this part seems to be the most important inheritance left by it. Unlike the current regulatory Agency of the Thessaloniki Masterplan, established as an institution supervised by the Ministry of the Environment, the study proposed that this agency was to be undertaken by local government under the authority of the local Prefecture and the handling over of rights and responsibilities for managing local resources, a particularly ground-breaking proposal, even compared to current regional politics situation. The study never acquired a binding character. Its approach came in contrast to Greek reality and consequent residential development in the area of Thessaloniki<sup>7</sup> . Although many of it proposals proved unrealistic, it had a positive contribution highlighting the need for strategic planning while creating a framework of ideas and information for various design issues in the wider region of Thessaloniki. In practical terms depending on the case, it was sometimes less and sometimes more seriously taken by subsequent design efforts in Thessaloniki<sup>8</sup> .

**The Regulatory Plan of 1985**

The Regulatory Plan of Thessaloniki (R.S.Th) was established by law in 1985, aiming to address the problems of the city and specify design guidance for its development. In particular, it focused on the Greater Area of Thessaloniki, that included the urban region, the peri-urban area and the rest of the region. This plan following Triantafyllidis study tried to define a spatial and urban policy in metropolitan scale, setting objectives and providing guidance to relation to strategic interventions, and coordinate actions for the overall development of the city of Thessaloniki. The general objectives / directives of the Master Plan were the following<sup>9</sup> :

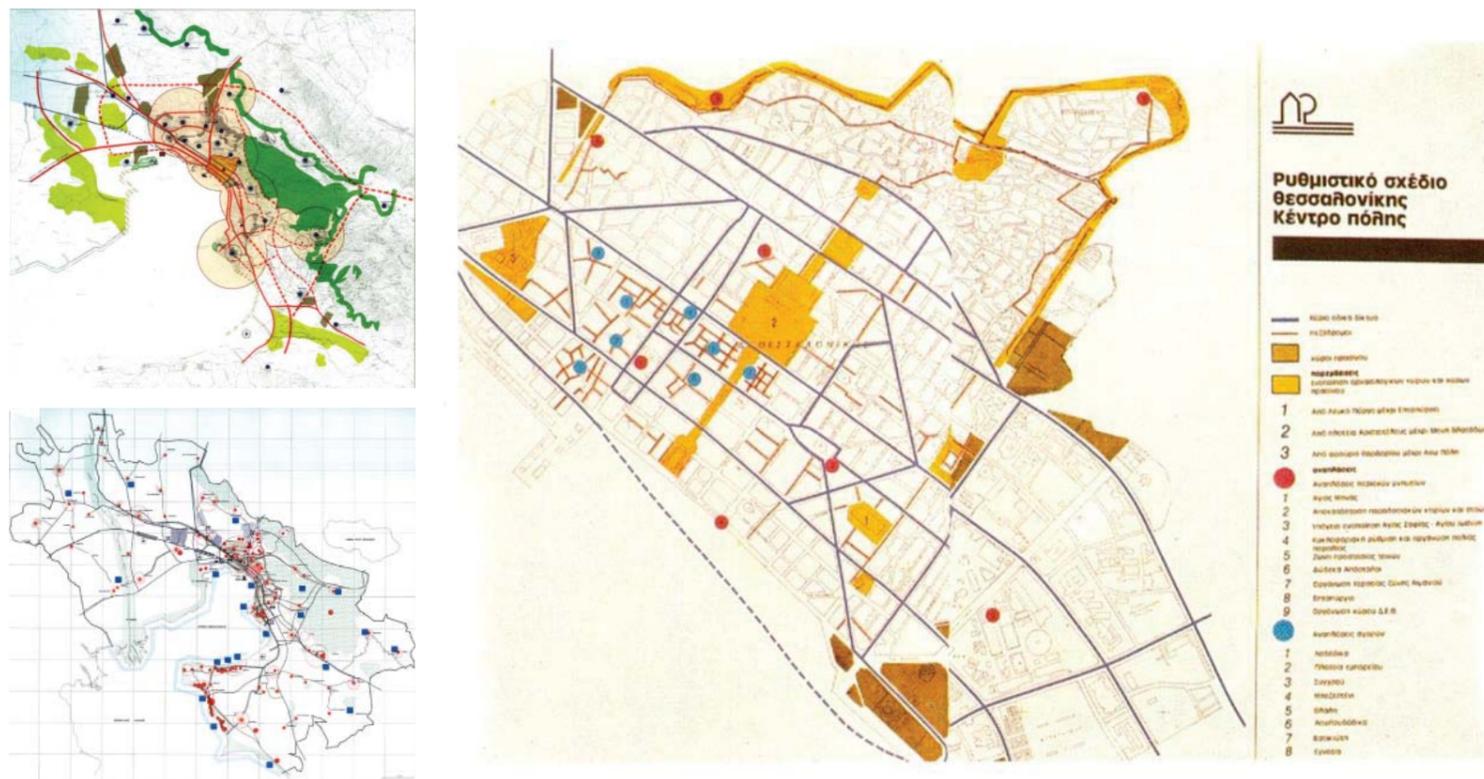
- highlighting the historical character of Thessaloniki
- improving the quality of life and environmental protection,
- balancing social inequalities,
- offer a wider choice of residence, work, leisure and recreation
- quality upgrade of every neighbourhood

7. Kafkalas, G. (2007)

8. Ibid.

9. Hellenic Ministry of Environment and Spatial Planning and Public Works (1985)

The 1985 Regulatory Plan (source: O.R.Th)



The environment lied at the centre of the discourse of the plan, calling for the creation of an Environmental Protection Program. Another key element of the plan was the effort to establish regional centres in the greater Thessaloniki area in order to curb the economic and functional dependence and concentration in the municipality of Thessaloniki<sup>10</sup>. Overall, the sum of the proposal made by the plan appeared once again to be quite pioneering for their time.

The plan called for the establishment of the Agency for the Master Plan of Thessaloniki (O.R.THE.) which was to coordinate and monitor the ongoing progress of the implementation of the Plan. The administration and management of O.R.Th. undertaken by an Executive Committee, chaired by the President of the Agency, a person prescribed by the Central Government- but also include for the participation of other local actors. That was inconsistent with the general philosophy of decentralization promoted by the newly then elected government, since there was significant involvement of the central Administration in the plan. Furthermore it went contrary to popular demand, which asked for a greater public participation.

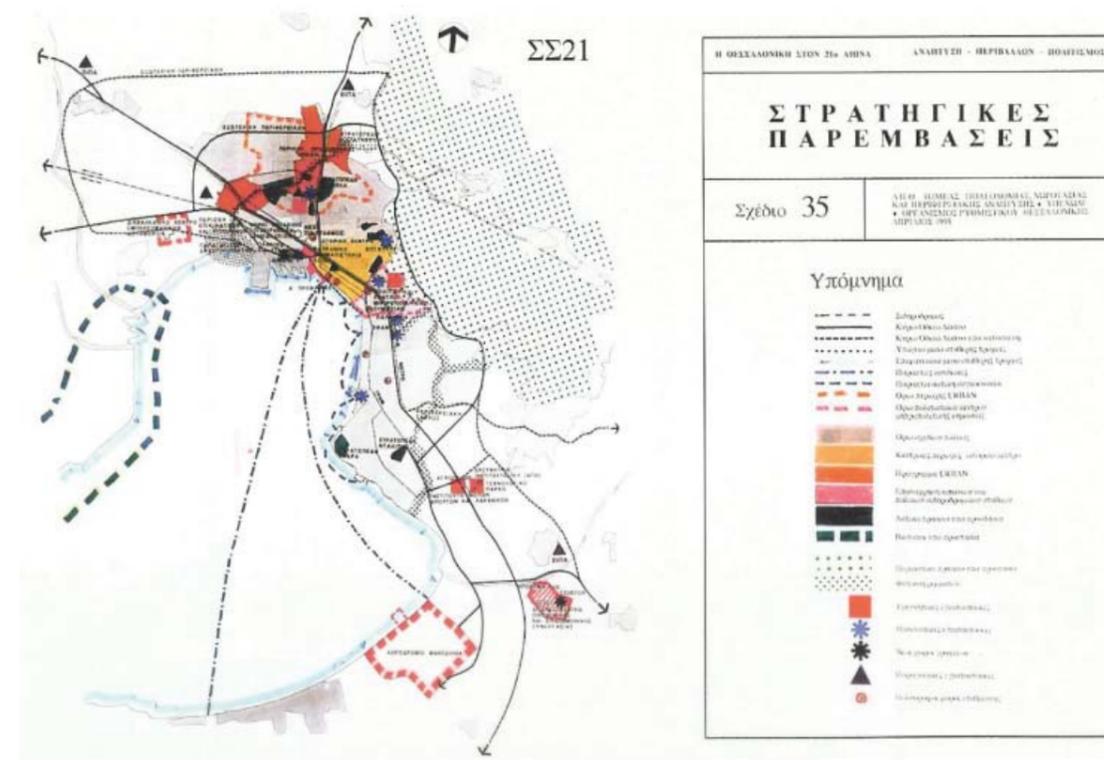
The plan also called for the establishment and operation of a Council for the Master Plan and Environmental Protection of Thessaloniki, which was to be the main political organ of the organization and responsible for ensuring the widest possible social consensus for the implementation of the Master Plan<sup>11</sup>. In reality it was a consultative organ to the Ministry of Public Works and the Cabinet in charge of drawing the policy for the city. The council operated until the early 90s, but later due to inactivity was finally abolished later in that decade. The continued operation of the Council could have led to the solution of many serious and chronic problems of the city that continue until today. In the years following the establishment of the plan, the operation of O.R.Th. has been orientated towards design guidance and monitoring of its areas of jurisdiction. Nevertheless it was restricted only in the development of studies and not their implementation due to the apparent lack of resources and authoritative power. The abolition of the Council effectively removed from O.R.Th. the legalization of the representation of the city against the Central Government as well as any possibility of applying political pressure to meet its demands and objectives<sup>12</sup>.

10. Aleksandropoulou A. & Makraki Chr. (2009)

11. Aleksandropoulou A. & Makraki Chr. (2009)

12. Hellenic Ministry of Environment and Spatial Planning and Public Works (1985)

Strategical Interventions for the 21st Century (source: Kafkalas, 2007)



#### Thessaloniki in the 21st century (1995)

The project title was "Thessaloniki in the 21st Century" followed by the structuring triptych of the plan, *Development - Environment - Culture*<sup>13</sup>. It was completed in 1995 and was the joint effort, a research project commissioned by the O.R.Th and the Aristotelian University of Thessaloniki (A.U.Th). Not as much a planning study, its main objective was to make a reassessment of the situation of the city 10 years after the first Regulatory Plan of 1985. In this context it was meant to provide a diagnosis of the new data and perspectives, investigate growth prospects for the city and formulate strategic guidelines, through the initiation of a broader social dialogue, that the previous plan lacked, that would re-shape and re-impulse the priorities set forth by the plan. The study also included a type of a program for the wider region of Thessaloniki. The most important contribution of this plan, does not lay in its programmatic character, but instead in its contribution in recognizing the need to update and adjust the 1985 Master Plan<sup>14</sup>. The political climate of the times whatsoever, prevented the effective application and continuation of this effort.

#### Strategic Plan for Sustainable Development of Thessaloniki 2000-2010, (2002)

The drafting of the Strategic Plan for Sustainable Development of Thessaloniki began in 2000. Initially it had the political and administrative support of the Ministry of Macedonia - Thrace, the Region of Central Macedonia and the prefecture of Thessaloniki as well as an extended list of institutions, administrations and social groups implicated in the city, the same ones that eventually ratified the plan in 2002. It included an action plan and outlined the actions and proceedings that should take place when formulating and implementing it. Through the process of social dialogue it managed to approve 4 main Axes/dipoles of development<sup>15</sup>: **a)** International role - national cohesion **b)** Competitiveness - Innovation **c)** Social cohesion - equal opportunities and **d)** Ecological Balance - quality of life. Actions along these axes were divided in six operational areas: **i)** governance **ii)** competitiveness **iii)** employment **iv)** infrastructure **v)** ekistic development and **vi)** quality of life under which 15 priority actions are set as goals for the year 2010.

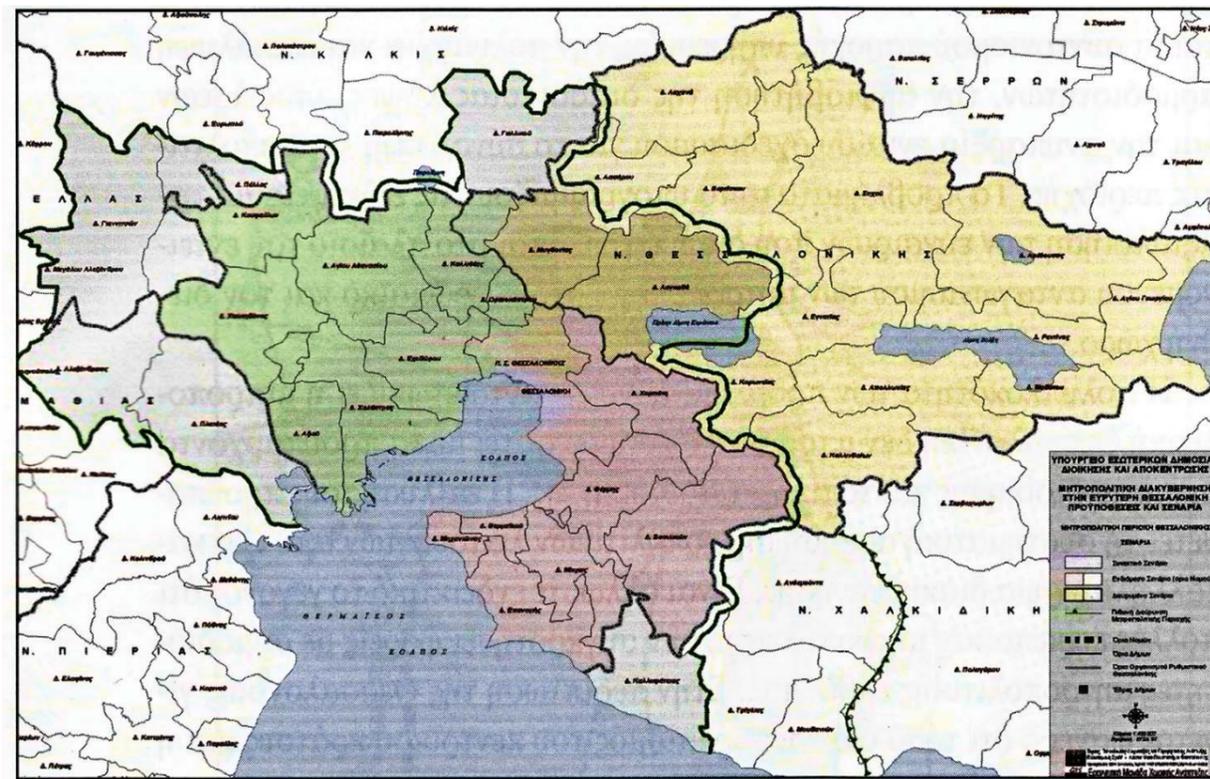
A key difference of the 2002 plan compared to previous similar intents, was that the proposal set forth by the strategic plan was based on a process of social dialogue and consensus on the main themes and objectives of the plan, rather

13. O.R.Th (1995)

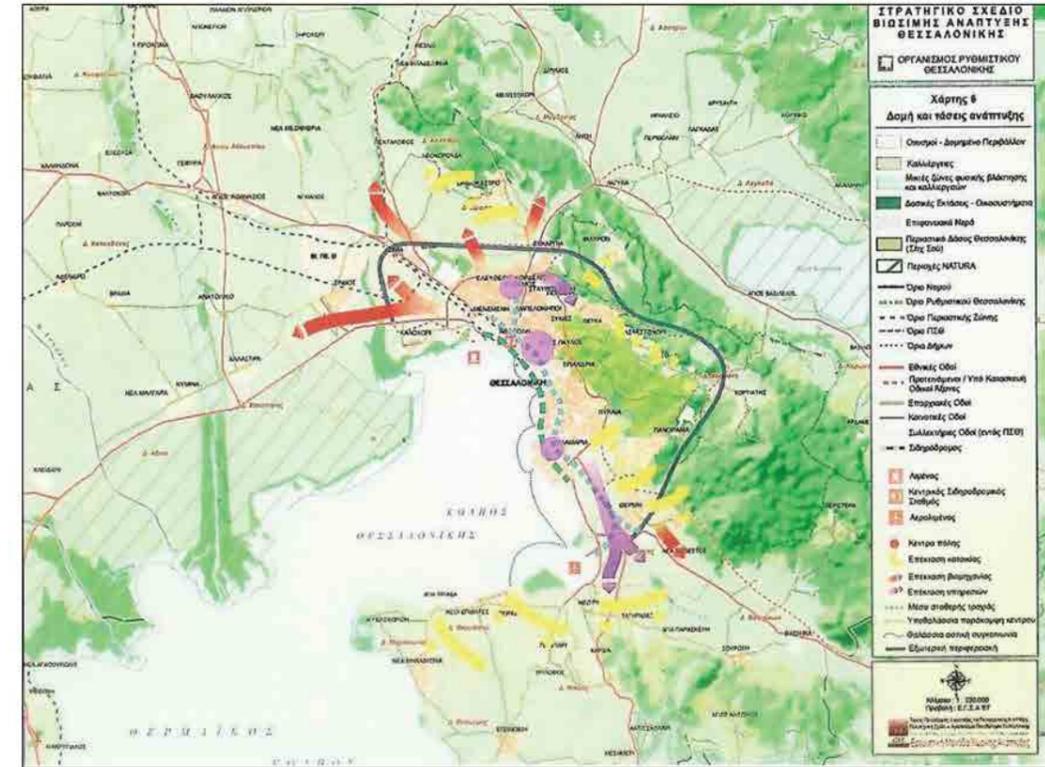
14. Kafkalas, G. (2007)

15. Ministry of Macedonia & Thrace (2002)

Metropolitan-range scenarios (source: O.R.Th, 2002)



Existing Structure and development trends (source: O.R.Th, 2002)



than opting to propose a strictly defined masterplan. The Strategic Plan set out as a design process instead of projecting a planned image for the future of Thessaloniki. For this purpose it included, both the attempt to establish a comprehensive framework of axes, objectives and actions to be brought to the attention of institutions and citizens and in this way establish a mechanism to activate the step-by-step development and implementation of the project. For the same purpose, it proposed the establishment of a special fund for the sustainable development of Thessaloniki to support complementary and innovative actions in the corresponding general framework<sup>16</sup>. The Strategic Plan sought to contribute in solving the chronic problems of the city of Thessaloniki, but its implementation was never set on track, remaining today as a proposal of a consultative character.

**Metropolitan Governance in the Greater Area of Thessaloniki (2002)**

In 2002, the Ministry of Interior and Public Administration commissioned the Aristotelian University and most specifically the research group of Spatial development of the department of Regional Studies to investigate the conditions for the establishment of metropolitan governance structure in the area of Thessaloniki. The Research project was titled “Metropolitan Governance in the Greater Area of Thessaloniki: Requirements and Scenarios”. Previously, a similar study was undertaken by Panteio University for the case of Athens. The study proposed four models of governance for the area of Thessaloniki<sup>17</sup>:

- a. Metropolitan Region: Decentralized structure of the Central government, that operates in coordination and with the possible participation of local authorities in a Council.
- b. Metropolitan Municipality or District: Self-governed institution with directly elected members.
- c. Metropolitan Union: Metropolitan institution with representation of local authorities at city level A and B
- d. Coordination of present Structures: It builds on existing structures and does not imply any change.

Also, the study proposed possible scenarios for the boundaries of metropolitan areas<sup>18</sup>.

16. Aleksandropoulou A. & Makraki Chr. (2009)  
 17. Hellenic Ministry of Interior and Public Administration (2002)  
 18. Ibid.

- **Coherent scenario:** The metropolitan area includes the District of Thessaloniki and part of the area of Lagada
- **Intermediate scenario:** The metropolitan area is identified with the existing Thessaloniki prefecture.
- **Expanded Functional Scenario:** The metropolitan area included the District of Thessaloniki, the Province of Lagada and small sections of contiguous municipalities (Kilkis, Pella, Imathia, Halkidiki).

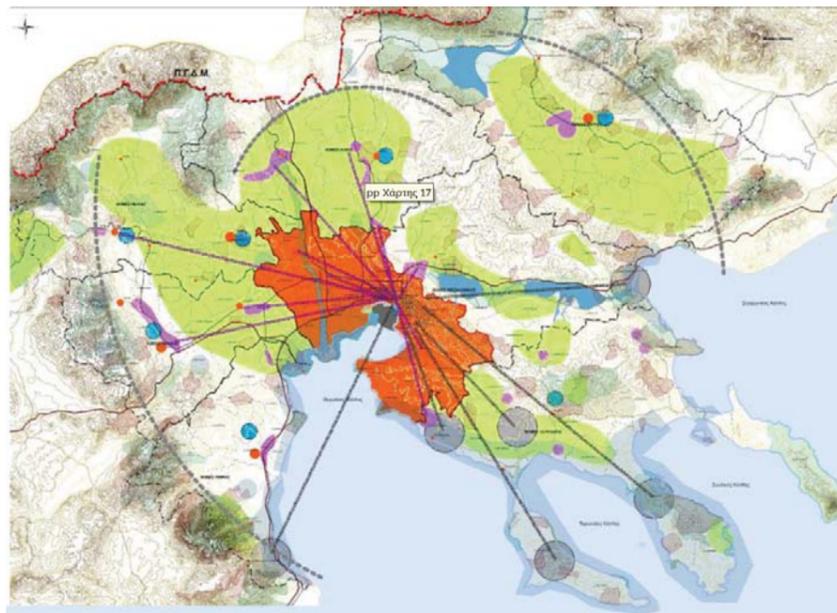
The study also discussed in some detail the various development sectors but did not reach a specific conclusion/decision on the geographical extension of the metropolitan governance reach. Nevertheless, even the most extended scenario proposed made reference to an area smaller than the scenarios being examined today by the revision of the 1985 Plan.

**The revision of the 1985 Regulatory Plan (2009-today)**

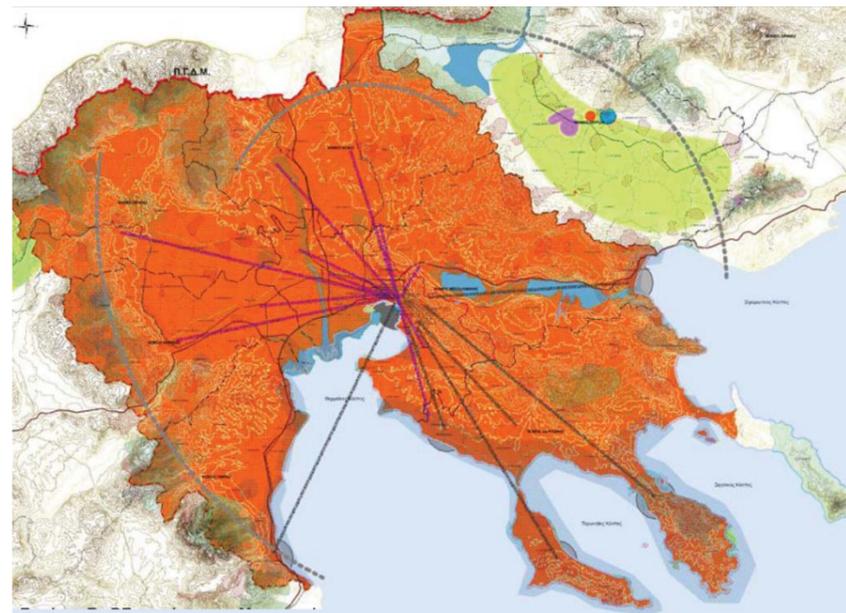
The need for a revision of the 1985 Regulatory Plan was made clear in and throughout the various studies that followed the original Plan, becoming conscious of the fact that the dynamics of the city of Thessaloniki were exceeding the established limits / provisions. The initial 2009 revision (developed by a group of professors from the Aristotelian university of Thessaloniki under the supervision of the O.R.Th ) saw the expansion of the limits of the metropolitan area of the Regulatory Plan as the key feature / objective. The plan recognized that almost 25 years later the general conditions (geopolitical, economic, social) in Europe and especially in the Balkans had been completely reversed and now permitted the city of Thessaloniki to gradually reconnect with its natural hinterland. The revision also marked the urgency to harmonize the Regulatory Plan with current principles of sustainable development currently governing the spatial planning practice and with the specific frameworks for spatial planning and sustainable development promoted by the Ministry, thus creating new framework for the urban region of Thessaloniki: “The Plan must ensure the appropriate spatial and environmental conditions for Thessaloniki and the wider region, taking advantage of position and momentum, to respond successfully to the new program framework and become a potential pole at the south and east Mediterranean<sup>19</sup>”.

The first phase of the study has been completed including the initial evaluation process. The second stage was also completed during the redaction of this thesis. Special emphasis was to be given to the notions of *administration* and *governance* while creating the framework for the application of the revision of the Plan. The plan also called for the creation of a Strategic Environmental Impact Study as well as a Structural Intervention Plan with specific proposals / projects . In the study phase three possible scenarios came up to define the area of application of the updated Master Plan<sup>20</sup>:

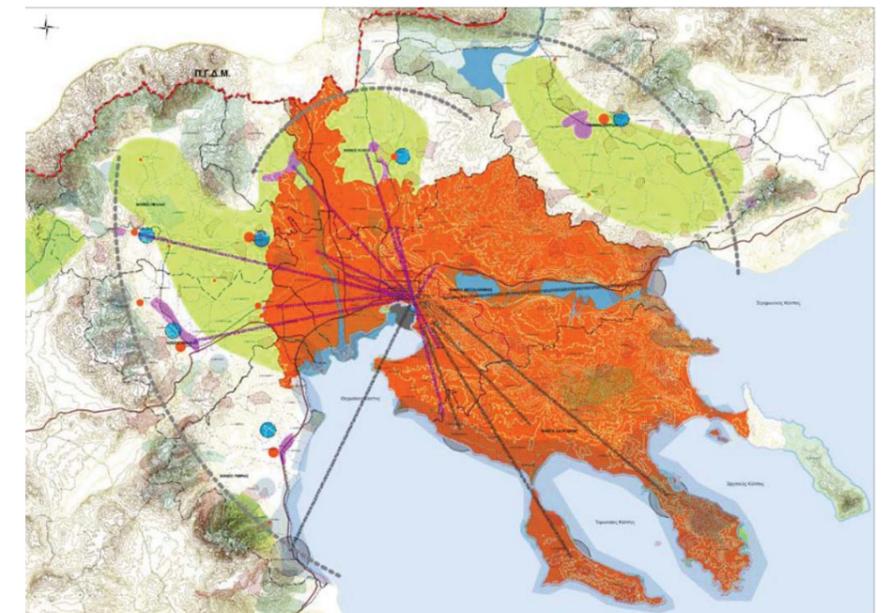
19. Hellenic Ministry of Environment, Physical Planning and Public Works (2008)  
 20. Ibid



scenario I



scenario II



scenario III

- **Scenario I:** On the limits of the Province of Thessaloniki. Based on the scenario of zero-expansion. The current limits are proposed to be maintained with limited extension to identify with the administrative boundaries of the Province of Thessaloniki. This scenario is based on the assumption that there has been a realization of the critical state of the natural ecosystems and a recognition of the impact on the production cost due to deficiencies, weaknesses and unclarity in the spatial framework. This realization will curb reactions to the plan and broaden public acceptance, permitting future interventions<sup>21</sup>.
- **Scenario II:** On the limits of the Metropolitan Region of Thessaloniki. The proposal is the area where the Master Plan of Thessaloniki extends the most and covers the wider region of influence of metropolitan centres, coinciding with the limits of the region of Central Macedonia excluding the prefecture of Serres.
- **Scenario III:** On the limits of the metropolitan area of Thessaloniki. The updated area is proposed to cover the immediate areas of influence of the metropolitan centre, including the principal growth axis and the major regional ecosystems. The proposal includes in the Master Plan region part of the prefecture of Thessaloniki and Halkidiki, part of Kilkis, and neighbouring prefectures of Imathia, Pella, Pieria that include the wider catchment area of the natural ecosystem of the Axios River.

The first scenario was characterized by Prof. Papamichos, director of the plan as basic and the most feasible, with a spatial organization as a result of strong regulatory intervention. The second scenario on the contrary is qualified as undesirable, with a loose intervention character and of a compromised nature. The third scenario finally is seen as desirable with a strong regulatory intervention and application of urban sustainability principles<sup>22</sup>. Based on the formentioned scenarios' characteristics, the study formulated the proposals to be offered for public consultation. Most of these proposals adapted the *Scenario III* and assessed it as being the most appropriate option<sup>23</sup>. Based on the proposed limits of the selected scenario, two further elaborated delimitation proposals were put on the table:

#### Proposal A

According to this proposal in the area of the new master plan the following areas are included:

- The prefecture of Thessaloniki
- the municipalities of Gallikos, Pikrolimnis, Axioupolis, Europou, Kilkis and Polikastro (prefecture Kilkis)
- the municipality of Pella ( prefecture of Pella)
- the municipality of Platy ( prefecture of Imathia)
- municipalities of Aiginio and Methoni ( prefecture of Pieria)
- municipalities of Kallikratia, Triglia, Moudania, Anthemounta, Zervochorion, Polygyros (prefecture of Chalkidiki)

21. Papamixos N. (2009)

22. Ibid.

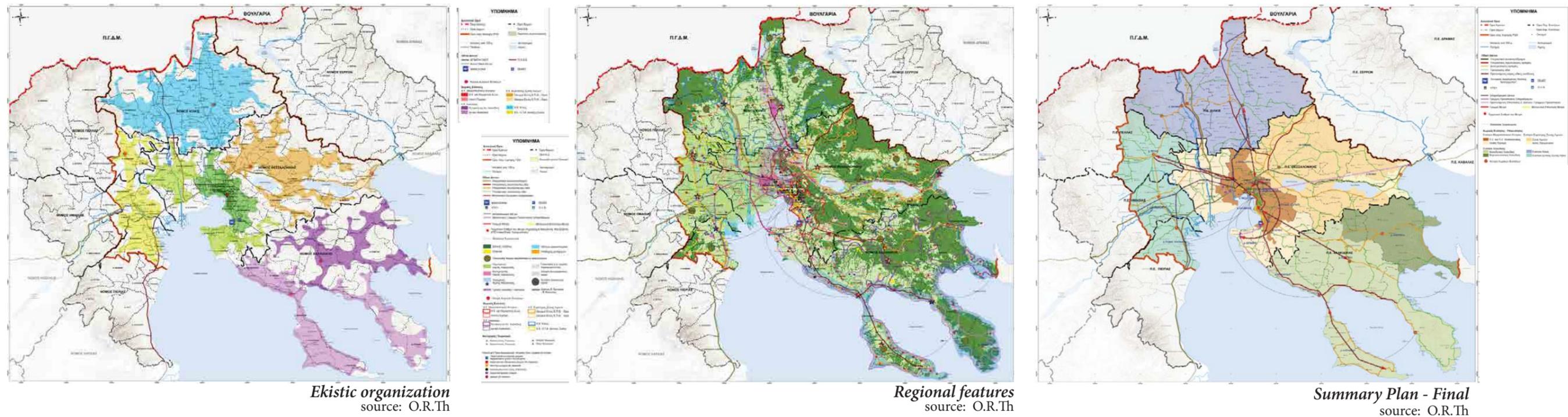
23. Hellenic Ministry of Environment, Physical Planning and Public Works (2008)

#### Proposal B

According to the second proposal, in the area of the new plan enter apart from the formentioned areas of *proposal A* also entered the municipalities of Kassandra, Pallini, Ormylia, Sithonia and Toroni (in the prefecture of Halkidiki). The study claims that both of these proposals, independent from their different extents, both meet / cover key issues 7 areas, for the of application of the updated regulatory plan, since both include and coordinate spatially the following points<sup>24</sup>:

- All areas where residential functions and sprawl as well as current trends of urban expansion in the metropolitan area of Thessaloniki are taking place. In particular, the area in the municipalities of Kallikratia, Triglia and Moudania that are being transformed rapidly into suburban type settlements. Similarly with settlements in the Stavros - Asprovalta area. Finally, the strong accumulation of residence activity in the zones of Kassandra and Sithonia (Chalkidiki), included in the second proposal, that are the principal summer tourism destinations in the vicinity of the Thessaloniki area.
- Areas within which lie the basic productive activities that support the growth dynamics of the metropolitan system (eg. the critical rural areas of the plain of Thessaloniki, Lagkada and Vasilika, the industrial/manufacturing concentrations in the prefectures of Thessaloniki, Chalkidiki and Kilkis, basic infrastructure of the services sector (services of metropolitan range: education, research, innovation, health and culture) and the principal touristic resources (second proposal)
- Basic transport and communication infrastructure. In more detail, the principal road networks and technical infrastructure to guarantee the functional competence and control of environmental impacts, particularly the axis of Egnatia and the vertical connections / axes focusing on their course through or around sensitive ecosystems of lakes and rivers, the operation of landfills, security of energy networks and development of alternative energy sources especially taking advantage of wind energy potential of the mountain ranges.
- Adequate and appropriate territorial reserves for the zoning of production facilities and technical infrastructure, providing installation alternatives and outlets for relief of saturated areas.
- Continuity between ecosystems and protected areas of all kinds, especially the lakes of Koronia and Volvi and the entire watershed, the mountainous protected areas of Cholomonta, Chortiati, Kouri the extended reforested are of Seich-Su (Σειχ-Σου), the basins of rivers Axios and Gallikos, the entire protected area of the tri-delta estuary, the Internal Gulf of Themaikos and the fragile coastal zone. Also monitor activities in the region that threaten

24. Hellenic Ministry of Environment, Physical Planning and Public Works (2008)



the fragile ecosystems of the rivers Axios and Gallikos, and discharges in the Gulf of Thessaloniki that influence negatively environmental conditions in the metropolitan centre and the extended region.

The revision of the regulatory plan recognized the competitive environment of economic globalization that the city of Thessaloniki and the surrounding area are immersed in and the need to respond adequately to the corresponding challenges. The plan defines the development model for the city of Thessaloniki as one *promoting the development of the city of Thessaloniki as a regional metropolis and a city - gate for southeast Europe, serving as a regional pole for research and innovation in southeastern Europe enhancing competitiveness and innovation and as well as a pole for culture, tourism and recreation in southeastern Europe*<sup>25</sup>. It also marks the importance for the protection of the agricultural lands of high productivity (areas of Lagkada, Giannitson, Alexandrias and northern Chalkidiki), as well as the preservation of the manufacturing / industrial character of the city, reinforcing the Thessaloniki - Kilkis axis as well as activity in the (old) prefectures of Imathia and Pella. Finally it also notes the need for strengthening and modernization of the tertiary sector with reference to logistics, trade and supply companies services, tourism, culture and especially their specialized disciplines. The strategic approach of the Plan follows the principles of contemporary sustainable spatial development which poses as key components the sustainable economic growth, social justice, the protection of the natural environment and the protection and enhancement of the cultural environment and landscape. Accordingly the basic goals that the plans sets forwards follow the logic of the previous plans and are the following<sup>26</sup>:

- Internationalization and economic development in Thessaloniki
- Strengthening the spatial coherence of the metropolitan area and equitable development
- Promote equality of opportunity, social cohesion throughout the updated range of application of the plan.
- Improve the quality of life for residents through processes of regeneration, halting urban expansion and sprawl with a simultaneous strengthening of the model of the compact city.
- Ensure ecological balance and the protection and enhancement of natural and cultural resources of the area.

After two and a half decades since the enactment and implementation of the first Regulatory Plan of Thessaloniki (n.1561/1985), the updated version incorporates all of the objectives, policy directions, priorities, programs and measures which according to the plan define the metropolitan region of Thessaloniki, concentrated in the following categories: **i) Territorial and ekistic organization ii) urban planning and organization iii) economic development iv) social**

cohesion and convergence **v) protection and enhancement of natural environment vi) protection and enhancement of cultural heritage.** And in particular proposes the creation and strengthening of the following key development axes / directions:

- The cultural triangle of Thessaloniki - Dion - Vergina with the promotion of historical monuments and museums of the Classical and Byzantine periods and with the respective enhancement of their accessibility.
- The tourist axis to the southeast of Thessaloniki - Chalkidiki. Promotion of sustainable tourism development while promoting alternative forms of tourism with protection of the natural and cultural environment.
- The tourist axis to the south in the coastal zone of Himachal Pradesh and the connection with the volumes of Pieria and Olympus NE.
- The formentioned industrial axis northward along the Thessaloniki - Kilkis axis and all the way to the borders with Bulgaria, strengthening incentives through the attractiveness of the area for new businesses.
- The completed motorway Egnatia Odos defined as “national development axis east-west “ and identifying measures to control roadside land uses.

As it can easily be noticed, the revision of the plan follows on the footsteps of its predecessors in terms of directions and strategies, adding an added emphasis on innovation, and at the same time setting under debate a proposal for a significant expansion of the urban, now conceived as metropolitan, region limits. The revision of the plan triggered directly or indirectly a series of parallel more detailed studies, that incorporated specific proposals for intervention. Nevertheless the political instability and responsibility, has jeopardized the application of the plan, following the government’s decision to dismantle institutionally the O.R.Th and pass responsibilities and jurisdictions to centralized ministry of environment, energy and climate change.

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## The Regional Operational Programmes in the region of Central Macedonia.

### The 2000-2006 Period

The Regional Operational Programme (ROP) of Central Macedonia 2000-2006 was the biggest development program to be implemented in the region so far. As part of the Third Community Support Framework, it reached a budget of 1.5 billions Euros and was mostly funded by European funds<sup>1</sup>. Within the official frame of the ROP, several projects and actions were planned with relation to regional infrastructure development, initiatives for small medium companies, integration of human workforce, rural development, social welfare, and the creation of the conditions for the development as well as protection of the natural environment of Central Macedonia<sup>2</sup>. The ROP's strategy defines a strong centre of development in around the urban area of Thessaloniki, while seeking an even development for the rest of the region, repeating the traditional monocentric approach.

Once again the development strategy depended greatly on the performance of the centre, having a diffused effect on a regional and transregional level, achieving the plan's proclaimed priorities: sustainable development and competitiveness<sup>3</sup>. One could claim that the proclaimed bipole of development presents an obvious oxymoron on its own, setting for a market value for natural resources, while failing to outline a plan of ecological sustainability. Nevertheless, the three priority axes set forth by the plan were:

1. Promotion of Innovation and entrepreneurship
2. Integral development of degraded urban areas
3. Integral intervention in mountainous & remote rural areas

### The 2007-2013 Period

The ongoing programme for the 2007-2013 period was approved in 2007 by the European Commission and forms part of the joint operational programme of Macedonia & Thrace. The programme follows the same base strategy as the previous period. A further stress is put on the development of the competitiveness of the region and its productive network. As stated in the corresponding document<sup>4</sup> "*the perspectives of Central Macedonia in the competitive European and international environment are defined on the basis of its productive system capacity for adjustment and restructuring. A central point, in order to face challenges and to exploit opportunities as within the framework of the knowledge economy, is the development of a regional strategy about innovation and competitiveness*". The programme envisions Thessaloniki as a metropolitan centre of the Balkans and a pole of cross-border cooperation in the wide SE European area. Summarized, the document describes the vi-

1. Regional Operational Plan (2007), RMC Region Profile (2008)

2. RMC Region Profile (2008)

3. Ibid.

4. Regional Operational Plan 2007

sion for the region of Central Macedonia, as<sup>5</sup>: "*A Region of innovation and balanced, sustainable development with a pivotal role in S.E Europe.*" In more detail, the official plan details four basic notions that form the strategic orientation for the Region. These notions are<sup>6</sup>:

#### *Innovation*

The diffusion of innovation in the diverse production modes is a strategical approach, of key importance to the programme. This diffusion focuses on sectors such as education, research, new technologies, new products and services and new forms of digital administration among others.

#### *Balanced Development*

The programme recognized that the present interregional inequalities are a result of the monocentric model applied till today. The development of a multi-centered system can act as a moderator of these inequalities.

#### *Sustainable Development*

This point emphasizes the counterbalancing of adverse effects of human activity on natural ecosystems. Reference is made concerning the assessment of the load bearing capacity of each ecosystem and the rational use of land and natural resources. It is being acknowledged that the applied models gave had a negative impact, downgrading the quality of living for the inhabitants and reducing the attractiveness and overall competitiveness of the Region.

#### *Pivotal Role in S-E Europe*

The 2007-2013 repeats and updated the stated aspiration for the city of Thessaloniki to play a pivotal role in the extended Balkan Region, serving as an important node in the SE European network, on the junction of overlaid energy, transportation and communication networks of national and transnational importance. It reminds of the updated socio-political situation in the Balkan economic area, and the ongoing procedure of gradual homogenization, with the opening of the borders and the sociopolitical transformation as a result of EU policies. Given the advantages due to its geographic position, the city can exploit the changing economic ground on its favour, and thus contribute to the extended development of the entire region.

Having those four notions forming the development framework, the programme, and proclaims that all actions taken need to anticipate the future role of the city of Thessaloniki, with the expansion of the tertiary sector, and the new conditions that arise. The Operational Programme is structured along three thematic

5. Ibid

6. Ibid

objectives<sup>7</sup>: *i) accessibility to infrastructures and services, ii) digital convergence and entrepreneurship and iii) sustainable development and quality of life.* As far as the regional development goals goes, the official document lists the following five general development goals for the period of 2007-2013<sup>8</sup>

1. Enforcement of the development role and the perspectives of Thessaloniki.
2. Introduction and exploitation of the Region of Central Macedonia dynamics in the wider SE Europe.
3. Reinforcement of the region 's productive network competitiveness.
4. Increase internal regional cohesion.
5. Environmental protection and integration of the environmental dimension in the development process.

Summing up, the 2007-2013 Programme document sees that the prospects of Central Macedonia in the competitive European and international environment will be determined based on the productive potential of the system for adjustment and restructuring. Principal idea in both addressing the challenges and exploiting the opportunities in the knowledge economy is to develop a regional strategy for innovation and competitiveness.

#### 2014-2020 Period

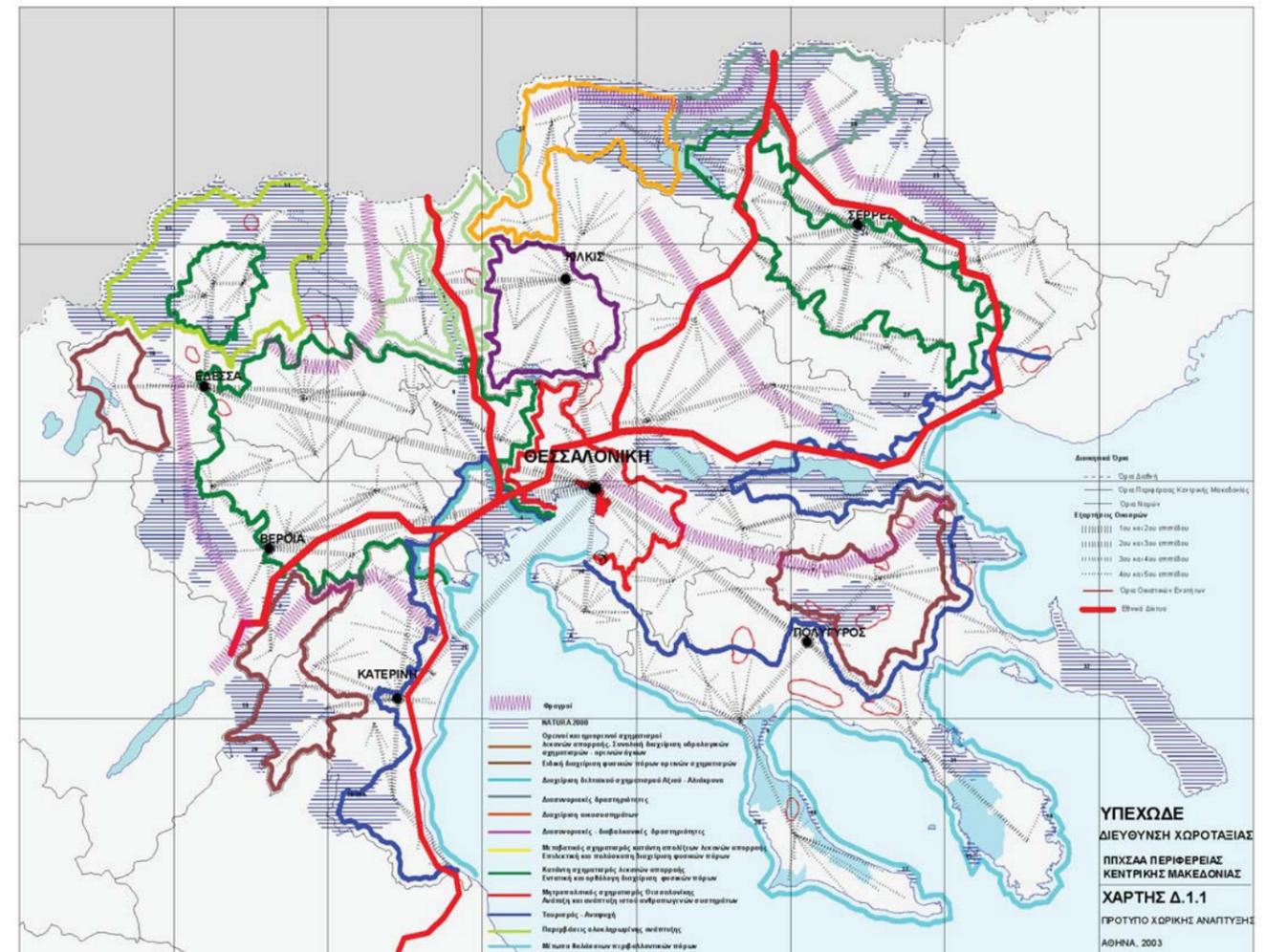
The last operational programme for the 2014-2020 period again follows on the footsteps of its predecessors both in the evolution of setting out objectives as well as in terms of concreteness and precision. Extra attention has been given to the emergence of the ICT sector, or respectively the creation of conditions for its promotion.

#### General Objectives

1. Transition of the regional economy towards a new and sustainable production model with competitiveness, openness, innovative entrepreneurship and smart and friendly utilization of ICT.
2. Support and Empowerment of mobility and upskilling of Human Resource Management, Dynamic Addressing unemployment, ensuring social cohesion.
3. Protection and sustainable management of the natural and anthropogenic environment as well as natural resources to ensure quality of life and resource efficiency.
4. Integration - promotion of transport infrastructure and networks for the emergence of the region as an international transport hub area - Take advantage of its centroidal position with respect to the macro-areas of Southeast Europe and the Eastern Mediterranean.
5. Improve institutional capacity and enhance the effectiveness of governance and public administration authorities.
6. Promotion of regional territorial cohesion and interregional / transnational cooperation.

7. Ibid.

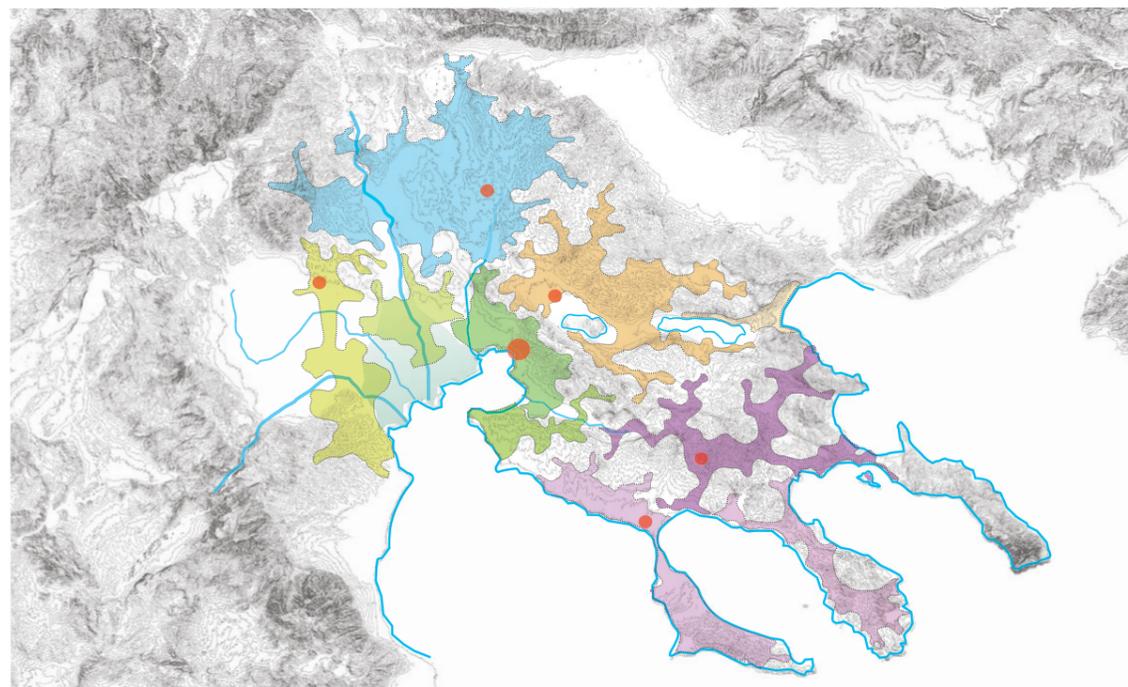
8. Ibid



Regional Spatial Plan (source: RCM, 2003)

Accordingly, the development vision of the Region of Central Macedonia defined for the new programming / operational period of 2014-2020 is the following: *“The emergence of Central Macedonia as a potential growth pole of international scope with an intelligent use of its distinct advantages, that is competitive and innovative production base, quality environment, strong social and territorial cohesion”.* In summary and synthesis, the vision of the Region of Central Macedonia is based on the triptych of: *i. economic development, ii. environmental protection and iii. social cohesion*, in full harmony with the core objectives of the *“Europe 2020”*. A potential advantage that could have been gained by combing the last regional operational programme with the revision of the Thessaloniki 's regulatory plan was lost, and that is put in evidence by the certain degree of vagueness that both plans treat the territory.

Following this brief overview of past and present planning attempts and initiatives, the next chapter will present the initial conclusions produced up to this point. These will serve as the base and point of departure for the urban ecotones analysis in the subsequent chapters.



### Ekistic organization & geomorphology

(data source: O.R.Th, EEA)

- - - ekistic units
- ekistic units' centres

## E. The Past as the Blueprint for the future

As seen in a previous sections of this chapter, there have existed a number of official plans/proposals for Thessaloniki especially, starting from the 60s up to the recent Revision of the 1985 Regulatory Plan. As seen in the respective analysis, the majority of these projects, early on with the 1968 Plan proposed by Prof. Triantafyllidis, realized the regional scale of the problem, that was later proven crucial for the development and the emerging problems of the city of Thessaloniki. Indeed it was this same problem, the question of scale that most of these proposals left at the end unanswered and thus were unable to inspire processes of transformation for the city and the wider region.

Scale, is presented again today as a predominant and pending question and a chance for a fruitful debate. Recent successful examples of spatial planning in the european context, such as the Randstad experience in Holland, or the RMB in Catalunya, Spain, have demonstrated that becoming aware of the proper scale for intervention is crucial to the success of the overall effort. Similarly, the region of Central Macedonia and the city of Thessaloniki need to identify local opportunities for development and avoid the generalizations and abstractions of further master and general territorial plans. The sites highlighted in the mosaic map previously, could serve as areas of specific planning and management. Many of these sites have been identified in many of the previous proposals but have never been properly acted upon. In looking answers on how to successfully address the problems, the scale factor is made again evident. Narrowing down the scale and focusing on individual intervention, while maintaining the wider territorial scale context, *the sliding between scales* technique, provides a integral perspective for addressing regional problems and needs. These interventions need to be contextualized and validated by the wider perspective offered by the larger scales.

The great extension of the new metropolitan / urban region proposed by the revision of the 1985 Regulatory Plan created a controversy early on. The proposed extension was backed by a certain rationalization: The Axios river is recognized as an important corridor, Chalkidiki is also recognized as prime destination for Thessaloniki residents, that has to support the weight of a large seasonal occupation. Similarly the corridor created by lakes Volvi and Koroneia, is included in its entirety. But what again is not made clear is if all these natural resources are now found subordinated to the city of Thessaloniki, in order to satisfy land use requirements and necessities of the urban centre. Overall the revision does not create the base for a certain dynamic that can go beyond where past plans have gone. Accordingly it could be said that it is a typical revision of

the 1985 plan, maintaining the same structure and forces-relation but increasing its metropolitan reach to greater extends. A revised completion of the second phase of the revision process will have the chance to answer all these questions and explain in more detail the structure of the new Thessaloniki region. Apart from planning-related issues, there are a few more points that need to be clarified regarding the revision. The metropolitan character thought out for the future of Thessaloniki brings up many questions. The creation of a new top-down hierarchical structure, that is to say the region of metropolitan governance, superimposed on top of existing structures, like the region of Central Macedonia and the existing prefectures, could create certain incompatibilities and conflicts. Given that the Master Plan Organization is an entity supervised by the Ministry of Spatial Planning, a centralized entity, it raises even more questions on how regional administration can function independent of central policies and mandates. Many of these questions are pending, and hopefully will be resolved with the approval and release of the administration map called Kallikratis, that will bring quite a few changes in terms of administration. The elimination of prefectures, the further reduction in the number of municipalities, the elected regional secretaries and council and the official establishment and delimitation of the regions of metropolitan governance for the city of Thessaloniki, all will help resolve the current situation, as far as official level is concerned. As always achieving positive results on real levels affecting the public, proves more challenging.

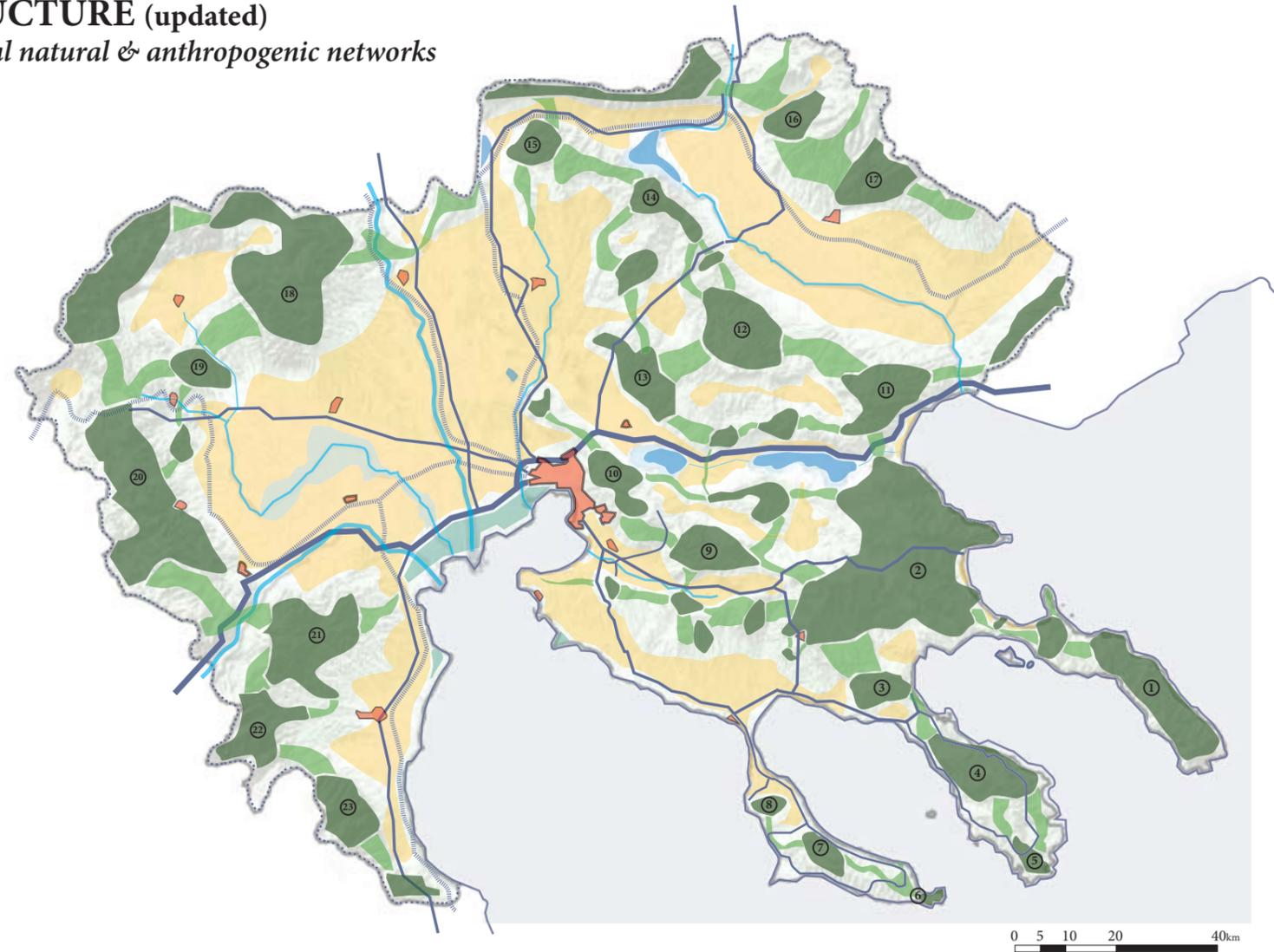
Public participation is another issue that needs to be discussed as well. Although a wide call was made for local entities ( a total of 105) to turn in proposal and questions, only half of them actually got to respond with proposals 1. Direct public participation unfortunately was not enacted at any point, and only indirect public representation through entities and organization was chosen, letting go of another opportunity for real and democratic dialogue allowing voices from the base to be heard and be known.

Nevertheless, the majority of the problems identified by the plan, are real and important problems that ask for an immediate response. A clear priority is the ecological restoration on a regional level, avoiding further deterioration that could have disastrous effects. The distribution of the various activities is a second priority, aiming in rendering the region more functional and innovative as well as competitive on an international level. Residential activity and urban growth is the third one. Controlling sprawl, but evenmore eliminating the reasons that give birth to sprawl will be the real challenge, but will also be the cornerstone for achieving

## REGIONAL MOSAIC STRUCTURE (updated)

*Thessaloniki in relation to the regional natural & anthropogenic networks*

-  urban cover
-  agricultural matrix
-  wetlands / fluvial ecosystems
-  regional patches
-  regional corridors
-  water corridors
-  traffic corridors
-  rail corridors



### List of major habitats / patches

1. Mont Athos & Karyes range
2. Cholomontas
3. Agios Nikolaos
4. Dragoudeliou Karra
5. Koufo
6. Paliouri-Agia Paraskevi
7. Anastasitiko
8. Sani
9. Zagkliveri
10. Chortiatis & Seich-Su
11. Stefaninon
12. Flamouri
13. Exalofos
14. Makriotissa
15. Exochori
16. Kokkala
17. Agriani
18. Paiko
19. Sotira
20. Seli - Tsanakli
21. Sykia - Kastania
22. Mesaio - Lapousi
23. Olympos

successful and meaningful planning in the region. The fourth is coordinating and promoting the wide and rich natural and cultural heritage of the region in a sustainable and feasible organisational scheme. Fifth and last one the plan and all consequent plans need to investigate, debate and propose new scales of intervention on the regional fabric that can have an immediate and direct impact on conditions and quality of living. Last, before concluding, it is necessary to relate the conclusions and the original hypotheses posed in the beginning:

**H1. In the case of the urban region of Thessaloniki, presented as a fragmented and minimally reticulated region, it is demonstrated that past plans and policies have proved inefficient in addressing territorial needs and provisioning for the emerging metropolitan patterns and thus providing a proper structure of development.** The growth patterns found both in the urban region and the prefecture level present an outward expansion dynamic, materialized in the form of urban sprawl in the outskirts of the city ( either tight urban fabric or looser unofficial patterns), satellite settlements in nearby municipalities ( principally along the principal transport routes) and a weakened central core. This uncoordinated expansion has compromised quality of living for city and regional users while at the same time is consuming considerable land resources compromising neighboring ecosystems. Quality of living and environmental indicators are two interrelated figures in the case of Thessaloniki. The uncontrolled growth is characterized by a social as well as an environmental vector, that have not yet been correlated. Their joint consideration demonstrates an central urban core, unable to cater for residents' needs and standards and a steady and unregulated outward drive to satisfy the formentioned needs. The historic incapacity to control these trends can be detected in the traits left throughout the urban fabric.

**H2. The inherited polycentric structure of the regional mosaic is a key asset when evaluating future growth patterns, since it provides the base for establishing new modes of production-economies while articulating, renovating and reconnecting fragmented and marginal areas towards a coherent city project.** The region of Central Macedonia presents a diverse but at the same time distinctive mosaic, principally the product of the pronounced regional geomorphology. Human settlements and natural elements have traditionally been treated as separate and isolated entities, referring both to networking as a means of organization as well as human-nature interaction in all levels. Ekistic organizational plans produced over the years have not achieved in most cases in establishing organic and dynamic relations over the territory. A coherent and careful networking of human/cultural elements on one hand and natural resources and flows on the other are necessary for achieving any meaningful research advancements. The juxtaposition of the two should serve as the research ground, on which further design and research hypotheses can be developed and supported.

**H3. Between the various scales of intervention that are available, the urban region presents an adequate framework for the quantitative and qualitative dimensioning of structuring elements, contemplating the limit as an interface, searching in this manner for the optimal integration within the regional natural structure.** The delimitation of the urban region is an important and precise exercise in identifying boundary zones or transition zones/ecotones between the constructed and the natural environment. Our modern notion of the urban region is enriched with additional elements of consideration that change the traditional perception of a stable and static limit. The urban region becomes the ground for

establishing agents of interaction and integration with the natural and cultural surrounding environment. This is probably the thesis with the most weight, since it can push towards an innovative analysis of the city-regional mosaic. The individual examination of ecotonal or boundary zones could identify potential smaller scales of urban intervention. Similarly, voids in the urban fabric are being reconsidered and thought in an updated way, aiming to intervene, heal and reconnect with the ultimate goal to create identity of place and an elevated quality of living standards.

These have been the conclusions to the initial hypotheses set forth. In continuation, to conclude this part, a series of *general conclusions* are presented, coming out of the prior analysis:

- The region of Central Macedonia, has experienced development patterns typical of peripheral and remote regions outside the main axis of development of the European Union. Certain disparities are observed in infrastructure development and average income compared to the European average.
- The region of Central Macedonia and the city of Thessaloniki are both characterized by a low degree of polycentricity. The city of Thessaloniki is seen as a functional urban area of transnational/ national influence with an established monocentric structure on its functional region.
- The recent socio/political/economical transformations that the Balkan peninsula has experienced, have influenced the position and role of the city of Thessaloniki. Whether the city will be influenced directly or experience a diffuse impact it will be decided by the policies/strategies for the urban region as well as the development pattern and configuration in the wider Balkan region in the area of the South-Balkan metropolitan constellation.
- The proper management of local natural resources brings up questions of trans-national/ regional character. The reconnection of the region with its natural hinterland can also open ways for cultural cooperation building in this way a more coherent and resilient matrix.
- The regional mosaic of the region of Central Macedonia presents a polycentric underlying structure and potential that has not been harnessed efficiently up-to-date. Identifying the correct and adequate structures and scales of intervention will be the key element in producing meaningful results and unleashing the polycentric potential.

- The sum of the natural ecosystems in the region have been identified but have not been organized efficiently into a coherent network. The natural backbone of the region will serve as a guide and an indicator for all future decisions.
- The interaction between the urban and rural fabric, in the case of Thessaloniki, presents a series of interesting points. From one side, distinct clear limit lines, especially along water lines the estuary area or the forest-urban contact, and on the other side the diffused consumption of agricultural land along the plains. Forest-areas concentrated on mountainous areas, face a slow but steady threat by urban expansion. A careful study of urban-rural interface can help explain urban growth behaviours adequately, and prevent unwanted sprawl.

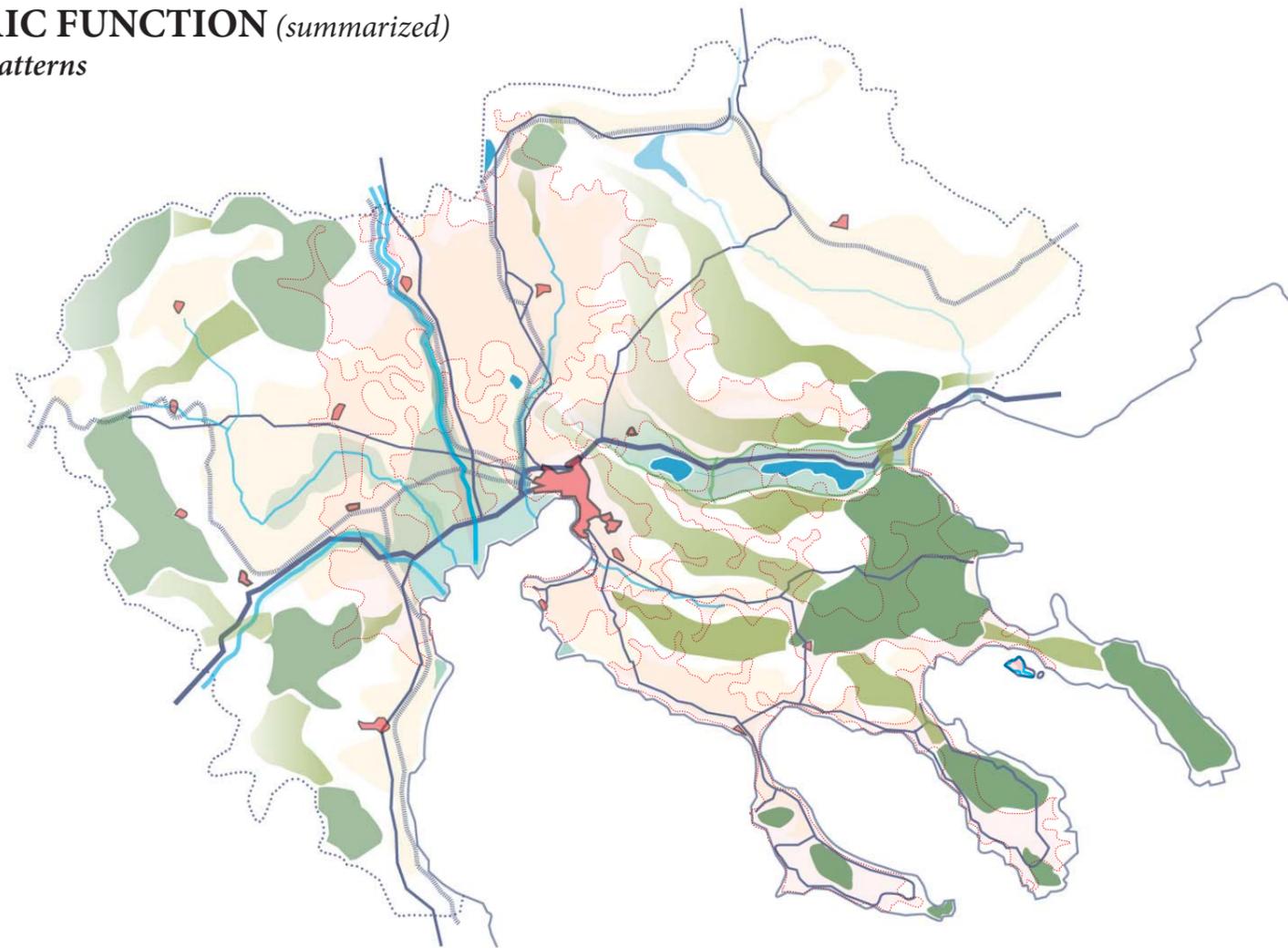
Concerning the question of the position of the city of Thessaloniki, and its urban region, within the regional mosaic a few points can also be made. These can also serve as preliminary conclusions and point of departure for the subsequent specific ecotone analysis, relating the different scales of analysis and their respective diagnosis. This diagnosis is important for a city like Thessaloniki, where urban growth in the late century has had significant impact on the natural functioning of the region and the overall territorial efficiency. Furthermore, the rich and the same time fragile mosaic of the region, apart from being in need of an adequate plan and management and scheme, has numerous areas found under significant stress, demonstrating preoccupying ecological degradation signs. Correlating urban growth with the regional mosaic the following points can be made:

- The *corridors* formed along water courses such as the Axios, Gallikos, Aliakmonas, Anthemountas or the Volvi and Koronia lake corridor, have traditionally served as routes of communication and commerce. Consecutively they have experienced great impact from subsequent urban growth and related mobility axes constructed along their route. Nevertheless they form the inherent structure of the region.
- Respectively the *delta area and extended wetland areas*, extending to the west of the city have historically inhibited growth towards that direction. Consecutive reclamation works and interventions have gone consuming wetland area and facilitating it for urban growth and activities.

## REGIONAL MOSAIC FUNCTION (summarized)

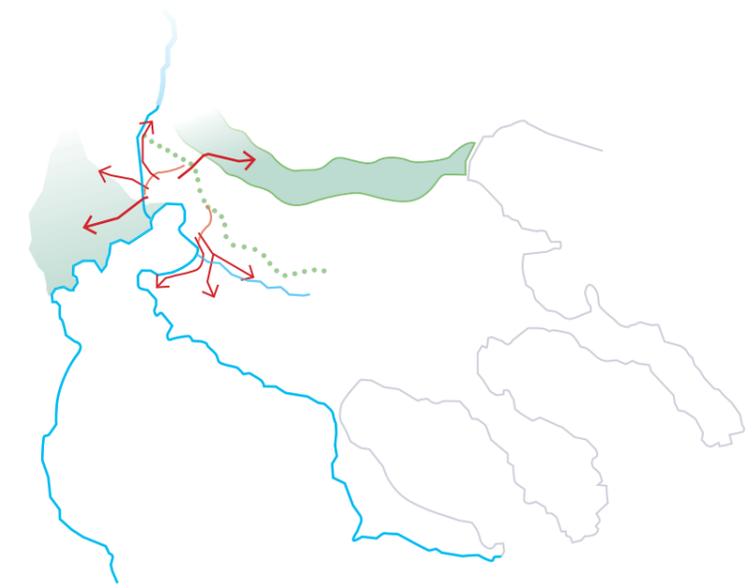
### Thessaloniki & regional patterns

-  ekistic units
-  agricultural matrix
-  wetlands / fluvial ecosystems
-  principal regional patches
-  regional corridors
-  water corridors
-  traffic corridors
-  rail corridors



## Territorial Ecotones

### Thessaloniki & urban ecotones



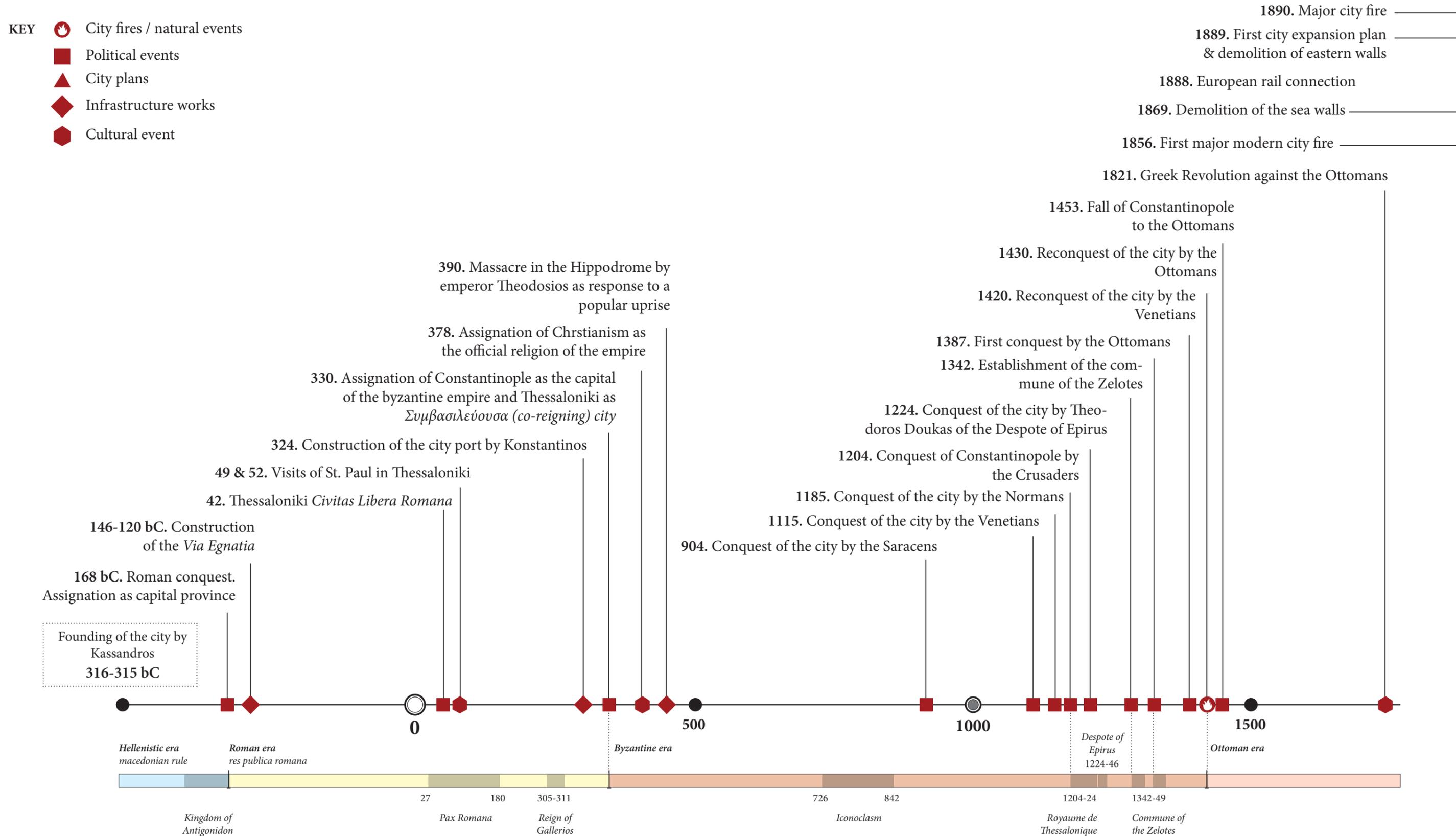
- Similarly the mountain range of Chortiatis extending from the Gallikos river, north-west of the city, and extending on a SE direction, past Zagkiliveri, all the way to the Cholomontas mountain / natural park, has historically formed a barrier to urban growth transversely to its axis. As a result the urban form has been accordingly influenced, developing along a general NW-SE growth axis.
- The creation of the Egnatia Odos highway and its vertical axes has improved the regional mobility scheme and repositioned Thessaloniki in an advance situation with regards to regional and supraregional considerations.
- The Thermaikos bay, a dynamic territorial ecotone functionally related to the adjacent delta area formed by the regional rivers, has altered its coastline drastically over the years. The contemporary hydrological management, urban growth of the city of Thessaloniki and the closed character / form of the bay, has intensified ecological degradation and disappearance of natural habitats.
- The Thessaloniki Plain and other agricultural areas, are key bioproductive areas, that have affected significantly regional economic development in the recent decades. Urban and infrastructure development has indiscriminately consumed great number of areas, especially along plains, and without a proper protection and management scheme, these areas will remain under the same risky situation.

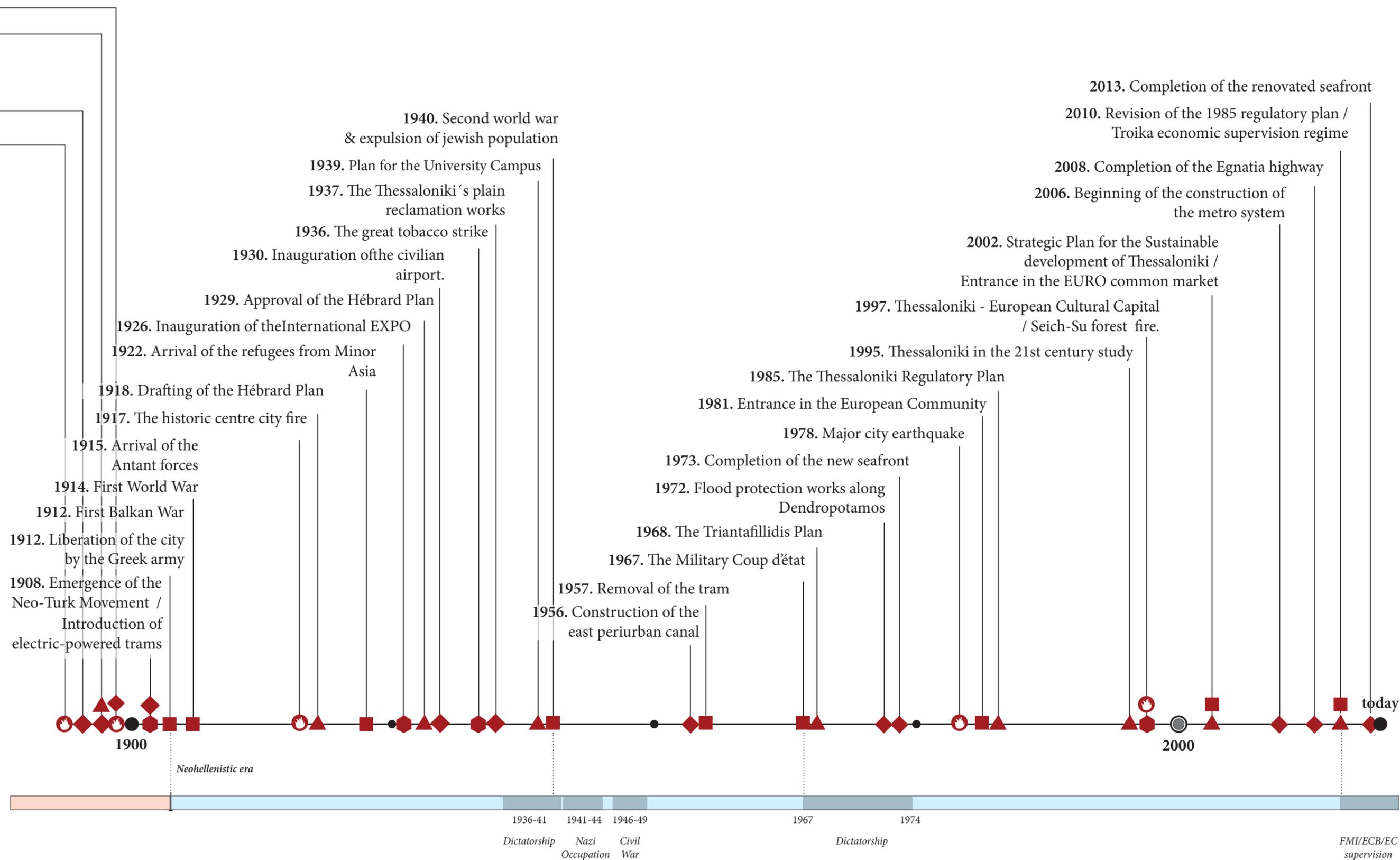
The historic evolution of the region of Central Macedonia (natural + anthropogenic region) in conjunction with the urban development pattern of the urban region of Thessaloniki give us significant hints and insight in the functional and structural context of the region. This way both the problems as well as opportunities present in the contemporary mosaic can be highlighted and planned accordingly. This initial lecture in a wider territorial and regional scale, with the occasional zoom performed, will serve as the basis for contextualizing the subsequent extended analysis of the selected ecotones in the Thessaloniki urban region. The *sliding between scales* methodology will enable the analysis to always keep under consideration the specific and transcendent criteria listed earlier, interrelating territorial as well as time scales.

The comprehensive lecture of the regional context is an important exercise, especially taking under consideration the metropolitan expansion of the city of Thessaloniki as envisioned by the revision of the Regulatory Plan that could have a notted regional impact and reach. The subsequent analysis will leave the regional level and zoom further in, to focus on the existing urban fabric, identifying and analyzing six ecotonal areas present in the contemporary mosaic.

# Thessaloniki & city evolution

## Chronogramme of key historical events





# **Ecotone Analysis**

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## *The six ecotones under analysis*

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I	<i>THE CENTRAL AXIS</i>	p.63
II	<i>THE WESTERN WALLS</i>	p.116
III	<i>THE WESTERN ARC</i>	p.172

IV	<i>THE EASTERN PERI_URBAN CANAL</i>	p.240
V	<i>THE CITY'S RING-ROAD</i>	p.290
VI	<i>SEAFRONT</i>	p.322



location



## **i. Re-imagining the central axis of Thessaloniki:** *An emerging metropolitan centrality*

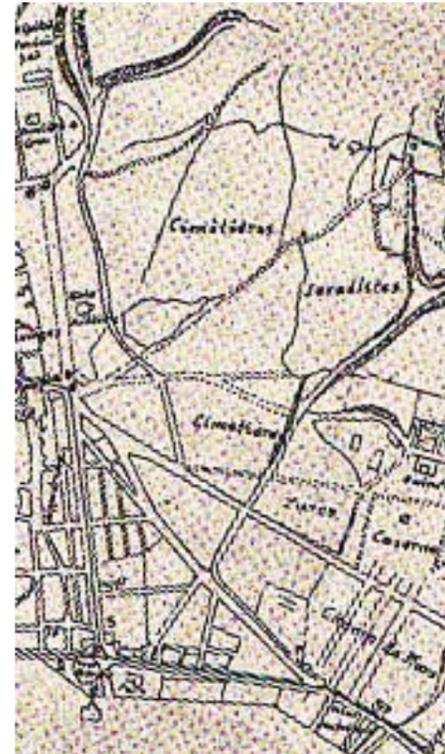
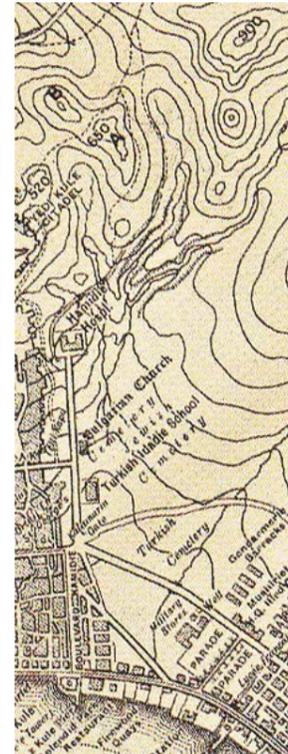
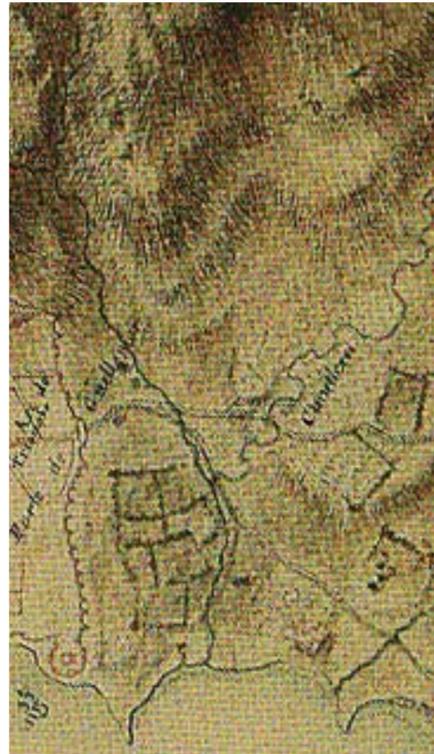
*top:* view of the central axis areas with the historic centre in the background. (Yerolympos, 2012)



The urban region of the city of Thessaloniki demonstrates some spatial particularities. The geographic growth is based in two broad areas of development, in the northwest and the southeast, joined by a central zone, adjacent to the east of the historic centre, which is clearly distinguishable from the rest of the urban fabric. This zone starts from the sea front, the White Tower and the old Electric Company, and reaches the suburban forest at a roughly transverse direction to the longitudinal axis of the city. The need for the implementation of a strategic plan for the renovation of the centre of Thessaloniki has been urgent the last years, in order to reorganize and restructure the central area and in this way improve the functionality and quality of life and services for local and metropolitan residents. Instead of isolated plans and interventions a more integral and global vision is required to tackle the problems and needs of this central area of the city. The idea of the central axis of Thessaloniki is not a new one. On the contrary it appears as early as the Hébrard plan, where it is planned out as a pronounced urban axis, similarly to the Aristotelous and the Gounari axes, along which the city garden park, the university campus and a series of other important buildings and services were located. The axis was never executed as it appeared in the plan, but *scars* of the original axis delineation are still visible in the contemporary urban fabric.

This forgotten axis, today presents a new opportunity and possibility to mend the fragmented fabric of the area and offer exciting possibilities for urban regeneration and reprogramming. Given the location of the newly built City-Hall and the numerous institutions that have located along the axis over the years, the axis now comes to play the role of an important and yet not well-defined latent centrality. The axis as seen earlier is located along an important urban ecotone, that is separating the historic city-center and the posterior ex-mural expansions to the south-east and connecting the seafront with the forest mountainous area. The rethinking and most importantly the replanning of this axis can provide the city of Thessaloniki and its citizens a dynamic and vibrant urban lineal interface that can increase connectivity and mobility, decrease fabric fragmentation and most importantly improve considerably the living conditions for local and regional users. The character, location and the particularity of the characteristics of this area makes it extremely important to the overall composition of city structure and function emerging as a key functional area with important civic, public and outdoors activities with respective morphotypes developing within its limits. The reorganization of the axis should be based first on an internal reorganization of the public/open spaces, connecting and consolidating the space while highlighting the rich and diverse activities, improving significantly the overall functioning, image and special features of the area; and second the fulfilment of bigger scale considerations such as the sea-mountain or east-west connection. The analysis will try to highlight this points

# The evolution of the territory



**1784**

Early map showing the condition of the area before any intervention. We can see the seafront and the S-E city wall fortification intact with the SE gate and the White Tower down by the water marked as the *Tower of Blood (Tour du Sang)*. Adjacent to the walls we see some kind of cultivations bordering the local streams and further out the cemeteries area.

**1873**

Another early french map showing some interesting details: First, we notice the destruction of the seafront fortification and the expansion towards the sea, while the S-E wall remains intact. We notice the presence of the stream/canal parallel to the city wall as well as the rest of the local streams. We see Via Egnatia marked on the map, the location of the army barracks (Caserne) and the location of the Jewish and Christian cemeteries.

**1909**

British military map showing the expansion of the city after the destruction of the S-E walls. The *Hamidie Boulevard* replaces the old walls lining the boulevard with new prominent housing. We see the Kalamaria Gate and the location of the Turkish and Jewish cemeteries. The military installations expand with the Military hospital and Ilisia Pedia. We can also see the presence of various

**1916**

French map for the newspaper *L'Independent*, that shows clearly the principal road axes and the slow occupation of the territory of the central axis. The stream are still present zig-zaging the landscape.

**1919**

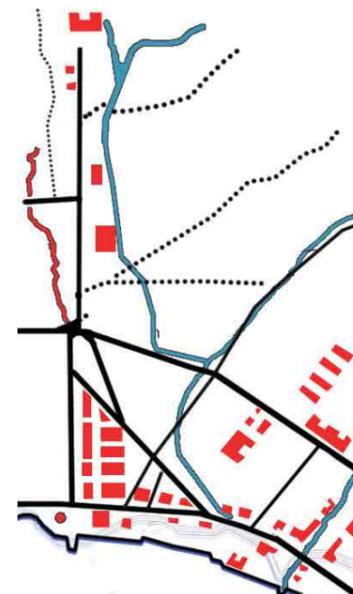
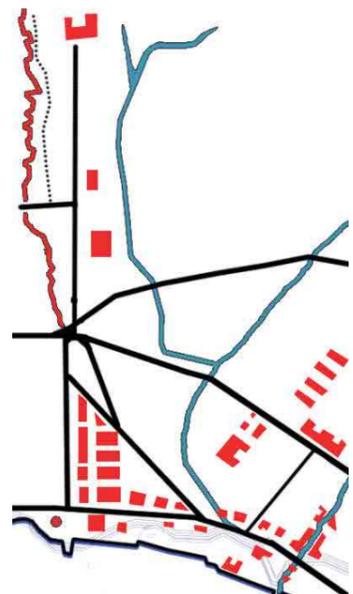
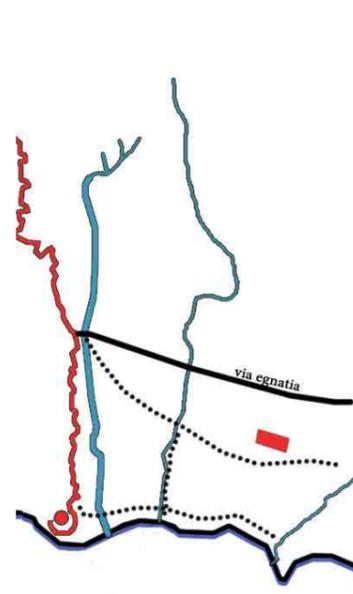
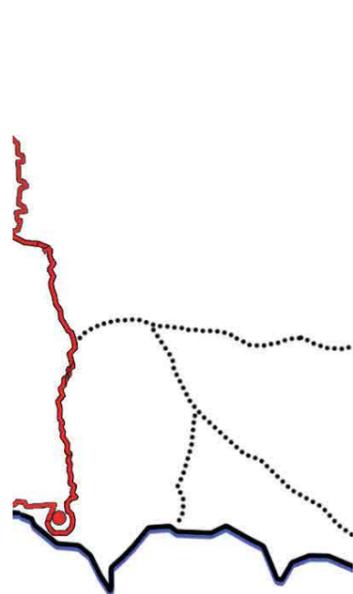
Greek map showing the area right before the Hébrard Plan starts. We can see the slow formation of the *Ethnikis Amynis-Aggelaki-Tsimiski* triangle, the cemeteries are no longer marked, while the surface streams are still present and marked on the map.

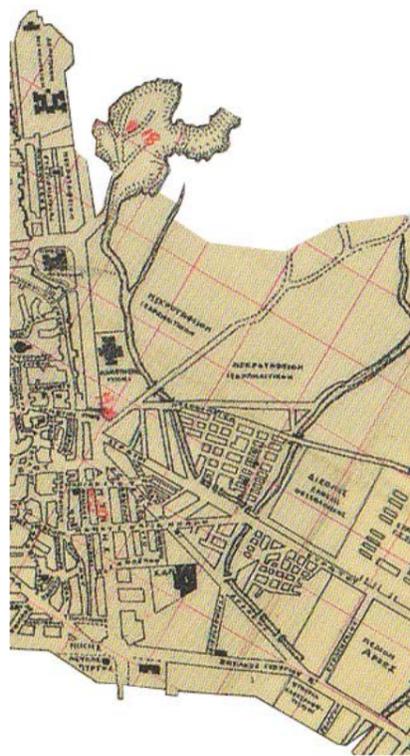
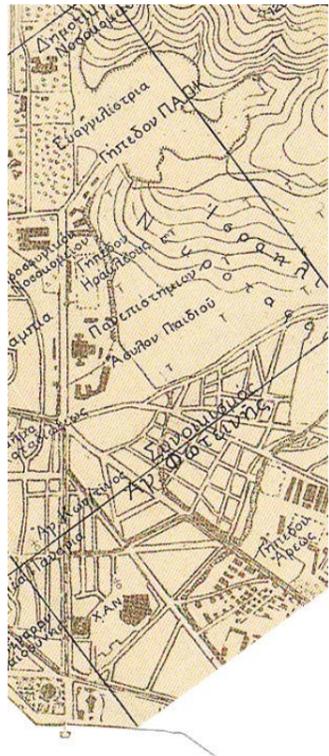
**1925**

The Hébrard plan as demonstrated on the official city plan. The Plan for the axis is now shown in full detail. The YMCA building and surrounding area are marked for the first time. Further up the axis we encounter a big stadium and east of the axis the appearance of a new residential district (*Synoikismos Melenikwn*) that later got incorporated in the urban fabric.

**1927**

Greek military map of low detail. We can however see the transversal axes that are formed, as well as the tram line that crosses the axis. We can see edification at the time and what seems to be marked as cemetery grounds.





**1928**

Greek map showing addition details. First we notice the locations of the stadiums of three of the city's athletic clubs (Aris, PAOK and Iraklis) as well as the X.A.N.TH complex. The district of Ag. Fotini makes its appearance as well as the district of Evagelistrìa although no details are marked.

**1935**

French map of low detail, that shows the development outside the city walls. The White tower is marked clearly and an interpretation of the unoccupied space is given, following vaguely the original Hébrard proposal.

**1935**

Greek survey map that demonstrates better the situation. The Expo site is located on the east of the axis, next to the military complex. The Ag. Katerini district seems quite consolidated by now while settlements appear south of the district as well. The surface streams are still visible and same goes with the cemetery ground on the upper part.

**1938**

Greek survey map that demonstrates better the situation. The first buildings of the Expo can now be seen next to the military complex. Part of the Ag. Fotini settlement has been cleaned off for future development and the districts of Evagelistrìa and Saranta Ekklisies make their first appearance. The surface streams are still visible although withdrawn and same goes with the cemetery grounds on the upper part of the axis.

**1940**

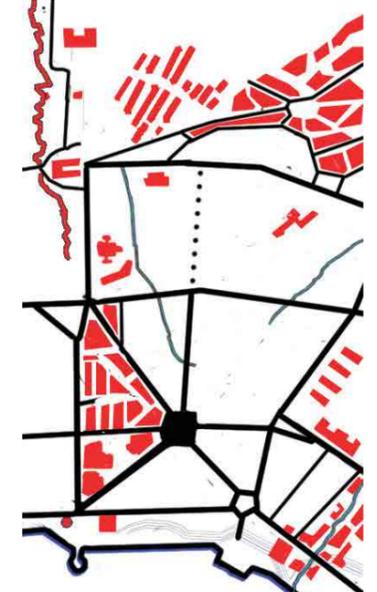
German map showing the various districts of the city. Along the axis we can still see the Ag. Fotini district, and Saranta Ekklisies further up. The Evagelistrìa district on the top west side and Ag. Pavlos further up and a bit off the axis. We can also discern the first buildings of what could be the initial university campus, on the western front of the current campus.

**1955**

Aerial photo demonstrating the situation on the axis. The axis is seen to be marked on ground for the first time, leading to the destruction of the district of Ag. Fotini, and adjacent settlements. The first university buildings are visible and so are the districts of Saranta Ekklisies and Evagelistrìa. Also a roundabout can be seen in the position of the X.A.N.Th square. New construction is seen all along the axis.

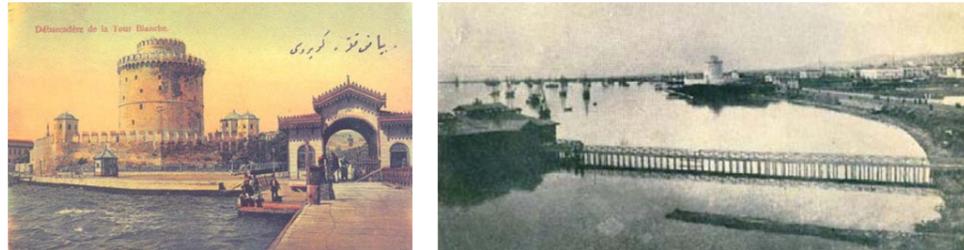
**1956**

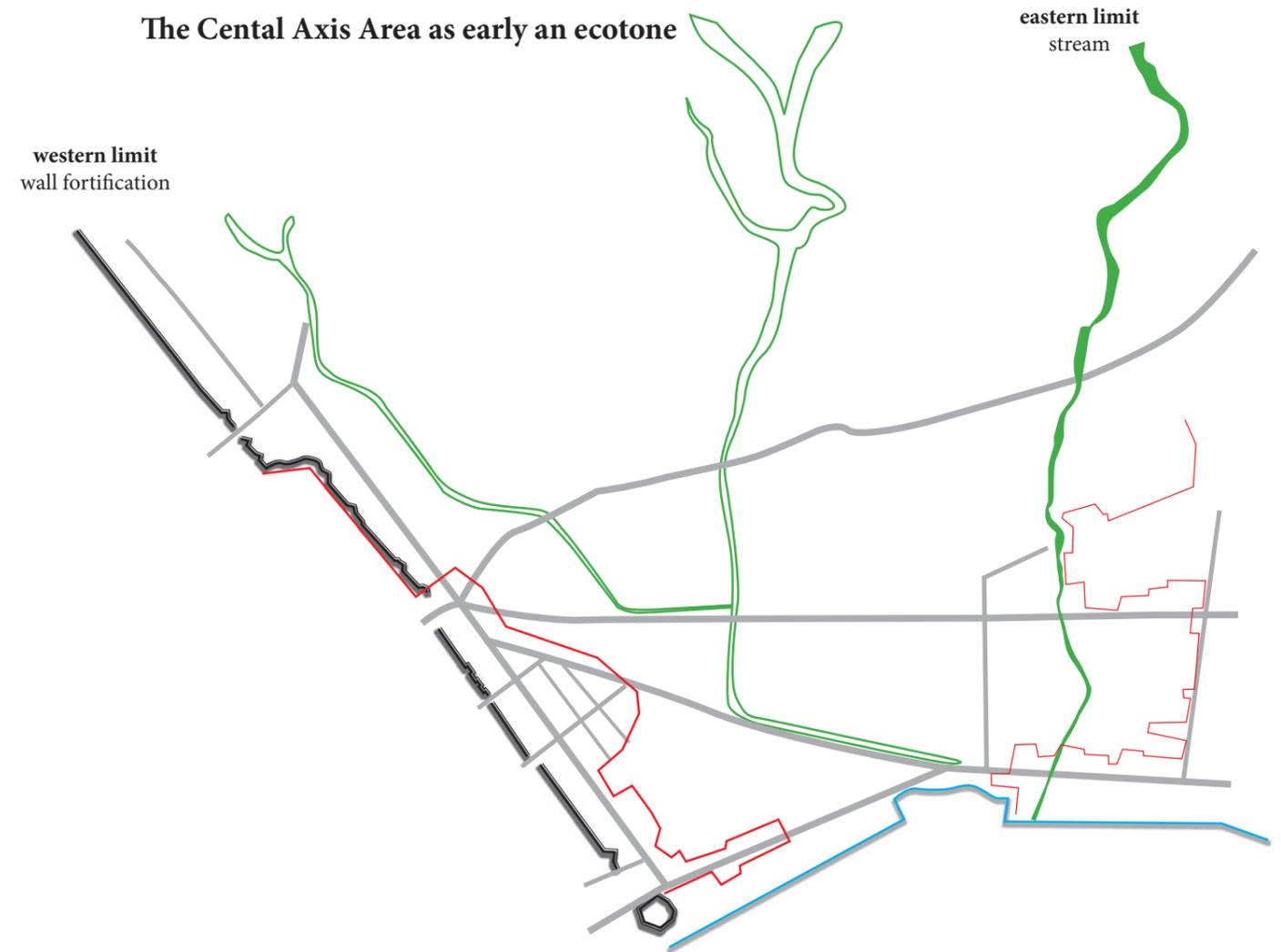
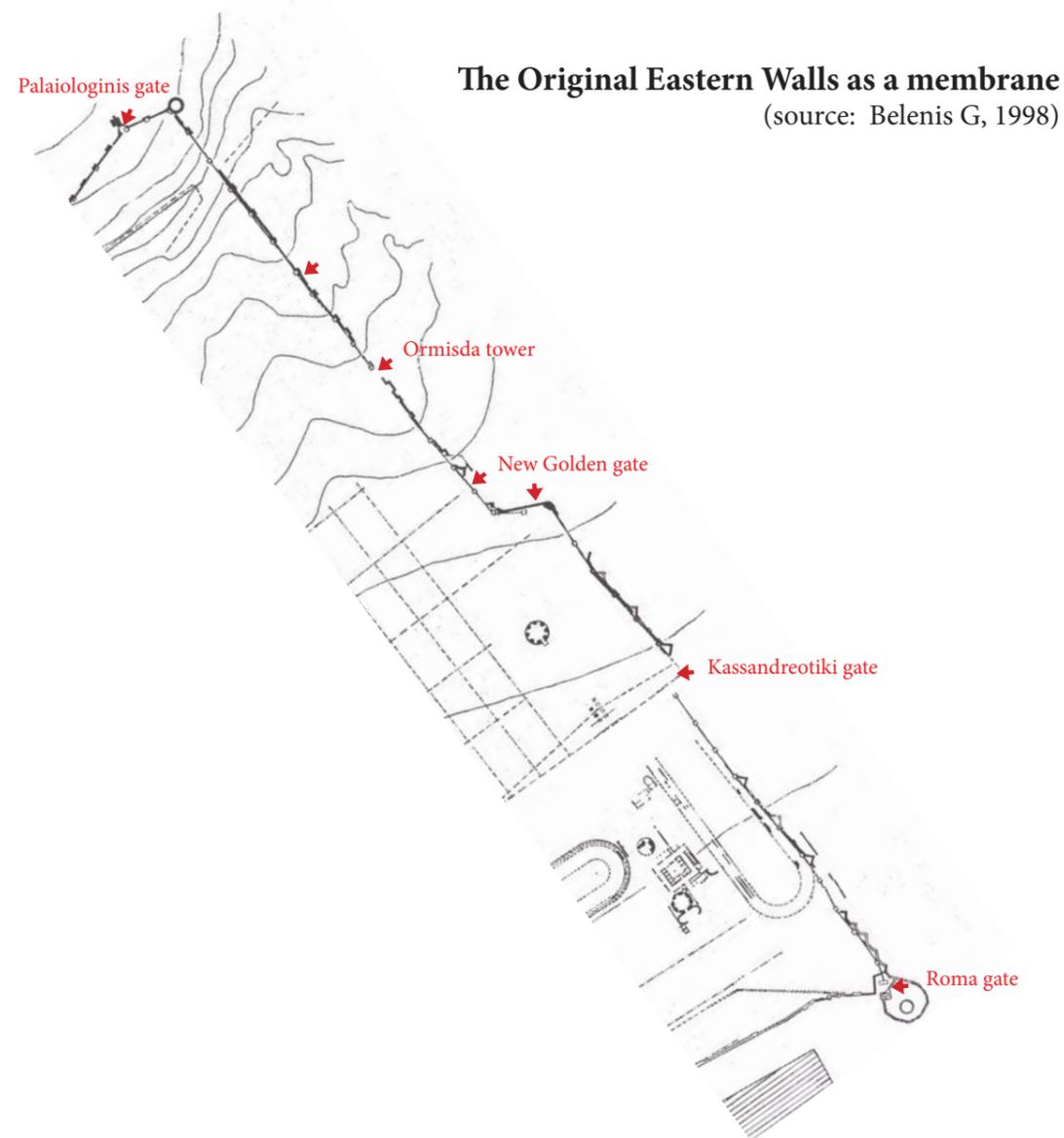
Greek government map, demonstrating allowed height for construction and demonstration existing edification. The university campus appears to have a height allowance of Z= 3 floors = 11 mt. The axis remains prominent although in the university campus section it is marked in shaded implying a certain modification in the future.





**i. Historical contextualization**  
*The Central Axis Area in the 1898-1899 map*





In the late 19th century and early 20th century, Thessaloniki initiated its modernization trying to get more of a European city character and expelling the attributes of the oriental city that it got to adopt over its Ottoman rule. During this period then the city expanded outside the walls that had protected it for centuries and began to expand and grow to SE (towards Kalamaria) and to the NW. Examples of this major redevelopments by the Ottoman administration were the demolition of large parts of the wall fortification (sea walls, part of the eastern walls), the creation or realignment of key roads / axes in the urban fabric, the inauguration of the tram, and a parallel commercial and economic development in the city.

However, in the early 20th century, (see 1898-99 map) the region south-east to the city walls remained relatively deserted with the exception of the villas along the Eksoches road by the seafront. The rest of the area was occupied by cemeteries and the large military camp. Since the antiquity, the area SE to the walls of the city was covered by cemeteries. Going back to the Hellenistic and Roman times there were remarkable tombs and funerary monuments outside the east and west walls and especially outside the respective gates of the walls<sup>1</sup>. Also, during the Byzantine era Christian city residents buried their dead in a large area that stretched out the north side of the eastern wall, where later the organized Christian cemetery of Evagelistria was created<sup>2</sup>. Near the current university campus Muslim and Jewish cemeteries were still widespread. This situation is reflected in various historic maps.

The first Turkish cemeteries should have been constructed immediately after the fall of the city and the destruction caused, full of ruins and dead corpses creating a serious hygienic risk. The dead were buried in two cemeteries, one east and one west of the city<sup>3</sup>. In the east part, the Turkish cemetery occupied the area from

the city walls and the seafront to the space currently occupied by the Thessaloniki International Fair. The extent of the Turkish cemetery was great, given that according to Islamic custom there is no digging up of the dead.

The Jewish community of Thessaloniki composed in its great majority of Jews of Spanish origin (*sefaradim*) and a few from Poland and Germany (*eskenazim*). The Jewish cemeteries outside the eastern walls early-on received the first deceased from the newly arrived refugees from Spain. At the beginning of the century the Jewish cemeteries formed a single extension. However walkers and especially Turkish soldiers in the nearby barracks of Toumba used to pass through the cemeteries to shorten the route. Thus a path opened up slowly that was to form the street of Chortatzides, and thus the cemeteries were divided into two sections on either side of the road. To protect the graves, the Jewish community soon built a stone wall around the cemetery. The number of dead who were buried there are estimated to approximate the number of five hundred thousand from 150 to the 20th century. The oldest tombstone recorded the graves had carved the date 1493. Older graves were small in size, but as the centuries passed marble slabs were used increasingly as well as family tombs - mausoleums for the prominent Jewish families<sup>4</sup>.

Interestingly, the conditions in the area early on formed a kind of early ecotone, with the city walls serving as a limit on the west and the stream by the Military camp on the east. The presence of the cemeteries and early establishment of non-residential activities / uses preestablished to a certain degree the special character that the area was to take in the future.

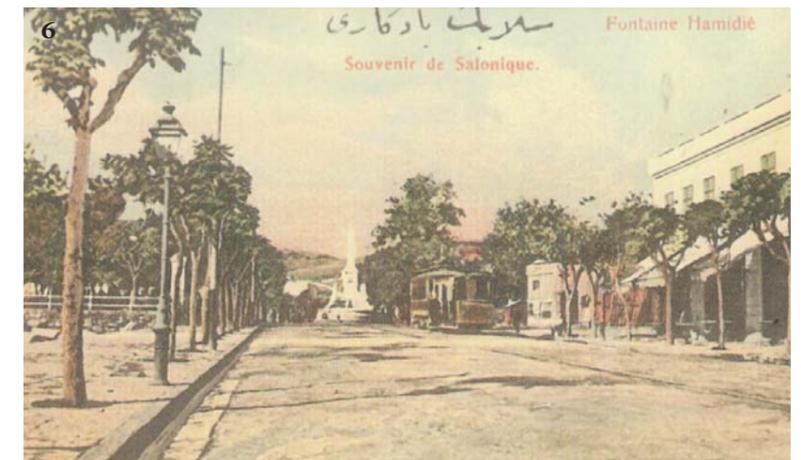
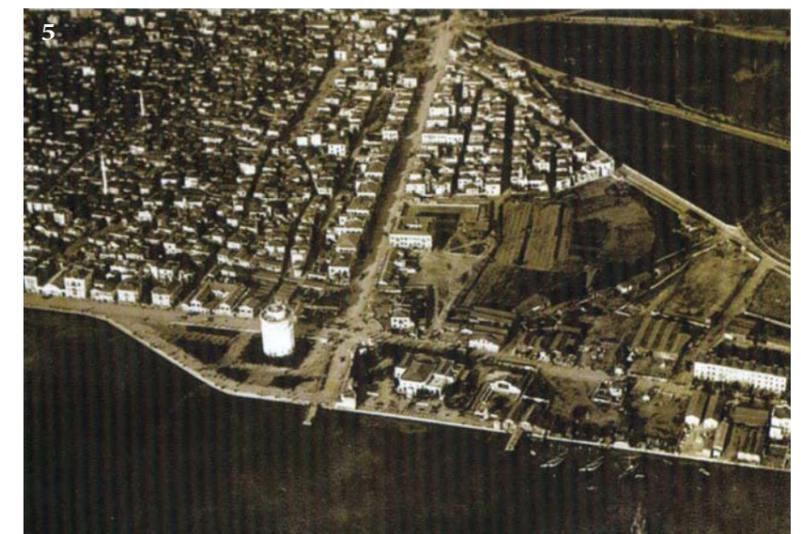
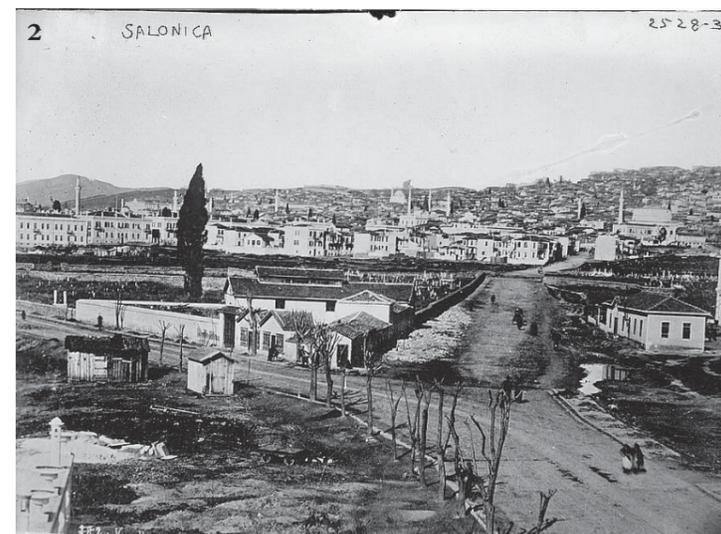
1- 4. Savvaidis, P. (2012)



### Plan for Salonik aufgenommen im Jahre, 1832

(source: Yerolympos A., 2013)

A plan that demonstrates the situation in the area before the expansion of the city outside the city walls. It also marks the principal local paths and their connection with the principal urban grid. It is worth pointing out the absence of a seafront connection on the east side and all the paths leading to Egnatia street.



### Representations

1. View of the area and the eastern walls with the Trygonion tower on the right in the beginning of the 20th century (Municipality of Thessaloniki). 2. View of Historic centre from the Eksoches district, 1910-15 (Library of Congress). 4, 5. Aerial views of the Hamidie Boulevard, top and lower part. (4, Municipality of Thessaloniki, 5. Yerolympos, 2013). 3, 6. Views of the Hamidie boulevard (Municipality of Thessaloniki)



***Plan for the Hamidie Boulevard, 1900***

*(source: Yerolympos A., 2002 )*

An early plan for the substitution of the eastern walls (their demolition started in 1879) with the new *Hamidie Boulevard* and the respective edification (from the seafront up to the contemporary Egnatia avenue). The intervention pretended to create a new axis with desired urban qualities.

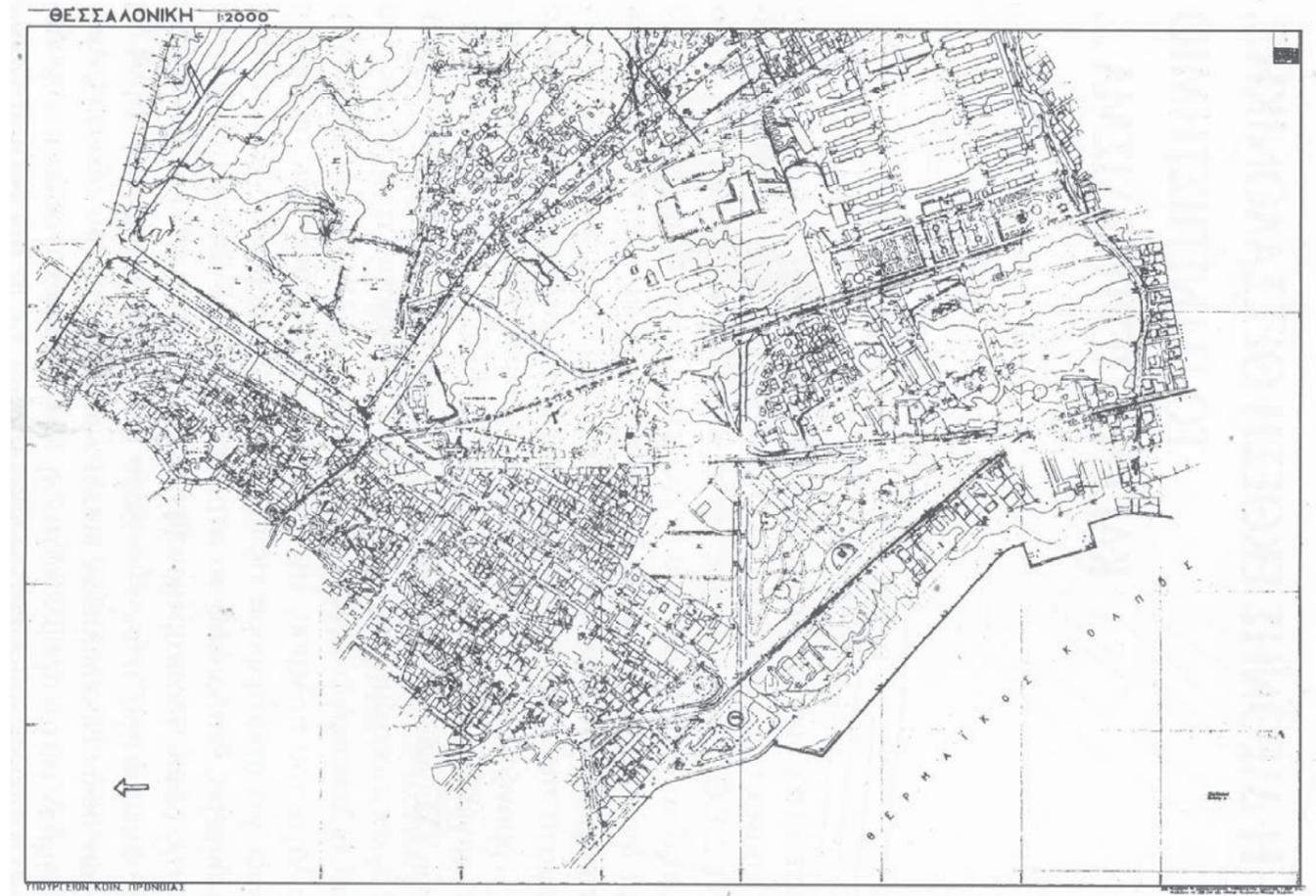


***Aerial Photo of the Eastern walls and the extra mural area, 1916*** *(source: Yerolympos, A., 2002 )*

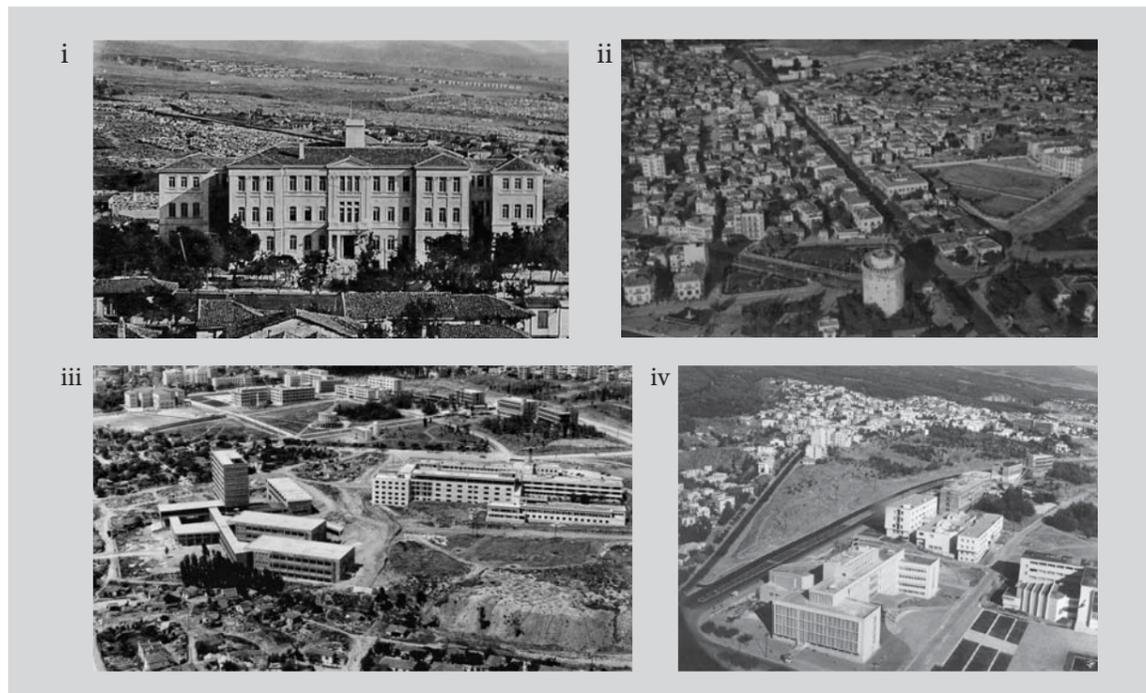
A very interesting aerial photo of the beginning of the century right before the city fire of the 1917 demonstrating the situation in the area before the massive expansion of the city to the east. The military installations can be seen on the right of the photo delimited to the east by the local stream. The rest of the local streams can also be discerned clearly. Other discernible elements are the israeli cemeteries, the seafront activities, the quarry in the Evagelistria area and the initial arteries that have formed, crossing and at the same time structuring the area.



1938 - Aeria Photo - (Archive A. Karadimou - Yerolimpou )



1951- Topographic Survey - (Technical Department of A.U.Th)



## ii. Transitions and transformations

As seen earlier the area west of the Jewish cemeteries was not initially inhabited. It was not until the 1917 Great city fire that the first settlements appeared to host families stricken by the fire. A few years later in 1922 with the population exchange and the arrival of the refugees in mass, the area served fast as a space for the erection of improvised settlements, principally in the area of today's University campus. In this manner pretty soon a refugee settlement started to take form, hosting in its majority Minor Asia refugees, specifically from Smirna (now Izmir) whose Mitropolis was Agia Fwteinh (Saint Foteini) and thus gave its name to the newly established settlement, as well as the small church that is saved until today<sup>5</sup>.

5. Savvaidis, P. (2009)

**images:** **i.** The building of the University of Thessaloniki with the jewish cemeteries and the Agia Foteini settlement in the background (1930) **ii.** The Ethnikis Aminis avenue (Panepistimiou avenue) with the university and the Agia Fotini in the background (end of 30s) **iii.** Aeria photo of the campus where the settlements can still be seen penetrating the campus. The stream can also be seen on the side of the Polytechnic school along with various settlement buildings (1962) **iv.** The Evagelistria district, with the univsersity campus on the foreground (1962) (source: Savvaidis, 2012))



**1958 & 1962 - Topographic Surveys** - (Technical Department of A.U.Th)

The Agia Foteini settlement with its precarious living conditions soon became a controversial issue for the city, attracting often the press's attention. The settlement was divided by the Stratou Avenue into two parts, upper and lower. The upper part occupied parts of today's University campus and the International Fair and had the Nosokomeio street as its principal street. The lower settlement extended south-west of the Stratou Avenue and up to the Ntespere street.

In 1929 the whole settlement numbered about 15,000 residents (about 3000 families) principally refugees but also locals. The illegal and informal construction taking place often with the tolerance of the authorities became a standard practice. Soon the area took over the area of the Turkish cemeteries<sup>6</sup>. The situation was more grave in the upper part, while in the south the settlement enjoyed all types of public amenities (water, electricity, sewer). The situation of poverty on the upper part soon gave birth to repetitive incidences of delinquencies as well as bad press, which pressed for the resettlement of the refugees and the eradication of the settlement.

Indeed in 1930 the Venizelou government decided its relocation to another area of the city (principally Nea Krini), passing the area to University of Thessaloniki for its future expansion. A task which did not prove so

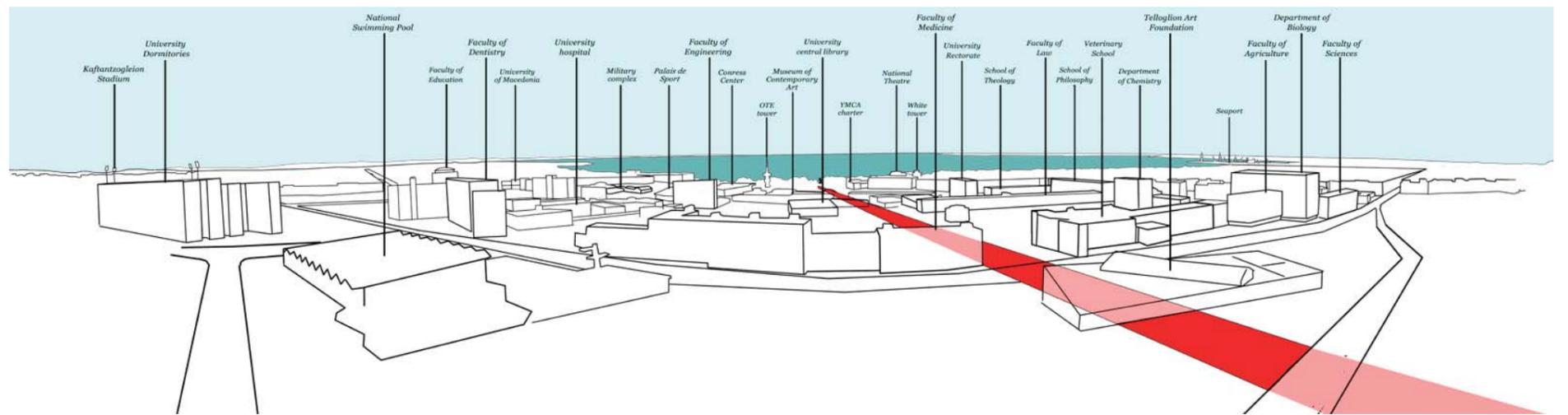
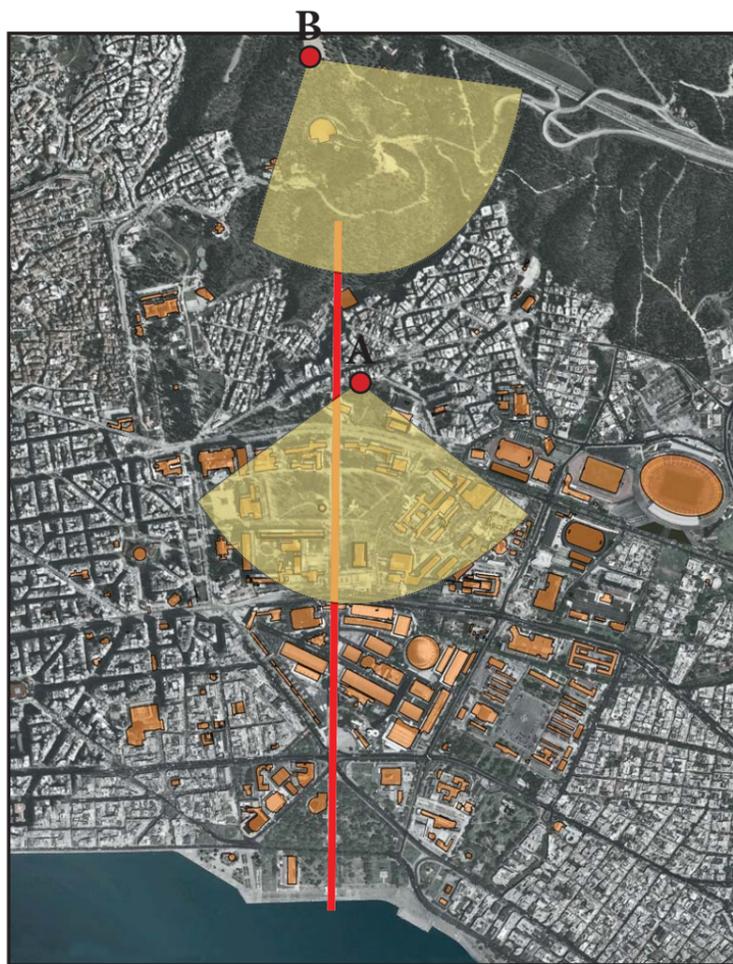


**1959 - 61 Photogrammetric Survey** - (Urbanistic Archive of A.U.Th)

easy. The lower part of the settlement soon disappeared to give space for the relocation of the Thessaloniki International Fair. By 1951, year of the post-war re-inauguration of the Fair, as seen in the topographic survey the settlement it is completely gone, with only the Upper part still existing intact in the university premises. When the University eventually bought of the land, it had to deal both with existing settlers as well as the continuing activity of illegally occupying new areas. Comparing the two topographic diagrams of 1951 and 1962 one notices that the phenomenon did not die off but kept going in the upper part of the settlement. Thus in 1957 the University in its effort for expansion counted with more than 650 constructions, and 2-3 new houses built every month<sup>7</sup>. It was only after a radical response on the part of the university that legal and administrative procedures were activated and initiated for the relocation of the settlers, that indeed few years into the 60s it managed to completely deal with the issue and liberate all space on its property from these settlements<sup>8</sup>.

The 1959-61 photogrammetric survey shows the international fair extended almost to today's size and having taken over the area of lower Agia Fotini. The upper part is seen intact occupying a big part of the university property, in close contact with the newly erected hospital and the Engineering faculty to be constructed.

6-8. Savvaidis, P. (2009)



### iii. The Central Axis area under consideration - uses & activities

Even at first glance the special character of the area under consideration can be perceived, just by considering the diverse and special uses that it encompasses. Trying to delimit the main area of focus we can say that in the northwest and west, its limits are set by the streets of Kastrwn (city walls), Ethn. Aminis, Angelaki, Nikolaou Germanou and leading all the way down to the area of the White Tower. To the North and Northeast, there are the cemeteries of Evaggelstria, the street of St. Demetrius, and areas of the sport stadiums of Ivanofeio and Kafantzogleio. To the southeast, the street of Kafantzoglou and to southwest of the limit of the waterfront. In essence it is a singular space between two urban districts, which are consolidated, densely urbanized and densely populated. On the one hand, to the west is the old historic centre of Thessaloniki and on the eastern side east, the area of East Thessaloniki, earlier known as Eksoches. We can see two densely urbanised fabrics both presenting to a great extend deficiencies in open spaces as well as social infrastructure. Between these two distinct poles and due to diverse historical and planning circumstances, various other uses and activities other than residential developed that over the time formed the special character of the axis area. Most of these places are closely connected with the memory of the Thessalonians and interwoven with the history of the last 60-70 years of the city of Thessaloniki. This geographical space constitutes the eastern entrance for the historic centre, a connector, connecting the waterfront to the mountains and the Seich-Su forest, being only partially interrupted by the settlements of Saranta Ekklisies and Evangelistria.

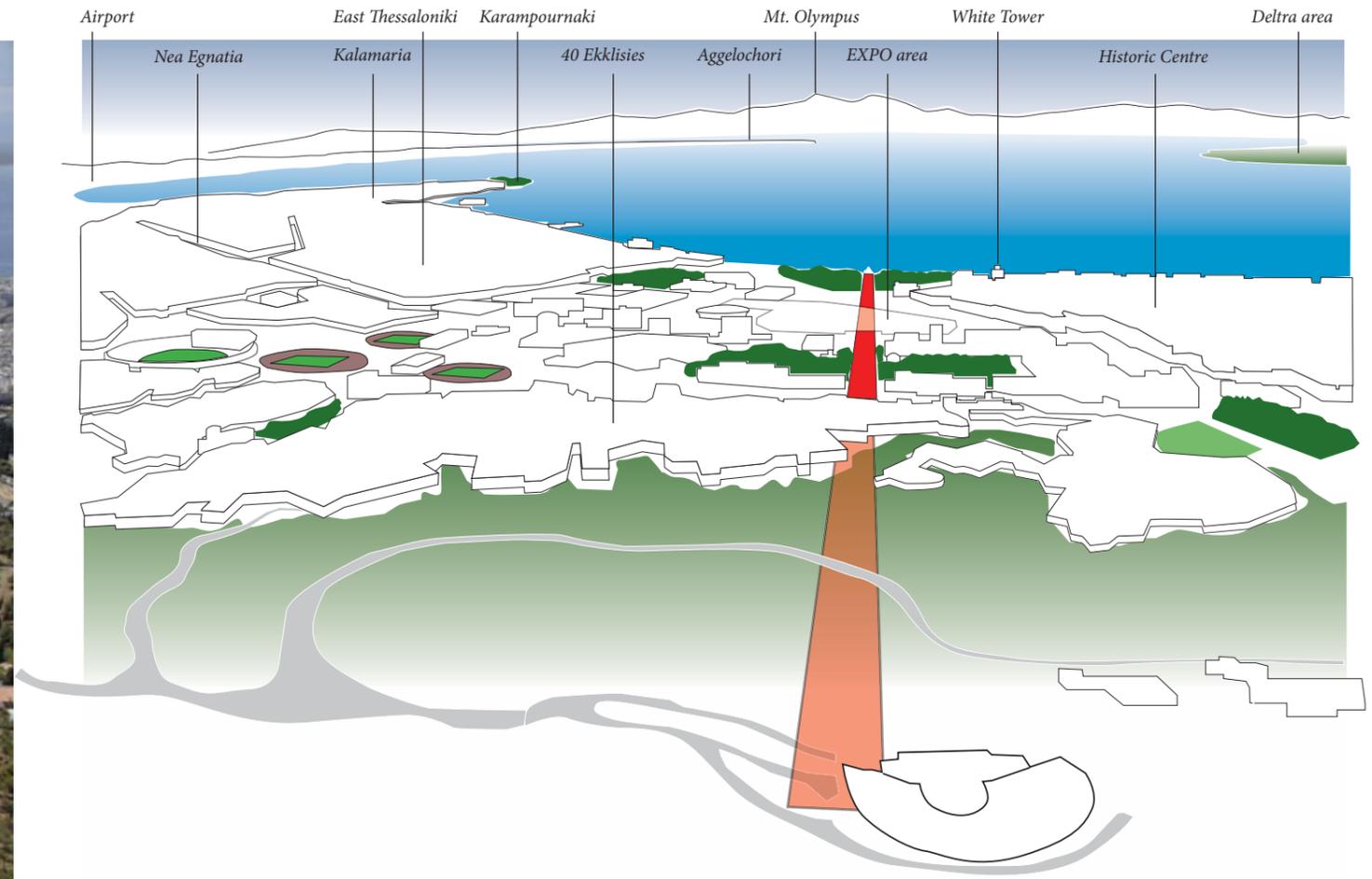
This differentiated space has always been a kind of *breath* for the city. As mentioned the existing uses had prevented the development of residences for the most part but at the same time the lack of an overall planning and led to further complications that eventually led the current situation characterized by the overall fragmentation of the space. This can be seen for example in the case of the university campus, which in practical terms has been rendered inaccessible to the citizens of the city. Similarly with the current and unacceptable problematic situation of the expo, which is also inaccessible to citizens. And so on with the spaces around the various museums and the construction of the site of the new City Hall. The problem has grown over the years to a extreme extend, and now it requires an imaginative and integral vision and proactive attitude to be able to provide treatment to the fragmented fabric.

#### The specific characteristics of the area

At a physical level the area is situated on an amphitheatrical slope with a clear sea-mountain connection. It is characterized by low coverage and relatively limited construction development. Various green spaces can be founded along the course of diverse sizes and types. In terms of uses and activities it is mainly of public character and principally of nonresidential use. More specifically we encounter recreational open space (parks or communal green areas), higher education, culture, sports, health and hospital administration uses among

**B**

(source: A. Sofianopoulos, greekscapes.gr)



others. Observing the area two distinct areas/units stand out easily: On one side the campus area formed by the faculties of two universities (Aristotelean University of Thessaloniki and Macedonia University) and the sport facilities and the other one with the areas and those related to the international EXPO, (including the Alexandreio Sport Palace, the Velidis Convention Centre), the Military installations, the various museums and the Town Hall.

As far as land ownership is concerned, the majority of the areas along the axes belong directly to the state or the local government or other entities controlled by the government<sup>9</sup>. In terms of monuments and important building in the study area we can point out the following: the White Tower, the neo-classical buildings of the Third Army Corps (current Military Museum), the complex of the Evagelistris Cemetery, the building of the Central Hospital and part of the Byzantine walls. More recent important buildings in the area include academic buildings on campus, the Officers Military Club, the Building of The Company of Makedonian Studies and the Royal Theatre as well as the Tower of OTE.

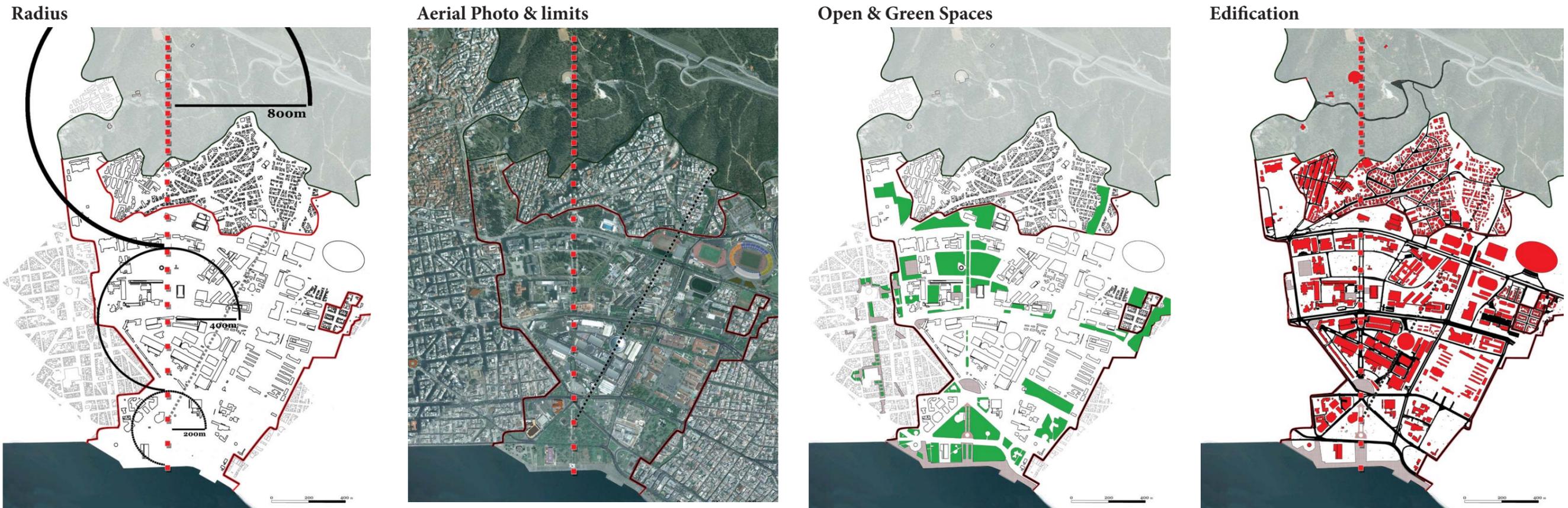
The high concentration of activities as well as the extended range of these functions of education, health, administration, culture, sport and recreation in the area creates a large flow of movements respectively. The question of managing these flows becomes more concrete when considered in relation with the major urban traffic axes crossing the zone (Tsimiski - Alexander the Great, Queen Olga - Tsimiski Avenue and Stratou,

New Egnatia St. Demetrius, etc.) or larger infrastructure (the coastal Axis and the Ring Road). The traffic and mobility problems that develop along these lines during peak hours, especially during the morning hours are the most easily identifiable and analysed problems of the city. The badly managed traffic flow at the node of the YMCA square is one of the key generators of the traffic problem in the zone<sup>10</sup>.

The operation of the EXPO and the rest of the sectorial exhibitions exacerbate these problems greatly over time. The function of the various museums and cultural spaces is not accompanied by respective parking positions nor proper traffic arrangements. Additionally the opening of the Town Hall creates an additional considerable pole of activity with its respective flows (although an underground parking was constructed underneath). Obviously, addressing the traffic and parking issue in the downtown area affects significantly the flows in the area of study of the central axis. The diagrams on the next page demonstrate the current situation in the area of study, presenting on a first plane the general situation and condition of the area and on a second plane going in more detail with the diversity of uses that are present in the zone. Above two perspectives of the area are shown, highlighting key landmarks and buildings.

The area we are talking about can then briefly be described as an area of low building activity, with a considerable part of the area designated officially and formally as public / commonwealth space. It should be emphasized that numerous parts of the area tend to present traits characteristic of official or unofficial public space.

9, 10. TEE/TKM (2006)



These are the open areas of the EXPO and the Aristotelean University which are linked along and through the Central axis, from the statue of the Great Alexander all the way to Teloglion Institute and extending mentally all the way to the forest of Seich Sou. past the Saranta Ekklisies neighbourhood.

The complete list of all the activities and buildings located on the vicinity of the axis are listed in the following page categorized in their respective group. A photographic gallery of the area in review can also be seen attached in the following pages. Observing the evolution of the urban fabric over the time we can see clearly the distinct succession phases, passing from a peripheral extra mural area to an intra urban area and finally to a special urban artefact area. (*territorialization -> des-territorialization*), The sum of all these activities and flows presented in this first part start to create a first impression of the rich mosaic of the zone, appreciating the complexity present in the fabric and making some first attempts to discern some opportunities for intervention based on this previous spatial lecture (*re-territorialization*).

Before going ahead into a more synthetic analysis, and after having completed this initial lecture of the existing urban situation- the *perceivable dimension*, an additional analysis is performed, starting with the description of the biophysical matrix and followed by the presentation of the Central Axis in the Hébrard Plan, that is the *planned dimension* of the current mosaic. Although the initial plan influenced to a great degree in the formation and preservation of the axis, a series of different plans that came along later, altered the original plan, transforming and giving the axis a different form and dynamic from the one initially thought out.

## Existing uses

### Residential development

1. General and residential areas Angelaki-Ethn. Amynis-extension Tsimiski
2. General and residential areas 40 Evangelist 40 Ekklisies.
3. The student dormitories of Aristotelean University are located in the area.

### Higher Education

- i. *Aristoteleion Univeristy of Thessaloniki (A.U.Th)* campus/installation  
The AUTH has approved various plans over the years leading to an excessive edification and buildup ratio.
- ii. *University of Macedonia*  
In fact its facilities are a single massive building which is fenced, creating little public space.
- iii. *Military School / University*  
A military campus of diverse disciplines adjacent to the 3rd Army corp military installations, that included housing for the enrolled students.

### Elementary & Secondary education

- High School (1st Lyceum and 31st Gymnasium) by the boyscout's park.
- 11th High school (by the Earth Theater - θεατρο Γης)
- 7th Gymnasium & Lyceum (by the Pasha Gardens)
- Elementary school of Agios Pavlos.



### Cultural activities

Archaeological Museum, Byzantine Museum, YMCA, White Tower, Teloglion Foundation, War Museum, Macedonian Museum of Contemporary Art, Cemetery of Evaggelistris, Sport Museum, Royal Theatre (M. Mercouri), The National Theatre Company, The Society for Makedonian Studies, The Garden Theatre, Earth Theatre, the ERT3 public radio & television studios, the TV100 municipal television broadcaster.

### Sports

«Palais des sports», the National Swimming Pool, Kaftantzoglio Stadium, Private Sports Facilities, “Hercules” Sports facilities, YMCA. Most of these sports facilities are fenced and thus contribute to further fragmentation and the obstruction of free movement of pedestrians and also do not have very large open spaces. The landscaping in the surrounding area around the Kaftantzoglio stadium is perhaps the only attempt to return open space to the public.

### Healthcare, welfare

AXEPA hospital, Children’s care Asylum, Agios Dimitrios hospital, G. Gennimatas hospital, Euromedica clinic, Centre for Infectious diseases, the military hospital (424)

### Administration

Thessaloniki City-hall, the National Cadastre, the Greek Tourism offices

### Free-public spaces

The D.E.Th park, the YMCA Park, The Royal Theatre Park, The *field of Mars park* (3rd Army corp park), Kolokotroni square, University campus park, 40 Ekklesies park, Melenikou park, and various smaller and disperse open and green areas found in the area.

### Special-uses

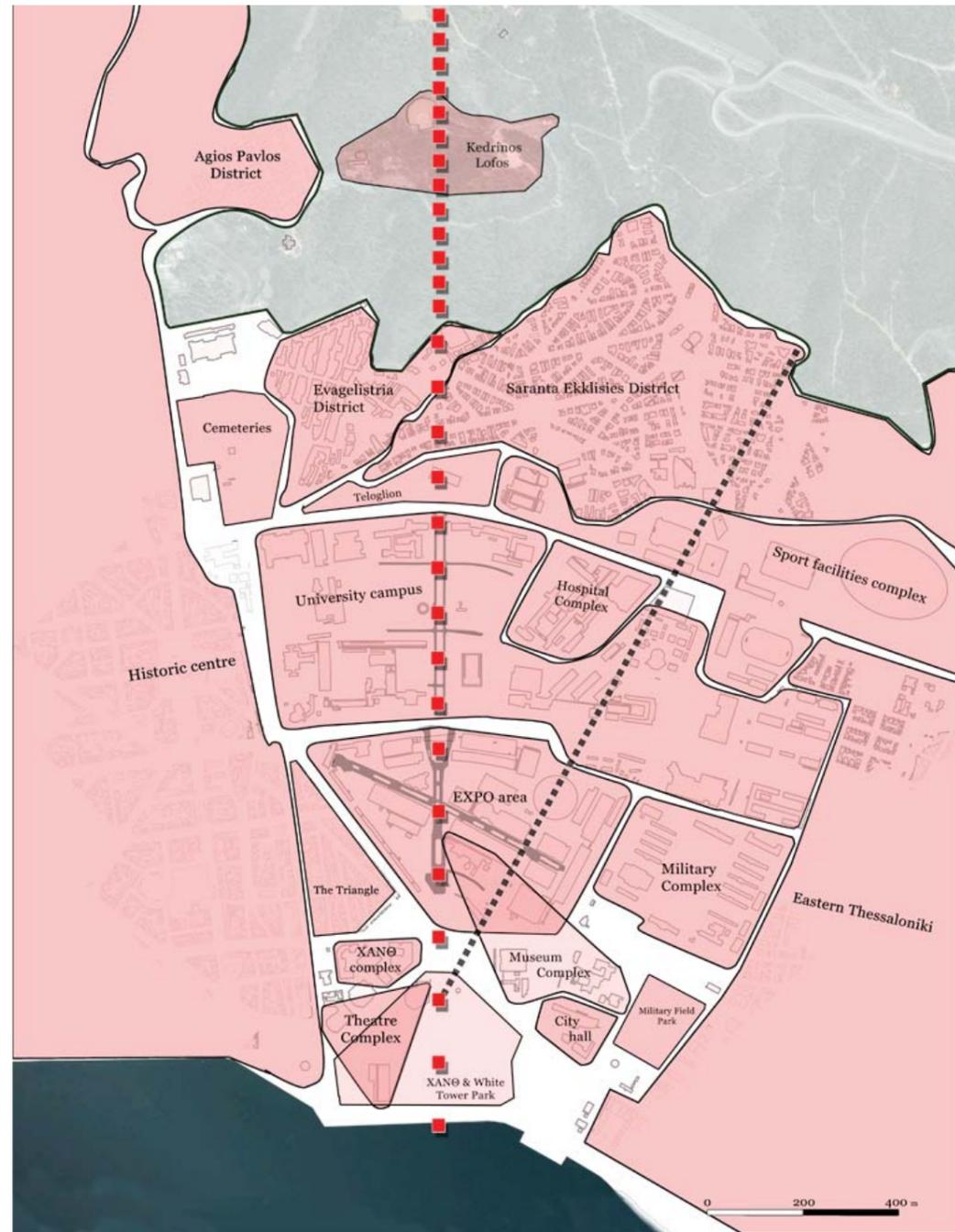
1. **the EXPO site**, that includes the various pavilions and office spaces destined for the different expos but also includes within its premises other uses such as museums (Museum of Macedonian Museum of Contemporary Art) conference centre (Vellidio), underground and surface parking, an outdoor cinema, the Palais de Sports basketball stadium area. The central axis is discernible but not given protagonism, plus it is blocked by the expo gates.

2. **the Third Military Corps** today serves as the NATO headquarters in Northern Greece. Apart from the offices it also includes the 424 military hospital, the War museum and the installations of ERT3 public television broadcaster. The antiquity of the site offers many buildings of special architectural and cultural interest area as well as available open areas that to a great extent are not accessible to the public.

3. **the YMCA**, and the resulting triangle formed between the Tsimiski and Nikolaou Germanou, hosts diverse activities. A recent actualization of the recent plan increased the built up ratio and introduced new uses. So apart from the YMCA buildings (cultural and sport facilities) one finds the National Cadastre, the Greek Tourism Agency offices, as well as spaces for private retail & leisure use. The Society of Macedonian Studies (with the National Theatre) and the 20th Lyceum although outside the YMCA premises, complete the triangle, along the Ethnikis Amynis street.

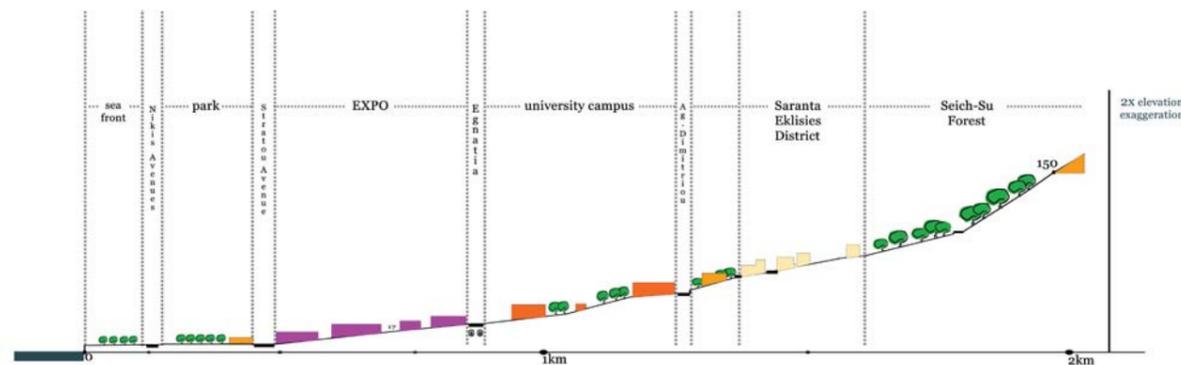
# Central Axis

## Thematizations and areas



# Central Axis

## Places



### Photo Listing

1. YMCA
2. Muesum of Byzantine Culture
3. Macedonian Muesum of Contemporary Art
4. Teloglion Art Institute
5. Archaeological Museum
6. Forest Open Theatre
7. Royal Muesum
8. National Theatre of Northern Greece
9. Garden Open Theatre
10. City Hall
11. University of Macedonia
12. Faculty of Philosophy
13. Rectorate
14. Central Library
15. Faculty of Sciences
16. Education / Pedagogical faculty
17. University Research Dissemination Building
18. Velidion Conference-Hall
19. EXPO
20. Old Army Headquarter
21. Public Pool
22. Kaftantzoglion Football Stadium
23. Alexandrion Basketball Stadium.

# Central Axis

*Situation and representative places along the axis*

1



2



3



4



5



6



7



8



9



10



11



12



13



14



15



16



17



18



19



20



21

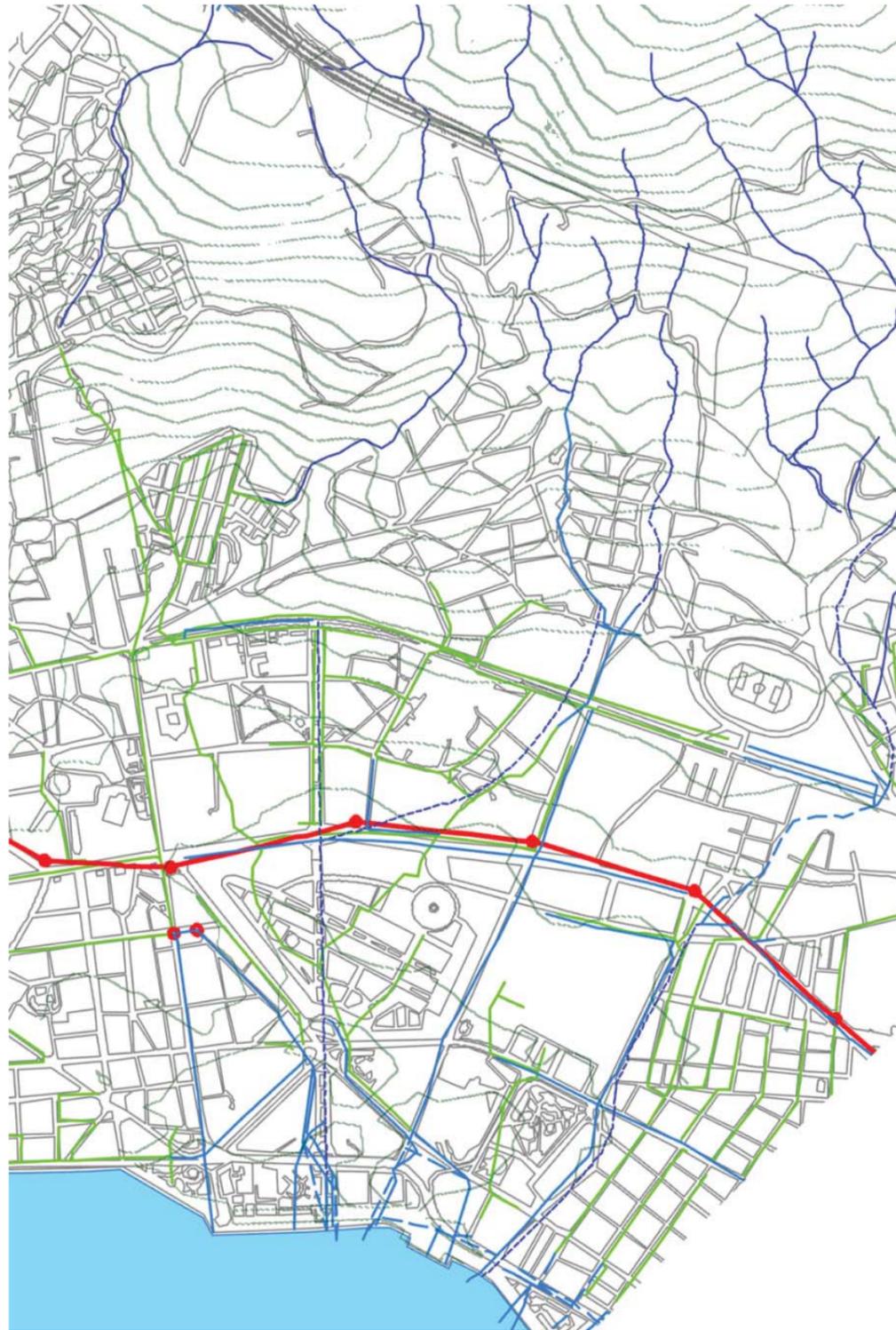


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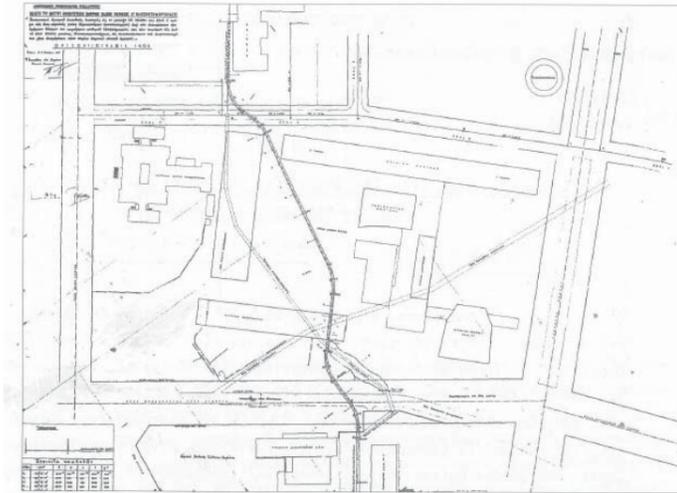
23





**Water Scheme** (source: TEE/TKM 2009 )

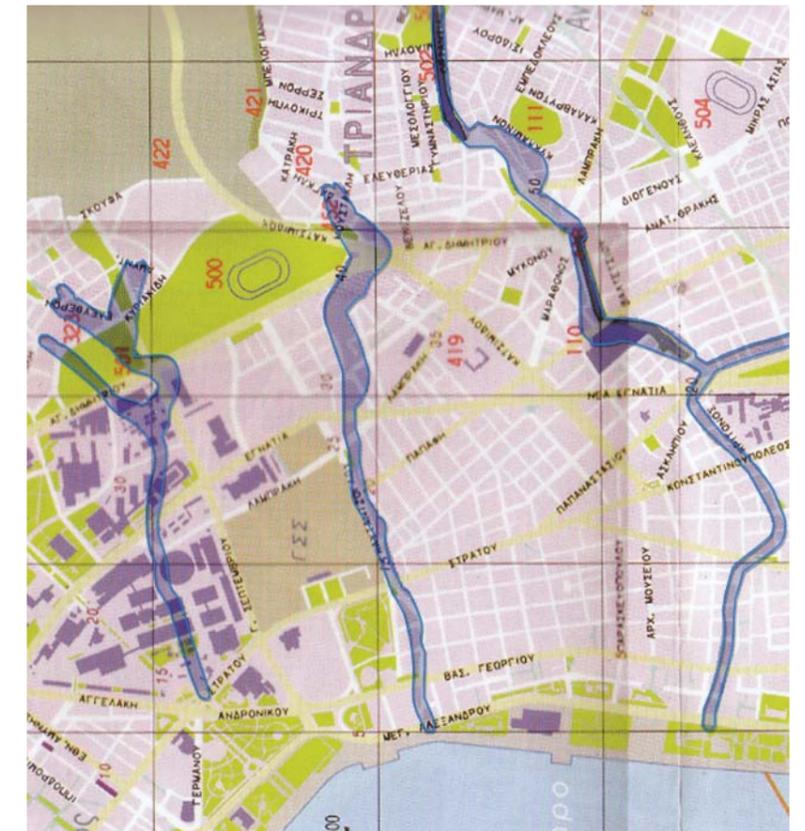
-  central pipe line
-  sewage pipes (combined)
-  drainage pipes
-  drainage pipes proposed
-  surface streams



**top:** Topographic plan (1966) proposal for the construction of a drainage pipe for the substitution of the Agios Pavlos stream in the area of the Philosophy and Theology faculty.

**bottom:** Topographic plan (1961) for the construction of the Polytechnic School, which started in 1958, demonstrating the proposal for the substitution of the torrential stream by a drainage pipe.

( source: Savvaidis P. & Mpantelas A., 2000 )



### Hydrological memory

(source: Municipality of Thessaloniki & National Map Archive , 2005)

The map above shows the streams as they appear in the french map of 1916 “*Plan de Ville de Salonique*” and superimposed on the contemporary map of the city. Two streams are seen visible crossing the area, one the east stream (Anatoliko rema) crossing the university campus and the EXPO area, and the second stream that starts from Triandria and makes its way down to the sea passing on the side of the 3rd military Corp area, setting the western limit of edification for the eastern expansions of the city.

As seen on the map on the left, the replacement and the subsequent management of streams affluents was undertaken by a network of drainage pipes, that to a great extent follow the path of the streams. The re-examination of the hydrological management of the EXPO site given the imminent relocation rises new opportunities for restoring parts of the original hydrological scheme. The central pipeline receiving all sewage for treatment and connecting with the treatment plan on the West passes perpendicularly to the Central axis.

#### iv. Biophysical Matrix & Ecological Functioning

This next section will examine the current ecological functioning in the contemporary biophysical matrix. The area of the Central Axis as seen earlier is situated along a conical stretch between the forest mass and the seafront. This special characteristic, also result of the local geomorphology, creates a concentration of flows both anthropogenic as well as ecological. As seen in the 1898-99 map the greatest part of the area initially was covered by the different cemeteries, and small patches of farmland, or semi-natural areas. Apart from the local torrential streams present initially in the area, there were no other ecological areas of special attention or interest.

This part is divided in two parts, one looking at the water scheme and the respective hydrological aspects and a second one examining the green layer, including the vegetation, green areas and their associated ecological function:

##### Hydrological scheme

The water used to be a pronounced element in the area, given the pronounced geomorphology and also the proximity between the sea and the mountain mass<sup>10</sup>. There were three streams present in the area, described in detail in continuation. The exact course of two of the streams in what would be the contemporary fabric can be seen in the map diagram on the adjacent page. On the next page the topographic survey diagrams of 1935 show the registered course of the streams in their upstream section.

- **Evagelistria / Agios Pavlos stream:** According to the map of 1732 (and consequent maps up to the early 20th century), the stream of Evagelistria was created by two smaller substreams one coming from the area of Ag. Pavlos and a second one that came down from the hills, and the two united at the point where the current district of Evagelistria is located. Originally the stream ran parallel to the eastern walls all the way to the seafront forming a small cape right by the White Tower. Later on its course was diverted, taking a slight turn at the height of the University building and uniting at the height of the current International Fair area. The stream of the Evagelistria, maybe have also once served as a defensive moat along the outside face of the eastern wall. The diagram on the adjacent page shows a detail of the eventual covering and tunnelling of the stream in the area of the Faculty of Philosophy in 1966.
- **The Saranta Ekklesies stream:** The second stream passed through the east section of the Israeli cemetery (the area today occupied by the AHEPA Hospital) and continued south through the Turkish cemetery to

eventually reach the seafront. The stream formed by two substreams that descended from the neighbourhood of Saranta Ekklesies, uniting at the height of the current Faculty of Pedagogy of the Aristotelean University. The topographic survey of 1961 shows the proposal for the covering and tunnelling of the stream at the area of the Polytechnic school. The drainage was never completed and only sewage pipes were constructed.

- **The Stratopedo Stream:** The third stream was created by smaller streams in the area of Triandria that united and passed east of the military camp of the Third Corps that was built in the summer of 1830. For this reason it was for some time known as the Pit of the military camp, while the upper part was called Diavolorema. The river concluded at the site of the former Electric Company. On the east side of the stream was located the first mill of the Allatini family. The stream today sets the limit for the east urban expansions and the respective eastern limit of the area under investigation.

As seen subsequent infrastructure works in the area covered the streams and provisioned a water management system to handle all subsequent torrential flows. The Water Scheme map on the adjacent page shows the layout of the various pipelines that cross the area today<sup>11</sup>. This grid undertakes the task to handle surface and underground waters related to the streams as well as sewage produced by the various activities. Recent infrastructure proposals propose an extension of the current grid with the addition of a main perpendicular pipeline along the delineation of the central axis as well as other interventions such as the creation of a drainage pipeline for the Saranta Ekklesies stream.

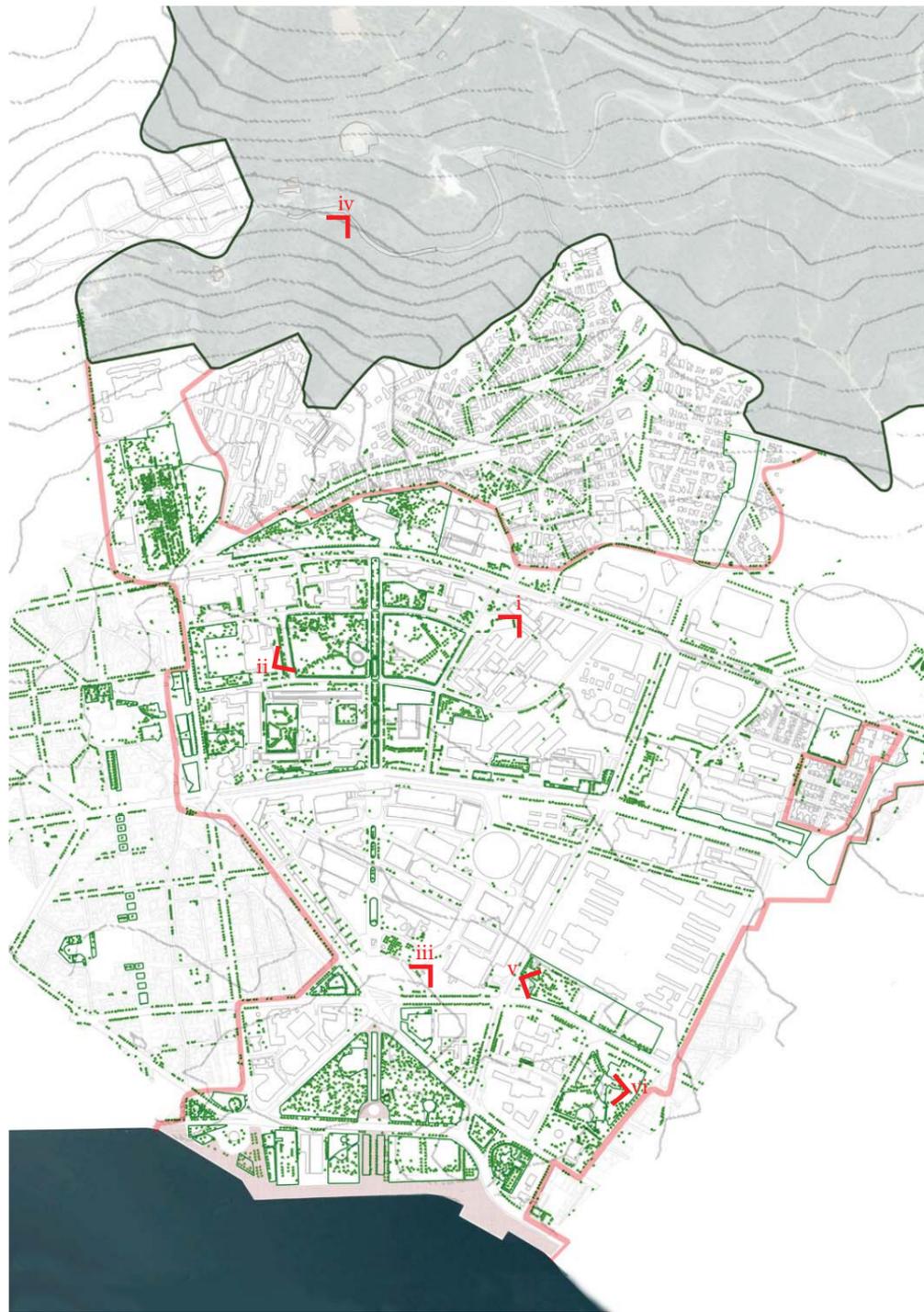
##### Vegetation Scheme

The first recorded mentions of the peri-urban forest appears in the Byzantine period making reference to the existence of springs, rivers and a dense oak vegetation (which served primarily logging purposes) in the area of the Seich Su forest<sup>12</sup>. The name which means *Water of the Sheikh*, was given to the forest during the Ottoman period and because of the presence of a Muslim funeral monument (turme) and a built spring, the ruins of which can still be found in *Χίλια Δέντρα* (Thousand Trees). Until the 1930's, the continued logging, overgrazing, land clearing and general overexploitation led to the severe degradation of the forest<sup>13</sup>. The effects of this degradation necessitated immediate upgrading. The forest was created in the 30s aiming at the recovery of the degraded ecosystem, and soil-stabilization to prevent and combat the frequent floodings that hit

10. Mplionis, G. (1996)

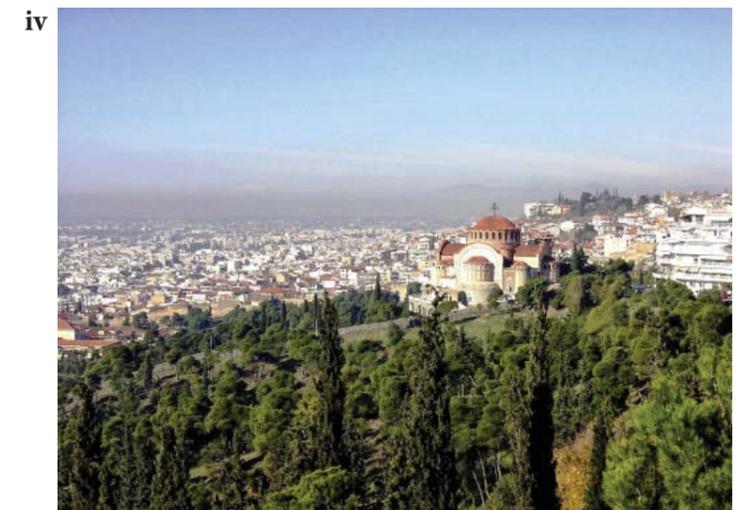
11. TEE / TKM (2009)

12, 13. Mplionis, G. (1996)

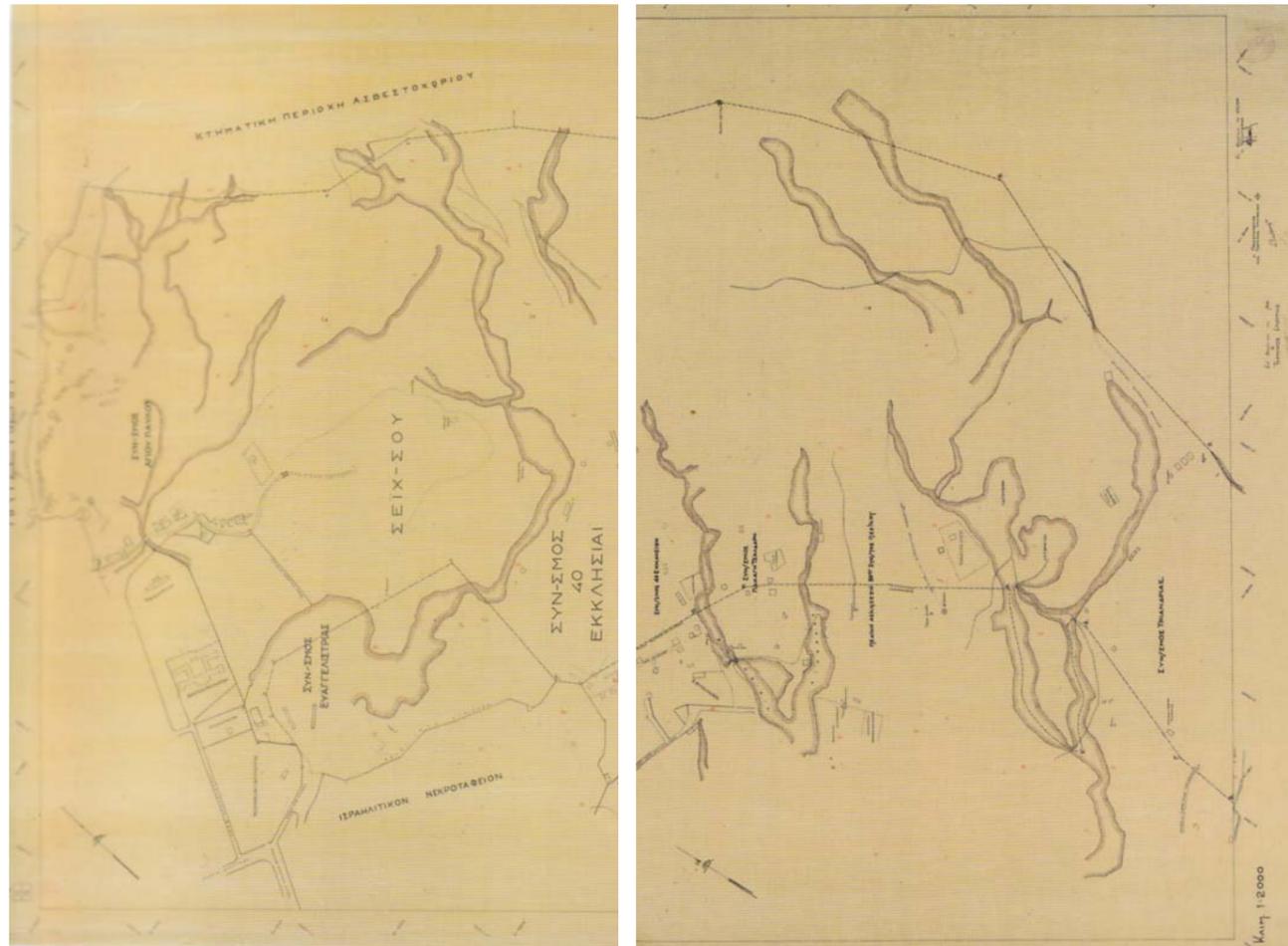


### Vegetation Scheme

Map indicating the location of planted and registered trees as well as green areas present in the fabric under analysis. The greatest concentration of trees is found in the bigger green areas, that is the campus the YMCA park, the Teloglion park, the Evagelistria cemetery and the various dispersed green areas/parks throughout the area.



**i, ii.** Views of the University central court park **iii.** View from the OTE tower towards the White Tower **iv.** Agios Pavlos Church in Agios Pavlos district **v.** Green areas in front of the 3rd Army Corps **vi.** Park next to the City Hall (source **i,ii, iii, vi:** Panoramio.com)



### 1935 Topographic Surveys of the Aktse Kisla area

by N. Fillipidis , 2 sheets, 1:2000

( source: Prefecture of Thessaloniki & National Map Archive, 2008 )

The two sheets from the 1935 Topographic survey show in detail the conditions in the Aktse Kisla area, which corresponds approximately today to the Seich- Su area delimited on the west by the Ag. Pavlos and Evagelistria streams and on the east by the Stratopedo stream, and on the south by the Evagelistria, Saranta Ekklisies and Triandria districts. On the north the Ring Road now poses as the limit for the area.

The map provides information on the existing uses and activities. The settlement name-places are noted, indicating the existing constructions in the area, evidence of the early stages of development in the area. There are diverse uses annotated, such as the cemeteries of Evagelistria and the Jewish community , the Ag. Dimitrios Hospital , the military shooting field and the quarries in the Triandria area. The local roads and paths along the survey area are also marked.

The map also provides useful information about the local streams in their upstream section, that part of it now belongs to the Seich-Su forest, The construction of the Ring Road had to deal with the presence of the streams and the local geomorphology, a question which will be dealt in more detail in the Ring Road analysis chapter.



### The Area in the beginning of the 20th century.

i. View of the area and the eastern walls (beginning 20th Century) ii. View of the seafront street and side vegetation iii. View of the open area in front of the 3rd Military Corps area, first location of the International Fair till 1939 iv. View of the area of Triandria with the characteristic low housing and small gardens. (Source: Municipality of Neapoli-Sykies, 2012)

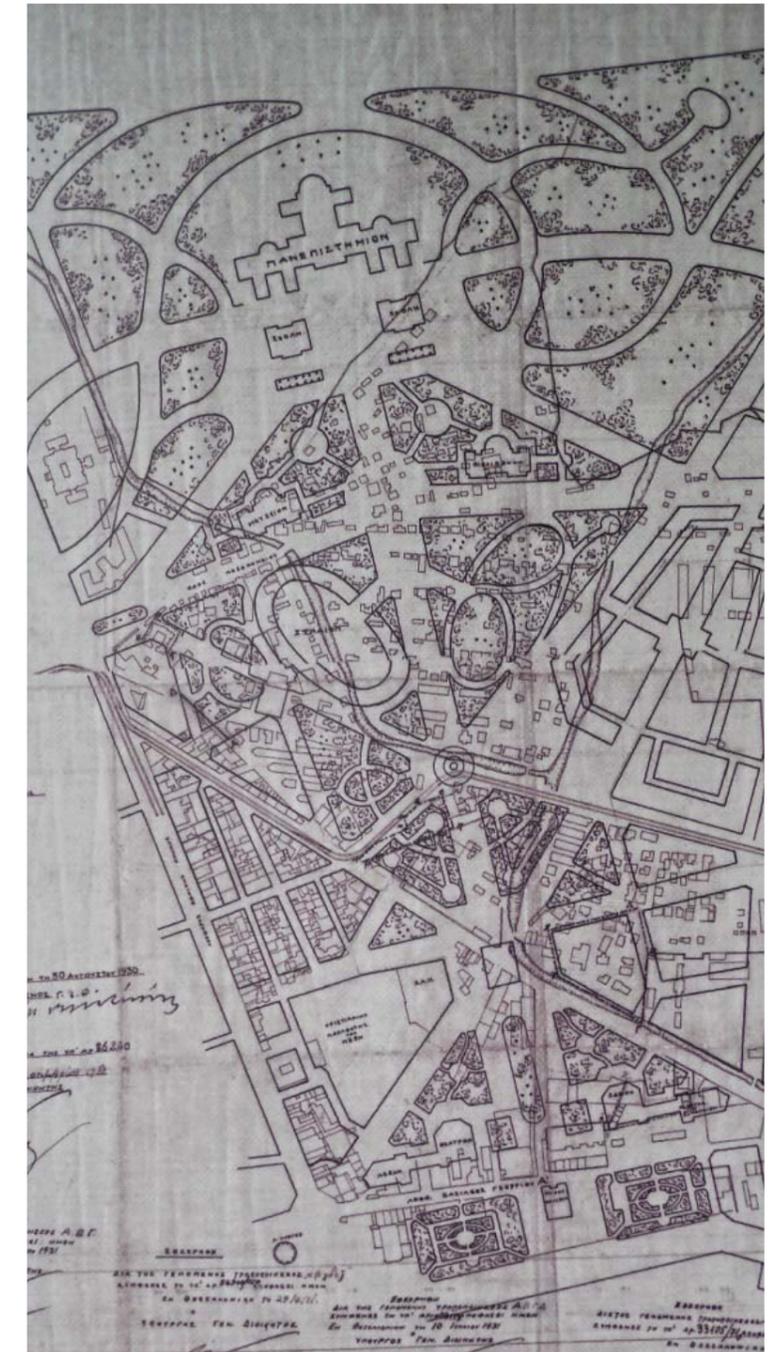
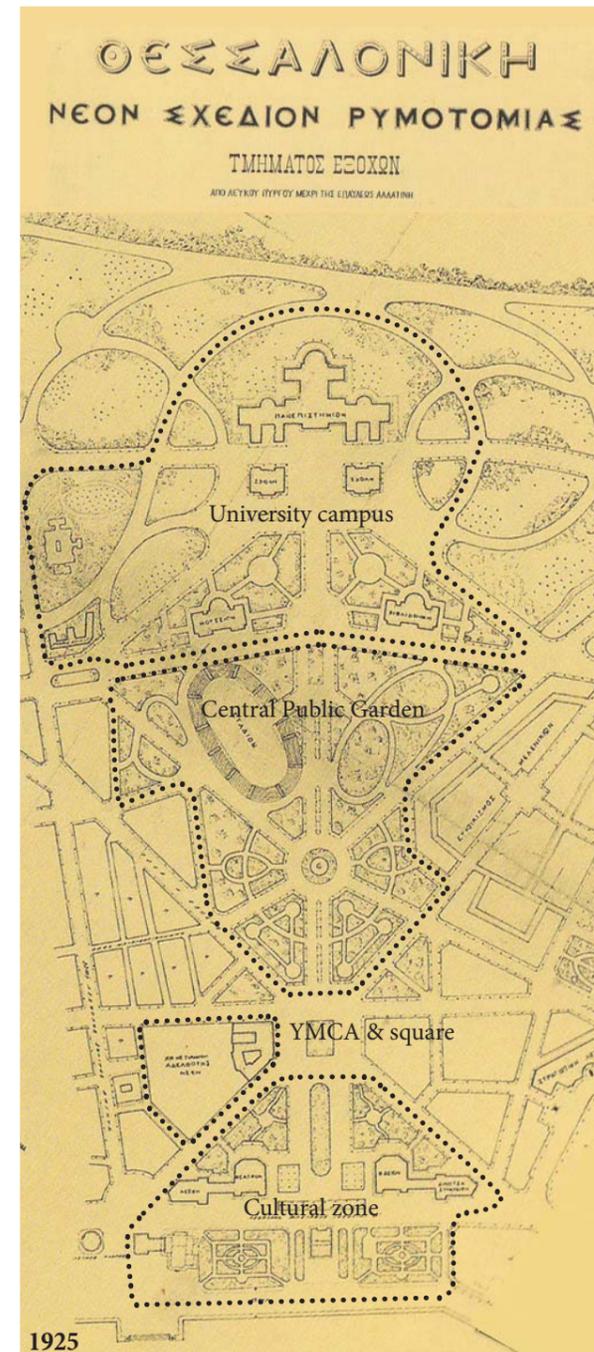
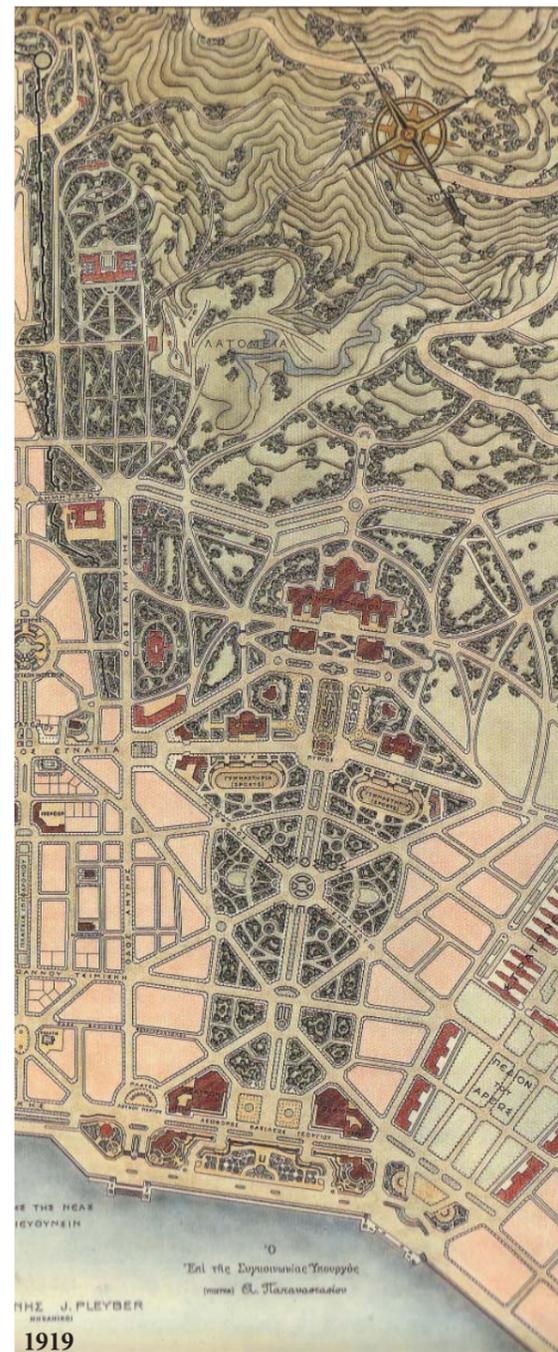
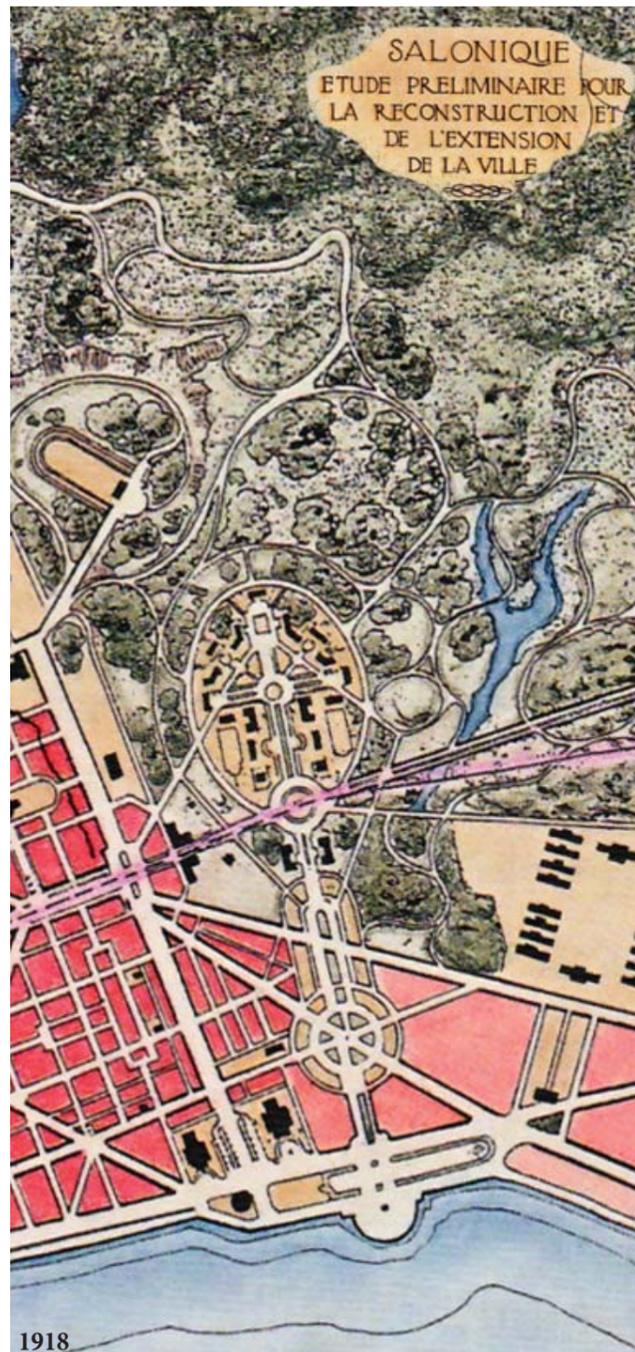
the city. So, in 1921, the Minister of Agriculture declared an area of 1,300m<sup>2</sup> to be reforested planting mainly pine and punctually cypress trees. The effort continued until 1934 and after the postwar period. This continuous effort, together with respective regulations, created a forest that extends along the slopes with a total area of about 30,000 m<sup>2</sup> consisting mainly of coniferous species. In July of 1997 a fire burned 55% of the forest, creating a huge ecological disaster. Restoration efforts initiated immediately and up to this day, with various interventions, by various local actors, and introducing new tree species, giving birth to a young and still fragile ecosystem<sup>14</sup>.

The area today holds a considerable amount of green areas for the greater Thessaloniki area and especially for the city centre. As seen some of these areas are open to public use while have partial or full restrictions applied for public access<sup>15</sup>. Observing the map of green areas/vegetation (adjacent page) we can notice the appearance of several green islets scattered over the available open areas along the axis. On the northern part, the park around the Teloglion Institute and the university campus courtyard hold a considerable amount of green areas and trees, attracting respective bird activity. Closer to the sea the YMCA/White Tower Park also presents another key patch with a great concentration of trees and a close proximity to the seafront. Other important green areas are park and green areas adjacent to the 3rd Military Corps, including the ministry of defence property and the boy scouts building. The Evagelistria cemetery area also is another islet of considerable tree concentration close to the Seich-Su forest. The overall connectivity between the green areas can be characterized as low, concerning both the macro-connection with the great mass of the Seich Su forest as well the overall cohesion of the biophysical matrix and the connection between them which is presented as quite fragmented and problematic.

14. www.seihsou.gr

15. TEE / TKM (2006)

## The Central Axis in the Hébrard Plan: *The Genesis and evolution of an idea*



**From left-to-right:** i) part of the map of the proposal for Thessaloniki and the extended area signed by Thomas Mawson in 1918 “*Salonique étude préliminaire pour la reconstruction et de l’extension de la Ville*”. A first version of the axis can be seen, with the university campus on the top part, the military installations, a big central nod in the area of the current YMCA square, where the idea of a central park is not yet clearly delimited. ii) The Hébrard plan as submitted and presented in 1919. The central axis takes a more pronounced role aided by the central park that follows it almost all the way to the seafront and the numerous new functions and activities planned out along. iii) The part of the central axis as shown in the approved version of the Plan in 1925 with the City Plan Gov. Decree 24/29-1-25. The space of the university is shown as an elaborated park with stand alone university buildings. Also shown are existing buildings (YMCA, Military grounds) as well as buildings planned for future use ( Theatre, music school & hall, museum etc). Also shown in the map is the neighbourhood of Melenikion ( Συνοικισμός Μελενικίων) that was finally integrated with the rest of the urban fabric. (source : Ministry of Macedonia - Thrace (2008) ) iv. *Plan of the green and public function areas south-east of the historic centre*, 1:2000, 1930. It displays part of the approved plan of 1925 but it also includes the mapping of existing conditions, where one can discern the form and the size of the refugee settlement of Agia Fwteinh, (source: Municipality of Thessaloniki Archive)

## v. The inheritance of the Hébrard Plan

Reconsidering the impact and influence of the Hébrard plan for the area, from today's perspective, we can recognize some traits of the original plan, the majority in a modified state, and start to appreciate the initial insightful provisioning of the original plan. The most notable element is the Central Axis, the boulevard that Hébrard envisioned connecting the what would be University building with the Seafront, dotted with diverse notable cultural buildings and matching in importance other key urban axes such as Aristotelous or Dimitriou Gounari. The boulevard was followed on its two sides by a series of parks and green areas, forming two opposed triangles joined at the YMCA square. The plan for the area changed substantially from the original idea all the way to its contemporary state.

As seen the city of Thessaloniki after 1917 and up to the 50s, was starting to operate as a modern city, whose new form and structure were a radical transformation of its earlier character and urban fabric<sup>16</sup>. The re-design effort for the city which was undertaken under quite difficult conditions, proved effective, given the knowledge and capacity that existed at the time. In the areas outside the walls, the plan did not go into proposals of similar detail to the historic centre but merely served as a guide for public planning services, the alignment of major road arteries, city blocks etc. The installation of the Minor Asia refugees and their need for habitat, as it emerged after the 1922 population exchange, modified and diverted to a great degree planning procedures. The situation got even more grave after the second world war, with the absence of any initiative to promote coordinated city planning, the further increase of building density with the expansion of the urban fabric and the unfavourable economic conditions all created disturbances that resulted in degradation of the quality of urban spaces and life and activities within<sup>17</sup>.

In an intend to summarize the sum of the traits of the Hébrard Plan present in the contemporary fabric one can annotate the following points:

- i. A particular contribution of the project was the provisioning for the creation of a surrounding green belt around the city, that penetrated along the boundaries of the historic centre and divided the city into three larger sections. One of these belts was the Central Axis that ran east of the historic centre.

- ii. The university campus planned at the top of the axis, was eventually constructed at a slightly lower point and with a totally different layout.

- iii. The creation of the YMCA building and complex was the only area that was constructed exactly as provisioned by the plan (position & extension)

- iv. Other Cultural buildings provisioned by the plan, such as the museum or the theatre, were constructed at different spots and eventually at larger numbers. The conservatory / music hall was the only one that was not constructed.

- v. The Stadium was eventually constructed but again in a different spot, higher up the axis where several sport facilities were constructed.

- vi. The installation of the Thessaloniki's International Fair in the site of planned great park eliminated any possibility of maintaining continuity and pedestrian connection along the axis. Remnants of this green area could be seen in the University's campus courtyard and other smaller green areas present in the contemporary fabric.

The original plan intended to suggest the creation of an important new axis outside the city walls, creating conditions for the emergence of a new centrality outside its traditional space. Although the plan was only partially implemented, the original plan contributed significantly in the concentration of key buildings and activities along the axis area, and thus maintaining a latent condition of centrality for the area. The further addition of key buildings and functions in the area not provisioned in the plan, verifies this theory and confirms the latent potential of the area. The present conditions of almost semi-periphery that prevail in some parts of the area can be reversed by reprogramming the axis, with the Central Area as the main projectual handle.

16. Kalogirou N.S. (1992)

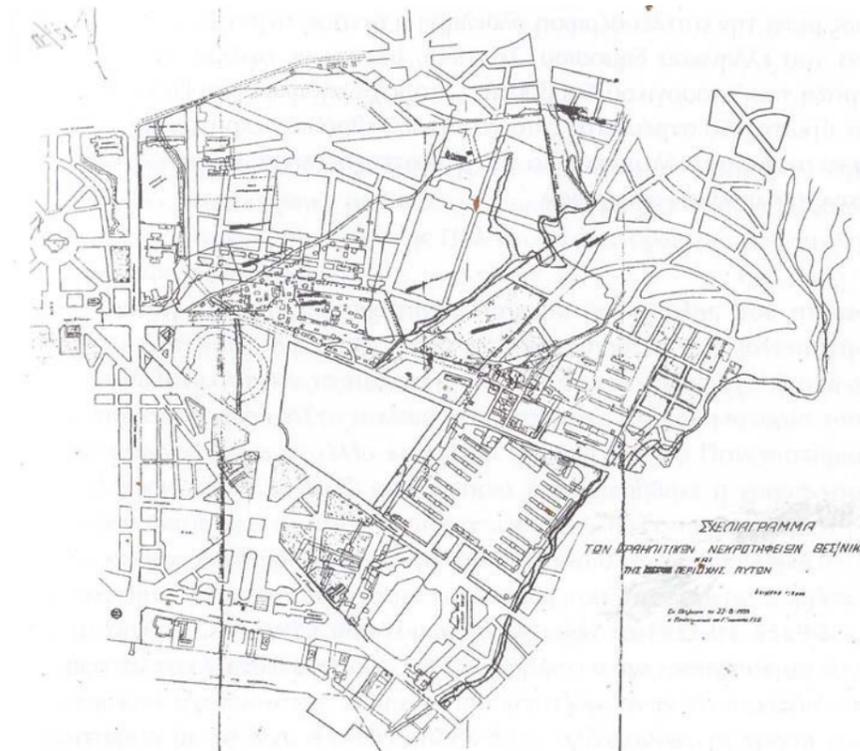
17. TEE/TKM (2006)



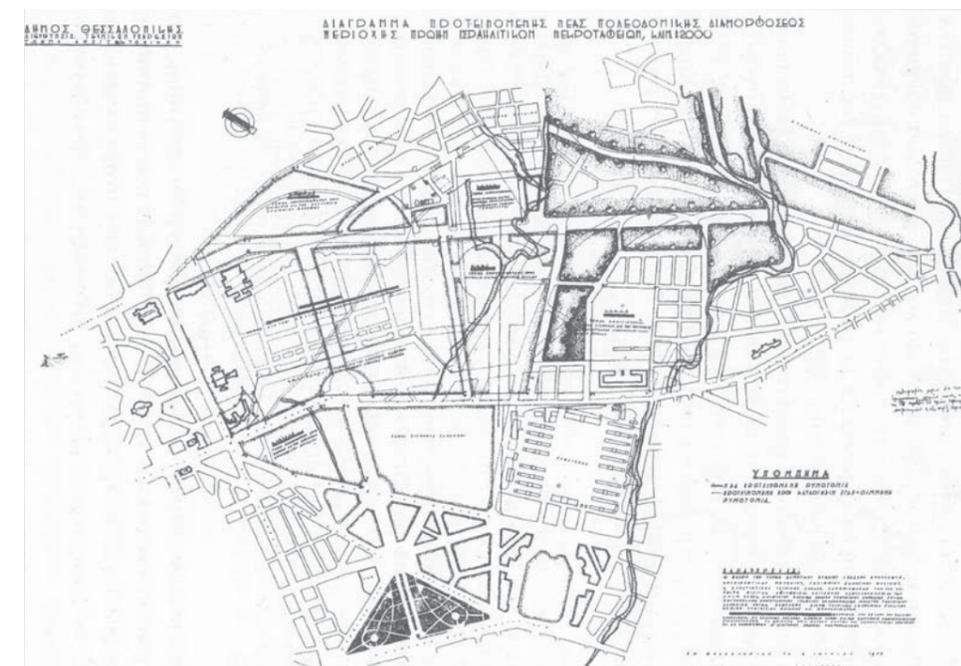
**1954 - Proposed land zoning**, 17/7/1954 Gov. Decree 163A/27-7-1954

Diagram showing and annotating the proposed uses for the distinct areas of the Central Axis, with the local streams highlighted in green.

1. University
2. Industrial School
3. Military Medicine School
4. Doxa Residential Settlement
5. Available municipal space
6. Open Theatre
7. Iraklilis Sport stadium
8. National Sport Stadium
9. Archaeological Museum
10. International Fair
11. Military Installations
12. National Radio Institute
13. Park of Vas. Konstantinou
- 14-16. Parks



**1939 Proposal diagram of the Israeli cemeteries of Thessaloniki and general area**, 1:2000



**1949 Proposal diagram for land zoning of the former Israeli cemeteries**, 1:2000

Two diagrams with a ten year difference, showing the evolution in the planning considerations for the area, from a predominately cemetery area to what would come to resemble today's situation, as well as the transformations and changes on the original Hébrard plan. The Central Axis remains a common reference element in all three plans.

(diagrams source: Savva P. & Mpantelas A., 2000)

## The Planned Dimension

The formation of the area as it emerges from the various official plans and ordenances.

In continuation this section will look at the planning layer present on the Central Axis area, looking at the various plans that were implemented over the years, changing and transforming the space and conditions in the area. The following list in an indicative of critical plans that have contributed to the final form of the Central Axis area.

### Master Plans and Regulatory Plans<sup>18</sup>

#### Master Plan and environmental protection program of greater Thessaloniki Area (N.1561/85 148A/6.9.1985)

The plan, among other points it makes reference to the direction of the spatial organization of the historical character of the city of Thessaloniki and the upgrading of the central area. It also examines the design of the central district as the predominant urban space with the following specific objectives: to halt the sprawl of the urban fabric, the polycentric structure, control of land uses and densities, the reconstruction of the neighbourhood units as well as upgrading and decongestion of the central region, with emphasis on conservation and promotion of the historic centre. Another point refers as a specific aim and direction the promotion and protection of historical elements, the ecological reconstruction and the restoration of the city's relationship with the Thermaikos Bay etc . Specifically for the EXPO site, the plan states that (Par 3.1.5.d Article 14): “...the conditions are being created for boosting the role, opening up the space for other activities during the course of the year and the transfer of certain activities in areas designated for similar uses.”

#### E.3. Master Plan of Thessaloniki (Gov. Decree 420D/27.4.1993)

The Plan defines zoning (other than residential uses) in the area, and in particular:

- The area of the military installations on the grounds of the Third Army Corps.
- The site of the expo (Δ.Ε.Θ.) with the exhibition and sports facilities.
- The space between the Electric Company - Leof. Stratou - YMCA Square - White Tower - the seafront, allocating with uses of cultural, urban green and education. These sites are the Metropolitan Center bounded by the coast Street
- The area of the University Campus for the use of education, healthcare and sports.
- The green spaces, healthcare, welfare, sports facilities and cemetery in the area north of the University and between the streets of Olympiados, Ag. Paulou, the forest of Sheikh Su and the district of Evangelistria and the drafting of a special study for the spatial organization of the formentioned uses.
- The need for transfer of certain commercial activities of the EXPO.

### City Plans and building ordinances<sup>19</sup>

- City Plan 17/7/1954 Gov. Decree 163A/27.7.54 (see opposite page):

The plan that gave the final form to the area. It cover a great part of the area from the seafront to the Ag. Demetrios Street and from Ethnikis Amynhs to Kaftantzoglou street. Defines land use zoning and superimposed on existing conditions.

- City Plan 10/04/1959 Gov. Decree 76A/25.4.59:

Concerns minor street realignments and the definition of the final area of the Expo. The central axis appears with the name Park Avenue.

- City Plan 8/3/1967 Gov. Decree 38D/22.3.67:

Modification of the city plan, specifically for the University campus establishing the position of the academic buildings and residences, the what would come to be Alexandreio Sport Palace, the final area of the Archaeological Museum, and other buildings.

- City Plan 09/15/1973 Gov. Ordinance 253D/25.9.73:

Modification of the city plan introducing new buildings and modifications for the university campus, the swimming pool centre, etc.

- City Plan 11/24/1975 Gov. Ordinance 44D/12.2.75:

Modification of the city plan introducing provision of space for the new City Hall.

- City Plan 04/16/1986 Gov. Decree 526D/13.6.86:

Modification of the city plan, the positioning of new buildings for *social and cultural* needs along the Aggelaki road along the edge with the EXPO, determining in addition a maximum height of 6.5 m for these buildings.

- City Plan 1/6/1989 Gov. Decree 459D/30.6.89:

Modification of the city plan, introducing the location for the construction of the Museum of Byzantine Culture, establishing a 40% allowed coverage and a maximum height of 17m.

### Special Plans<sup>20</sup>

There are a numerous special plans that intervened in specific sections in the area. The ones for the university campus were one. For the complete list see the university campus evolution diagram.

#### The 1939 study for the University Complex

The first study in 1939 by N. Mitsakis for the university complex included four principal buildings in an informal layout. The building of the school of Agriculture and Forestry was the first of the university's new building to open, after a partial revision of Mitsaki's original designs by P. Karandinos

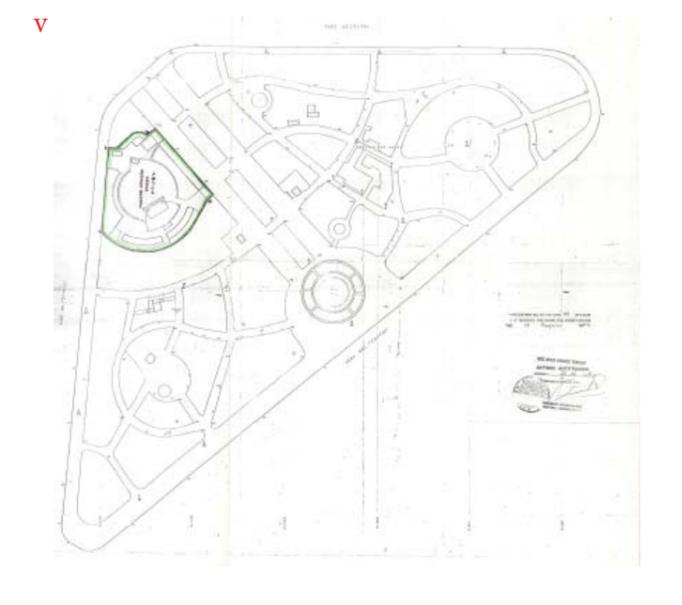
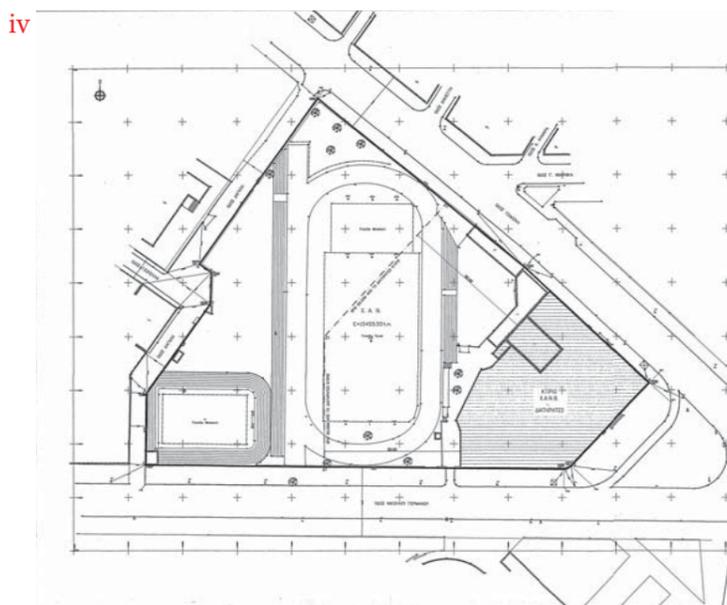
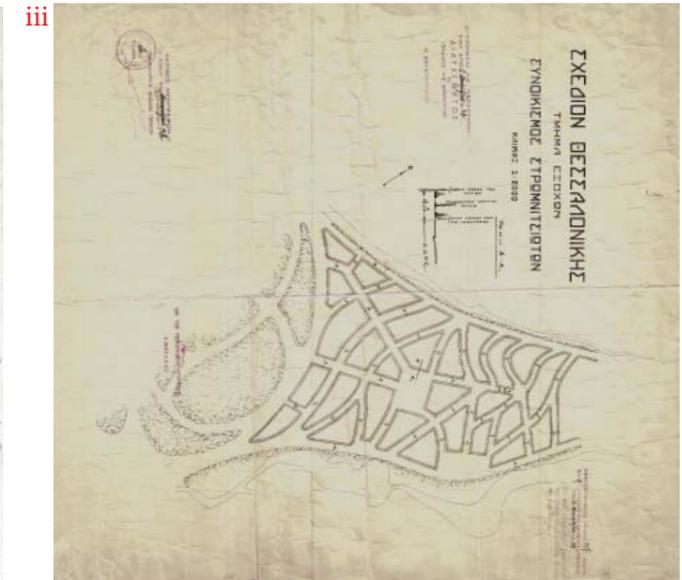
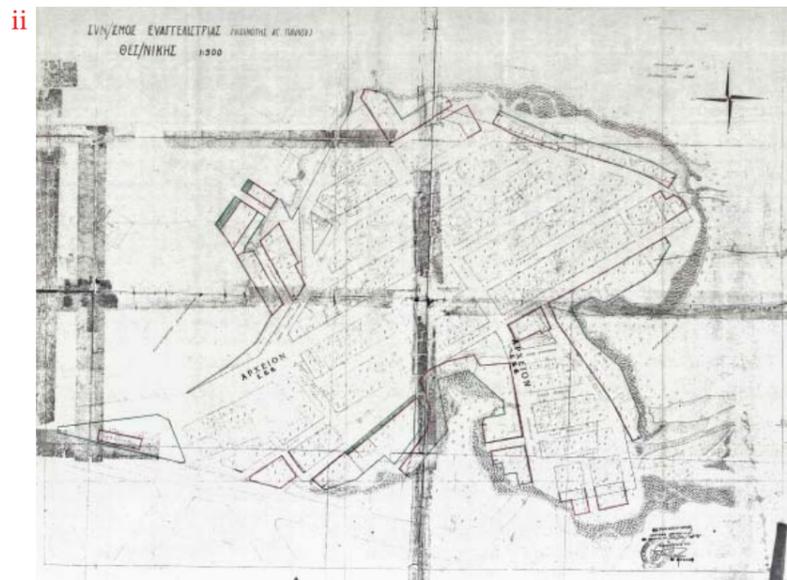
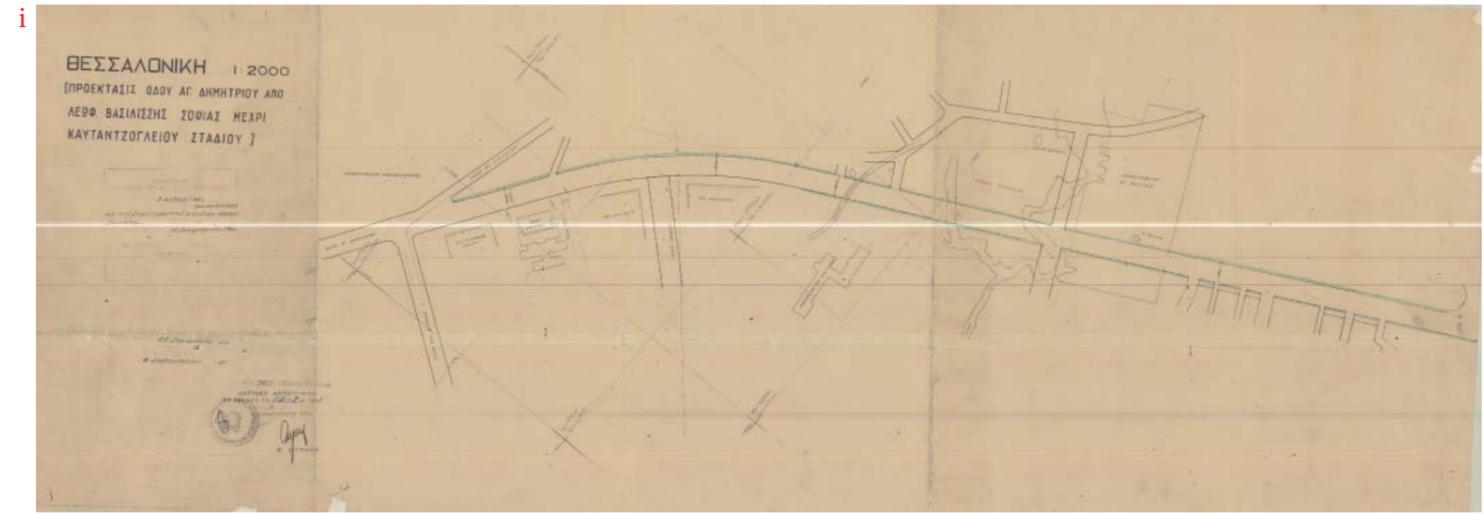
#### The 1950 Masterplan for the University campus

The design by Karandinos divided the campus into functional zones and established the basic layout. Overall a pioneering introduction of functional planning in the greek context. The addition of the complex of the school of Law and Economic Sciences, designed by K.Fines and K. Papaioannou in 1960 is the most characteristic urban unit of mature modernism in Thessaloniki. The elongated building separated the sector of the Theoretical/Social Studies from the rest of the campus

The next two pages showcase a number of additional plans and interventions that have respectively influenced in the final form of the Central Axis area.

18, 19: TEE / TKM (2006)

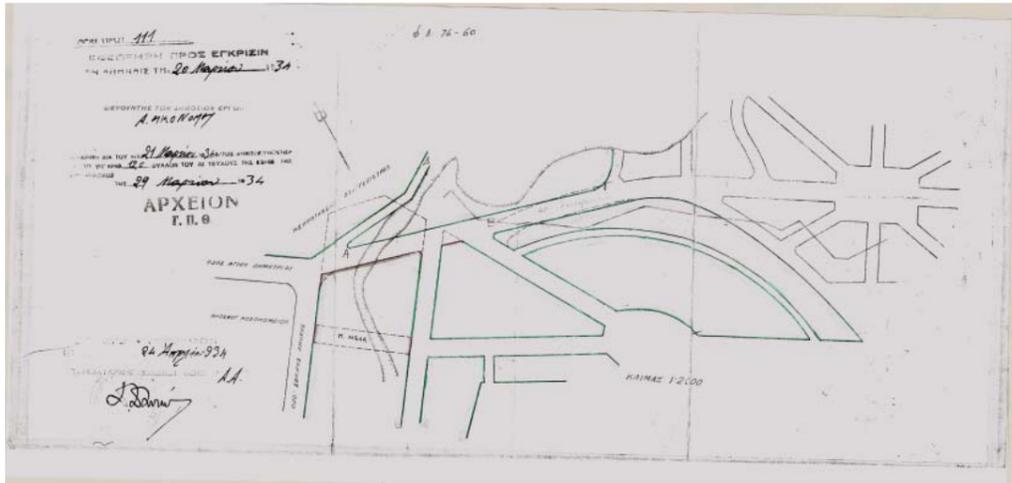
20. Kalogirou N. (1992)



**Plans** (source: Municipality of Thessaloniki)

- i.** Extension of Agia Dimitriou Street from Bas. Sofias Avenue to the Kaftantzoglio Stadium. (1980)
- ii.** Settlement of Evagelistria (1958)
- iii.** Settlement of Strotsimnioton (Eksoches) (1927)
- iv.** YMCA grounds (2001)
- v.** Open air Municipal Theatre (1979)
- vi.** Evagelistria area (1934)
- vii.** Location for the building of the School of Higher Industrial Studies of Thessaloniki (later Macedonia University) (1983)
- viii.** Allocation of space for the new City Hall and museum of Byzantine Studies (1980)
- ix.** 3rd Military Corps and adjacent sites (1951)
- x.** Modification of city plan and survey of the Kaftantzoglio area (1981)
- xi.** Modification of city plan for the Museum of Byzantine Studies (1989)
- xii.** Arrangement of the property of the Sports club Iraklis (1986)
- xiii.** Arrangement of the stream from Egnatia to Ag. Dimitriou
- xiv.** Arrangement of the stream from Bas. Georgiou to Egnatia (1964)

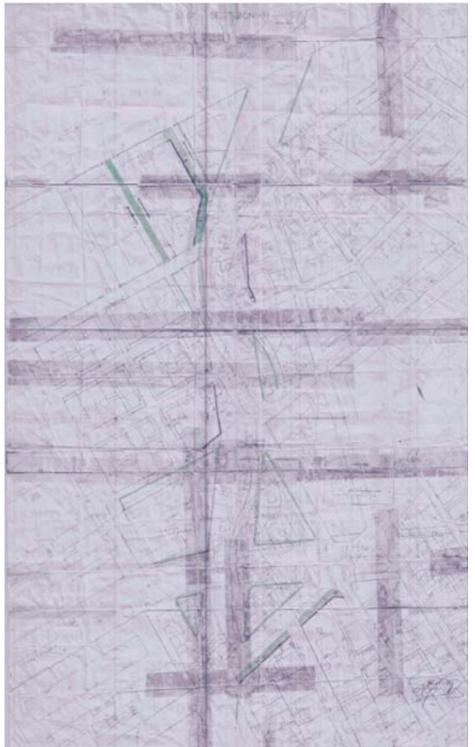
vi



x



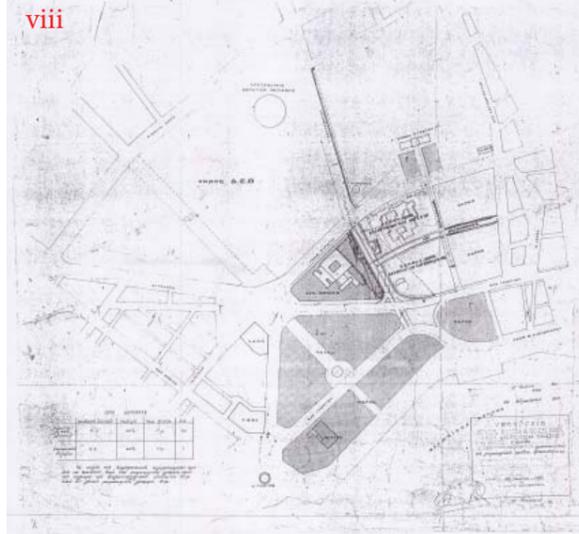
xiii



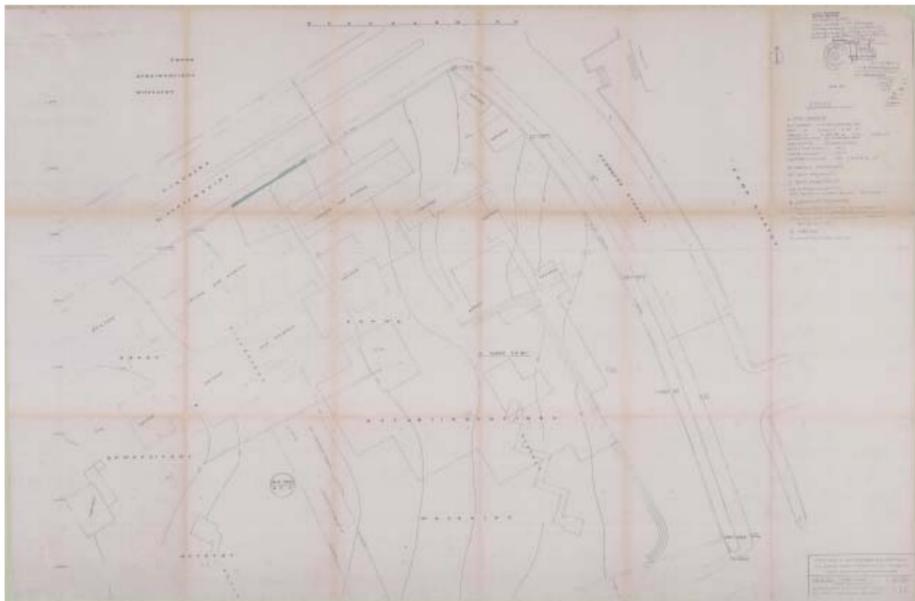
vii



viii



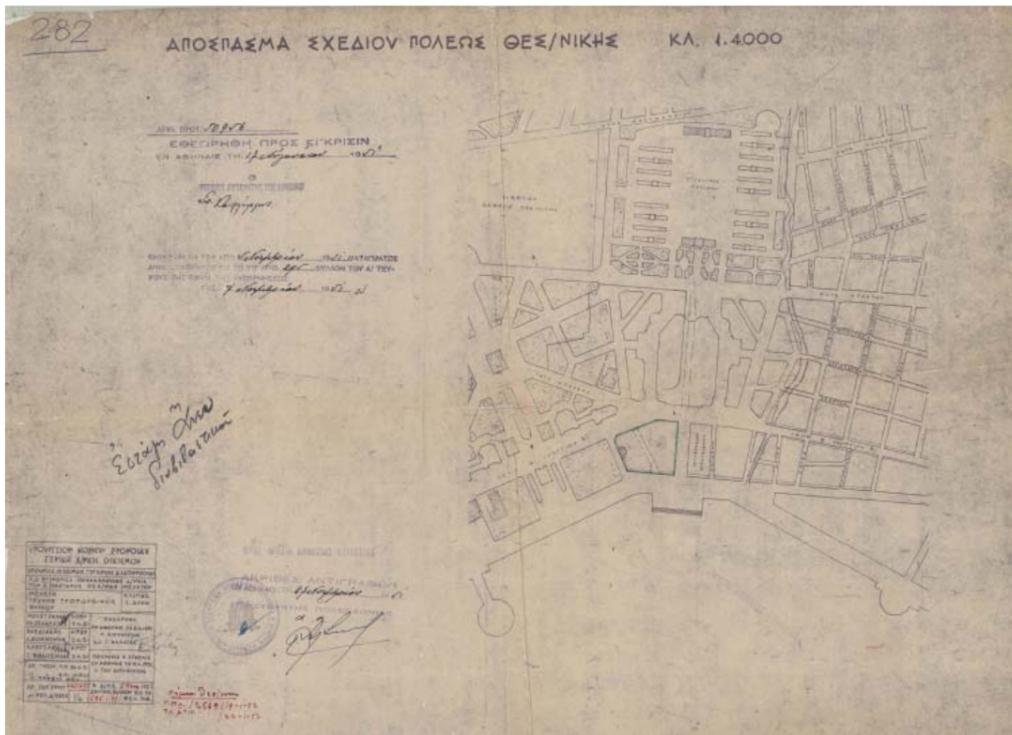
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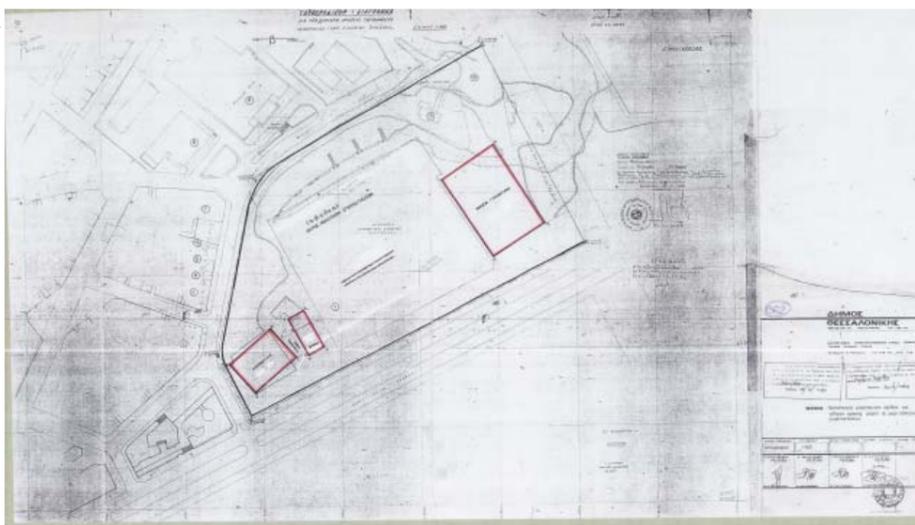
xiv



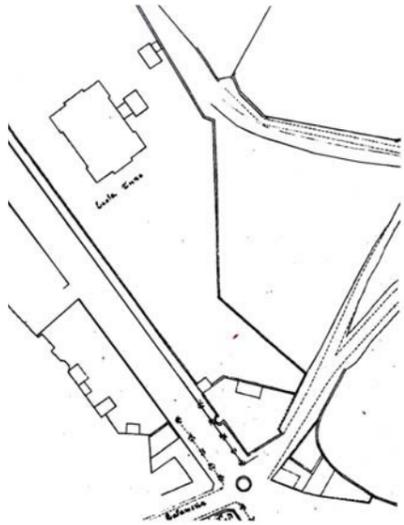
ix



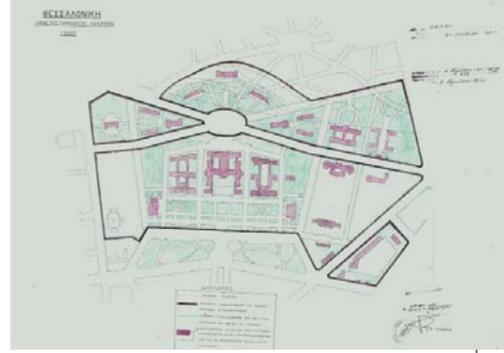
xii



Detail from the 1898-99 maps  
(Savvaidis, 2000)

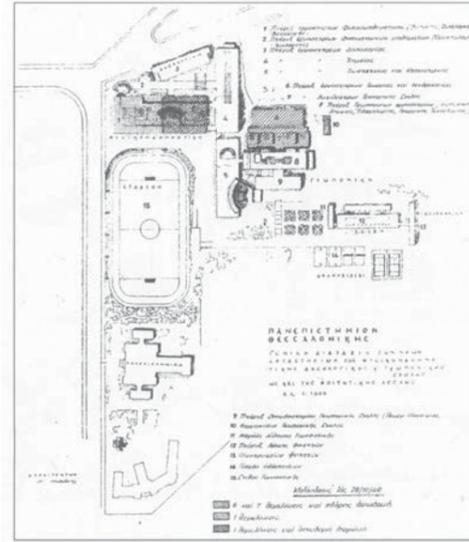


Thessaloniki - University Center  
(Municipality of Thessaloniki Archive)

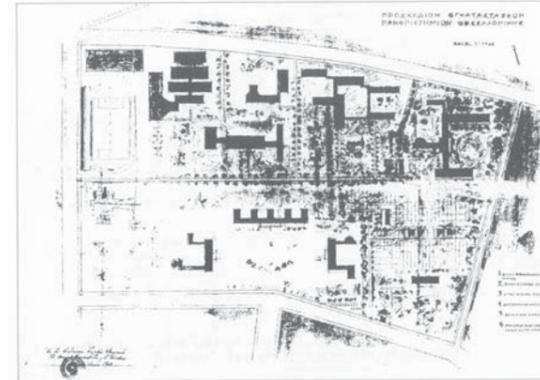


The campus plan superimposed on the existing cemeteries (Savvaidis, 2000)

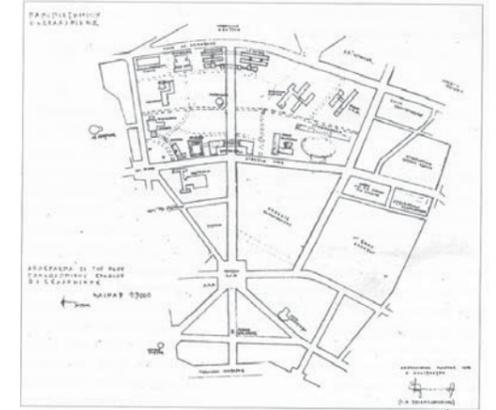
Plan for the University by N. Mitsakis  
(Savvaidis, 2000)



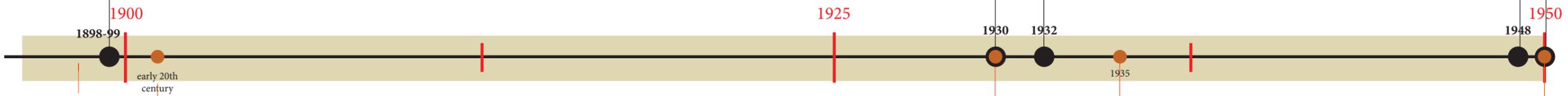
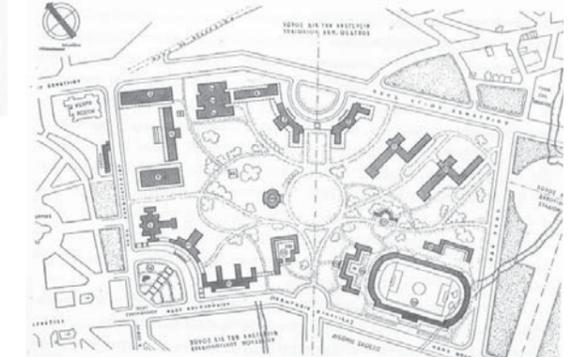
Draft Proposal for the Arrangement of the University Buildings  
(Municipality of Thessaloniki Archive)



Modified plan by I. Triantafyllidis  
(Savvaidis, 2000)



Proposal by B.D Kiriazopoulos  
(Savvaidis, 2000)



Savvaidis, 2008



Municipality of Thessaloniki, 2012



Savvaidis, 2008

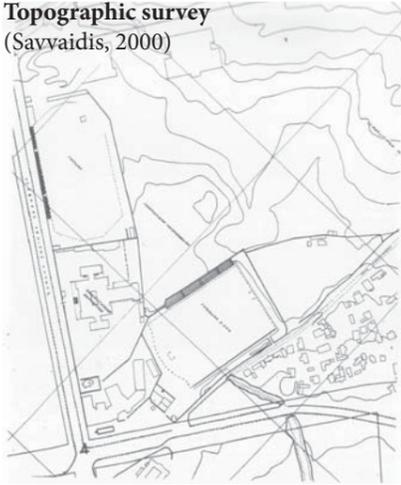


Municipality of Neapoli-Sykies, 2012

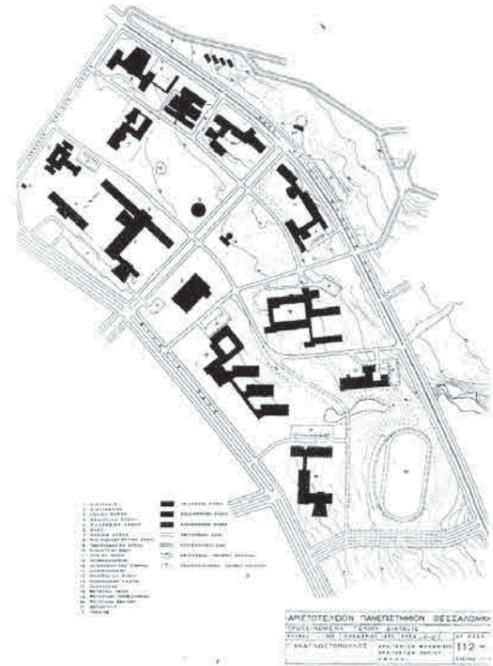
# The University Campus

The morphogenesis of the area as it emerges from the plans and ordenances, surveys and photos

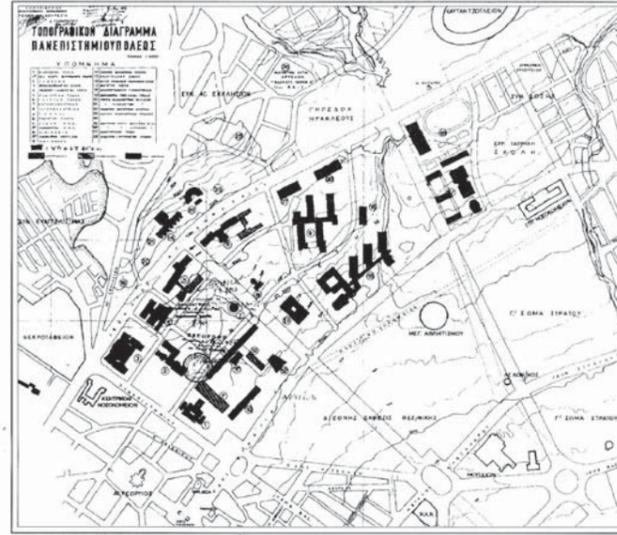
Topographic survey  
(Savvaidis, 2000)



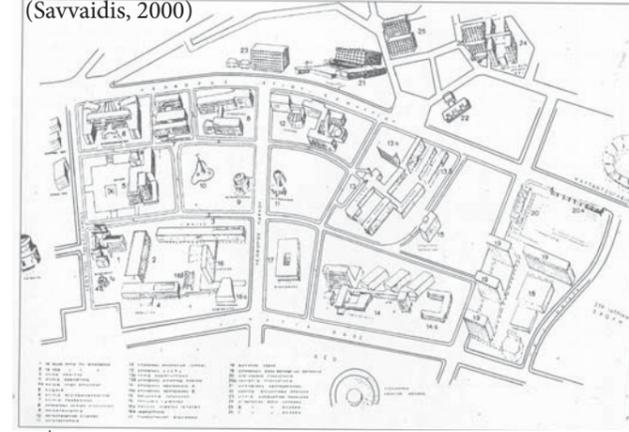
Proposal by G. Anagnostopoulo  
(Savvaidis, 2000)



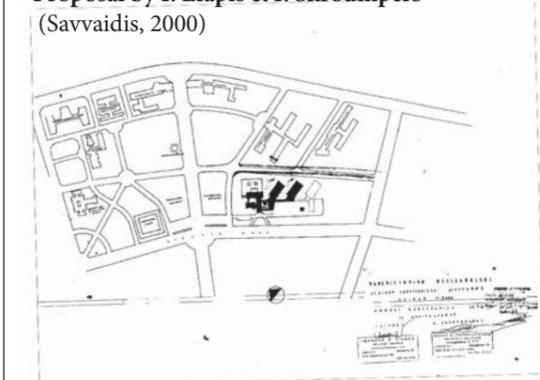
Topographic survey  
(Savvaidis, 2000)



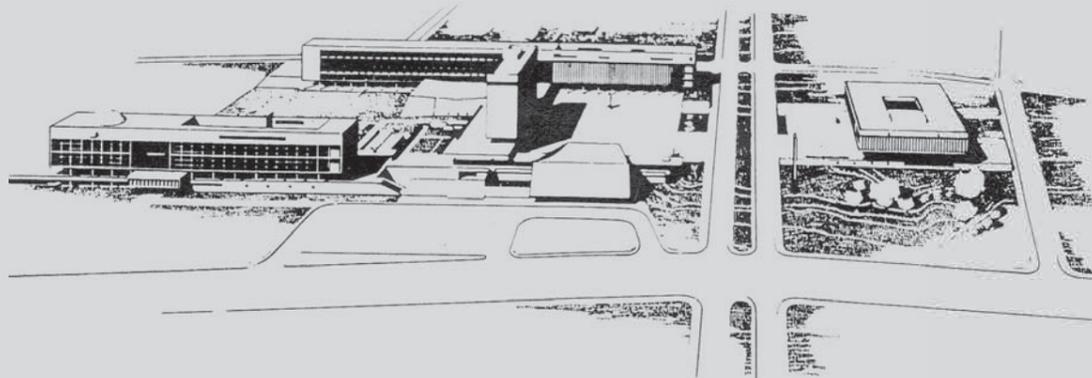
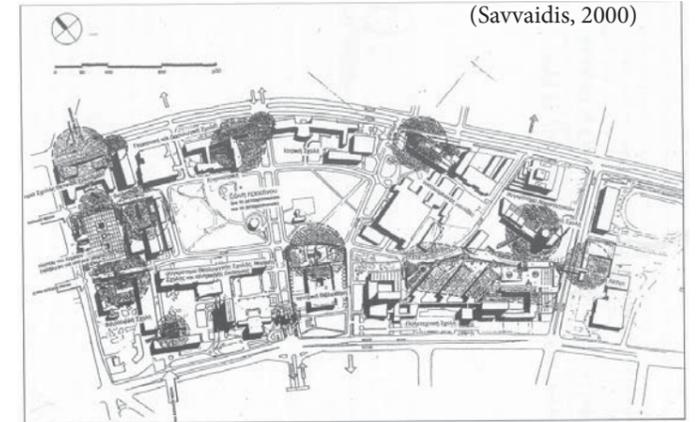
Topographic survey  
(Savvaidis, 2000)



Proposal by I. Liapis & I. Skroumpelo  
(Savvaidis, 2000)



Topographic survey  
(Savvaidis, 2000)

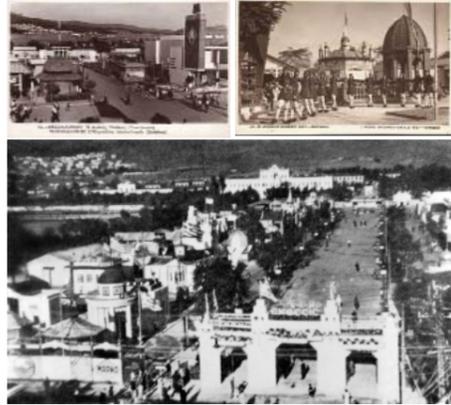


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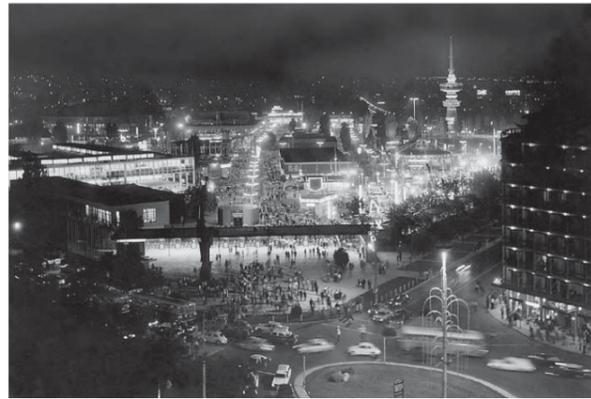
i. 1926-29



ii. 1964



iii. 1972



iv. 1972



v. 2010



(sources : i-iv. History Center of Thessaloniki v. airphotos.gr)

## Thessaloniki's International Fair (TIF) Area

The first step in establishing the Expo was a meeting organized by different agents of the city on May 25, 1926<sup>21</sup>, which eventually gave birth to the First International Exhibition of Thessaloniki on Sunday, Oct. 3, 1926 when Nikolas Germanos inaugurated the first Expo, housed in the area conceded by the Military (3rd Corps) in the field of Mars directly opposite the building of the Electric Company (demolished today). It covered initially an area of 7,000 square meters. According to the records of the EXPO, the first Expo involved 600 exhibitors, of which 310 were from abroad, with two official participations from the Soviet Union and Hungary. In this area the 14 of the 15 pre-war Expos were held there, while the 15th was held in the new premises that the Expo resides till today<sup>22</sup>. From another perspective, in the first year of operation, the Expo had a character more of a folk fair with a strong entertainment elements with diverse attractions arriving every year and fireworks exhibitions 2-3 times a week, than a proper commercial expo. It is worth noting that the same year saw the establishment and the University of Thessaloniki.

The Expo picked up momentum fast and upward trend will continue all the way to the 15th Trade Fair of 1940, when the Expo will then be relocated to its new premises in the old football stadium of Aris. In a few days though Greece entered the war. During the German occupation, the Expo facilities were used by the Germans for warehouses and other military purposes. Upon leaving the city, the Germans blew up the EXPO buildings and set fire to the premises, bringing a total destruction<sup>23</sup>. The war ended with Greece beginning the efforts to heal the wounds of the war only to be halted when by the ravages of the consequent civil war. Thus, the International Exhibition had to remain closed for a total of ten years during this period.

Starting with the 16th edition of 1951, the first post war expo, would serve as a reflection, an indicator of the Greek economy, political and social ongoings. Since then it changed character, adapting a more industrial / production / technological expositional space and less that of a folk festival<sup>24</sup>. Prevalent areas will dominate:

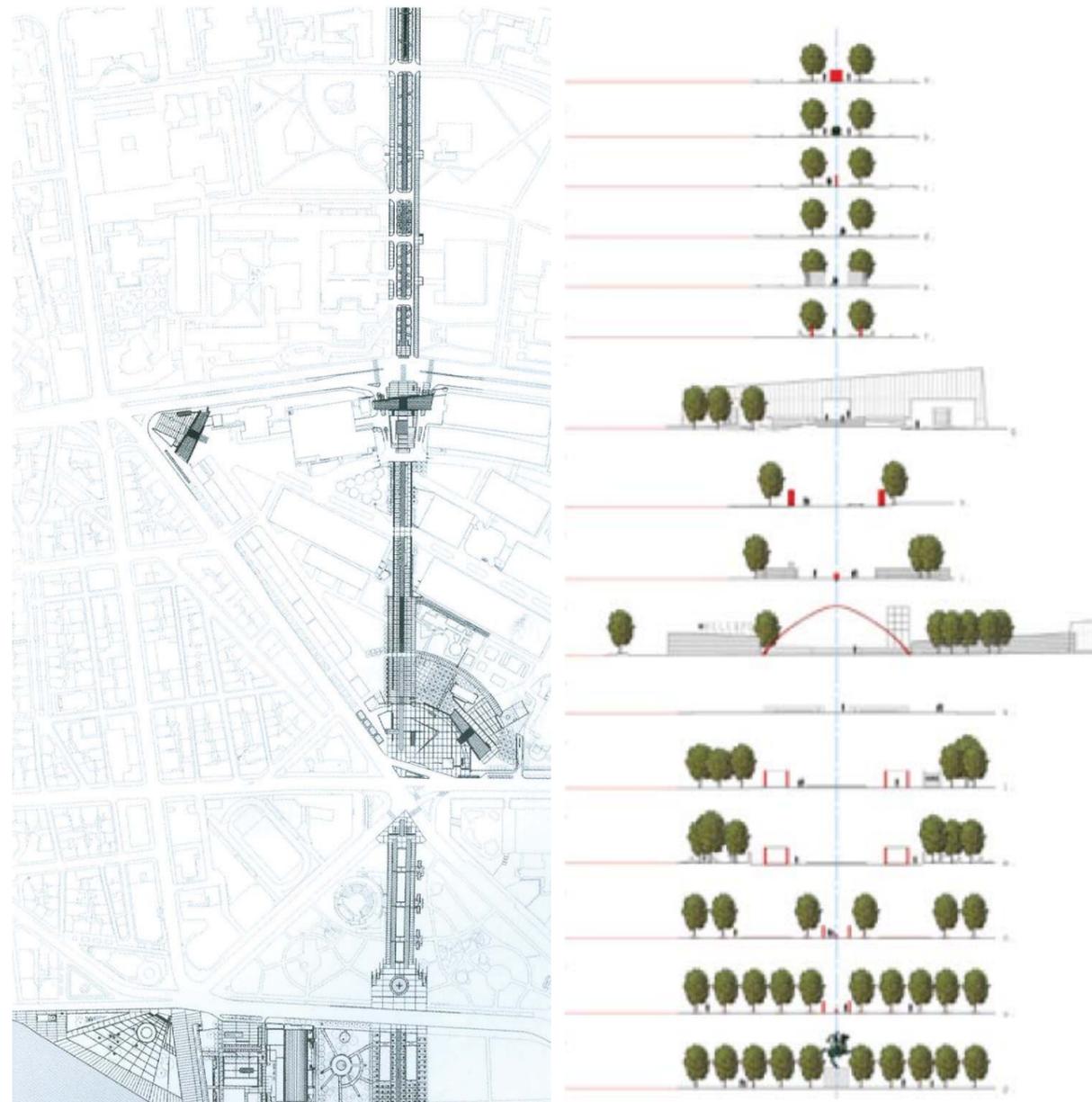
the reconstruction effort, foreign industrial presence, the local agricultural and industrial production. With the passing of the years the number of visitors will increase beyond all predictions. The TIF, the first postwar decades grew steadily and became an established and important event. The expansion and improvement of facilities as well as type and character of events became an imperative necessity. In 1954 the expo expanded to the west, taking over the Thessaloniki's Archeological Museum area<sup>25</sup>. Another parentheses in the evolution of the fair was upcoming seven-year dictatorship of the colonels.

The change from a Public Entity to an anonymous company, HELEXPO in 1977, long before the any other privatization efforts, enabled the Agency to gain a relative flexibility and efficiency in its functioning<sup>26</sup>. Since then, HELEXPO is the official organizer of international exhibitions, conferences and other events throughout the year with the most notable the traditional General Fair in September, which the last years it has lost considerable strength. The question of the relocation of the Expo has been raised in various occasions, which have produced accordingly diverse solutions and proposals. Nevertheless the relocation or transformation of the Expo area is a matter of time and of key importance. The strategic and vital space liberated provides enormous potential for improvement in the area and will be seen in more detail in continuation.

21. The Founding Board of the TIF were: Nikolaos Germanos, Varlamidis Diomedes (Director of the National Bank), Nicholas Darveris, Vassilis Dimitriou (director of the Electric Company), Petros Sindikas (mayor), Petros Louvaris (editor of the newspaper *Μακεδονικά Νέα* (Macedonian News) and the merchants Mikes Mavrokordatos, S. Georgiadis, Veros Zissis, Dimitrios Katsaros and A. Koukoumpanis. (source: [www.tif.gr](http://www.tif.gr))

22, 24, 25. [www.tif.gr](http://www.tif.gr)

23, 26. Manou N. (2001), in Kathimerini.gr



(source : [www.tsigarida.gr](http://www.tsigarida.gr))



### The Eastern cultural axis of Thessaloniki. (1997)

The proposal by K.Tsigarida, A.Skouvakli and N.Kalogirou was a first attempt to resuscitate the idea of the axis as an important urban component. With the motive of the 1997 declaration of the European Cultural Capital of the city of Thessaloniki, a study was made to highlight the *Eastern axis*, as it is referred, as a potential cultural axis connecting various buildings and public spaces as well as a study for the reform of the White Tower square. The proposed axis had a linear character of 30m width and 1500m length connecting the seafront parks, the theatres, YMCA, crossing the EXPO, the university campus and concluding at the Teloglion Institute. The basic principle behind the axis was the unification of all public activity and use and the restoration of the continuity of the space, with the central axis serving as a public pedestrian axis.

The use of a common urban and material vocabulary meant to give emphasis on the unity of the axis as a whole and creation of a common experience from the seafront all the way to the Teloglion Institute. The gates to the EXPO were accompanied by adjacent hard-surface squares, with a frequent play of levels and surfaces, as well as vegetation and water at parts.

As far as the reform of the White tower is concerned the basic principle as stated was the restructuring of the public space with the tower as an epicentre and its connection with the Eastern Axis. So the proposal included the creation of a trapezoidal square that opens up to the sea, creating smaller individual paths of various directions.

Today, the initial proposal was implemented only partially with most emphasis given on the three gates of the EXPO and the spaces adjacent to them, and the square of the White Tower. The proposals most important idea with all potential flows that it may have carried was the reopening of the central axis. The fact that it is referred to as an eastern access (with reference to the historic centre) as opposed to central, hints that the true potential of the axis at the time could not be yet appreciated. Also the issue of the relocation of the EXPO was still at a very early and uncertain stage and thus any speculation concerning the future use of the EXPO space was not attempted. Even more the EXPO gates provided a major barrier along potential major pedestrian routes. Lastly, even though the proposal contemplates the connection with the forest, it does not provide more concrete proposals, ending the axis on the height of the Teloglion Institute.



## Forms of habitat

1. Nisaki District  
(unofficial settlements)



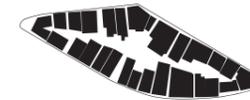
2. Evaggelistria District  
(elongated grid)



3. Kaftanzoglio  
(residential islets)



4. 40 ekklesies district  
(organic grid)



5. Historic centre  
(Hébrard fabric)



## Forms of activity

a. White tower



b. Trigonio tower



c. Garden theater



d. Faculty of Education



e. Forest theater



f. Palais des sports



## Forms & Typologies in the Central Axis ecotone

Following the presentation of the transformations of the sub-areas within the ecotonal area, these two next pages will demonstrate a representative selection of building typologies present in the central axis area. The historic activity and development in the area is made evident in the diversity of forms and typologies found in the contemporary fabric of the area, some of which are intrinsic and exclusive to it. Similarly the different types of activities and areas of activities that have emerged as well as the distinct historic phases corresponding to each typology are represented in the found typologies.

50m

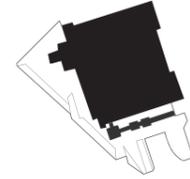
g. Ag. Fwteinh church



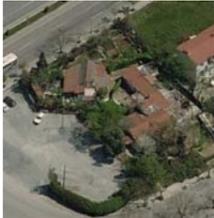
m. Archeological museum



s. Velidio conference center



h. fabric remnants



n. Byzantine museum



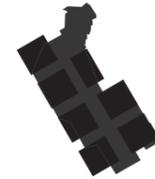
t. EXPO space



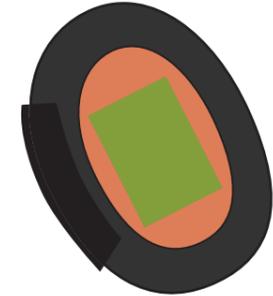
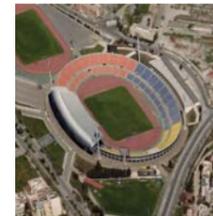
i. National theater



o. University of Macedonia



u. Kaftantzoglio stadium



j. Ag. Dimitrios hospital



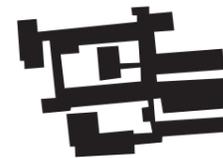
p. City Hall



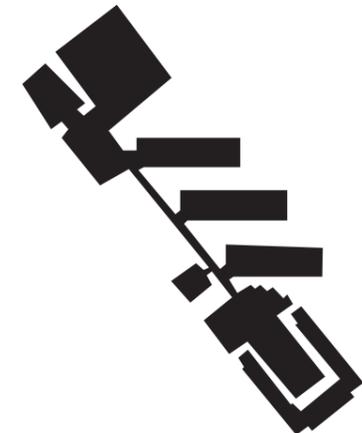
k. Royal theatre



q. AHEPA hospital



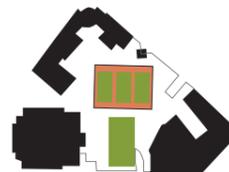
v. Polytechnic school



l. Palais des sports



r. YMCA Thessaloniki

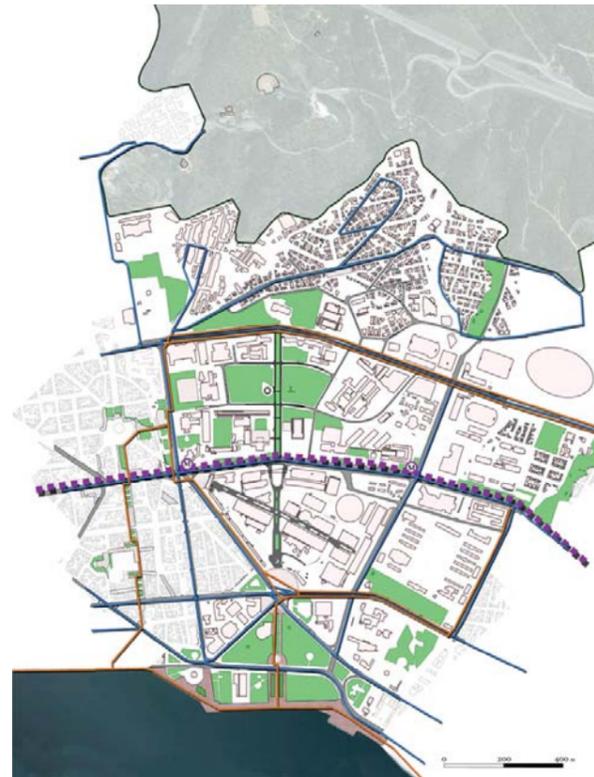


50m



**A. Vehicular traffic**

major traffic arteries  
 traffic direction



**B. Public & light traffic**

bus routes  
 bikes lanes  
 planned metroline



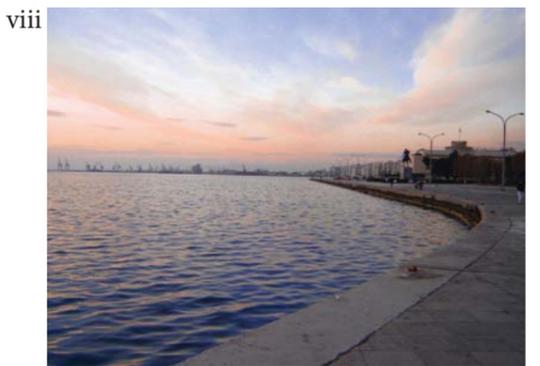
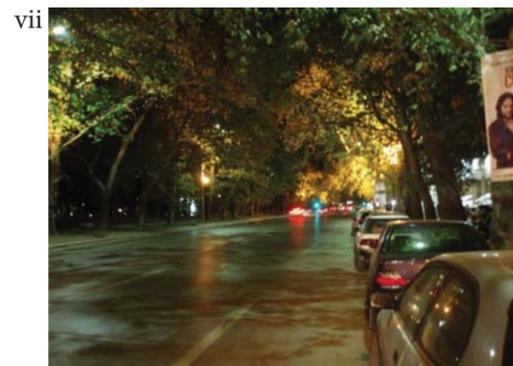
**C. Pedestrian traffic**

intensity of pedestrian activity



**D. Barriers**

physical barriers



i. Elenis Zografou / Kastorn street along the eastern walls ii. Agiou Dimitriou Avenue  
 iii. Aerial photo of Egnatia avenue crossing between the International Fair and the University campus iv. Egnatia Avenue v. XAN.Th Square vi. Stratou Avenue viii. Megalou Alexandrou avenue viii. Seafront  
 (sources: iii. airphotos.gr v, vii, viii. panoramio.com )

## vi. Flow Analysis - Mobility assessment

An analysis of the flows that cross the area will help understand better the mobility factor and investigate problems and prospects that could possibly arise under a potential future restructuring. As mentioned earlier the area apart from being a key urban ecotone area that is crossed by important urban arteries it also hosts various activities that have a wide influence range and thus attract increased amounts of traffic. The four diagrams in the adjacent page show the various flows that are present in the area as well as the various physical barriers that obstruct accessibility and mobility and increase fragmentation of the urban fabric. Analysing the various flows in more detail we see:

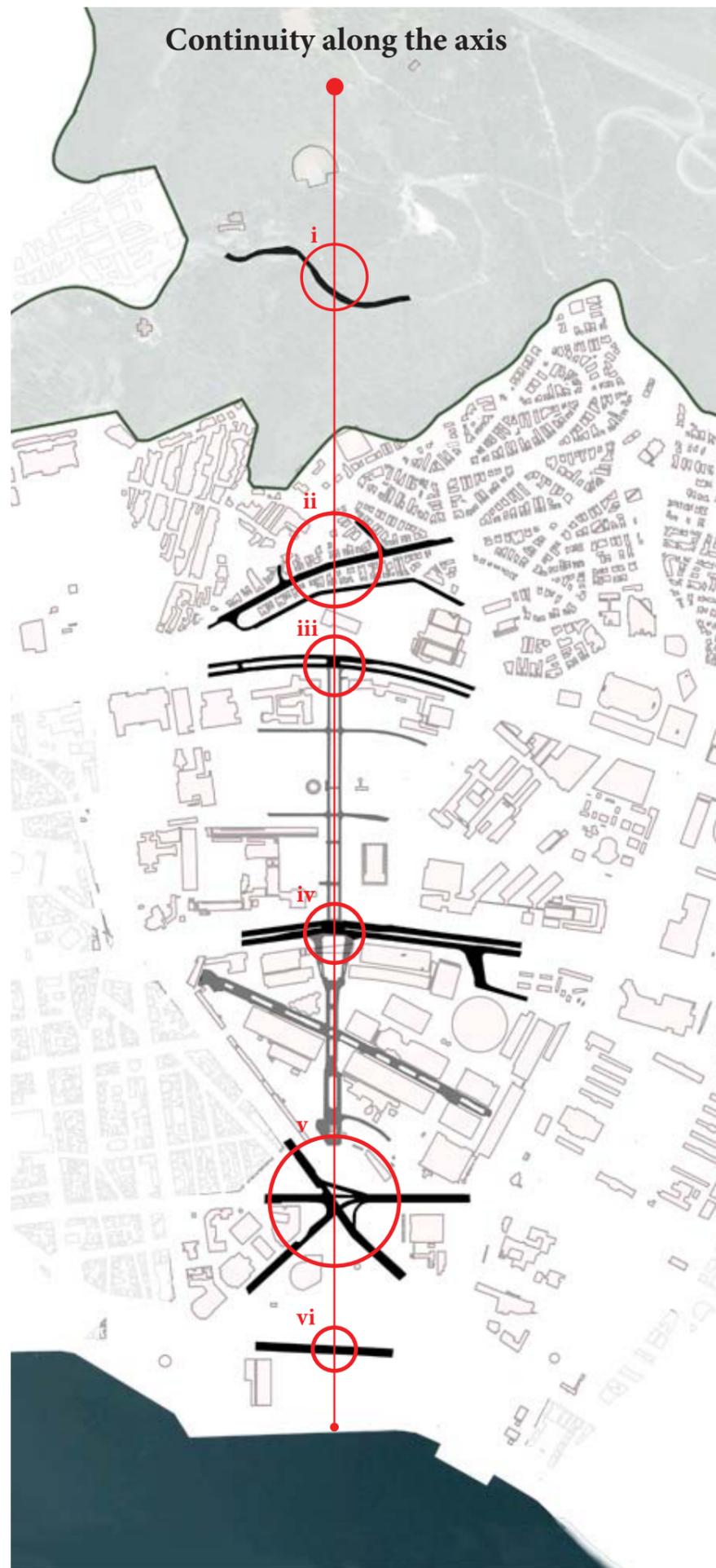
- A. Vehicular traffic : As stated earlier the area receives a great number of through-traffic as well as incoming traffic to the various uses that are present in the fabric. It also needs to be noted that on the line of the central axis the urban fabric presents its more narrow point of its elongated form, and thus all transversal traffic (parallel to the seafront) arteries that run the city have to be squeezed through this reduced cross-section. On the transverse level we have four important parallel avenues Vas. Georgiou, Tsimiski/Stratou, Egnatia and Ag. Dimitriou, while on a perpendicular level the 3rd Septembriou avenue is the most important artery, providing connection with the Ring Road. This condensed presence of road infrastructure produces an increased effect of a car dominated environment, that is augmented by the large number of parked cars. Even more the road grid and its related flows have influenced the consolidation and at the same time fragmentation of many of the isolated areas encountered (EXPO, campus etc.) and dictated pedestrian and consequently public space use. Many of the aforementioned areas give the impressions of urban islets, even more taking consideration the perimeter fencing that the majority have.

The traffic scheme of the area that emerges makes it clear that given the importance that it holds it is inevitable that the section will always have to deal with increased amounts of traffic. But the current scheme has to be considered under the spectre of a heavily car-dependent local population, the lack of a fast public transport infrastructure, and an earlier design mentality that gave priority to car usage. With each of these factors starting to change, the general scheme also starts to change and present new

conditions and considerations to think about. Nevertheless the issue of car-pedestrian relation needs to be considered and resolved on a general and small scale level, aiming to maintain and improve traffic flow, while reestablishing continuities and relations in the urban fabric.

- B. Public & light traffic : The public transport element is referring principally to the public bus system, given that the metro line has not completed yet. The buses cover all the major arteries as well as the districts of Evagelistria and Saranta Ekklisies, yet the traffic around the EXPO and university campus is perimeteric and does not enter in any of the two. The construction of the metro with the addition of two stations on the two sides of the campus will help increase public transportation usage and facilitate easier access to the area. The idea of a light-rail system, that used to cross this area in earlier days, has also been put again under consideration. Such a system could take advantage of the central axis or alternate parallel route and help restructure the area, creating and attracting in this way new activity and facilitating additional flows. Similarly with the bus system, it needs to integrate the axis in its traffic scheme if not in its entirety, in certain parts, like the university campus. A fleet of small and energy - efficient buses could improve connectivity and mobility considerably without producing any adverse effects.

The recent construction of a bike-lane network in city, has been a welcome addition by a large number of local citizens, despite the poor planning and construction quality of the final result. Nevertheless it opened the door to think and imagine the role of the bicycle in the city of Thessaloniki in new terms and open prospects for further planning in the future. The bike connection on a perpendicular (mountain-sea) level is not as easily achieved, compared to the transverse connection that was facilitated some lanes. If a continuous flow along the central axis could be achieved, a bike connection from mountain to the sea could be rendered quite an easy and fast trip. Also the university campus, with the great number of students could be facilitated with easy and uninterrupted bike access.



## Important Points

### i. Seich-Su forest

The axis on this part does not really exist and it was never really considered or planned to such an extent. At the same time it is interesting to consider the extension of the axis in order to raise questions of accessibility to the natural areas, and reconsider the relation of the urban with the natural. On the part from Saranta Eklisies to the road there is very little activity taking place. On the upper part though it presents a different use with the Forest Theatre, the recreation areas, the Zoo and the various pedestrian paths developed in the area over the time.

### ii. Saranta Eklisies

In this part, the continuity of the axis is lost completely. On one part the development of the district of Saranta Eklisies and Evagelistria created a built barrier halting the expansion of the axis and obstructing the access to the Seich Su forest at the same time. This area in reality constitutes a urban/natural interface area, with an improvised development on the urban side, that makes limit areas subject to further degrading and occupation. A careful rethinking of these limit areas and small interventions on the urban fabric can aid considerably in establishing the continuity and improving accessibility.

### iii. Ag. Dimitriou

The connection between the Tellogleion Institute and the university campus lacks any real relation. The fact the museum's surrounding space has not been utilized as a public space but instead is fenced off creates a considerable barrier and fragmentation in the continuity of the axis. Nevertheless with minimal intervention integration could be achieved.

### iv. Egnatia

Connection between the university campus and the EXPO is quite poor, given i) the high traffic that the Egnatia avenue presents throughout the day, ii) the obstruction on side of the EXPO by the northern gate and surrounding fencing iii) the mere presence of unprioritized zebra crossings to facilitate pedestrian crossing.

### v. XANΘ / YMCA Square

The square which in reality holds a very small value as a public space is a key element in restructuring of the axis as well as the adjacent historic centre. The traffic congestion created throughout the day, affects severely incoming flows to the centre. The current situation is a result of a bad traffic management policies and the incompetence to the original plan's provisions for a prominent roundabout on the spot. Nevertheless both its potential as a public space and as well as the traffic management issue need to be reconsidered on a new basis.

### vi. Vas. Georgiou Avenue

The lower part of the axis presents little complications compared to the rest of the points. The avenue of Vas. Georgiou is a high traffic and relatively high speed traffic artery. The pedestrian crossing is not adequately prioritized, restricting access to the seafront. The reduced activity on the cafes and the park nearby have affected activity and public space utilization in this lower end, and thus the fast traffic of the avenue does not really present a great conflict with current use. In a possible reconsideration of the axis and the traffic scheme of the centre this point would also need to be reconsidered.

## Aerial view

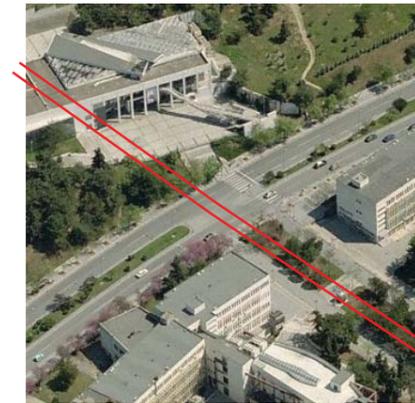
i.



ii.



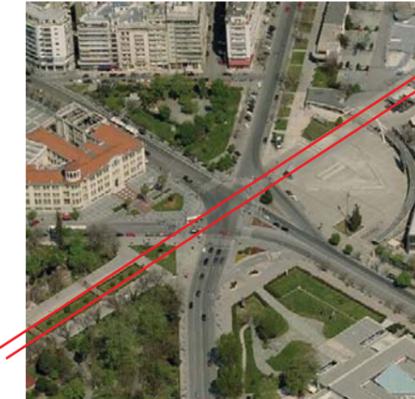
iii.



iv.



v.



vi.



- C. Pedestrian traffic : In this heavily car dominated landscape, as a consequence all pedestrian traffic is to a great extent depended and dictated by the parallel car usage or its absence altogether. For example on the university campus, where there's little car traffic, there's an increased density and pedestrian activity during the day, but at the same time considerably reduced at later hours. The green area of the campus is a considerable green area and apart from student usage it receives little public usage. The AXEPA hospital is the principal attraction of outside visitors, a lot of which do not arrive by feet. The EXPO receives reduced pedestrian traffic principally for the Macedonian Contemporary Art museum, the Alexandrion Sport Palace, the Belidion Conference center and almost none through-traffic. During the season of the International Fair and following months the EXPO area receives a great number of visitors. The isle effect of the EXPO creates a considerable and radical break in the continuity of the axis and the larger public-space structure. The green spaces, principally the White Tower Park and the park on the Teloglion Institute level, are not very frequented and during later hours empty completely. The seafront at the lower end of the axis is the most utilized and easily accessed horizontal pedestrian access. The rest of the transverse/parallel pedestrian routes between the historic centre and the eastern districts are along major road arteries that do not facilitate easy and enjoyable access. The route on the university campus is the one that presents the longest horizontal range. Vertical access on a mountain-to-sea level presents similar characteristics and in this case there's no continuous pedestrian route/connection all the way.
- D. Barriers : The presence of numerous and often perimetrical physical barriers is a key factor in creating fragmentation in the contemporary fabric. A series of areas along the axis such as the university campus, the Military Field, the EXPO area and the sport facilities around Kaftantzoglion stadium, as well as smaller units like the YMCA property are surrounded perimetrically by fences, with occasional entrances to allow access, but discouraging through-traffic as a general rule. As far as access to green areas is concerned there are some parks (Teloglion, Ilisia Pedia Park) that are fenced and close during night hours, while the green areas closer to the sea have unobstructed access. Access to the Seich-Su forest is at lower part partially fenced while going up the number of barriers reduce significantly. Making reference to larger scale barriers, it can be noted that the districts of Evagelistria and principally Saranta Ekklisis do present a pronounced built-up barrier that fortunately is has not gotten completely out of proportions, to the extent that with a few and minor interventions on the formentioned urban fabrics, continuity could be resolved eventually. The diagram on the page on the left displays the issue of continuity/discontinuity on the vertical level, that of the central axis, in more detail.

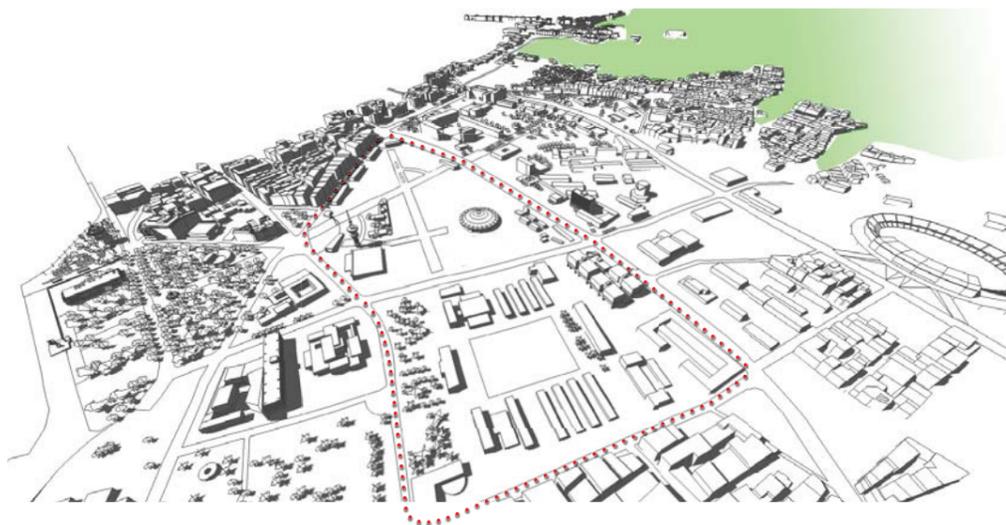
## vii. Updated conditions along the axis

As seen through the analysis so far, the area of the axis has experienced various transformation, that have correspondingly altered the uses and activity along its course and time. At the same time the lack of coordination and a wider planning perspective have limited the character and scope of the axis considerably. The initial and primordial purpose of the axis that was to provide a sea-mountain connection has been significantly altered with subsequent partial plans, that apart from affecting the axis have also affected the local urban fabric. Creating, as seen, diverse and multilevel fragmentations and discontinuities that have an evident and easily detectable impact on mobility issues, as well as equal but not as easily detectable effects on terms of activity (generation/conservation) and habitability. The 1997 proposal of the *Eastern Cultural Axis* was the latest attempt to rethink about the axis as an urban component, although it did not manage to present proposals to convert it into an integral urban element. In 2006 the Technical Chamber of Central Macedonia (TEE/TKM) also released a study by one of the working groups entitled *Rehabilitation of the Central Area of Thessaloniki* that looked the issue in a deeper level trying to discern underlying possibilities. Nevertheless since the publication of these last two documents, new data has emerged about certain areas along the axis.

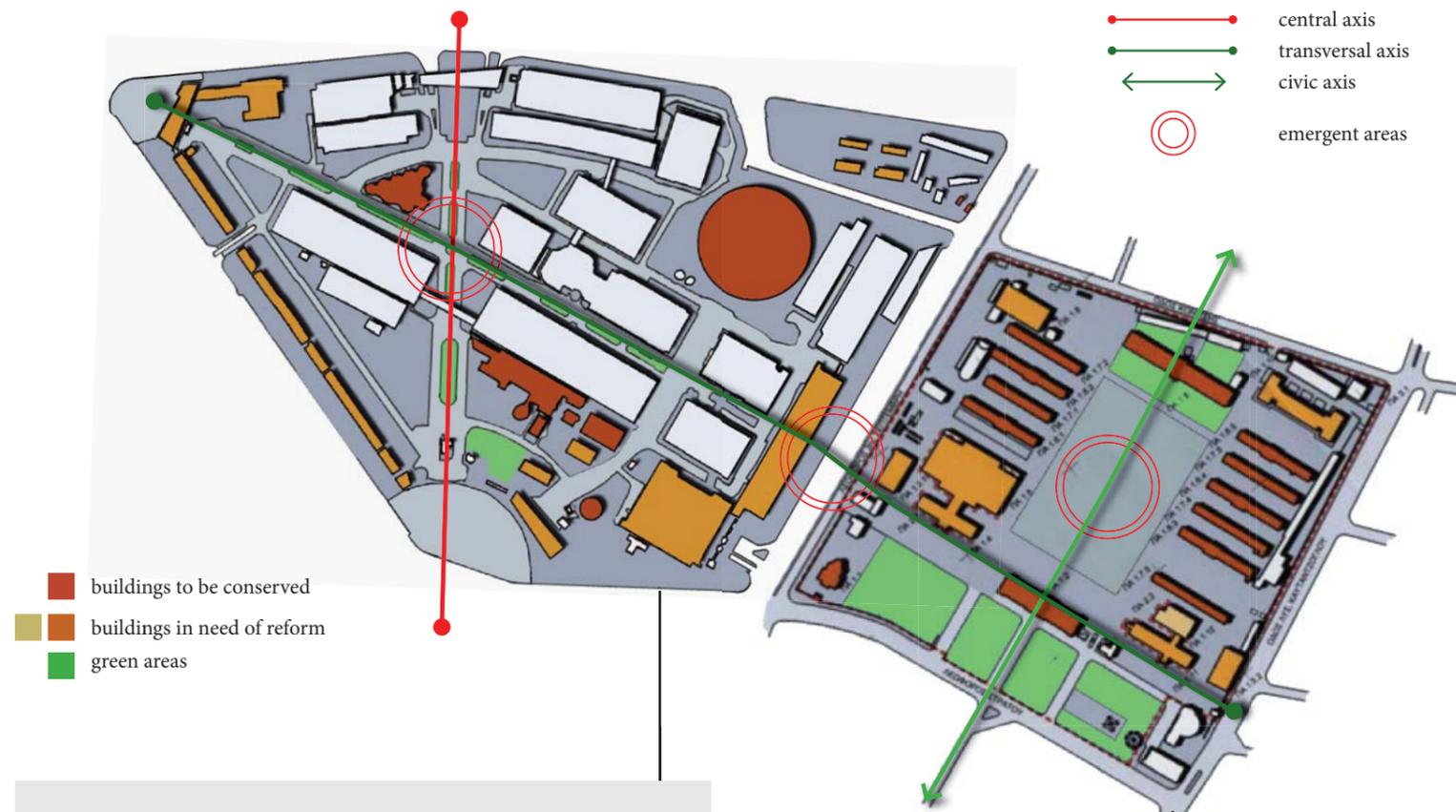
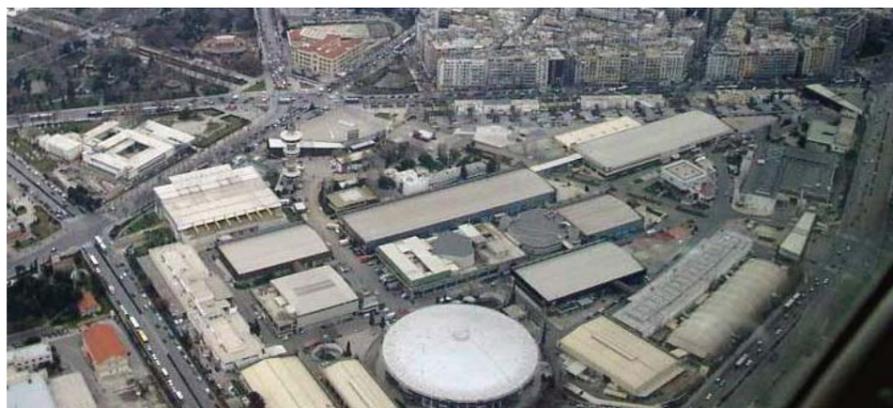
More specifically the area of the EXPO that currently occupies a considerable area in the central part of the axis is bound to an imminent transformation. The question of the relocation of the EXPO had been set as early as the 1967 Triantafilidis plan almost forty years ago<sup>27</sup>. In the 1985 Regulatory Plan it was included as a general direction, proposing its relocation in the seafront area of Kalochori. In 2001 with the candidacy of Thessaloniki for the EXPO 2008 the whole issue was revisited, with a series of plans and revision performed to accommodate the candidacy, which proposed the relocation to a new site in Sindos. In 2008 the Technical Chamber of Central Macedonia released another report entitled *Utilization of free spaces in the urban unit of Thessaloniki. Relocation of the International Fair* that further supported the idea of the relocation to the Sindos area (after an examination of all available sites in question) and stressed the urgency of this move to free up critical urban space<sup>28</sup>. The idea of the relocation seems to have matured sufficiently today, and given that the plans and study already exist, it is hoped that is just a question of time before the official decision is taken and approved.

Another important issue that has also been on debate is the question of the relocation / transformation of military installations inside the urban fabric of the city. The military areas of the west part of the city have been an object of discussion in the past in design competitions and individual proposals. The site of the 3rd Military Corp/*Pedia tou Areos* is an urban unit of special significance and potential. On one hand it contains an important and well preserved building stock of military architecture of the entire last century and on the

## Urban transformations and updated conditions along the axis



Given the future use change of both the EXPO area and the adjacent military field, new prospects rise up that also affect the issue of the central axis. For a first time after a long period a strictly pedestrian transversal connection can be achieved between the eastern part of the city and the historic centre. The point of inflection of the two axes could be a new civic node for the urban space. The liberated surface of the two areas could host a variety of activities and add considerable amount of green areas in the contemporary fabric.



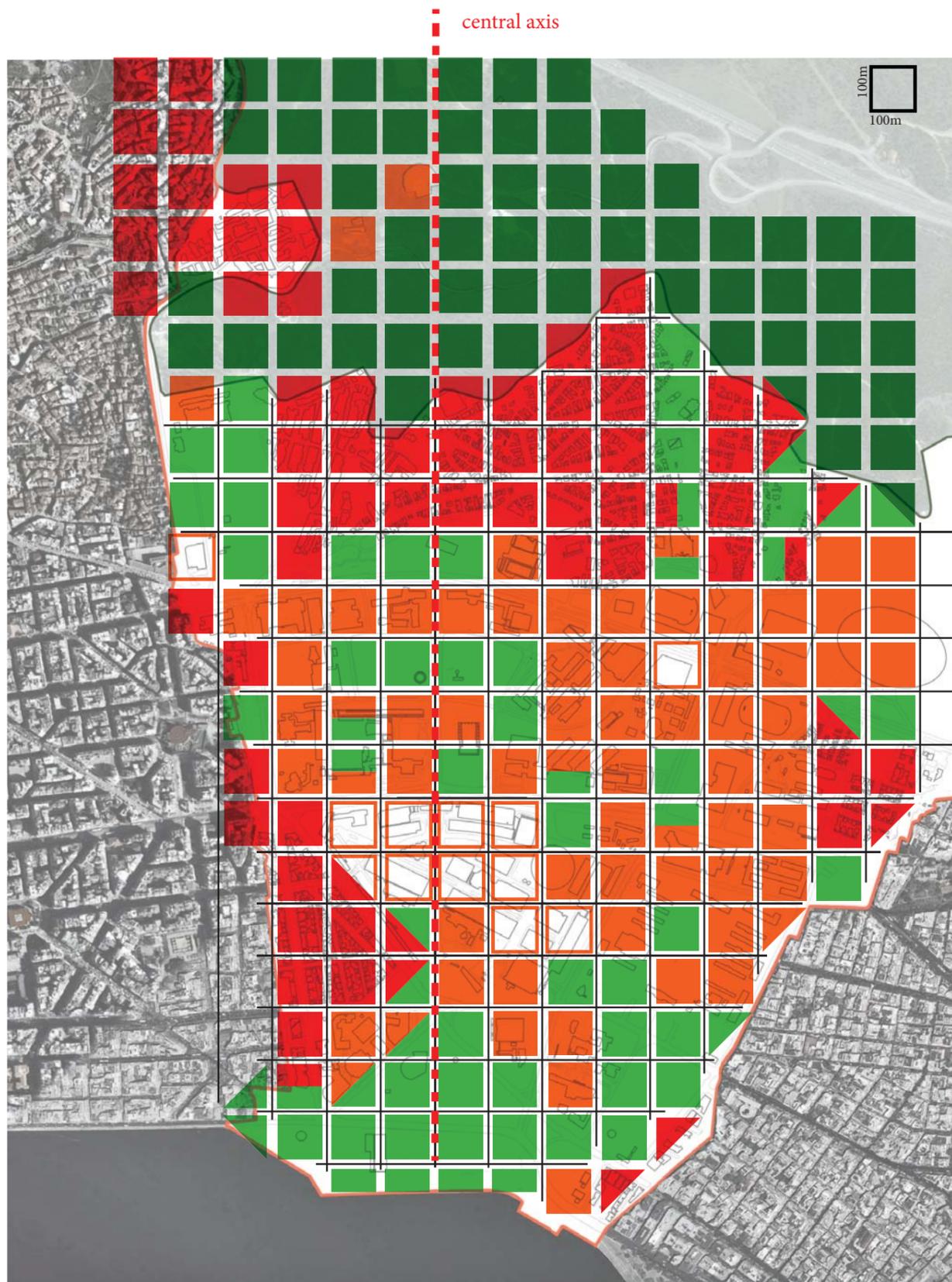
- buildings to be conserved
- buildings in need of reform
- green areas

### The EXPO grounds

The relocation of the Expo and the liberation of the space occupied today presents a great opportunity to rethink the use and occupation of this space. Although the existing building stock includes many exhibition and expo related installations there is a series of buildings that stand out, either for their use or for special architectural qualities that they possess. These are: the Alexandreion Sport Palace, home of the Basketball team of Aris, the tower of OTE, a familiar landmark of the area, the Macedonian Museum of Contemporary Art, which was one of the first attempts to install non-expo related activities in the area, and other smaller expo pavillions that present some architectural interest. On the other hand there are numerous buildings that could with varying interventions improve their usage and integration within the city structure. These building include the line of two storey buildings along Agelaki Avenue, the Belideion conference center, that could take advantage of avaiable space and reconsider its position as an important urban element, the Expo gates, that could take on different public uses, except for the one on the axis that blocks mobility. A couple of other building could be rehabilitated and host different activities. At the same time there is a great numer of buildings that given the updated conditions do not present any interest in preserving, and could free up vital space. The green areas within the area are quite limited. Small green isles are found along the central axis and the cross-horizontal one. The latter is blocked on the southern side by pavillion #6, a point that needs to be resolved in order to achieve connection with the adjacent military installations.

### The 3rd Military Corp Field

Inside the limits of the military area, a special architectural sum can be recognized. It consists primarily from the initial building stock of the military installation, and a series of newer constructions, all built around a central unbuilt area. From the initial building stock, that dates to the last phase of the ottoman era, stands out the Headquarters , the church of Saint Konstantinos, the building of the Military Museum and two rows of five similar barracks arranged symmetrically on the two sides of the central area. Concerning the newer buildings that complete the stock includes two building complexes and two similar barrack buildings , the four storey building of the current headquartes and the three storey building that functions as barracks as well. Apart from the building elements, it has been noted also the presence of a considerable number of trees of old age, characteristic of the local climate, in unitary zones on the side of Stratou Avenue and parallel to the inside fachade of the Military Museum, as well as scattered inside the area limits. The area as seen includes a wide historic range of military architecture, that spans from the ottoman era to the modern period, rendering it an open space public and urban museum. Nevertheless there are various smaller building that could be eliminated and numerous that could be reconfigured. As far as public space is concerned the central area holds a great and still unexploited potential, given that is unique kind of open space of this size in the city centre. The horizontal axis could easily be facilitated on the lower part of the area, where green areas are already available. Also another potential perpenic-ular axis arises starting from the seafront and following the historic Ilisia Pedia deliniation crossing the central area to the Makedonia University and potentially all the way up to the Kafantzoglion sport facilities



other, it includes one of the largest relatively open surfaces (central court) available in the central area, that has enormous potential as an urban space and is currently not being taken advantage.

Taking these two last point under consideration and reviewing their potential effect, a new interesting perspective arises. The combined reconsideration of the two areas (EXPO+military) reveals the possibility of a transversal connection between the historic centre and the eastern districts, independent of the existing road grid and of a pronounced pedestrian character. Branching of this transversal axis a series of connections are created that start to restructure the fragmented fabric, along public spaces and uninterrupted flows. The place where the it meets the central axis inside the limits of the EXPO is a key centrality point. This new axis could help restructure and interrelate the two areas in question and search for ways to integrate the in the contemporary urban fabric. The diagram on the left page explains in more detail the situation and provides a more detailed analysis of the current situation in these two areas.

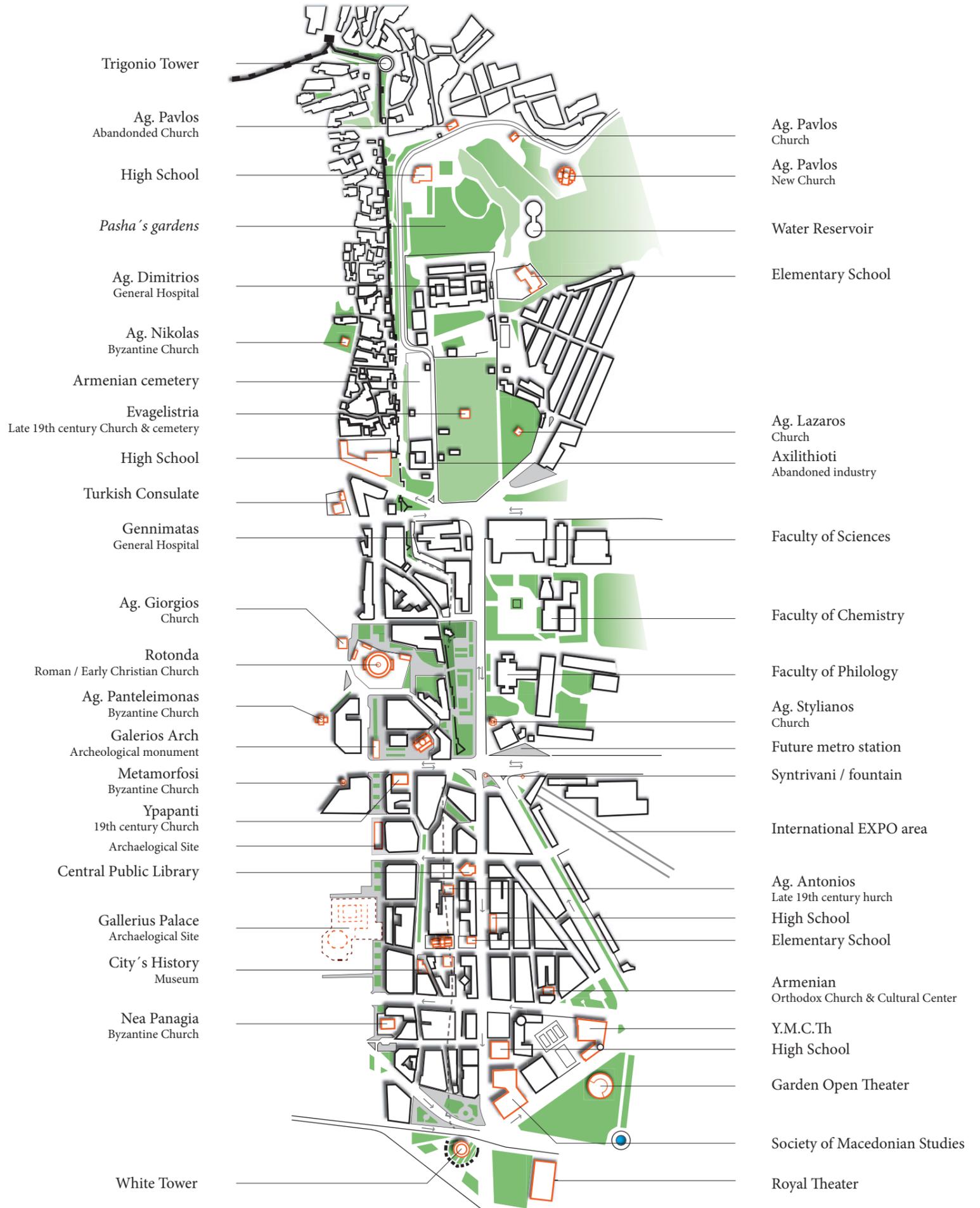
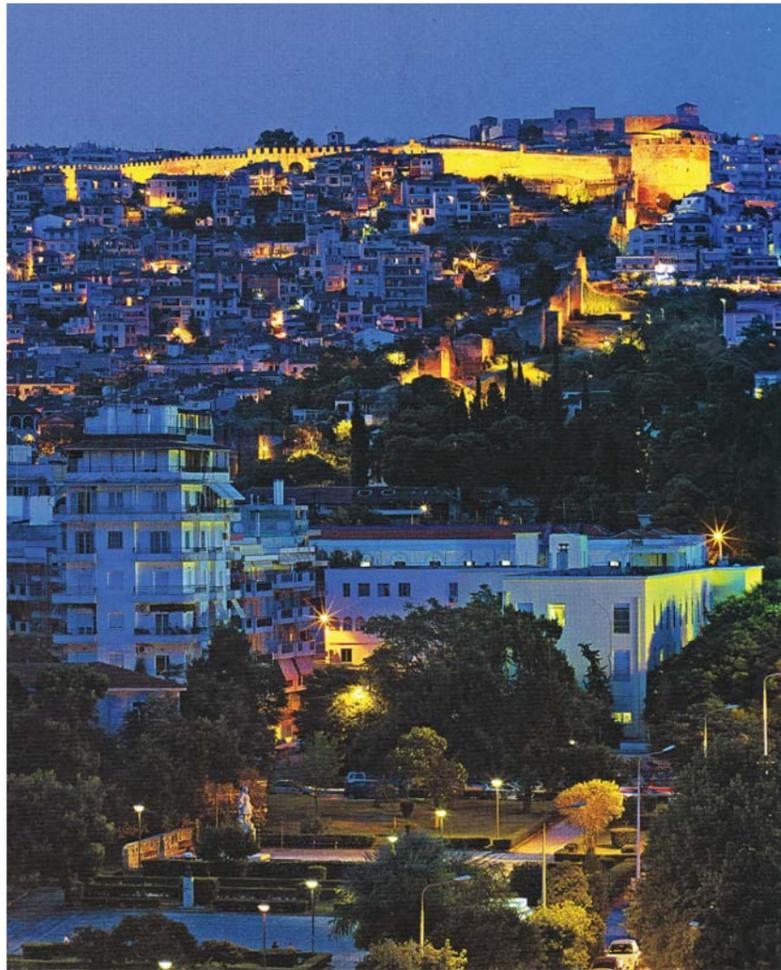
When considering the central area as an ecotone, respecting the original limits (east walls and Stratopedou stream), some elements come in relieve. The transverse connection by non-residential units along the Egnatia avenue or a bit to the south along the Bas. Georgiou - Manoli Andronikou street axis. The ecological connections are found to a great extent fragmented both on a transverse as well as parallel to the edge with key patched developing by the seafront, in front of the 3rd Military Corps camp, in the university campus courthouse, and further north by the Tellogleion Center and Evagelistria district. The forest mass of Seich-Su up to the Ring Road is a critical mas that apart from concentrating great amounts of vegetation also allows a transverse connection. Finally as seen the area of the International Fair is converting into a considerable void / latent space in the centre of the area, one that could play a key role in the reprogramming of the ecotonal area.

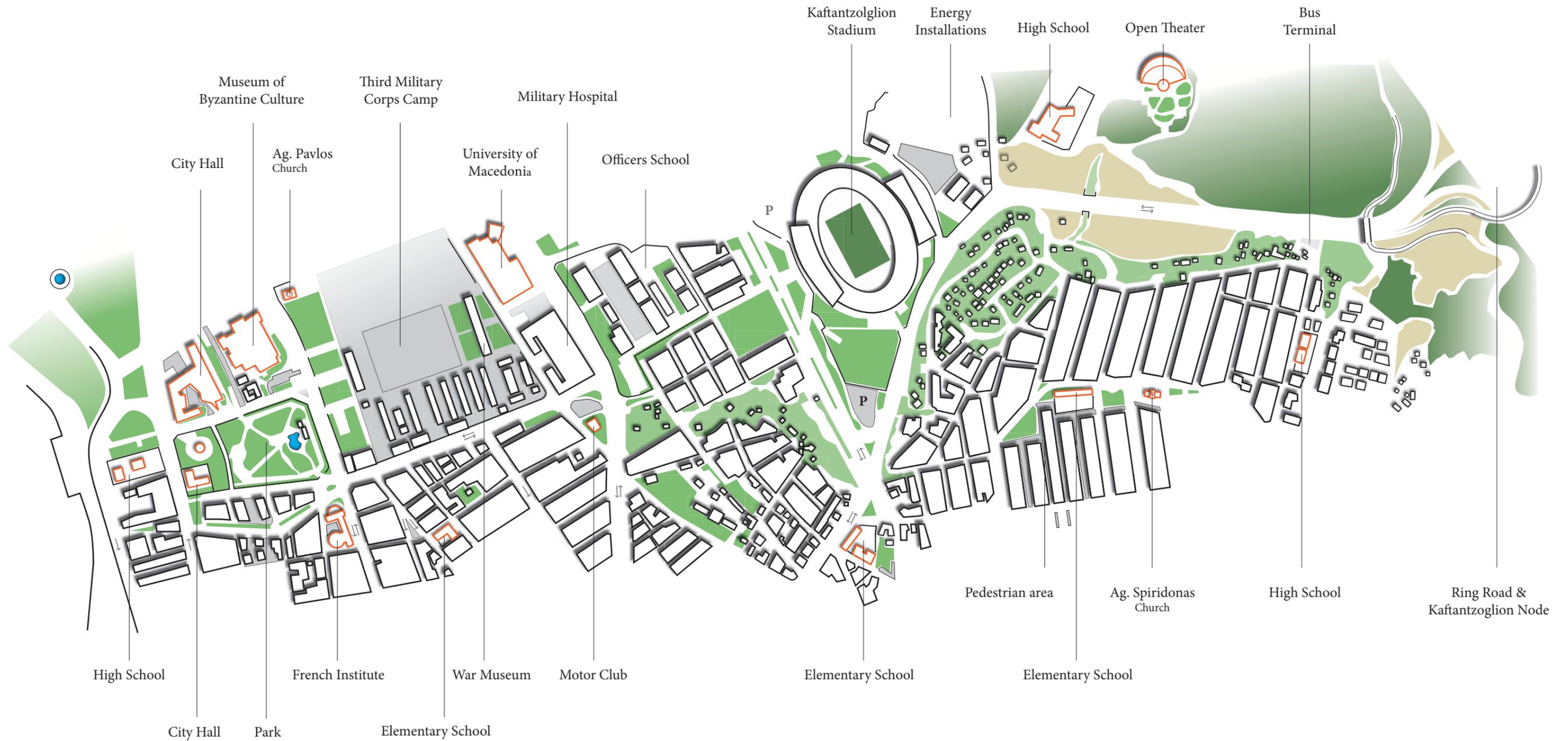
**The Central axis as an ecotone**



# The West (NW) limit

The east walls as a historic membrane





## The East (SE) limit

### *The old stream trail as ecological permanence*

The diagrams on these two pages show in detail the conditions along the two edges that give form to the ecotonal area of the Central Axis. The understanding of the activity, flows and space along these limits can aid in the comprehension of their historic functioning as edge areas.

#### photos

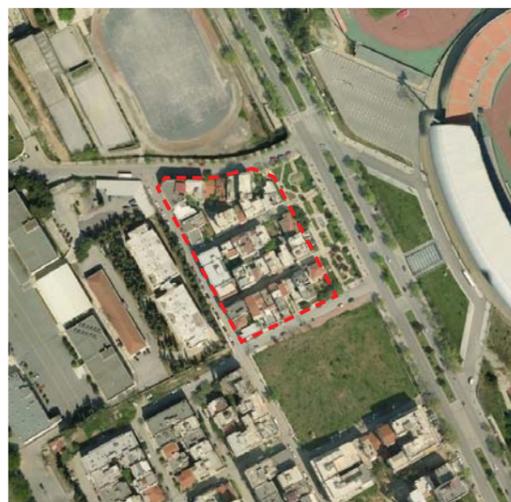
**left page - top :** View of the east walls lit up at night. (Yerolympos, 2012)

**bottom :** Aerial view of the east wall from Ano Poli all the way to the sea (airphotos.gr)

**right page:** View the east urban facade with the International Fair ground in the foreground (Yerolympos, 2012)



residential islets



0 25m 75m

trapped facilities



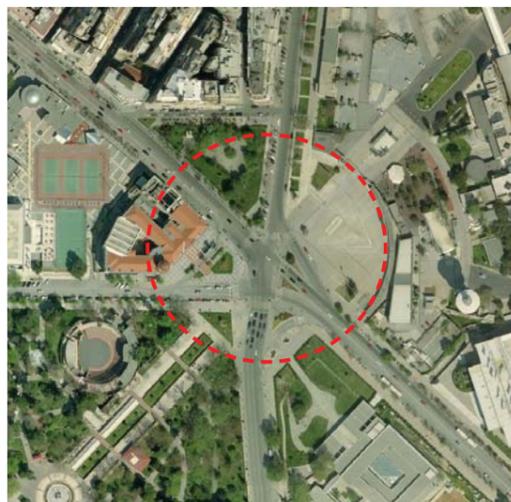
0 25m 75m

pronounced edges



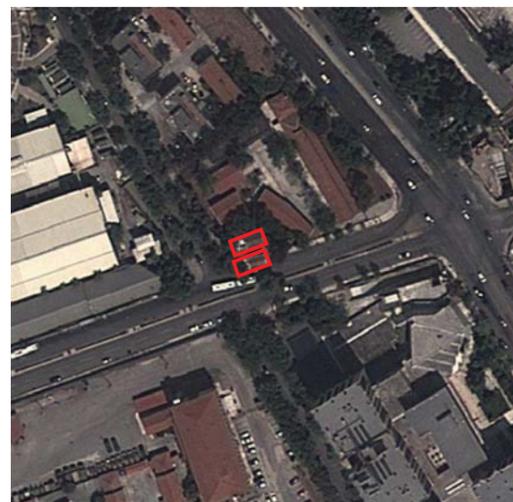
0 25m 75m

crossings / nodes



0 25m 75m

fabric remnants



0 20m 50m

latent spaces



0 50m 100m

transects



0 50m 100m

### Situations detected



#### legend

- is: residential islets
- f: trapped facilities
- e: pronounced urban edges
- c: crossings / nodes
- r: fabric remnants
- la: latent spaces
- g: green enclaves
- s: stream traits
- h: historic membrane
- fe: fenced islets
- d: axis discontinuity
- t: transects
- a: new modes of accesibility
- m: contemporary membrane
- re: recycling sites

## viii. Situations Detected - *Risks and Opportunities*

Having analysed this particular and key ecotonal area in its different aspects and scales, this following section will make an indicative listing of the different kinds of situations detected along its course, serving as a phenomenology of conditions and dynamics present in the contemporary mosaic. For each type of situation the risks detected as well as the possible opportunities that arise are listed.

### *Accessibility*

#### **crossings / nodes**

Risk: Certain spots in the area lie on the confluence of different flows. The YMCA square and the Syntrivani square are two such spots related with vehicular mobility. The current configuration creates problematic traffic conditions as well as barriers for soft flows and urban fabric continuity.

Opportunity: The reprogramming of these key areas of mobility and for the urban structure, can have a catalytic effect for the improvement of the area, both in terms of free space allocation as well as flow optimization.

#### **new modes of accessibility**

Opportunity: The construction of the metroline will create two stops within the Central Axis area. These key mobility areas will offer increased accessibility for the area and create a radius of positive impact on adjacent areas.

#### **transects**

Risk: There are numerous existing and emerging transect paths/axes that are not connected and thus have a very limited effect in terms on transect connection of soft mobility.

Opportunity: The inter-connection of this transects axes and their docking with the central axis can create a drastically distinct situation in the area.

#### **trapped facilities**

Risk: A series of facilities (Macedonian Museum of Contemporary Art, The Alexandreion Sport Palace, the OTE tower) are found trapped within the confined and restricted area of the Expo.

Opportunity: These existing uses can serve as points of reference and poles of future development once the Expo is relocated from its current location.

#### **fenced islets**

Risk: The fenced islets of various sizes present in the area create diverse micro and macro fragmentations in the fabric

Opportunity: Eliminating these barriers and reintegrating these spaces can improve drastically the continuity and function of the local fabric.

### *Activity*

#### **residential islets**

Risk: The various changes in city plans as well as the realized spatial transformations had as a result the apparition of numerous residential islets of different sizes in the area, fragmented and disconnected from the rest of the fabric.

Opportunity: These areas should serve as areas for special plans, taking into consideration the upgrading & improvement possibilities, the special character of the residential activity within the area, and the possibilities of reconnection and integration in the urban fabric and structure.

### *Limits / edges*

#### **pronounced urban edges**

Risk: The residential districts in the upper part of the area (Evaggelistria, 40 Ekklesies, Agios Pavlos) have pronounced urban - forest edges with the forest of Seich -Sou, without a proper limit treatment and provision.

Opportunity: To articulate defined urban limits and efficient urban-wild interfaces with the forest mass.

green enclaves



0 50m 100m 250m

stream traits



0 25m 75m

historic membrane



0 20m 50m

fenced islets



0 50m 100m

axis discontinuity



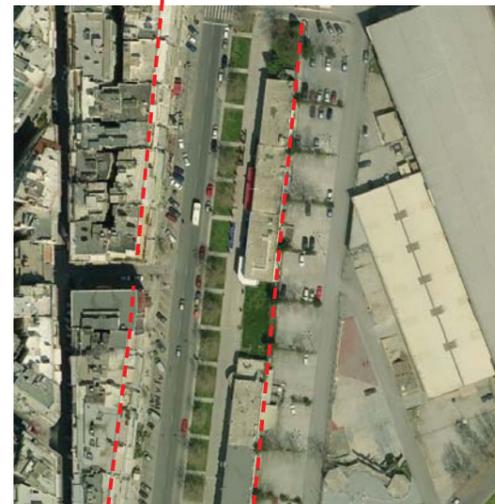
0 25m 75m

new modes of accessibility



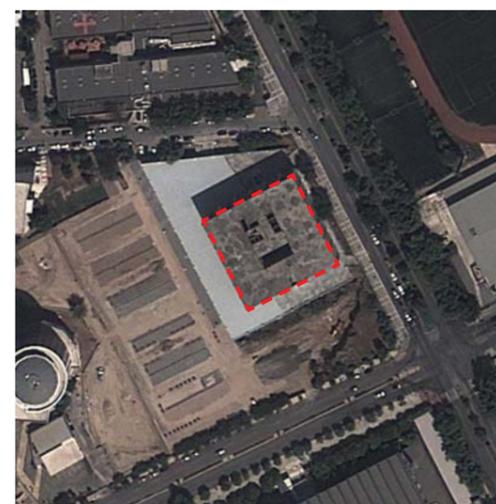
0 20m 50m

contemporary membrane



0 20m 50m

recycling sites



0 20m 50m

### **historic membrane**

Risk: The eastern walls have served as the historic membrane of the city with the area. Currently it is found in a residual and an overall degraded state lacking any dynamic characteristics.

Opportunity: The walls, the most notable and historic landscape element, should be rethought, restored and reprogrammed as a dynamic urban interface.

### **contemporary membrane**

Risk: The contemporary membrane on the other hand presents different characteristic than the historic one but maintains the barrier effect in different manifestations, principally smaller localized barriers.

Opportunity: To reconfigure the contemporary membrane similarly into a dynamic interface, eliminating local barriers and locating dynamic activities along the edge.

### *Ecological*

#### **green enclaves**

Risk: The most extensive green areas are found in a fairly isolated state or with little accessibility, not fulfilling their true potential.

Opportunity: The restructuring of the Central Axis can help reconnect and revitalize a series of such key areas (YMCA Park, University campus courtyard, Telloglion Park) as well as smaller ones with secondary connections.

#### **stream traits**

Risk: The old streams of the area can still be seen in the upper part of the axis area, and along the eastern limits of the area in contact with the fabric of east Thessaloniki, and they are found in a limited and declining state threatened by adjacent urbanisations.

Opportunity: This is a historic chance to achieve a significant ecological restoration in the area, first by protecting existing stream traits and then by achieving further restoration in degraded or covered parts where possible.

### *Fabric / Mosaic*

#### **axis discontinuities**

Risk: The central axis is found in a fragmented and discontinuous state. The EXPO imposes the most notable discontinuity, with road arteries on a second plane creating barrier effects.

Opportunity: This is a historic opportunity to finally restore continuity along the axis and the distinct ambients along its course and establish the area as key area of centrality of a regional reach and importance.

#### **recycling sites**

Risk: There is residual building stock and number of open areas that hold no use and further degrade visual and functional aspects of the area

Opportunity: These areas need to be recycled and reutilized for new updated uses according to existing or emerging needs.

#### **latent spaces**

Risk: There are numerous sub-areas within the Central Axis area that hold a latent role and potential that they cannot develop due to present conditions and restrictions.

Opportunity: Reintegrate these areas into the urban fabric and introduce new public areas and dynamic activities in the area.

#### **fabric remnants**

Risk: There are very few spots of remnants of the previous fabric before its recent transformation.

Opportunity: Highlight these areas and their historic importance preserving the memory of the territory.



**Existing Conditions along the Central Axis Area**



**Existing Conditions / Photographs**

Conditions and Physical barriers present in the area creating discontinuities and fragmentations

- i.** 3rd Army Corps courtyard
- ii.** Ethnikis Aminis Street by the University campus
- iii.** Ag. Foteini church
- iv.** Kafatzoglio
- v.** Agios Nestor church
- vi.** Boy Scouts building
- vii.** Faculty of Philology
- viii.** Alexandrion Sport Palace and Internataional Fair barriers / (source: **i, v, vii.** panoramio.com )

## ix. General Conclusions on the Central Axis Area

Based on the previous analysis the situation and problems present in the area can be summarized in the following points :

### a) Excessive & uncoordinated edification

Apart from the adjacent residential areas for which the respective building ratios have been enforced, the dominant features and activities in the area that occupy the greater part, have implemented exaggerated building ratios. As a consequence the built up area has taken over vital space, reducing and fragmenting the remaining open spaces in the vicinity. The A.U.Th has implemented the current land/building ratio, while the 3rd Military corp and the YMCA are exempted, as spaces of special use, while the EXPO has exceeded the permitted ratio (both on terms of size and uses)<sup>29</sup>.

### b) Reduction and fragmentation of free space

The arrangement and development of buildings, in the University campus, the EXPO or the 3rd Military Corp do not allow for the connection and integration of open spaces. Meanwhile physical barriers ( fences, walls, vegetation etc) around the formentioned sites, as well other nearby sites (University of Macedonia, Sports facilities, etc.) do not permit public pedestrian access and prevent further connections with existing green spaces (the YMCA / White Tower park , or the forest of Sheikh-Su) or public spaces (Dhm. Gounari, seafront). The current available green space per inhabitant ratio is quite small, and if building ratios are to be fulfilled in the area and in the city in general, this green space ratio is bound to lower even more<sup>30</sup>. The public spaces need to be configured properly in a well defined network that permits pedestrian and light traffic mobility while at the same time creating aesthetic and quality urban spaces.

### c) Vehicular and pedestrian flows

The main roads in the area apart from the daily circulation of vehicles serving the connection between the eastern Thessaloniki with the central and western part of the city, are also overburdened by traffic of vehicles that serve certain uses and activities either on a daily basis (museums, Aristotle University of Macedonia, AHEPA Hospital, sport facilities) or periodically (EXPO, Vellidio, Kaftantzoglio, Palais des sports etc). These same vehicles create a visible and serious problem with regards to parking, since they go occupying inappropriate spaces due to the lack of sufficient parking. The pedestrian flows both on a vertical and horizontal level are presented with considerable obstructions rendering the access on both levels from difficult to almost impossible. Public transport is solely confined to bus traffic that have to cope with the formentioned conditions. The future addition of the Metro line and the renewed consideration of light-rail systems might help reconfigure the traffic / mobility map of the area.

### d) Lack of architectural cohesion

Although past attempts like the Eastern Cultural Axis have intended to apply a common architectural vocabulary in order to create the impression of spatial unity, this was achieved in a certain limited areas and within a limited scope. The overall fragmentation of the area prevents such a unity to be achieved both on a physical/visual and mental level. Any intervention should seek to highlight existing architectural elements and unite them into an aesthetic and radiating sum for the whole region.

### e) The need for a proper city structure

Given the imminent use change in the EXPO area, (as well as the possibility of the opening of the military installations to the public) a study on the reorganization / restructuring of the area should investigate for instruments and ways to mend the fragmented and dysfunctional fabric. On the positive side, the coexistence of a diversity and rich activity ( work, residential, recreational, cultural and academic facilities), creates an advantage when it comes to rethinking possible future transformations. The key factor in this process will be to achieve the maximum possible integration for the sum of the diverse patches into the city fabric. The inclusion of the university campus and its opening to the public as an academic haven for the city centre is crucial in this process. The revival of the idea of the central axis, can prove to be a handy urban instrument for increasing accessibility and resolving issues of mobility while helping restructure the area in its entirety.

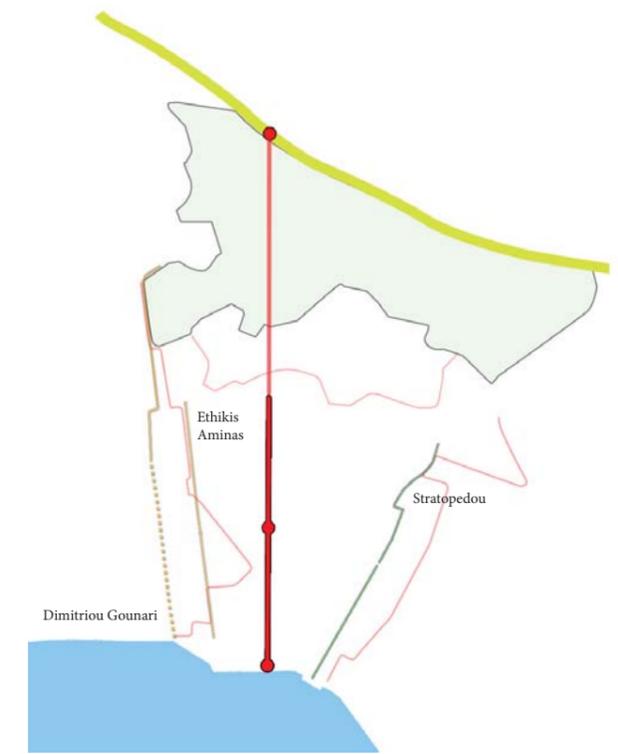
### f) Management of housing stock

The housing element that has traditionally served as a dynamic force in the area needs to be considered carefully in this updated context. From one point there's the need to register the non-occupied apartment stock, observe deficiencies and on a next level investigate ways to restimulate the attraction of the citizens for the city centre as a preferred site of residence. New but carefully placed residences should also be considered as a means to work towards a general site upgrade and generate activity in the area.

The sum of the problems in the area have been identified and localized giving in this way a better impression of the area under investigation. This process has aided in decomposing this complex mosaic of the ecotonal area in its individual parts, and reconsidering its function and role in this critical location for the city of Thessaloniki. Another point highlighted through the analysis is the potential for the idea of the revival of the Axis of the Hebrárd plan to help mend the fragmented fabric of the area, provide continuity and serve in the wider reprogramming of the city structure. In continuation the next part will try to demonstrate the perceived and implicit emergent mosaic around the axis, revealing in the process latent projects that stay dormant in the fabric and opportunities for restructuring.



horizontal connections



vertical connections

Legend

- Central axis - lower part
- Central axis - upper part
- Pedestrian axes
- urban arteries
- Dimitriou Gounari axis
- Ring road
- Principal traffic arteries
- Ring road nodes
- Central axis nodes
- Pedestrian nodes
- Central axis nodes of special attention
- Connectors
- Transformable areas
- Seich Su Metropolitan park



environments

## x. Reprogramming the Central Axis area as an emerging centrality

Given the previous analysis of the area, a better understanding of the current situation and functioning of the area can be achieved. This understanding can help and also serve as a base for rethinking / reimagining the functioning of the area. A transformation of the local mosaic can then be thought out again, aiming to heal and repair the fragmented fabric. This task that can be achieved by interconnecting public and green spaces on a network base, managing and rerouting the various flows and evaluating and introducing old and new activities and thus reaching a significant restructuring of the local fabric. This will be performed in two parts, first the restructuring of the urban functioning and secondly the restoration of the green layer.

### City Structure

This new axis as it emerges from the analysis can be seen on the image on the left, displayed along with the corresponding city structure that emerges through the process. The individual parts/elements that compose these reprogrammed city structure are described in continuation:

#### Central axis

The central axis is recognized as an important element and a key urban planning tool to help mend the fragmented local landscape. The question of continuity and consequently mobility is the most important that needs to be considered and resolved whereas conflicts and barriers arise. The axis in its totality starts from the seafront, goes all the way to the Teloglion institute and continues further up passing the Forest Theatre to eventually reach the Ring road and the forest mass. Nevertheless for questions of continuity is convenient to talk of a unitary axis, in reality the axis is separated into two distinct parts:

Lower part: makes reference to the part from the sea to the Teloglion Institute, the part that usually is referred to when studying about the axis. In reality it refers to the 1997 proposal extension, but with a renovated consideration of the site conditions. Also the points of conflict with the principal road arteries need to be resolved with adequate solutions to succeed in achieving continuity. Certain points of centralities and potential public space value emerge along, such as the reform of the YMCA square or the centre of the EXPO property on the point of junction with the transversal axis. The issue of connection and integration in the urban fabric needs to be considered also, when looking for possible ways to reroute and restructure public activity and flows, facilitating access and means (physical and mental) of connection.

Upper part: makes reference to the part from the Teloglion Institute and all the way up to the ring road. This part of the axis is meant to have a distinct character given, that it crosses a completely different context. The more important issue here is the question of connectivity raised and investigating ways to both connect the urban fabric with the natural surrounding and at the same time think the interrelation and interaction of the two. The axis on this part could be defined as a central axis of a Seich-Su metropolitan masterplan, where a more in-depth detail could be performed.

#### Pedestrian axes

These axes make reference to emerging pedestrian axes that come out of the analysis. These are: **i)** the transversal axis that crosses the EXPO property, **ii)** the university campus axis, **iii)** the sport complex axis and the **iv)** Seich-Su axis on the upper part. All these have a horizontal, parallel to the sea direction, with the only exception the vertical axis that is created starting from the Kaftaztoglion stadium and the sports complex, passing from Makedonia university and the 3rd Military Corp area, following the old *Ilisia Pedia* delineation and reaching all the way down to the sea, offering a vertical access alternative to the central axis, with a distinct character.

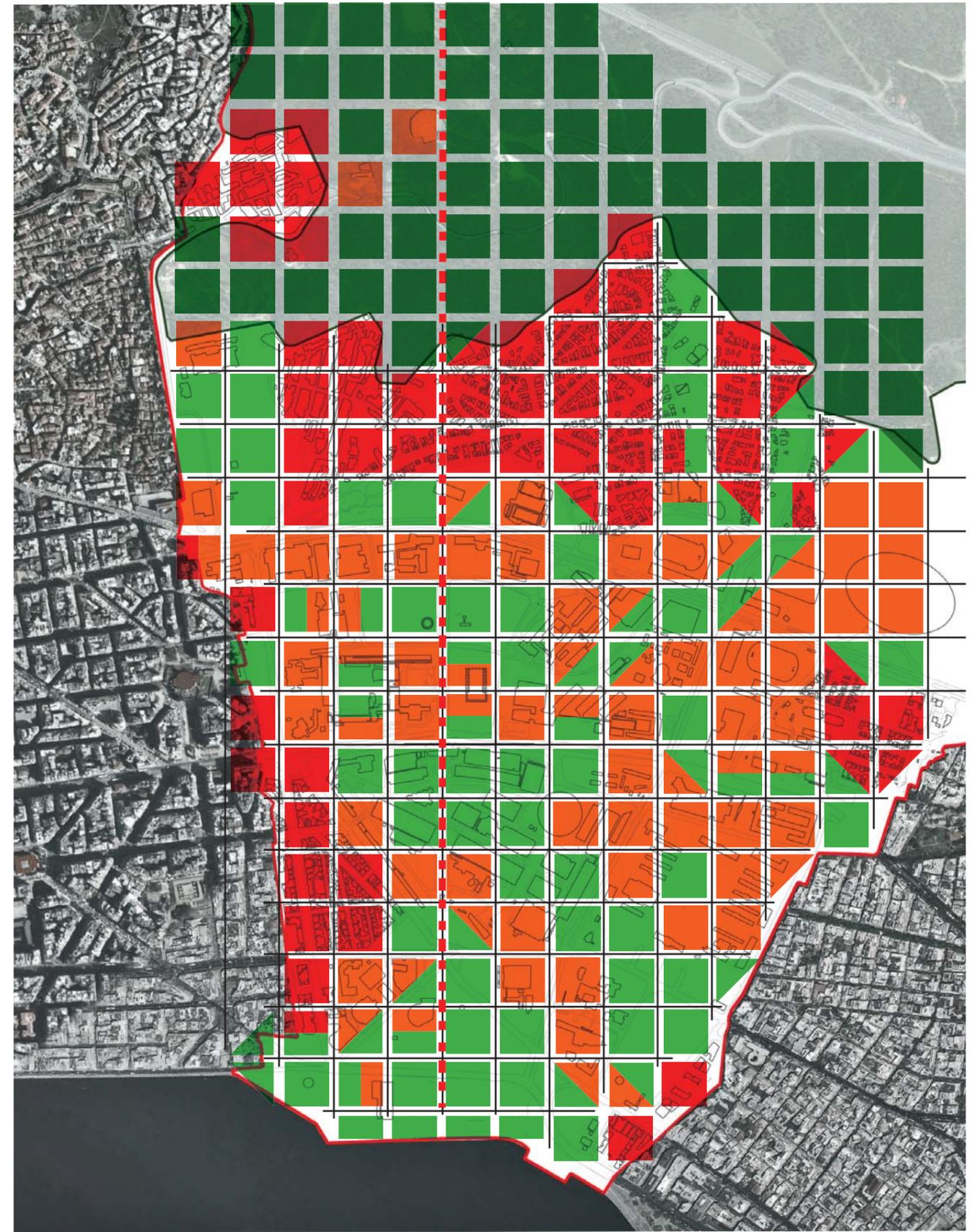
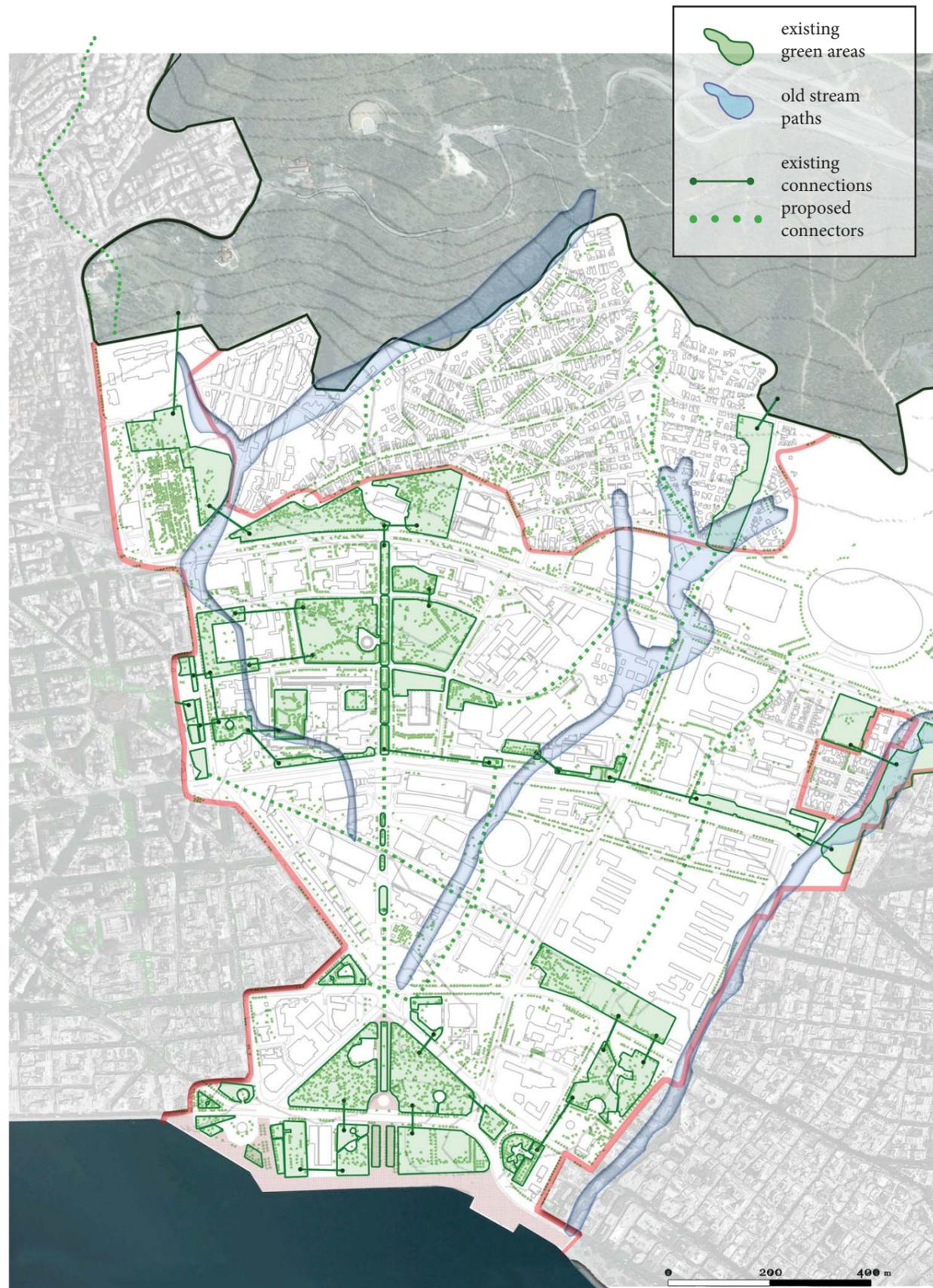
#### Urban arteries

Contrary to the previous category this one makes reference to existing urban arteries that hold an important position as mobility and activity corridors and could in a wider reconfiguration of the area scheme play an upgraded role, combining existing activities with introduction of new ones, and an overall improvement of public space amenities and access. These arteries can combine vehicle and light flows (eg. Ethnikis Aminis, Al. Svolou, Vizyinou Georgiou etc) or have a more pedestrian character (Kastron, Proksenou Koromila, Gr. Lampraki etc). This smaller scale interventions can help reticulate and propagate the central axis effect on a larger scale and accelerate the process of integration with the rest of the urban fabric. If we consider the central axis as part of the macro-structure (*hard*) these arteries could be considered as forming and structuring the local micro-structure (*soft*).

#### Nodes & connectors

This category makes reference to points of intersection of flows that hold a key role in the overall functioning of the city structure. In this category we can discern two distinct kinds. On one side **i)** existing traffic nodes that need to be reconsidered due to their current malfunctioning and on the next level **ii)** nodes that appear along the restructuring of the Central Axis. With regards to existing nodes, the two that stand out and deserve immediate attention are YMCA and the Syntrivani node. The first encountered on a key spot of the central axis, is responsible for a great part of the traffic problems associated with the historic centre and for the incontinuity that characterizes the axis today. A number of important activities are found around this node, and a potential future intervention could improve drastically the image of the area and the overall functioning. The management of the various flows (vehicular & nonvehicular) and the upgrading and highlighting of the public space are the two key issues in this spot. The Syntrivani node is of equal importance but maybe in need of a less drastic intervention taking on the role of an entrance exit to the area with all respective uses that could accompany it.

Now as far as nodes along the axis is concerned these make reference to latent key public spaces that emerge from the previous analysis. These also lie on the intersection of flows but this time principally of pedestrian axes. The principal nodes of this category are: **i)** the node that appears in the central area of the EXPO where the two axes meet **ii)** the seafront connection on the site of the statue of Alexander the Great **iii)** the point of intersection with the Ring Road and the connection with the Seich Su forest.



The Central axis as a reconfigured ecotone



Connectors on the other hand refer to certain kinds of interventions that intend to reestablish continuity and overcome fragmentations caused by the intersection of incompatible flows. They come to prioritize pedestrian flows over vehicular flows or resolve conflicts of the two. These could come in the form, for example, of overpass pedestrian/bicycle bridges, priority pedestrian passes, or subterranean vehicular passes.

### **Urban voids**

These term refer to areas that are present in the contemporary fabric, and are either in a latent state and bound to change use or currently holding no use. Given the importance of the area and the special occupancy terms that exist, these areas although small in size could play a key role in transforming and dynamizing the existing fabric.

This is how the urban structure appears based on the analysis and restructuring of its individual parts. In order to formulate the final mosaic of the area, it is necessary to perform the same operation for the ecological structure present in the area. The combined result of the two layers can produce more significant and insightful results and can highlight clearer the order of intervention on the distinct areas of the urban fabric. The analysis of the ecological functioning follows in the next part.

## **Restoring the ecological layer**

After having looked at the possible restructuring of the urban space using the open / public space as the principal design parameter, this next part will look at a potential restructuring and restoration of the ecological layer of the area, taking also into consideration the results of the first part. The analysis of the ecological layer of the area was looked at an earlier stage, but its correlation with the updated conditions highlighted by the earlier analysis can provide more insightful conclusions. The old local streams can serve as lineal structuring elements for generating green spaces but also importantly restoring the sea-forest connection. In continuation the activity along the old stream paths is analysed in more detail in order to detect possibilities for intervention, with the map on the side indicating their original traces along with green spaces correlating it with previous analysis<sup>31</sup>.

### **Evagelistria Stream**

The Evagelistria stream is only still visible on the upper part, bordering the district of Saranta Ekklesies, while the rest has been covered up. Still its trace is still visible, crossing the Ag.Pavlos district, passing by Ag. Dimitrios hospital, curving around the Evagelistria cemeteries to reach the Ag.Dimitriou avenue.

After that its trace is lost in the university campus and the EXPO area, but underground it is followed by a corresponding drainage pipeline. The upper part and especially the part starting from the Ag. Pavlos District and leading all the way to Ag. Dimitriou Avenue, is the part that presents the greatest potential for structuring urban space, given that all along its path, it is bordering urbanized fronts, and it is connecting the districts of Ag. Pavlos with Evagelistria.

### **Saranta Ekklesies / Eastern Stream**

The eastern stream was the most prevalent of all local streams in the area. Currently the stream is covered for the most part and can only be seen in the forest Seich-Su area. Yet all problems of flooding that occur in the area are results insufficient hydrological management of the stream<sup>32</sup>. The relocation of the EXPO, and a updated masterplan of the university campus could achieve a major ecological restoration, both in vegetation and hydrological terms. At the same time it could help in the intrusion of the Seich Su into the urban fabric and its connection with the sea front.

### **Military Corps Stream**

The third stream in the area is also found in a covered state for its most part, with its trace being visible only at small parts on the eastern part of Doxa district. The trace and course of the old stream, as mentioned earlier, dictates the western limits of the eastern edification and the ecotonal area, and only in its upper part, in the Nhsaki district, is edicated to a great extend. This edge stream precisely assume the role of an edge element, that controls relations of the built fabric with the area of the central axis. Intervention could be applied effectively on the upper parts, from Nhsaki to Ag. Dhmhtriou avenue, while the lower part of the stream would be in need of a different approach. Once again, similar to the previous case, the most important prospective for the rehabilitation of the stream is the possibility to reestablish a surface forest-sea connection and a socio-ecological corridor.

As it can be seen the old stream paths offer viable way to create accessible green spaces that given their lineal nature, can also serve as structuring elements. Contrary with the central axis, with its rigid nature and maybe more civic character, the stream paths emerge as organic alternatives for re-sawing the local fabric, eliminating present fragmentations and barriers that characterize the current mosaic. The actual restoration of the streams into natural open canals is another interesting and challenging prospect, that can to a great extend determine the degree of ecological restoration that could be achieved by an intervention on the specific area. In continuation the combined mosaic of the area, as it emerges from the analysis performed, is shown in its final form along with related diagrams.

31, 32. TEE/TKM (2009)



# IDEOGRAM\_CENTRAL AXIS

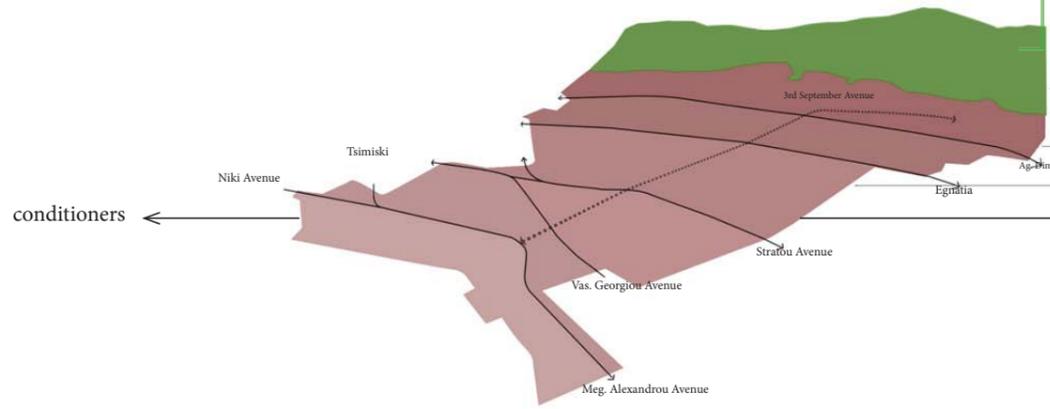
Thessaloniki, Greece

Axis length : 1.3km

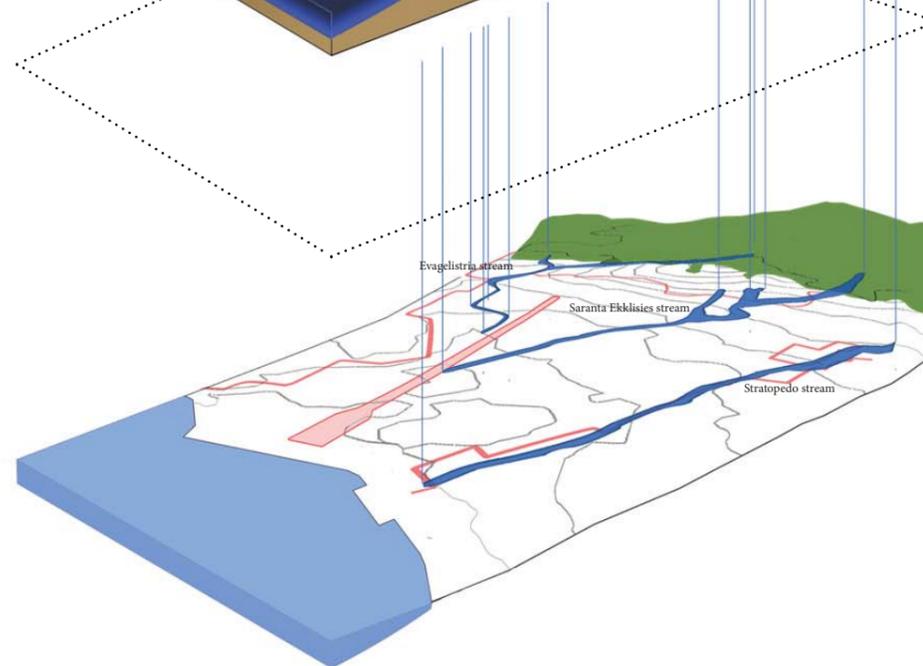
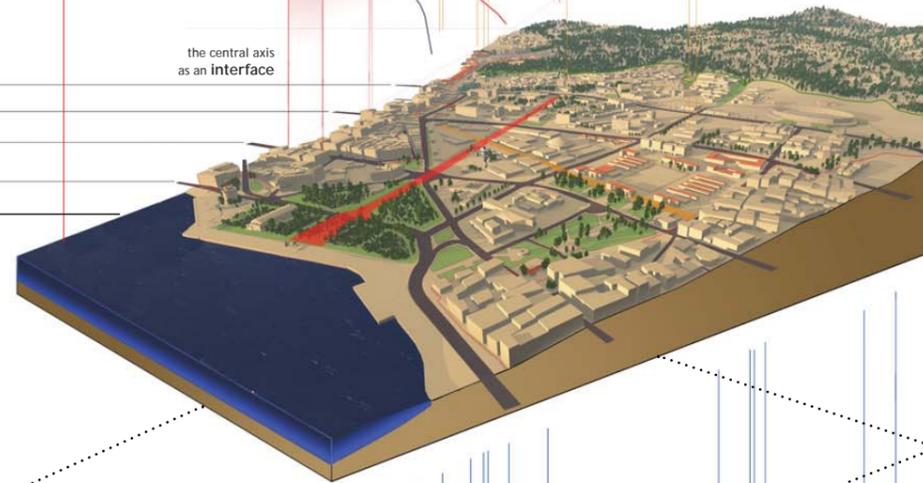
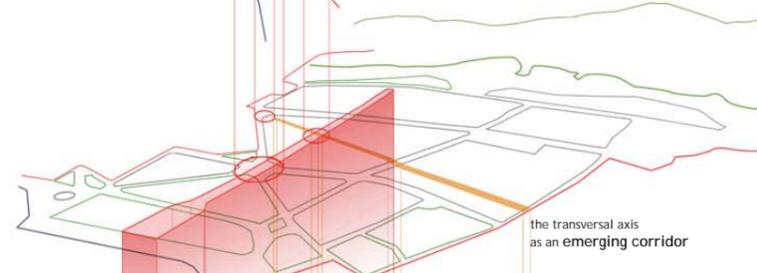
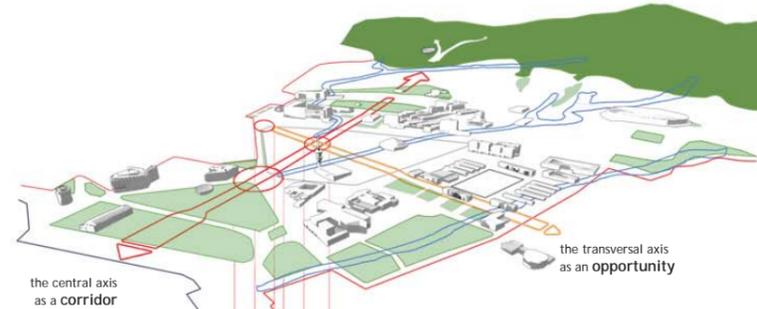
Axis area surface: 1,36 km<sup>2</sup> : 136 Ha

## Strips & Fragmentation

The narrowing of the urban fabric in this area and the presence of numerous major road arteries that cross it, create special conditions: a series of horizontal strips separated by the mentioned arteries, and the heavy vehicular flows that they carry, that inhibit the connection in the sea-forest axis, and thus flow along the central axis.



conditioners ←



space ↑

## Re\_Assemblage

The updated central axis and the emerging transversal axis permit rethink the restructuring of the area in ways unpermitted before. The re-assembly of the fragmented fabric should be performed having the public space as a primary consideration on one hand and the unobstructed mobility flows on the other. Reconnection can be considered on both the mountain-sea and historic centre - east Thessaloniki axes.

## Urban islands

The fragmentation of the local landscape has led to the creation of various urban inlets. The latent or better said dormant project of the central Axis is presented today as valuable tool for resawing the fragmented fabric and re-establishing continuities in the area. The relocation of the EXPO and the reconsideration of the current use of the 3rd Military Corps area open new possibilities for re-thinking the entire area as a whole, and as an important regional structuring element.

## Current State

The area of the central axis on the east side of the historic centre is found today in a state of transition and needed transformation. The concentration of activities and flows along the axis have converted with a delayed effect the central axis in a an emerging centrality of the regional urban fabric.

## The Planned Axis

The area of the central axis on the east side of the historic

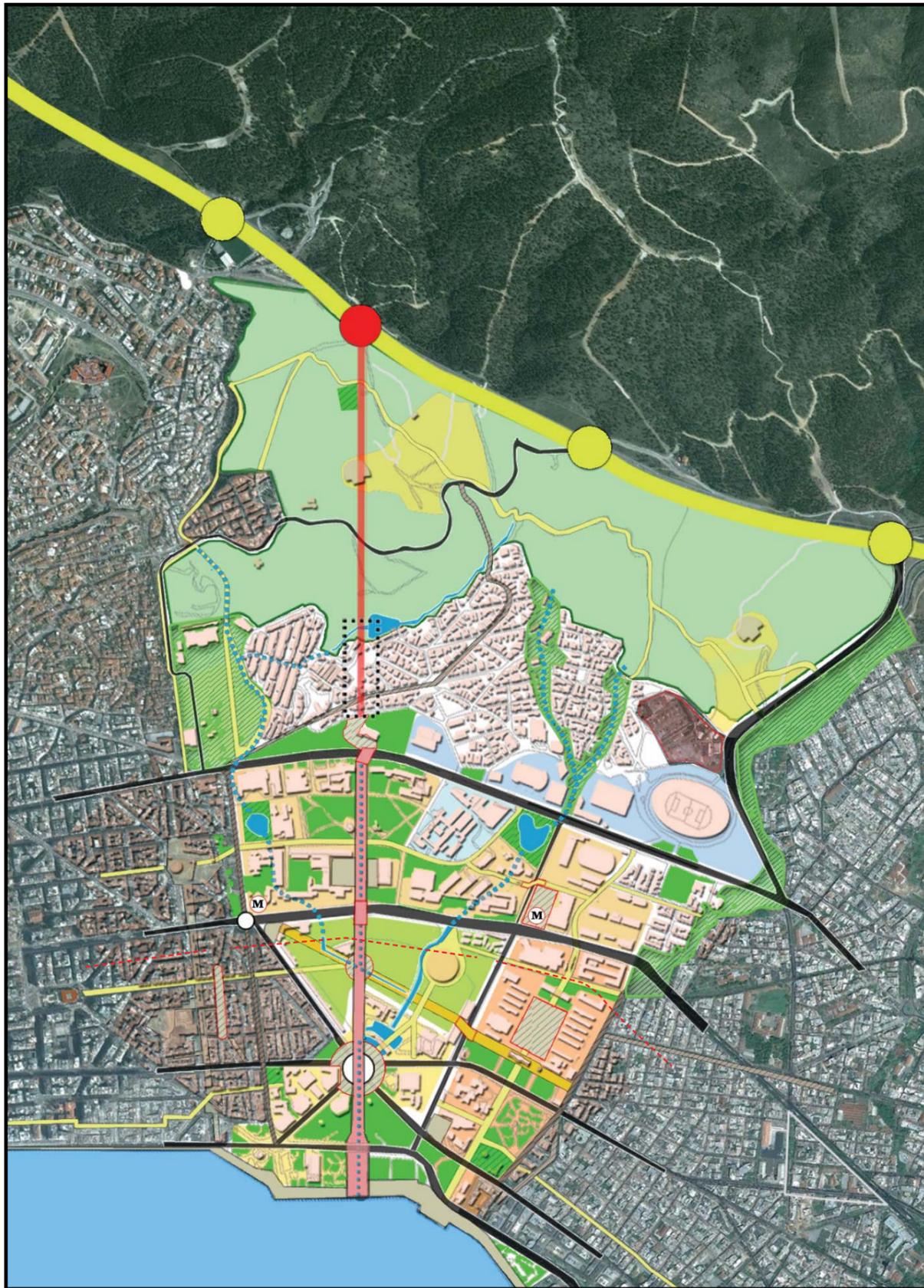


## Hydrological memory

The old local streams emerge as opportunities for ecological restoration and hydrological management for the area. The hydrological restoration of the streams is a difficult task in most parts, and possible in others. Nevertheless the streampaths do offer the possibility of creating green corridors along their original streampath. Thus two objectives can be met : first the re-connection of the forest with the seafont, and second to resolve the inundation problems that occur with heavy rainfall.

time ↓

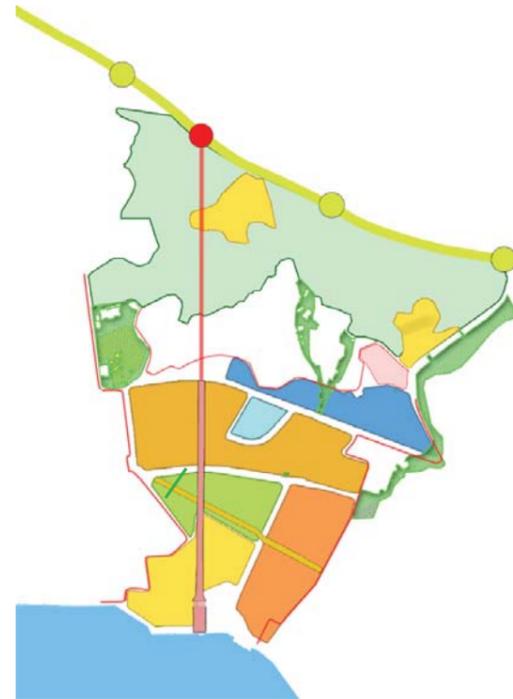
# The Central Axis of Thessaloniki Re-configuration - *Mosaic and Structure*



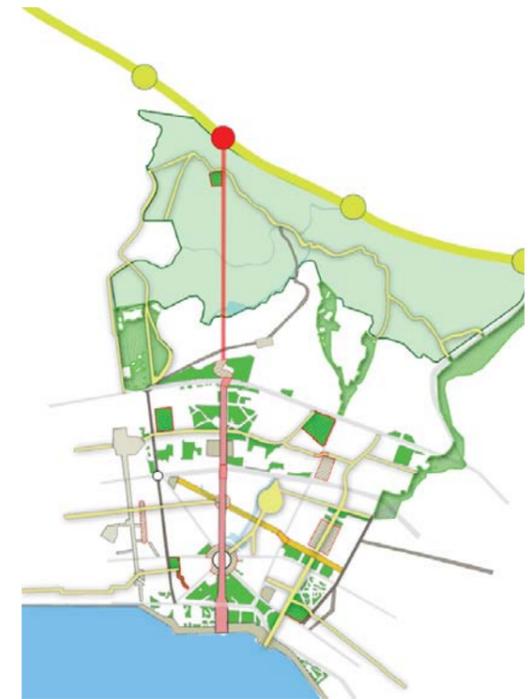
structure



ecological structure



zones of activity



open space network structure

	Central Axis / lower part		Pacificated Urban Arteries		Existing Green Areas
	Central Axis / upper part		Road arteries		Emerging Green Areas
	Transversal Axis		Metro Line & Stations		Existing Public surface
	Connector Points		Water course		Emerging Public surface
	Pedestrian Arteries		Hydrological Restoration Points		