

Land Use and Property Market Impacts of the Relocation of Athens International Airport

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Abstract

This dissertation investigates the impact of the relocation of Athens International Airport (AIA), the most significant urban development in the modern history of the city of Athens, on land uses and the property market around the former airport site (FAS) and the new Eleftherios Venizelos airport (EV). Airport relocations are in themselves relatively rare events in global aviation. In this dissertation, for the first time, sources from various fields are brought together to bear on this relocation case. Finally, this dissertation highlights the opportunities being missed in development and planning terms, as a result of chronic weaknesses of the Greek planning system.

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Abbreviations

AIA	Athens International Airport
ADA	Airport Development Agreement (for the new AIA in Spata)
AO	Attiki Odos (regional motorway / Athens ring road)
CBD	Central Business District
EV	Eleftherios Venizelos Athens International Airport (the new airport)
FAS	Former Airport Site \equiv Elliniko Airport site
GTP	General Town Plan
MEPPW	Ministry of the Environment, Planning and Public Works (<i>Ypourgeoio Perivallontos, Horotaxias kai Dimosion Ergon</i> [ΥΠΕΧΩΔΕ])
ORSA	Organisation for the Athens Master Plan and Protection of the Environment of Athens (<i>Organismos Rythmistikou Schediou kai Prostasias Perivallontos tis Athinas</i>)
PATHE	Patras-Athina-Thessaloniki-Evzoni (motorway)
RR	Regional Rail network (<i>Perfiereiakos Sydirodromos</i>)

Chapter 1: Introduction

This dissertation investigates one of the most significant urban developments in the history of the city of Athens, the 2001 relocation of Athens International Airport (AIA). The relocation involves the release for another use of the 530-hectare plot of the former airport site (FAS) within the dense urban fabric of Athens, while Eleftherios Venizelos (EV), the new airport has been constructed on a 1,250-hectare Greenfield site of prime agricultural land. As a project, the relocation is emblematic of the transformation which Athens has undergone over the past decade.

The property market and corresponding land use patterns across the greater Athens area have been in a state of metamorphosis, since particularly the mid-1990s, for various reasons. First, declining interest rates since 1996, a result of Greece's process of accession to the Eurozone, have led to increases in the volume of mortgages and other loans (DB Real Estate, 2003: 12). Second, successive governments have been attempting to reform the property sector, making it more transparent and competitive. Finally, the most visible changes have been the various large infrastructure projects in and around the city.¹ The 2004 Olympic Games in Athens only accelerated the speed at which these pieces of infrastructure materialised. This infrastructure has however often been realised without adequate planning regarding its integration within the city of Athens, the region of Attica and the country as a whole (Kathimerini, 31/12/03).

Chapter 2 of this dissertation gives a brief introduction to the Greek planning system context and a summary of the evolution of Athens' urban form. Chapter 3 introduces

¹ New Athens International Airport (AIA), Attiki Odos (AO) ring-road metro, tram, regional rail-link, Marathonos Avenue, Ymyttos Avenue as well as the various Olympic facilities dotted across the region of Attika. As part of the redevelopment of the FAS, it a large Metropolitan Park, a museum of modern art and a convention/exhibition centre are planned; strategies typical for Olympic cities (Andranovich, Burbank and Heying, 2001: 115).

the two study locations, the Elliniko area around the FAS and the Messogheia Plain, where EV was constructed, and summarises the main characteristics of the relocation project.

In Chapter 4 we focus on the property market and land use impact of large infrastructure projects, particularly airports. Airport relocations are rare events and so, in the last part of the chapter, 3 key cases of airport relocations are presented in order to learn from international experience and the measures implemented.

Chapter 5 presents the anticipated and observed property market and land use impact of the relocation, the planning reactions proposed and those finally legislated. International experience is brought to bear on the question of land use and property market impacts around the FAS and EV. The impact of the relocation of AIA can be looked at in relative isolation from the other infrastructure projects, as a result of its sheer scale, particularly when considered jointly with the supporting infrastructure it has given rise to.²

Chapter 6 outlines some conclusions regarding the future development of the property and land uses in the study areas. Although the relocation has stimulated a short and medium-term boom in the Athens property market, this dissertation highlights the opportunities being missed, in development and planning terms, as a result of the weaknesses of the Greek planning system. These opportunities will determine long-term sustainable development in the areas under study and in Greater Athens as a whole.

Many sources I found during my research presented a historical narrative of the AIA relocation project and effects in Mesogheia and around the FAS, others presented

² The Attiki Odos (AO) ring-road, metro, tram, regional rail-link and Ymyttos Avenue.

the planning for the two locations, while the press and internet offered current insights into land use and property market developments in the two areas. No source I came across brought together the theory of transport infrastructure's impact on property and in particular as a result of airport relocations. In this dissertation, for the first time, these various sources are brought together to bear on the case of the relocation of AIA.

Chapter 2: The planning system and Athens' urban form

The Greek planning system

The Greek planning system is classified as one of the Napoleonic family (Newman and Thornley, 1996) in that its legislative system sets out an explicit set of rules meant to prescribe appropriate action. At the same time, the Germanic family in its administrative organisation has been a significant influence.

At the same time, the modern Greek state's system of governance has been and continues to be characterised as clientalistic and ruled by systems of patronage (Christopoulos, 1999; Ioakimides, 2001; Maloutas, 2003: 173-4). "Apart from the possibility of formal appeals, the Greek administration and political system favours conflict resolution through informal routes and procedures which, although lacking transparency and independence from party politics, are sometimes more effective in defusing conflictual situations. This tends to reinforce political clientalism and to obstruct administrative modernisation and collective decision making" (OECD, 1997: 236).

"The Greek spatial planning system is dominated by an emphasis on purely physical aspects," concentrating on land ownership and development rights (Sapountzaki and Karka, 2001: 409). Two immediately identifiable disadvantages of the planning system are the lack of coordination between planning and economic development policy, the former being a responsibility of the Ministry of the Environment, Planning and Public Works (MEPPW - *Ypourgeio Perivallontos, Chorotaxias kai Dimossion Ergon*, [ΥΠΕΧΩΔΕ]) and the latter of the Ministry of Economics (YPETHO [ΥΠΕΘΟ]),

and secondly a “theoretical and informational vacuum on the interaction between environmental and spatial planning” (Nadin, 1999 cited in Sapountzaki and Karka, 2001: 415). A new wave of europeanisation of the Greek planning system, improving horizontal policy coordination, will be necessary to take advantage of the emerging territorial cohesion framework at the European level.

The 1997 Capodistrias Programme (L.2539/1997) consolidated the local tier of the Greek administrative system, merging the smallest communities and municipalities into functional “open towns”, and was thus a step in the right direction in terms of decentralised, sustainable governance (Sapountzaki and Karka, 2001: 420). The regional tier was also reformed in 1997 (see table 1 below). The country was divided into 13 regions, each with a General Secretariat responsible for planning and coordinating regional development. Appointed by central government, these General Secretariats function as agencies of the central state at the regional level, thus undermining the nominal devolution of authority to the local tier (Sapountzaki and Karka, 2001: 411).

Fig. 1: Geographical divisions and sub-national administration levels

		Levels of sub-national administration			
		<i>Regional or supra-prefectoral</i>	<i>Prefectoral (nomarchiako) (“second tier” authorities)</i>	<i>Sub-prefectoral</i>	<i>Local (“first-tier” authorities)</i>
Geographical divisions	<i>Region (Periferia)</i>	Administrative Region [13] (Appointed)			
	<i>Prefecture (Nomos)</i>		Administrative Regional Services under a Secretary-General (appointed) [54] Prefectoral Self-Government (PSG) (elected) ⁽¹⁾ [50]		
	<i>Local</i>			Area Council (local authority unions, formed by central government)	Local Self-Government Organization (OTA) (elected): Municipality [434] and Community [5394]

1. The term “self-government” is used to cover two elected tiers of sub-national government. Local self-government organisations, i.e. municipalities and communities are known in Greece as “first tier” authorities; while prefectoral self-governments are “second tier” authorities.
(Source: OECD, 1997: 229)

In the 1980s and 1990s the spatial planning system seems to be equipped with a variety of instruments, but its potential impact is weakened by several shortcomings... In particular, planning law is not consolidated and the legal and institutional framework is chaotic; administration is unable to formulate consistent, long-term policies addressing an issue or problem; departures from approved plans are frequent and the gap between official planning and the reality on the ground is wide;^[3] in most cases, plans are being adjusted to stabilized situations and do not lead development;^[4] plan approval procedures are very slow; there is a lack of coordination between levels of spatial planning and development; and finally effective systems of control of plan implementation on the ground are non-existent.

(Sapountzaki and Karka, 2001: 412)

Planning instruments and institutions for Athens

The Attica 2000-2006 Regional Development Plan (RDP) guides the implementation of the Community Support Framework (CSF) in Attica. Its central aim is the promotion of the capital's international role (Attica RDP, 2000 – 2006: 36). The new AIA is named as one of the major instruments for achieving this objective as are the supporting Attiki Odos (AO) ring-road and the Regional Rail (RR) network discussed later (Attica RDP, 2000 – 2006: 41). The “driving forces” which we can see in the Fig. 2 below have heavily influenced the land uses provided for and promoted by Regional Development Institute (RDI) study into the anticipated impacts of the new AIA and appropriate regulation of development around it, which will be presented in Chapter 5.

³ The 1833 plan for central Athens was never fully implemented as a result of objections from wealthy Athenian landowners to the expropriation of all or part of their lands for the creation of wide, straight central road axes (Bastéa, E., 2000, *The Creation of Modern Athens: Planning the Myth*, Cambridge: Cambridge University Press). Arguably, the plans of 1833 were implemented more closely to the actual design than most plans since.

Illegal land uses persist in the areas under study. Mines continue to operate in Messogheia, though banned by law throughout the region of Attica and night clubs operate along the sea front close to the FAS, although this is not one of the appropriate land uses indicated in general town plans (GTPs). The development of more nightclubs has been stalled by local pressure groups (Iatridou, 2001: 99).

⁴ “In Greece [...] the exploitation of the land has been promoted to the first priority of economic activity, there is not a forest around cities which can escape being divided into parcels, there is not a road which does not attract a plethora of urban functions, there is not a cultivated area which has not been converted to urban status” (Sariannis, 2001: 54).

Fig. 2: The Attica 2000-2006 Regional Development strategy

Metropolitan centre	Development Role	Business and Development Infrastructure	Driving Forces
Athens	<ul style="list-style-type: none"> • Metropolitan urban centre – European development pole • Node in national and trans-European networks • Cultural metropolis in the wider European and Mediterranean area 	<ul style="list-style-type: none"> • New Airport • Piraeus port • Patras – Athens – Thessaloniki – Evzoni (PATHE) Motorway • Rail network • Infrastructure for 2004 Olympic Games • Athens Metro • Attiki Odos (AO) ringroad/motorway • Natural gas pipeline • Stavros-Elefsis motorway • Railway network modernisation 	<ul style="list-style-type: none"> • Higher education • Technological Research and Development • International Trade – International transport • Industry • Productive services • Financial services • Culture & Sport • Tourism • Mass Communication media

(Source: Attica 2000 – 2006 RDP: 41)

The Athens Master Plan (law 1515/1985) removed the issue of AIA's relocation from the government agenda altogether implying that the existing airport at Elliniko was to continue to operate indefinitely.⁵ Instead, the Master Plan emphasised the protection of the Messogheia Plain, where AIA was later to be relocated to, from urbanisation. It was the minister's plan to relocate certain run-down central government offices from central Athens to the Messogheia Plain. The Master Plan (Article 5) also established the Organisation for the Athens Master Plan and Protection of the Environment of Athens (*Organismos Rythmistikou Schediou kai Prostatias Perivallontos tis Athinas* [ORSA]) responsible for overseeing the implementation of the Master Plan in the Greater Athens area, writing *General Town Plans (GTPs)* in harmony with the Master Plan for each of the municipalities and communities in the Greater Athens area and for implementing measures for the protection of the environment.

Urban Development Control Zones (UDCZs – Zones Oikistikou Elenxou [ZOE]) – One UDCZ covers the whole of Attica and simply restricts the subdivision of land

⁵ This was reversed by amendments in the early 1990s when the tendering process for the construction of the new AIA began.

parcels to those parcels measuring at least 20,000 m² in area with the specific aim of restricting urban sprawl. The formulation of a new UDCZ was initiated by the ORSA in 1996 offering the Messogheia Plain more explicit protection in order to deal with the development pressures anticipated from the relocation of AIA. We will return to this planning reaction to the relocation in Chapter 5.

The Greek planning system remains one of the least participatory in the EU (Maloutas, 2003). The multi-tiered, decentralised appearance of the administrative system portrayed by Fig. 1, with elected representation at the local and regional level, is of little consequence in the areas under study: the combination of the ORSA, responsible for planning, and the General Secretariat of the Attica Region,⁶ managing funding in Attica, reduces the authority of the Attica Prefecture and local municipalities (i.e. the regional and local tier) (Karka, Sapountzaki and Wassenhoven, 2000: 3). Decisions of strategic importance are ultimately taken by central government in Athens, even if consultations are held with local and regional government.

The Athens metropolitan area has been placed squarely in the sights of researchers and authorities proposing various scenarios for governance reformⁱ (Getimis and Hlepas, 2002). The common aim of most proposals is to create an institutional structure which will enhance Athenians' feeling of ownership of policy measures and to developing Athenians' sense of metropolitan identity by granting the elected local tier of government greater resources and executive powers.

⁶ Both controlled by central government.

Athens: urban form and the property market

The first significant expansion to 19th century Athens came with the exchange of populations of 1921,⁷ as a result of which the population of Athens doubled. Asia Minor migrants established the first suburbs of Athens in the southeast of the Athens basin (e.g. *New Smyrna*). Since this time, master plans and designs for Athens have been unable to keep up with the rate of urban expansion, and consequently neither has infrastructure provision.

Greece experienced a brief, economically successful industrialisation in the 1950s, 60s and 70s (Maloutas, 2003: 172).⁸ However, this industrialisation created insufficient numbers of jobs for all those unable to find work in agriculture⁹ fuelling internal migration and emigration (Maloutas, 2000; Maloutas, 2003: 173). Those arriving in Athens looking for work often settled outside the city in shantytown conditions. It was during this period that the relatively poor, western suburbs became established.

Athens is located in a basin: mountains on three sides and the sea on the last restrict its growth.ⁱⁱ The intense pressure for accommodation in the city centre gave rise to the construction of most of the apartment blocks of central Athens, beginning in the late 1940s and peaking in the 60s and 70s. Maloutas and Karadimitriou (2001) describe the emergence of patterns of vertical social differentiation, where the more affluent take up better-lit, more pleasant apartments, on higher floors.

⁷ All Muslim inhabitants of Greece (apart from those of Thrace) were deported to Turkey and all Greek Christian Orthodox inhabitants of Turkey (apart from those of Istanbul) were deported to Greece.

⁸ In the late 70s Greece was classified by the OECD as one of the most successful newly industrialised countries (OECD, 1979).

⁹ The mechanisation of agriculture was hard to achieve, mainly due to the steep relief of the land.

In the post-war period Athens expanded rapidly from the centre along the principle road axes (see Map 1, pp 12, and the map of Greater Athens in the Appendix) (anticlockwise from the northeast):

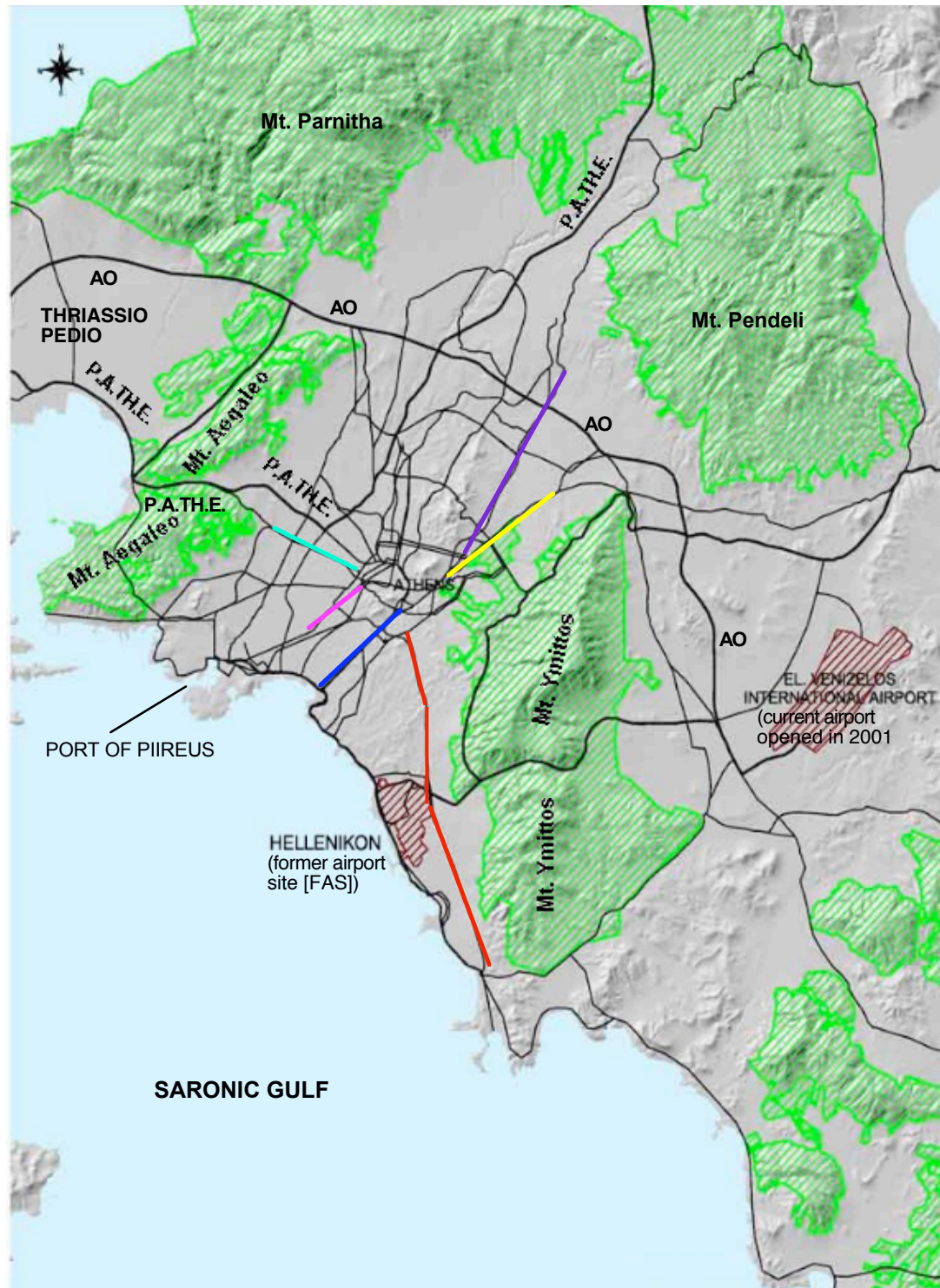
- Messogeion Avenue leading northeast to Stavros, the pass between Mt. Pendeli and Mt Ymittos towards the Messogheia Plain (where EV is located);
- Vasilisis Sofias Avenue and Kifissias Avenue leading north-northeast towards the settlement of Kifissia at the foothills of Mt. Pendeli;
- Iera Odos leading west-northwest across the course of the river Kifissos towards Mt. Aegaleo;
- Pireos leading southwest towards Piraeus;
- Syngrou Avenue leading south-southwest to Faliro and the Saronic Gulf coastal front; and,
- Vouliagmenis Avenue leading southeast parallel to the coastline and delineating half the eastern boundary of the FAS.

The *antiparochi* (αντιπαροχή) method of residential development, has become something of a trademark of Greek housing development. This method, essentially a form of joint venture, emerged as a natural solution to the stark lack of the requisite development capital among plot owners and small developers. Thus, the plot owner contributes their plot of land, while a developer invests know how and capital in the form of construction materials and crews in exchange for a share of the finished building's area. The result has been the creation of highly fragmented ownership and land use patterns and widely varying build quality. The resulting mixed land uses may sound appealing in principle but lead to "problems of excessive densities, traffic overloading, lack of road safety, noise, pollution and incompatibility between competing land uses" (Sapountzaki and Karka, 2001: 420).








The rent control measures of the immediate post-war period reinforced owner-occupation and the *antiparochi* mechanism. “This in the short run acted against a planned policy rationale and to the various planned attempts formulated during reconstruction. In the long run, it has also acted as a determinant for the consolidation of a ‘non-planning policy’ situation persistent in Athens and in most urban areas in Greece” (Delladetsimas, 1999: 325).

In the post-war period and until the 1980s: ‘The choice made in government policy was one of non-intervention; spatial planning was implicitly seen as obstructing economic growth and private investment’ (MEPPPW, 1998b).

(Sapountzaki and Karka, 2001: 412)



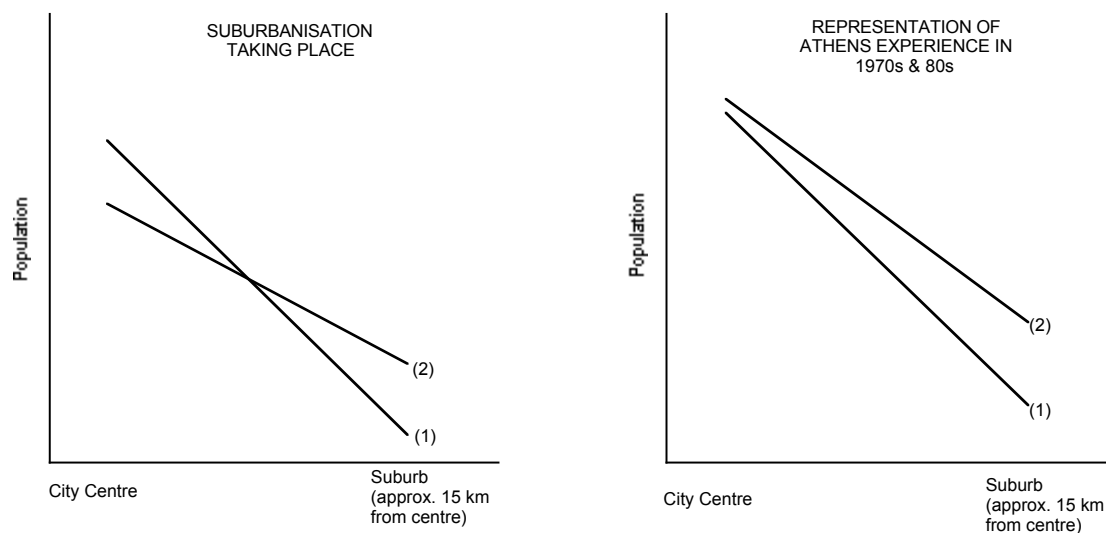
Map 1: Central Attica. The Athens basin is the area between the four mountains. The FAS is visible as an area shaded with red diagonal lines below and to the left of the centre. The new EV AIA at Spata is visible as the larger area with the same shading to the east of the centre. The areas shaded in green are the main mountains and forests where development is prohibited. (Source: www.minenv.gr/hellinikon-competition, own processing)

-  Mountain and/or Forest Area - Development Prohibited
-  Vouliagmenis Avenue
-  Syngrou Avenue
-  Messogeion Avenue
-  Vassilissis Sofias and Kifissias Avenues
-  Iera Odos
-  Piraios Avenue
- P.A.T.H.E. = Patras-Athens-Thessaloniki-Evzoni Motorway
- AO = Attiki Odos ring-road/regional motorway

In the residential property sector we discern a long-term tendency towards urban sprawl as a result of intense demand side pressures on the limited land available within the approved GTP¹⁰ of each municipality in Greater Athens. The housing stock is highly variable in quality. Land and property ownership are highly fragmented, not least because of the *antiparochi* mechanism.

In the 1970s and 80s, attracted by lower building densities and the seafront, the Saronic coastline from Alimos to Vouliagmeni was transformed from a holiday home destination for wealthy Athenians to a commuter suburb for the middle and upper Athenian class.¹¹ Emanouil (1999) emphasises that Athens has technically not undergone a suburbanisation process because as more people have settled in the suburbs the population of the centre has not fallen but increased slightly (Fig. 3).

Fig. 3: Representation of the demographic development of the centre and suburbs of Athens (right) compared with a theoretical suburbanisation pattern (left)



(Source: Emanouil, 1999)

In the same period (1970s and 80s) the office sector saw the emergence of two secondary Central Business Districts (CBDs) developed outside the centre of

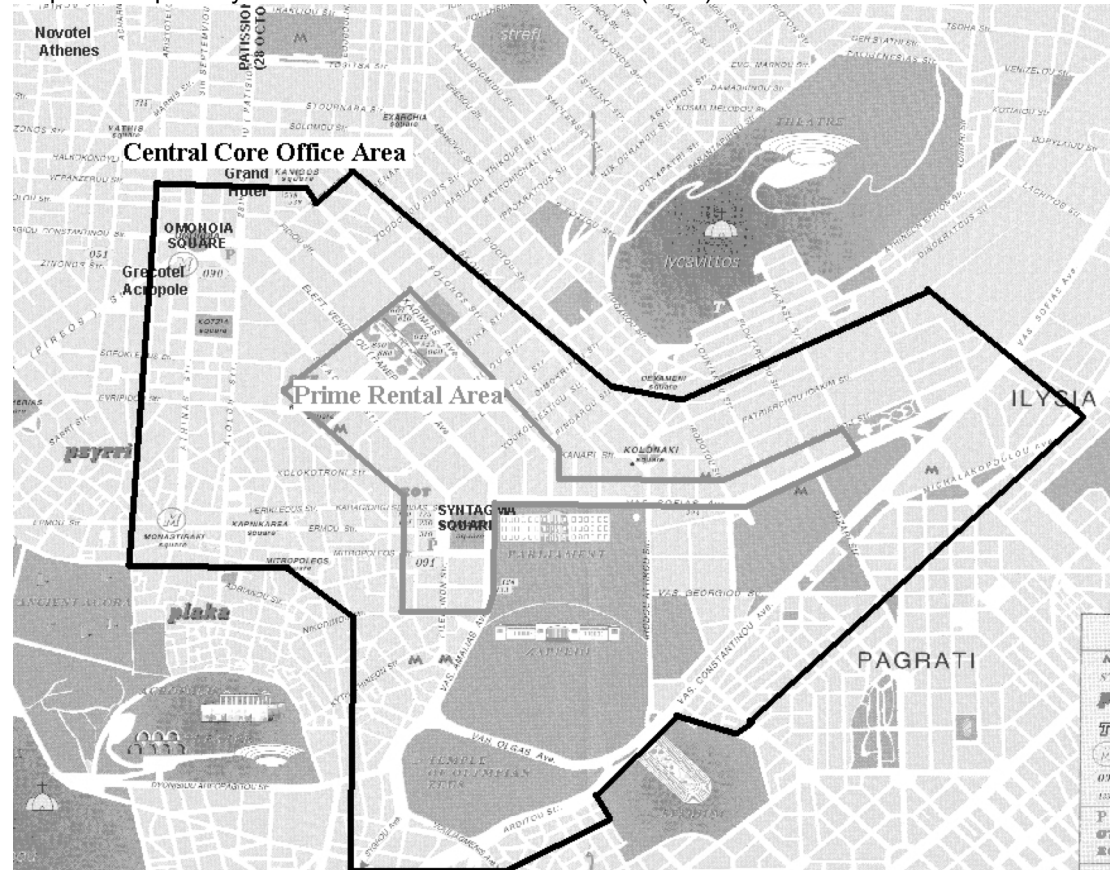
¹⁰ Town plan (see pp 7)

¹¹ The same was taking place in the northern settlement of Kifissia, the attraction there being the forested Mount Pendeli as well as the low building densities.

Athens,¹² one leading south-southwest along Syngrou Avenue and southeast along Vouliagmenis Avenue and the other north-northeast along Kifissias Avenue and northeast along Messogheion Avenue (see the highlighted roads on the map above). While the original CBD concentrates central government offices and private offices of law firms and financial firms seeking prestigious addresses close to the Athens stock exchange (Sofokleous Street), the secondary CBDs have differentiated themselves through larger plot sizes, higher-rise, newer, office stock. Large multinationals, banks based overseas and insurance firms have tended to agglomerate in these locations. Kifissias avenue commands the highest rents and capital values outside the CBD and is home to almost a third of Greece's businesses. Among these are: Microsoft, IBM, Hewlett Packard, BP, Mobil, Coca-Cola, Pepsico, MacDonalds, Kraft, Nestlé and the three mobile telecoms operators Vodafone, Telestet and Cosmote (TA NEA, 24/4/1999). The secondary CBD along Kifissias Avenue in particular is developing rapidly as it benefits from direct access to the AO, offering rapid access east and west across the Attica region, including to EV.

¹² See Map 2, pp 15, for the location of the original CBD.

Map 2: The primary Athens Central Business District (CBD)



(Source: DTZ Greece, 2003, own processing)

In the industrial property sector, the original industrial areas west of central Athens have been changed to mixed residential and light industrial uses. The light industry includes warehousing and logistics. We see a tendency for these light industrial uses to move further from the centre of Athens, under top-down pressures to exclude industry from within the Athens urban area and under property market pressures (demand for residential property). Potential areas for relocation are the Messogheia plain to the east and Thriassio Pedio to the west of the Athens basin (Map 1).

Chapter 3: An introduction to the study locations

(Please refer to Map 1, pp 12, and the map of Greater Athens in the appendix)

The former airport and its surroundings

Greece gained its first international airport in 1937 with the establishment of Athens airport in the area known then as Chassani on the Saronic Gulf coast, southeast of central Athens. The area had originally developed as a holiday home area for affluent Athenians in the late 19th and until the 1950s (see Fig. 4 below).

Fig. 4: 1937 aerial photograph of Elliniko Garden Suburb with overlay of FAS



(Source: www.minenv.gr/helliniko-competition)

The Chassani area was not renowned as an agricultural area as a result of its rocky, saline ground, poor fresh water supply, seawater contamination of ground water and household contamination of the water table through poorly planned sewage disposal via underground cisterns. The quality of the ground and agricultural productivity improved with distance from the sea in the direction of Ymittos Mountain.

As a result of the urban sprawl triggered by industrialisation in the 1950s and 60s many areas bordering on the airport site were included in their respective GTPs, releasing their latent potential to become primary (permanent) housing areas. The declining quality of the urban environment in central Athens expedited this process. By the 1970s, the southern suburbs were being assimilated into Greater Athens (see Fig. 6 below).

In 1938 the airport registered passenger traffic of 8,500. By its closing year (2001) annual passenger traffic had risen to above 10 m. In 2001 the airport was operating 4 m above its design capacity. Those opposing the relocation of the airport argue that passenger traffic was rising less markedly since the 1970s as regional airports started to offer international flights and so transits through Athens began to decline (Sarigiannis, 2001: 52). A series of land expropriations, the last of which took place in 1959 resulted in an airport plot of 530 Ha. There are two terminal buildings one to the east and one to the west of the runways.

The Chassani airport came to be known as “the Elliniko” because its area lies mainly within the boundaries of this municipality and the name has remained with the FAS, whose area in fact makes up 83% of the land area of the municipality. The site overlaps with three other municipalities: Alimos, in the north, which it comprises 10% of; Argyroupoli in the north-east, which it comprises 5% of); and Glyfada in the south, which it comprises only 2% of (Thaka and Mavrogonatou, 2002: 7).

The population of the municipalities bordering the FAS have been rising since the time of the establishment of Chassani airport (see Fig. 5 below). The population of Glyfada, one of Athens' most affluent suburbs, has risen most, while the population of Argyroupoli, a relatively densely settled, working middle-class suburb, has risen least. South-east of the middle-class suburbs of Alimos, Argyroupoli and Elliniko, Glyfada marks the beginning of the more affluent southern coastal suburbs.

Fig. 5: Population of municipalities bordering on the former airport site

Municipality	1981	1991	2001	1991-2001 Change	1991-2001 % Change
Alimos	27,193	32,024	38,196	6,172	19.27
Argyroupolis	26,224	31,530	33,310	1,780	5.65
Elliniko	11,865	13,517	15,378	1,861	13.77
Glyfada	43,748	63,306	79,842	16,536	26.12

(Source: Thaka and Mavrogonatou, 2002: 9)

Thus far the municipalities around the FAS have not developed into true secondary centres of commerce, administration and business after the centre of Athens, but this may be changing. There is an observable lack of higher order services in these areas and local inhabitants frequently have to travel to central Athens.

The local property market is currently following the general downward market trend, especially in the office sector. However, as a result of the transport infrastructure projects and the regeneration of the area around the FAS during the 1990s and particularly for the 2004 Olympic Games,¹³ values have risen in all property sectors. The municipalities of Alimos, Argyroupoli and Elliniko have shown more moderate increases in residential property values than Glyfada to the south of the FAS. The emergence of a significant retail sector in the area came about in the mid 1990s with

¹³ In the run-up to the 2004 Olympic Games the southern coastal front (including Elliniko) was regenerated in depth. A tram-line was constructed linking central Athens with Elliniko via the south-western neighbourhoods and Posidonos Avenue relieving the waterfront of traffic. An extension of Athens Metro line 2 is under construction and is expected to reach Elliniko in 2008 carrying hundreds of thousands to and from the centre of Athens in less than 15 minutes. The sports complex of Aghios Kosmas, one of the few athletic and recreation areas available for Athenians was given a much needed €11.5 m makeover including a marina (visible in the following aerial photograph).

the creation of two superstores close to Vouliagmenis Avenue. Apart from these, the retail sector centres on a couple of streets at the centre of each of the municipalities, Alimou Avenue¹⁴ has emerged over the past decade as an important location for retail as it links the inland Vouliagmenis Avenue and the coastal Posidonos Avenue, thus benefiting from traffic from both. The volume of retail activity in close proximity to Alimou Avenue has led recently to the attraction of higher order functions such as car dealerships, company headquarters and banking services. While the centres of the municipalities around the FAS have been losing office sector occupants particularly over the last five years, Vouliagmenis Avenue is developing a substantial office stock as a result of the relocation of the largest shipping companies from the old, cramped office stock in Piraeus (MEPPW, 2001).

The municipality of Elliniko suffered the greatest impacts on account of the proximity of the airport in terms of development pressures on the one hand, coupled with construction restraints (mainly relating to height, for safety reasons) and road traffic and environmental degradation (noise and atmospheric pollution) impacts on the other hand.

¹⁴ See the map of Greater Athens in the appendix.



Fig. 6: Aerial photograph of the FAS looking north. Olympic installations visible in the north-west portion of the site. Coastal redevelopment of Aghios Kosmas sailing and sports complex and marina visible along the coastal front of the site.

The Relocation

Since the late 1950s, at a strategic level, the possibility of the relocation of the airport from Elliniko was being discussed (Sarigiannis, 2001: 50). Among the alternative locations named during the three decades that it took to finally select one was the Messogheia plain, to the east of the Athens basin but separated from it by Ymittos Mountain.¹⁵ Although confined by mountains to the northwest (Mt. Pendeli), southwest (Mt. Ymittos), high hills in the south (Mt. Paneion and Mavrovouni) and the Euboian Gulf to the east the Messogheia Plain was selected in the late 1960s as the location of the future airport by the military dictatorship of the time; the area between the settlements of Spata, Artemida, Markopoulo and Koropi is among the largest expanses of flat land almost void of development in close proximity to Athens.¹⁶

The relocation to Messogheia was shelved by the socialist *PASOK* government of the 1980s through the 1985 Master Plan for Athens it legislated (see pp 7). In 1991, the liberal *New Democracy* government reversed this process and began the tendering for construction. A consortium led by *HOCHTIEF* was awarded the contract in 1995 by the new *PASOK* government. Construction began in 1996 and the new AIA was inaugurated in March 2001.

A six-lane toll road, known as the Attiki Odos (AO – “Attican Road”) was constructed across Attica east west. It intersects the P.A.T.H.E. motorway twice, once to the west of Athens, and again in northern Athens and continues east to the Messogheia Plain (see Map 1). It is planned to extend the AO southeast to the port of Lavrion (see Map 3, pp 55). The AO has been complemented since 2004 with a branch known as the

¹⁵ EV is in fact only 10 km to the east of Athens centre in a straight line. However, as Mt. Ymittos stands in the way, a 16 km detour to the north-east is necessary, bringing the total distance from the city to the new airport site to 26 km.

¹⁶ The first land expropriation of 165 Ha for the construction of the new AIA took place in 1977.

Ymittos Ring Road (*Perifereiakos Ymittou*) linking the centre and east of the Athens basin to the AO. Although it was not planned from the beginning, it was decided that AIA should be provided with a rail link.¹⁷ This resulted in the Regional Rail (RR - *Proastiakos*) line currently operating between

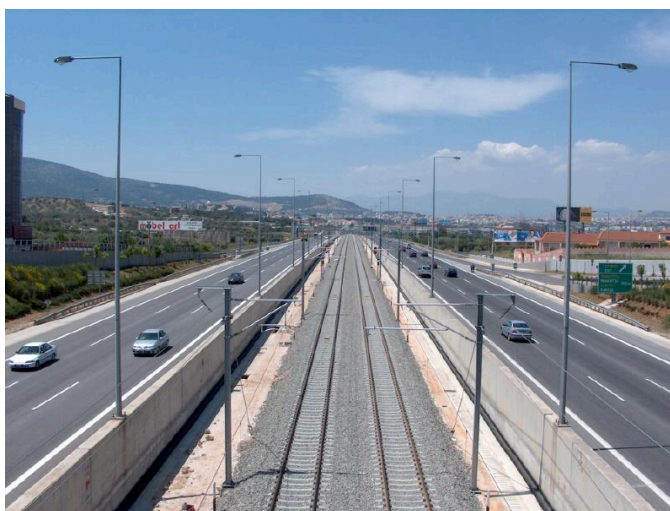


Fig. 7: The Attiki Odos (AO) motorway and RR track between the two directions of traffic flow

(Source:

<http://briefcase.pathfinder.gr/download/gm22632/24691/295849/0/Attiki+Odos-Holiday+Inn+Junction.jpg>)

Larissa Train Station¹⁸ and AIA, running in between the two directions of traffic on the AO (Fig. 7). Metro line 3 also provides access to AIA from the centre of Athens using the RR track.¹⁹

MIT professor and airport consultant Amedeo Odoni is often quoted as having supported the reorganisation of the Elliniko airport site in order to extend its capacity and condemning the EV's location in Messogheia, as a worst-case scenario (Sarigiannis, 2001: 53). Odoni also supported the site of Tanagra, an air force base 30 km to the north of Athens, as a suitable location given:

- its proximity to the existing P.A.TH.E. Motorway, and thus requiring relatively less drastic interventions in terms of improving accessibility,
- the growth of freight transport offering the possibility to create a new peripheral centre to serve the cities of Halkida, Thebes and Livadia and the suitability of

¹⁷ Car ownership rose by 80% in Greece in the 1984-94 period, a rate second only to Portugal among the EU15 for the same decade (Banister and Berechman, 2000: 109); rail access (in addition to road) to the new AIA is fundamental for a sustainable transport strategy.

¹⁸ The principal rail station linking the capital to the Peloponnese in the west and to northern Greece.

¹⁹ The delay of the metro compared to cars along the AO where the former can only reach 100 km/h compared with 120 km/h of the latter is made up for by the traffic cars have to face in Athens. On the same track, the RR is clearly faster than the car, reaching speeds of 150 km/h,.

facilities for the types of activities which develop around airports (e.g. freight firms, light industry, fuel storage, logistics),

- the greater potential for future expansion than at Spata.

(Romanos, 2004: 179)

Others proposed to extend Elliniko airport out to sea on reclaimed land, while another proposal was to relocate the airport to the island of Makronisos off the southeast coast of Attica (Sarigiannis, 2001: 90).

The issue most objectors to the selection of the Messogheia location identify most closely with is urban encroachment upon one of Attica's last areas remaining largely rural in character²⁰ (Biris, 2001: 70; Dima, Laina and Simaioforides, 2001; Kondaratos, 2001; Kotionis, 2001: 67 Sarigiannis, 2001: 52; Romanos, 2004: 179, 182-3). Over the last decade in the Messogheia plain, over 300 hectares have been incorporated into the GTPs and, it is estimated, at least a further 450 hectares have been encroached upon illegally (Polychronopoulos and Serraos, 2001: 72).²¹

The development of the Messogheia plain, spurred by the relocation of AIA, has also been accused of opposing decentralisation efforts adding economic weight to Greater Athens (Kondaratos, 2001: 69). Others cite this very effect as a benefit as Athens seeks to establish itself as a competitive global city and as the gateway to Greece and the broader region (Loukakis, 2001: 52).

²⁰ Sidiropoulos (1998: 8) refers to the Messogheia plain as a "rural urban area."

²¹ Vineyards, arable and grazing areas have shrunk greatly and mountain massifs, which are the only remaining pine forest ecosystems in the area and the Vravrona wetland, are being encroached upon. During the 1980s the areas around the old centres of the settlements in Messogheia and large expanses of the Euboian Gulf coastal front were incorporated into the GTPs. Industrial parks and crafts parks were delineated at the same time in Paiania, Koropi, Gherakas, Markopoulo and Pallini. (Loukakis, 2001: 52)

The Messogheia Plain

The Messogheia plain has been settled since Neolithic times. Records from the classical period refer to the area's reputation as a centre of viticulture. This reputation has persisted until today²² (Christophilaki, 1998: 4-6). Profits from the vineyards were reinvested in the land, enlarging estates, until the 1950s. At this time industrialisation led to a decline in primary and a rise in secondary sector employment.

Fig. 8: Distribution and development of the Messogheia plain population (1951-91)

Areas to be affected	1951	1961	1971	1981	1991	51-61 (%)	61-71 (%)	71-81 (%)	81-91 (%)
Anthoussa	0	0	0	577	3050	-	0		428.60
Artemitha	0	0	0	4249	9374	-	0		120.60
Gherakas	0	0	5716	6703	8541	-		17.26	27.42
Glyka Nera	0	0	1233	3547	5966	-		187.60	68.20
Kalyvia	2253	2399	2624	4860	7318	6.48	9.37	85.21	50.57
Koropi	7125	8029	9716	12893	17173	12.68	21.01	32.69	33.20
Markopoulo	5112	5341	5954	9388	10420	4.48	11.47	57.67	10.99
Paiania	4824	7431	6111	7278	9701	54.03	-17.70	19.10	33.29
Pallini	954	1909	3190	5475	10914	100.10	67.10	71.63	99.34
Pikermi	0	1213	262	509	1291	-	23.00	94.27	153.60
Rafina	1888	2137	2674	4994	8556	13.18	25.12	86.76	71.32
Spata	5024	5620	6425	6398	7775	11.86	19.32	-0.42	21.52
Kouvaras				1194	1369				14.65
Total	27180	34079	43905	68065	101448	25.38	28.83	52.31	49.04

(RDI 2, 1998: 3)

For the development of the area, the most important event at this time was the change in the way its inhabitants perceived the land. In the 1960s and 70s Athens was expanding northwards bringing substantial windfalls to the landowners of the Messogheia plain whose interests extended into the north of the Athens basin. Reinvestment in the land dwindled as farmers and landowners anticipated sales for large profits and divided up their land into smaller parcels for the construction of homes: note the growth in population (Fig. 8). Land use patterns have been changing fundamentally since the 1960s. In the 1971-91 period cultivated areas in the municipalities of Messogheia had, in most cases, been reduced, as had grazing areas. Forests and areas covered by water were also reduced, albeit less

²² The establishment of the wine-producing cooperative of MARKO in 1800 eventually gave rise to the settlement of Markopoulo (Christophilaki, 1998: 6).

significantly. The growing area devoted to settlements and roads explains, at least in part, these reductions.²³ By the 1970s, secondary sector employment continued to grow but at a much-reduced rate while tertiary sector employment grew enormously. This trend is expected to continue (see Fig. 9 below). (Christophilaki, 1998: 6-7)

Fig. 9: Employment by sector for Messogheia in 1998 and 2020 (forecast)

Year	1998	2020 (forecast)
Total population employed	70,000	170,000
Primary sector	14.0%	1.8%
Secondary sector	46.5%	39.3%
Tertiary sector	39.5%	58.9%

(Konsolas and Karagiannis, 1996: 12; RDI 2, 1998: 4, 13; own processing)

Development in the Messogheia Plain over the past 30-40 years has been characterised broadly by the breaching of land use regulations. Illegal construction takes the form of mainly primary and secondary housing and dispersed industrial units and is illegal as regards its density, building coefficients, not meeting minimum plot size regulations,²⁴ illegally subdivided plots or having developed a different function to that dictated by the GTP for the area. (RDI 2, 1998: 8)

In administrative terms the Messogheia plain comprises of thirteen Municipalities²⁵ and Communities²⁶. Urban functions have been well distributed between the settlements by market forces. Koropi concentrates 24% of all enterprises including all the largest ones, as well as many administrative services (Konsolas and Karaganis, 1996: 4). The Prefecture of Eastern Attica is in Pallini while some other services are in Rafina (RDI 2, 1998: 3).

There are ten settlements in the Messogheia Plain with populations varying from 6,000 to 17,000 and yet the area fails to qualify as functionally autonomous. This is

²³ See the table of land use distribution and change by municipality and community in the appendix.

²⁴ Therefore in violation of UDCZ regulations.

²⁵ Pallini, Paiania, Spata, Koropi, Markopoulo and Messogheia.

²⁶ Gherakas, Anthoussa, Pikermi, Rafina, Glyka Nera, Artemida, Kalyvia Thorikou and Kouvaras.

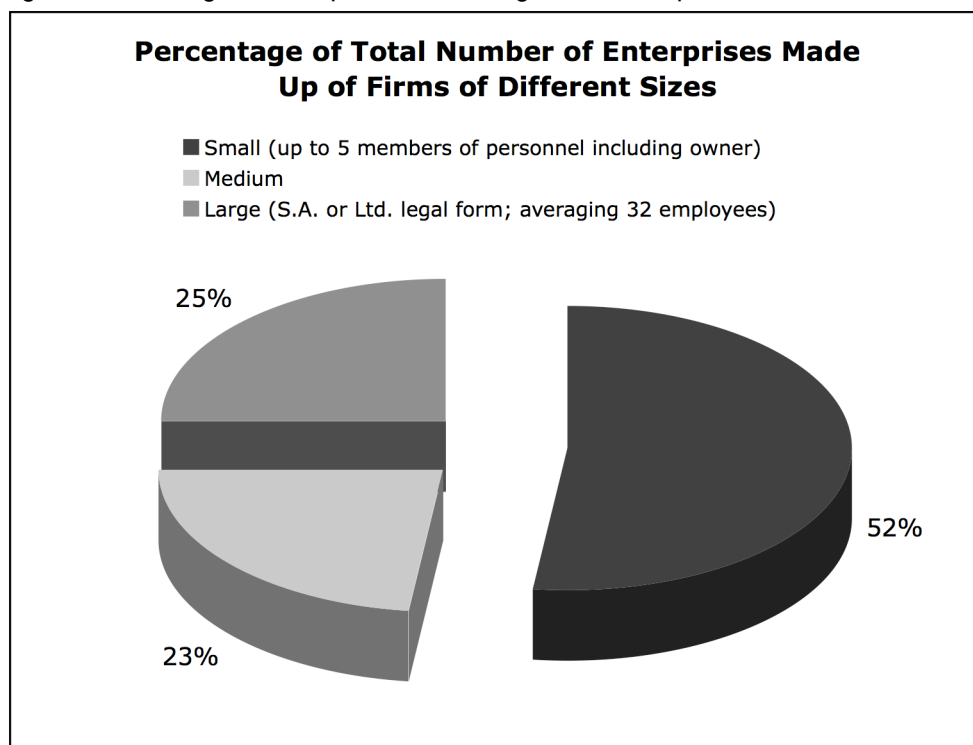
mainly due to the policy affecting the area originating from the national level with the aim of enhancing the capital's role and function as a metropolitan centre on an international level (Karka, Sapountzaki and Wassenhoven, 2000: 1-2). The influence of central government has sometimes benefited the area: policies such as the 1985 Athens Master Plan protected the Messogheia Plain against development (Karka, Sapountzaki and Wassenhoven, 2000: 2-3).

Economic activity in the Messogheia Plain has a distinct geographical distribution: agriculture dominates the interior of the plain; holiday houses and domestic tourism are the mainstays of the coastline;²⁷ permanent residential areas are found in the west and north-west of the plain and a mixture of manufacturing units, logistics, services and retail and recreational uses are located along the principal transport routes in the north, north-west, west and south-west of the plain; and there is a concentration of high-tech industries in Paiania, in the north-west (RDI, 1998).

Enterprises tend to be small, employing up to five people including the owner (see Fig. 10 below). Even the large enterprises employ only 32 people on average (Konsolas and Karaganis, 1996: 3). Practically all (98.5%) the enterprises of the Messogheia Plain have only one site or address (Konsolas and Karaganis, 1996: 4). 80% of the production of enterprises goes to the Greater Athens area (Konsolas and Karaganis, 1996: 3).

²⁷ In this sense, the Euboian Gulf coastline of Messogheia is developing in much a similar way as the Elliniko area of the former airport 50 years before it.

Fig. 10: Percentage of enterprises in Messogheia made up of firms of different sizes



(RDI, 1998, own processing)

Fig. 11: Chronological account of events of the former and current AIA

Date	Event
1937	First expropriations by Ministry of Defense of land in the then Chassani area (now Elliniko) for establishment of Chassani airport (21.5 Ha), first civilian airport in Greece
1943	22 Ha expansion of Chassani airport (29/1/1943) followed by second expansion (1/6/1943)
1944	Expansion of Chassani airport
1948	47.5 Ha expansion of Elliniko airport
1950	21 Ha Extension of landing zone of Elliniko airport
1952	55 Ha expansion of Elliniko airport
1953, 54	Two expansions to Elliniko airport
1956	0.167 Ha land expropriation for access road to Elliniko airport
1958, 59	Two expansions to Elliniko airport (brings total land area to 530 Ha)
1976	Doxiades Planning Office recommends relocation of AIA to Makronissos island off the south east coast of Attiki. Spata proposed as second-best alternative. Residential use of Elliniko site recommended.
1977	First land expropriation of 165 Ha in Spata
1978	Athens Airport S.A. established
1980	DG Housing of Ministry of Public Works publishes (the “Manos”) plan for future use of Elliniko site as holiday home location and names Spata in the Messogheia plain as the location for AIA
1985	Law 1515 defines a Master Plan for Athens which reverses relocation plans for the airport removing the 1970s designation of Elliniko airport as a ‘temporary’ airport
1991	Amendment to 1985 Athens Master Plan (via Law 1995/91) allowing for relocation of AIA to Spata
1993	Government statement that 300 Ha of FAS to be developed to finance creation of green areas in other Athens neighbourhoods
1995	Law 2338: Ratification of contract with HOCHTIEF consortium for construction of new AIA in Spata and definition of the “main purpose” of the FAS as “the creation of a metropolitan area of green”
1996	<ul style="list-style-type: none"> • ORSA announces that FAS destined as a “Multifunctional Recreational Metropolitan Park” from the exploitation of which would be raised the funds for alleviating the local social cost of the new AIA in Messogheia. Stated that in the revision of the 1985 Master Plan for Athens, National Metsovo Polytechnic (NMP) findings will be considered for the matter of development of the FAS. • Leaks to the press that there are plans to sell 250 Ha of FAS to be developed.
1997	<p>NMP head researcher Professor Vassenhoven suggests the creation of a large Metropolitan Park with “mild” residential development as a financing mechanism.</p> <p>MEPPW announces intention to sell “a large part” of the FAS for private development (income to be used to compensate Messogheia municipalities)</p> <p>Prefecture self-government (“second”/regional tier) opposes the sale of any proportion of the FAS, save for the relocation to the site of functions such as convention centre from other areas (presumably in exchange for those locations becoming open/green spaces)</p>
1999	Law 2730: “The area of the Elliniko Airport is designated as an area for the reception of Olympic [Games] installations and the necessary supporting redevelopment works”
2000	Law 2833: “The area of the Elliniko Airport is designated as the area to host the baseball, softball, hockey, badminton and archery installations and the necessary supporting redevelopment works”
2001	Phase B of NMP study as to the future of the FAS put on hold; NPM study for planning for Olympic installations to be temporarily located on FAS
2001	So-called “Eastern Airport” comprising the terminal buildings which all airlines save the national carrier, <i>Olympic Airways</i> , made use of and customs building (totalling approximately 3.75 Ha) was labelled as a “Public Tourist Estate” and assigned to Greek Tourist Real Estate S.A.
2001	Open international design competition for redevelopment of FAS
2005	Winner of FAS design tender, DZO Architecture, Philippe Coignet, Ryosuke Shimoda and Erwin Redl, to be commissioned for updated, detailed plan for redevelopment to be submitted by October 2005
2026	Eleftherios Venizelos airport to reach maximum passenger traffic capacity of 50 m p.a.

(Sources: Sarigiannis, 2001; MEPPW, 2001; National Metsovo Polytechnic (NMP) cited in Thaka and Mavrogonatou, 2002; Paschalidou, 22/03/2005; own processing)

Chapter 4: The economic impact of airports and other transport infrastructure

In this chapter a short discussion of the economic impact of transport infrastructure is presented, focusing on airports, highways and rapid transit systems, all integral to the AIA relocation project. After a brief discussion of the labour market effects of transport infrastructure, we concentrate on the property sector and the impacts of airport noise. The chapter ends with accounts of selected characteristics of three international case studies offering some experience of airport relocations elsewhere.

The reason air transport and the infrastructure it requires are such a controversial topic is because the positive and negative externalities they are responsible for are so sizeable.²⁸ This is the reason why “planning for airport expansion, involves protracted 10-15 year lead times. The airport planning process involves forecasting demand, producing feasibility schemes and consultating upon alternatives. Generally a lengthy period of public inquiry is undertaken prior to detailed design or construction” (Andrew and Bailey, 1996).

The discourse regarding the development effects of infrastructure has evolved greatly over the past half century: the simplistic belief that more infrastructure will result in swifter economic development has been overtaken by more complex theories.²⁹ Studies of the impact of EU structural funds on the relative economic development of different member states and regions within those states indicate that,

²⁸ Externalities are costs or benefits suffered or enjoyed by third parties not involved in the economic transaction that created the externalities.

²⁹ In the field of development economics emphasis is placed on the amelioration of a whole host of variables, including education, health care, sanitation, transparency, political and religious freedom and equality between genders, among other factors (Sen, 1983). A combination of “investment in both infrastructure and social capital” might yield a significant marginal benefit for regional economic growth (Flyvbjerg, 2003: 71).

whereas at earlier points in the development process infrastructure can have a profound impact on economic growth, in more developed areas, its marginal developmental impact can be negligible (Canaleta, Arzoz and Gárate, 2002; Phang, 2003: 32; Rodríguez-Pose and Fratesi, 2004) or even negative (Flyvbjerg, 2003). Contemporary development theories emphasise linkages (physical, ICT and business, and cooperation).

Local economic development depends on the presence of agglomeration economies,³⁰ which are themselves dependent upon a set of key factors, among them: a skilled work force, the potential for sharing infrastructure and service provision with other firms and transport and infrastructure externalities (Banister and Berechman, 2000: 212-5). “Infrastructure is seen as a public good which enhance the productivity of private factors of production, or it combines with private capital in an optimism ratio to raise productive potential” (Banister and Berechman, 2000: 114).

Krugman’s ‘new economic geography’ theory argues that transport infrastructure alters economic convergence and divergence factors: lack of investment can lead to “deconcentration” of economic activity, while investment may lead to a concentration (Krugman, 1991 cited in Banister and Berechman, 2000: 114). On the contrary ‘new growth economics’ theory claims that transport costs make up only a small proportion of firms’ total costs and undue attention and expenditure is concentrated on them (Romer, 1986 cited in Banister and Berechman, 2000: 113).

The economic impact of infrastructure is often divided into temporary and non-temporary effects. “Temporary effects on the demand side of the economy relate to the increase in income and employment during the period in which the investment

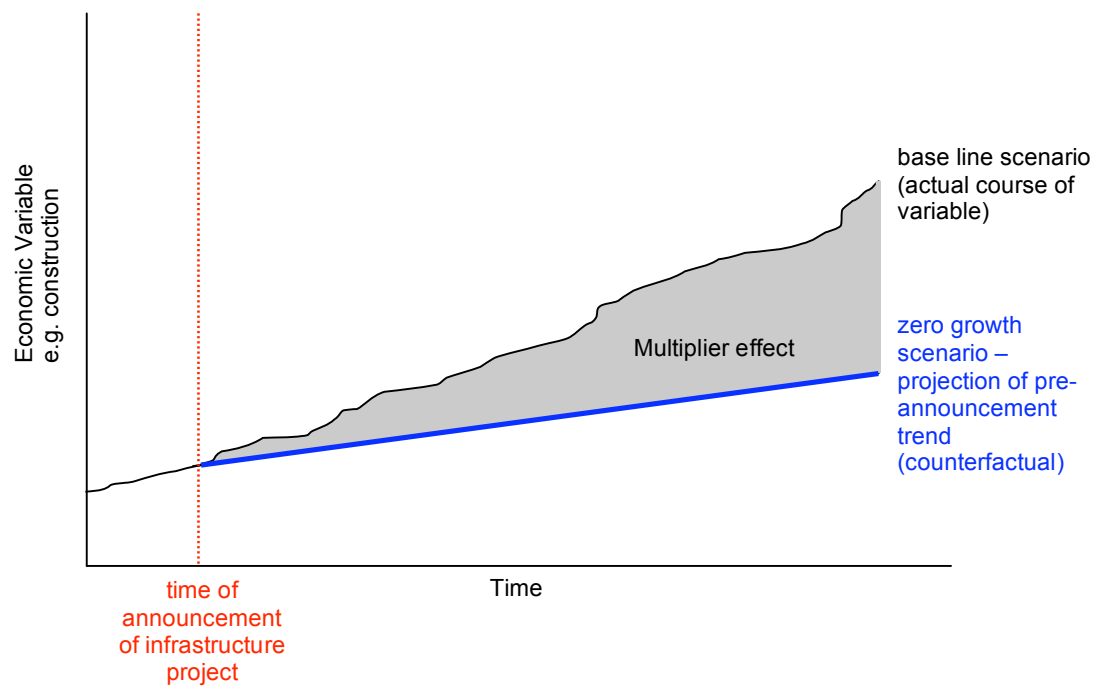
³⁰ Falling average costs of firms as more production of the same good or service is concentrated in a specific geographical area.

takes place because of activities of construction firms and their suppliers... Non-temporary effects... on the demand side consist of the costs of operation and maintenance of the [infrastructure] such as the employment involved in [maintenance and operation]” (Hakfoort, Poot and Rietveld, 2001: 597).

Backward linkages point towards the number of suppliers to the airport benefiting when the activity on the airport grows. Forward linkages indicate how much the region benefits from the proximity of the airport in terms of location (Hakfoort, Poot and Rietveld, 2001: 596).

The main problem one confronts in searching for the impact of large infrastructure projects on economic variables is that the counterfactual scenario – what would have happened if the infrastructure investment had not taken place – is difficult to estimate (Banister, 1995: 8; Hakfoort, Poot and Rietveld, 2001: 598). One way to proceed is to plot these variables (base line scenario) and to compare their trend to that which could have been projected before the infrastructure project started to have an impact, such as before it was announced (zero-growth scenario) (see Fig. 12 below). The difference between the two curves is in fact the impact the infrastructure has had on this particular variable and is often referred to as the infrastructure’s multiplier effect.

Fig.12: Discerning the economic impact of transport infrastructure on economic variables



(Source: Hakfoort, Poot and Rietveld, 2001: 602, own processing)

Labour market impact

The impact on the labour market of enhanced accessibility, although minor compared to wage rate effects, include higher participation rates, though the increase in employment varies by employment type³¹ (Banister and Berechman, 2000: 231). Labour market and other economic impacts are often subdivided into direct, indirect and induced. Direct employment is defined as that which takes place on the airport site itself, whether through the airport company itself or other companies working on-site. Indirect employment includes those employed by companies supplying the airport. Induced employment includes the employees of companies whose business is not directly linked to the airport but who benefit from the proximity of the airport.

³¹ Executive employment is most affected, followed by technicians, administrative employment and transport employment.

The enlargement of Schipol airport between 1987 and 1998 generated a combined indirect and induced employment multiplier of approximately 2.0 (Hakfoort, Poot and Rietveld, 2001: 603). However, this is only indicative as the multiplier effects estimated for different West European airports vary widely (Fig. 13).

Fig. 13: Direct, indirect and induced employment multipliers at West European airports

Airport(s) and year of study/passenger throughput	Passenger throughput	Study area	Estimated direct employment	Indirect multiplier	Induced multiplier	Combined indirect/induced multiplier
Paris (Orly and CdG): 1988	40 million ppa	Ile-de-France	65,000	1.1	2.1	2.3
Paris (Orly and CdG): 1991	44.8 million ppa	Ile-de-France	72,000	1.1	2.1	2.3
London: 1993	72.6 million ppa	South East England	82,000	1.2	1.3-1.8	1.5-2.0
Manchester: 1988	10 million	North West England	8,000	2.5	1.9-4.1	4.4-5.6
Manchester: 1991	10.8 million	North West England	10,600	2.4	2.2	3.6
Manchester: 1993	13.4 million	North West England	10,600	1.9	1.6	2.5
Copenhagen: 1983	NA	Copenhagen Region	12,100	1.1	2.5	2.6
Copenhagen: 1991	11.9 million	Copenhagen Region	14,500	1.8	2.1	2.9
Amsterdam: 1993	21.3 million	Netherlands	37,000	NA	NA	2.0
Düsseldorf	11.3 million	Nord Rhein Westfalen	9,800	2.7	5.5	7.2
Oslo: 1996	NA	Oslo Region	10,000	NA	NA	3.5

(Source: IAURIF, 1995; Institute of Transport Economics Norway, 1997; Hakfoort, Poot and Rietveld, 2001 cited in Hakfoort, Poot and Rietveld, 2001: 598)

Land-use and property market impact

The arguments for investing in transport infrastructure are fundamentally linked to location theory. Improved accessibility improves efficiency, lowering the costs that those using the infrastructure face (fuel, maintenance, time, inconvenience etc.), thus render the region in which the infrastructure investment is located more competitive (Banister, 1995: 1-5; Flyvbjerg et al., 2003: 66). This is often at the expense of other parts of the region or other regions of the country. In some cases, the improved access can have the opposite effect from that which was intended. Opposing Krugman's 'new economic geography theory,' improved access to a nearby economic core can stimulate businesses to leave the peripheral location, as employees who live there will now be able to access the core more easily and it will be feasible to deliver finished products from the core to the peripheral location: this is

the backwash effect (Myrdal, 1957 cited in Schmutzler, 1999: 4). The backwash effect aside, improved accessibility leads to an increase in demand for and thus rents of land and property, and hence the prevailing land use changes according to classical von-Thünen land use theory, from agriculture, to industrial, to residential, to offices and finally to retail.³²

For the case of industrial property, Cohen and Paul (2003) employ a cost function based model to estimate the impacts of proximity to airports and highways on manufacturing firms. They conclude that the impact on short-run costs is insignificant. This is a result of opposite input-specific effects: in the case of airports, increased raw materials use counters lower labour expenses. Their main finding of interest to the present study is that, the advantages of easy access to airports and highways are capitalised into asset values. In the case of industrial property the benefits of proximity to transport infrastructure outweigh disadvantages such as noise, traffic and pollution. They suggest that for every 1% increase in highway provision there is a 0.7% increase in the (shadow) value of property (2003: 20). Lastly, they conclude that private investment is attracted to such locations.³³

Capital values of land and property are likely to rise speculatively from the time when the infrastructure's planned construction is announced, while rents are likely to rise more gradually with greater increases being noted after the commencement of operation, since those seeking property which will benefit from that infrastructure, unlike purchasing investors, will not pay a higher rent before they need to move to the given location.

³² The enlargement of Schipol airport between 1987 and 1998 caused a 2.3% higher rate of construction in Amsterdam centre annually, while construction in the periphery was accelerated by 4.5% per annum (Hakfoort, Poot and Rietveld, 2001: 603).

³³ An airport nearby raises the marginal value of additional buildings and equipment invested in by the private sector.

Flyvbjerg (2003: 66-7) breaks down the economic impacts of improved accessibility resulting from infrastructure investment into short-term, medium-term and long-term effects:ⁱⁱⁱ

- Short-run: contribution to economic growth
- Medium-term: relocation effects
- Long-run: if land is abundant for development, further economic growth may take place; if land is not abundant the only effect will be rising land and property values.

“Rapid transit tends to accelerate existing trends. If an area is undergoing an expansion or boom period, rapid transit can accelerate the expansion” (Walmsley and Perrett, 1992: 127). Bowes and Ihlanfeldt (2001 cited in Cohen and Paul, 2003: 1) have demonstrated that rail access reduces commuting costs and attracts new retail activity, raising property values. Brons (2003 cited in Cohen and Paul, 2003: 1) finds that the noise generated by rail transport drives down the values of properties adjacent to the route. Running a rapid transit system along a main road can reduce its impact since it may lose much of its speed advantage over the car (Walmsley and Perrett, 1992: 130).

According to Debrezion, Pels and Rietveld (2003) retail properties benefit from new transport infrastructure, in terms of value, more than residential properties do. They also find the greatest impact on values is generated by proximity to commuter rail stations rather than metro stations. This is unsurprising as commuter rail stations service areas that were previously relatively inaccessible. The marginal increase in accessibility for a commuter zone with a new rail link is much greater than for an area within a city gaining a metro station while it already benefits from other modes of public transport and greater proximity to work and leisure destinations in the urban area.

For developers, areas around rail transit stations in the network have natural commercial advantages. Developers may thus be persuaded to contribute to the construction of rapid transit and commuter rail networks or individual stations, if they are convinced of the resolve of the government to see the project through to its completion. After its completion the developers may be able to recoup their expenses through higher rentals and capital values (Walmsley and Perrett, 1992:126).

Finally, rail transport is considered a much more sustainable mode of transport than road transport. Thus, access mode choice when it comes to airport transfers is an extremely important component of the project of designing a new airport. Not only is the provision of efficient rail access considered essential but airport employees and travellers alike must be encouraged to use it, as opposed to private car. Airports implement schemes to encourage employees to use public transport (Humphreys and Ison, 2004).

Aircraft noise and its impact on property values

Levinson et al. (1998 cited in Janić, 1999: 160) show that noise is the most significant external cost of air travel, followed by congestion, air pollution and accidents. According to the same source air travel creates smaller external costs than highway travel: “the social cost of highway travel is about 15% of total travel cost. For air travel, the social cost’s share is only 5% of total travel cost” (Janić, 1999: 161 – Fig. 14). In fact it seems that when calculated per kilometre travelled, the

social costs³⁴ of air transport are smaller than those for highway travel in all but the case of noise (see Fig. 14 below).

Fig. 14: Comparison of long-term average social costs for air and highway travel

Type of cost	Air travel (\$/pkt)	Highway travel (\$/pkt)
Air pollution	0.00090	0.00370
Noise	0.00430	0.00045
Accidents (safety)	0.00050	0.02000
Congestion	0.00170	0.00460
Total	0.00740	0.02888

(Source: Levinson et al., 1998 cited in Janić, 1999: 161)

Since noise is the most important external cost of airports,³⁵ it has been focused on by the research summarised in Fig. 15 below. Most research has found that significant noise levels (above 65 dB)³⁶ result in measurably lower sale values and rentals of residential properties. At the other end of the scale, properties in extremely quiet areas (below 40 dB) may command a measurable premium. A couple of the studies incorporate the benefits of proximity to an airport in terms of accessibility and employment opportunities and in doing so find that these benefits might outweigh the noise nuisance.

³⁴ Social costs are the total of external costs and private costs (those accounted for in the transaction).

³⁵ The air pollution generated by aircraft and contributing to global warming has vast effects. These effects are, however, frequently distributed by global air circulation so that it is very hard to pin any one of the external costs of the air pollution of any one airport on that specific facility. Effects of low level pollution around the airport site such as headaches from carbon monoxide and more severe acid rain from the nitrogen oxides produced have not been shown in any research I came across to be capitalised into property values. With every successive generation of aircraft emissions, particularly during landing and take-off are reduced (Janić, 1999). On the other hand air travel is becoming more and more popular. People travel on average more kilometres in the air every year and the number of aircraft also increases year on year. Thus, over the past three decades, the emissions attributed to air travel have increased (Banister and Berechman, 2001).

³⁶ "The FAA [Federal Aviation Authority], as well as HUD, defines areas exposed to L_{dn} levels of 65 or over as incompatible for residential housing uses" (Espey and Lopez, 2000: 411).

Fig. 15: The impact of airport noise and proximity on house prices

Case	Proximity/ Price relationship	House price impact
Manchester (Tomkins, Topham, Twomey and Ward, 1998)	+ ?	Higher noise levels are associated with lower property prices, but other positive benefits of airport proximity such as improved access and employment opportunities might outweigh the negative attributes of noise.
El Toro, Marine Base airport (Bell, 2000 cited in Lipscomb, 2003: 260)	–	Average single-family residence near the base has a market value 27.4% less than the average price of other single-family residences in nearby areas. Price decrease does not include pricing effects caused by noise mitigation measures that individual homeowners may undertake
Seattle-Tacoma (Helmuth, Obata & Kassabaum, 1997 cited in Lipscomb, 2003: 261)	–	Proximity to the airport has a negative effect on housing prices. On average the value of a house and lot increases by about 3.4% (\$4,450 on the average valued house of \$129,900) for every 1/4 mile the house is farther away from being directly underneath the flight track of departing/approaching jet aircraft
Schipol [Amsterdam] (Theebe, 2004)		In a rising residential property market, noise levels in excess of 65 dB depress capital values by on average 5%. If properties are located in very quiet areas, below 40 dB, they might command a premium of up to 6.5%.
Hartsfield International [Atlanta] (Lipscomb, 2003: 267-8)	+	Being 1 mile further from Hartsfield International Airport lowers the selling price of a house by \$36, 332.24 at the mean <i>ceteris paribus</i> or a \$9,083 decrease in the selling price of a house for each 1/4 mile on an average valued house of \$101,708, assuming a constant decrease in price per 1/4 mile... the benefits of being near a large air transportation hub outweigh the liabilities. (NB: does not include variables such as proximity to interstate highways, distance from CBD etc.)
Reno-Sparks International Airport (Espey and Lopez, 2000)	–	House prices fall as proximity to airport increases. 2.4% lower market value of homes in areas where noise levels equal or exceed 65 decibels, in Reno-Sparks Nevada, US.

International experience

Three case studies are presented in the boxes that follow. The first presents the choices made regarding the use of the site of Munich's former Riem airport after the opening of Munich 2 airport and will benefit our understanding of the use of the FAS in Elliniko (Chapter 5). Box 2, presents the location decisions freight forwarders and logistics companies made following the airport relocation in Hong Kong in 1997, granting us an insight which will promote our understanding and predictions of similar companies' actions in Messogheia and around the FAS in Elliniko (Chapter 5). Box 3, summarises the strategies employed in Singapore to attract distribution centres and will enrich our understanding of the preconditions necessary for the attraction of a whole host of economic activities to the Messogheia plain (Chapter 5).

Box 1

Uses of a former airport site - Riem airport, Munich
(Avgouropoulou, 2001: 103)

Case: Munich Riem replaced by Munich 2
<i>Riem year of opening: 1939</i>
<i>Riem year of closure (duration of operation): 1992 (53 years)</i>
<i>Riem distance from city centre: 11.3 km</i>
<i>Riem site: 450 Ha</i>
<i>Riem passenger traffic: 12 m (1992)</i>
<i>Riem cargo traffic: 57,000 tonnes (1992)</i>
<i>Munich 2 year of opening: 1992</i>
<i>Munich 2 distance from city centre: 28.5 km</i>
<i>Munich 2 site: 1,500 Ha</i>
<i>Munich 2 passenger traffic: 26.81 m (2004)</i>
<i>Munich 2 cargo traffic: 177,000 tonnes (2004)</i>

Riem airport closed in 1992 after 53 years of operation, replaced by a new airport, *Munich 2*. The municipality of Munich's contribution to the equity of the new airport are to come from the redevelopment of the 450 Ha Riem site, which belongs to the municipality. In the Riem case, areas around the airport site itself were added to the redevelopment plan, bringing its total area to 562 Ha.

Proportion of Riem redevelopment being allocated to different uses:

Land use	Area (Ha)	Proportion of total area (%)
Green/open space	265	47.1
Residential	110	19.5
Offices	80	14.2
Exhibition space	65	11.5
Special uses	18	3.2
Super-regional uses	12	2.1
Surrounding space	9	1.6
Built-up zone	3	0.53
<i>Total</i>	<i>562</i>	<i>100</i>

(Source: Avgouropoulou, 2001: 103)

The redevelopment zone is expected to become home to 30,000 new residents and to create 13,000 new jobs. High quality housing was prioritised. 40% social housing, 30% subsidised for low-income earners, while 30% is to be sold at market prices.

Box 2***Airport relocations and freight forwarders' and logistics companies' location decisions******- Kai Tak closure and relocation to Chek Lap Kok, Hong Kong*****Case: Kai Tak replaced by Chek Lap Kok***Kai Tak year of opening: 1929**Kai Tak year of closure (duration of operation): 1997 (68 years)**Kai Tak distance from city centre: 4.8 km**Kai Tak site: 333.8 Ha**Kai Tak passenger traffic (year of closure): 29.5 m**Kai Tak cargo traffic: 1,560,000 tonnes (1996)**Chek Lap Kok year of opening: 1997**Chek Lap Kok distance from city centre: 24.2 km**Chek Lap Kok site: 1,248 Ha**Chek Lap Kok passenger traffic: 32 m (2001)**Chek Lap Kok cargo traffic: 3,090,000 tonnes (2004)*

Chek Lap Kok airport, Hong Kong, built on 1,250 Ha of reclaimed land, 25 km from the city centre, registered annual passenger traffic of 32 m and annual cargo traffic of 3.1 m tonnes in 2004. (Source: http://www.bbrail.com/DynamicContent/Images/ImageLibrary/02_ChekLapKok_HongKong.jpg)



In 1996, Kai Tak Airport, a tiny area of 333.8 hectares, handled 1.56 million tonnes of air cargo and 29.5 million passengers. In 1997, the airport was ranked number one in terms of international cargo tonnage... The growth in passengers and air-cargo flows had created tremendous pressure on the capacity of the airport and caused great disturbance to near-by residential areas. In 1989, as part of a major infrastructure project for the strategic development of Hong Kong, the Hong Kong government decided to move the airport to Chek Lap Kok (CLK), which is close to Lantau Island.

While the residents around the Kai Tak airport applauded the relocation, various airport related industries had to face new challenges.

In August 1997, despite the fact that the CLK airport would start operating in a few months, the majority of forwarders were still using a wait-and-see strategy (57.5%). They were waiting for different things: the actual impact of the CLK airport on operations, more information possible warehouse locations, and the decisions of their peers for reference. Some might also be bounded by their current rental contracts.

(Wan, Cheung, Liu and Tong, 1998)

The opening of the new airport at Chek Lap Kok in 1998 triggered a number of warehousing and logistics operators to relocate from East Kowloon to Kwai Chung and Tsuen Wan areas. On the property front, the completion of the new airport has actually generated additional demand for quality industrial premises. This in turn has been reflected in the general growth in rental values... Growing

demand for logistics functions from overseas and established domestic logistics operators is expected to translate into the demand for more logistics space in the industrial property market.

(Colliers International, 2004: 17-18)

The airport relocation programme projects include the new airport, the airport railway, five road projects, two major land reclamations, and a new town. The Airport Core Program is being overseen by the New Airport Projects Coordination Office (NAPCO), which serves as a liaison between Government works departments and non-Government agencies to ensure that potential problems, such as logistics and budgeting, can be remedied in a efficient manner. The Government of Hong Kong has stated many of the benefits of the Airport Core Program. The main benefits to be seen for the community is an ease of congestion, improved road and rail facilities, and the airport itself. The closure of Kai Tak will also provide benefits for the 350,000 residents living under its flight path. The economic benefits are the creation of employment opportunities for local workers. 16,800 employment opportunities have been created during the construction period. It has been estimated that the new airport and the Airport Railway will create 6,000 new jobs. Other benefits include having a new airport located away from the urban area, the first road link between Lantau Island and Hong Kong, and the development of a new town.

(<http://www.american.edu/projects/mandala/TED/airport.htm>)

Jones Lang LaSalle (2004: 5) notes the attraction of warehousing and logistics tenants to Kwai Chung, near the container port and with good access to the airport. Warehousing companies found half-way relocations a wise choice (Wan, Cheung, Liu and Tong, 1998: 206).

Box 3**Strategies and policies for attracting distribution centres – Singapore**

(Mark Goh)

Case: Paya Lebar replaced by Changi
<i>Paya Lebar year of opening:</i> 1955
<i>Paya Lebar year of closure (duration of operation):</i> 1981 (26 years)
<i>Paya Lebar distance from city centre:</i> 11 km
<i>Paya Lebar site:</i> 373 Ha
<i>Paya Lebar passenger traffic (1975 - year of decision to relocate):</i> 4 m
<i>Paya Lebar cargo traffic:</i> -
<i>Changi year of opening:</i> 1981
<i>Changi distance from city centre:</i> 20 km
<i>Changi site:</i> 1,300 Ha
<i>Changi passenger traffic (year of closure):</i> 30.4 m (2004)
<i>Changi cargo traffic:</i> 1,775,092 tonnes (2004)

The case of Singapore's airport relocation project highlighted the vital importance of the quality of area's transport infrastructure and its strategic development for attracting distribution centres (Mark Goh, pp 189; Phang, 2003).

Phang (2003: 29) emphasises the Singapore government and Changi airport strategy of "investing in capacity far in advance of actual need... to maximise long run growth." Changi airport opened in 1981 with a capacity of 12 m passengers per annum. Long before the first terminal approached its saturation level, the construction of terminal 2 began and was completed in 1990, raising passenger traffic capacity to 24 m p.a. Subsequent extensions to terminals 1 and 2 and the construction of terminal 3 beginning in 2000 (to be complete in 2006/7) will raise capacity to 64 m p.a. (Phang, 2003: 29). In addition, "it was felt that the MRT [Mass Rapid Transit] system would improve competitiveness in attracting the kind of higher value added investments desired by Singapore" (pp 29). "The explicitly stated target was to have 'as high a percentage of trips on a quality public transport system as Zurich, where 75% of the trips into the city center are by public transport'" (Phang, 2003: 30).

"The MRT had a significant impact on the spatial structure of the city – delivering workers not only to the center but also to some of the areas of employment that have grown up in outlying areas. It also made feasible the development of high-density new towns in outlying areas that would have been considered remote if not for the MRT" (Phang, 2003: 31).

Singapore's success in attracting distribution centres has been a result of an integrated, dedicated, long-term effort to provide all the pre-conditions, conditions and incentives necessary^{iv} (Mark Goh, 189).

Some of the main incentive measures implemented included the creation of:

- Free trade (tax-free) areas around the air freight centre
- Logistics parks were established close to the airport
- Good intermodal connectivity, e.g. to the port
- An electronic paperwork process, known as *Trade Net*, was created, which dramatically reduces the cost in time of red tape. Paperwork now takes minutes to be processed. This has been extremely beneficial as 40% of Singapore's total imports are re-exported. 90% of sea cargo can be cleared by customs within 8 minutes, while 90% of air cargo can be cleared within 14 minutes.

In this chapter a theoretical framework has been laid out for the planning and observed and expected changes discussed in Chapter 5 to be compared against. The key points from the three case studies (Boxes) presented at the end of the chapter will also be used in Chapter 5 as a frame of reference for particular observed property market effects in Athens and for the prediction of property market developments.

Chapter 5: The impact of the relocation and the planning reaction

(The principal urban centres around EV have been labelled in Fig. 16. As the discussion in this chapter refers frequently specific locations and areas please refer to Map 1 and the map of Greater Athens in the Appendix)

The Regional Development Institute study and proposal (1995-1998)

Research, consultation and planning regarding the impact of the relocation on the Messogheia area should have started in the mid-1980s for EV to open in 2001. However, as a result of the faltering of the relocation project over almost two decades, this process began in 1995, the year before construction commenced and just six years before the inauguration of the airport. Thus, the impacts of the relocation were being felt before the planning for them had begun.

In 1995 the Regional Development Institute (RDI) of Panteion University was commissioned by the ORSA to carry out a study titled *Economic Development and Regional Planning of the “Messogheia” Plain 1995-2020: Spatial Planning of the “Eleftherios Venizelos” Airport Area*. This study presented the anticipated impact of the relocation on the Messogheia plain, mainly in economic and urban development terms, and proposed planning measures to regulate it.

The AO, RR and metro³⁷ transformed the Messogheia plain, one of the least accessible parts of the region of Attica, into one of the most accessible, releasing

³⁷ Remember their sections across Messogheia were constructed mainly to provide access to EV.

latent tendencies for urban expansion (OECD, 2004; Romanos, 2004). At the same time, just as predicted by classical von-Thünen land use theory, the improvement in accessibility has led to an increase in the rents, and thus accelerated the land use transition, from a primarily agricultural pattern to an urban pattern of light industries, residences, offices and retail, taking place since the 1960s.³⁸

This intensification of land uses has also been a result of the substantial agglomeration economies the Messogheia plain generates, themselves a consequence of the proximity of an educated labour force and now the potential for businesses to share new transport infrastructure and to benefit from shared business service provision. The educated labour force predated the rapid urbanisation observed since the mid-1990s. The contract for the relocation of the airport and the development of supporting infrastructure such as the AO was signed in 1995.³⁹ Thus, Krugman's 'new economic geography' prediction, that improvements in transport infrastructure accelerate economic convergence, has been demonstrated.

In phase 1 of the RDI study some general spatial development trends were examined and three alternative organisation scenarios were suggested for the Messogheia plain:

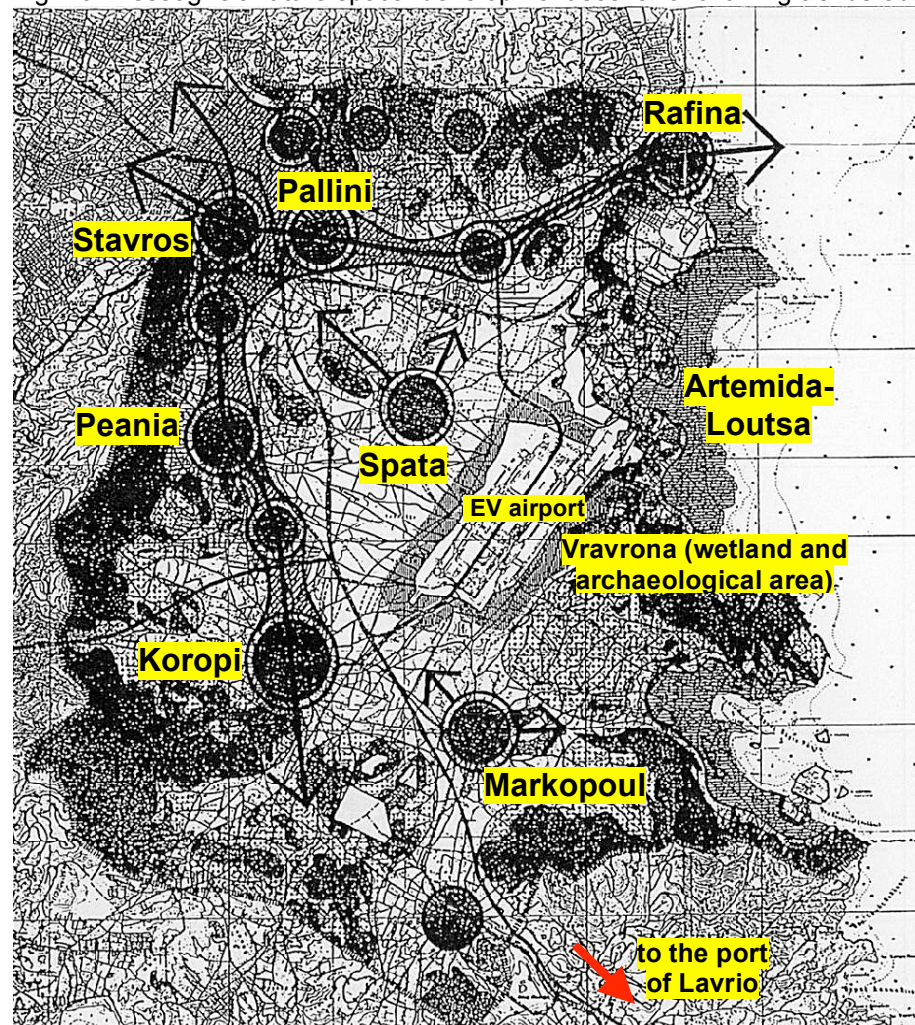
³⁸ There was never a time when the Messogheia plain could not be accessed. Land use change started in the late 1950s. However, gradual transition since that time has been replaced, since the signing of the Airport Development Agreement (ADA) which made official and imminent the construction of EV and its supporting road and rail access, by a much more rapid land use transition.

³⁹ Although most knew that these investments would take place in the given location for since before 1980, the faltering of the project since then meant that people only started to act upon their intentions when the contract for EV's construction, which also made reference to the AO's construction, was signed in 1995 and published the same year in the Government Gazette.

1. Continuation of 1996 development tendencies (Fig. 16)

This least desired scenario, anticipated the perpetuation of the pattern of spatial development in Messogheia in 1996, tending towards the *corridor city* (Newton, 1997 cited in Banister and Berechman, 2000: 120), where unregulated speculative development is attracted to land adjacent to transport corridors, leading to the emergence of haphazard, linear, non-sustainable urban areas.⁴⁰

Fig. 16: Messogheia future spatial development scenario following trends observed until 1996



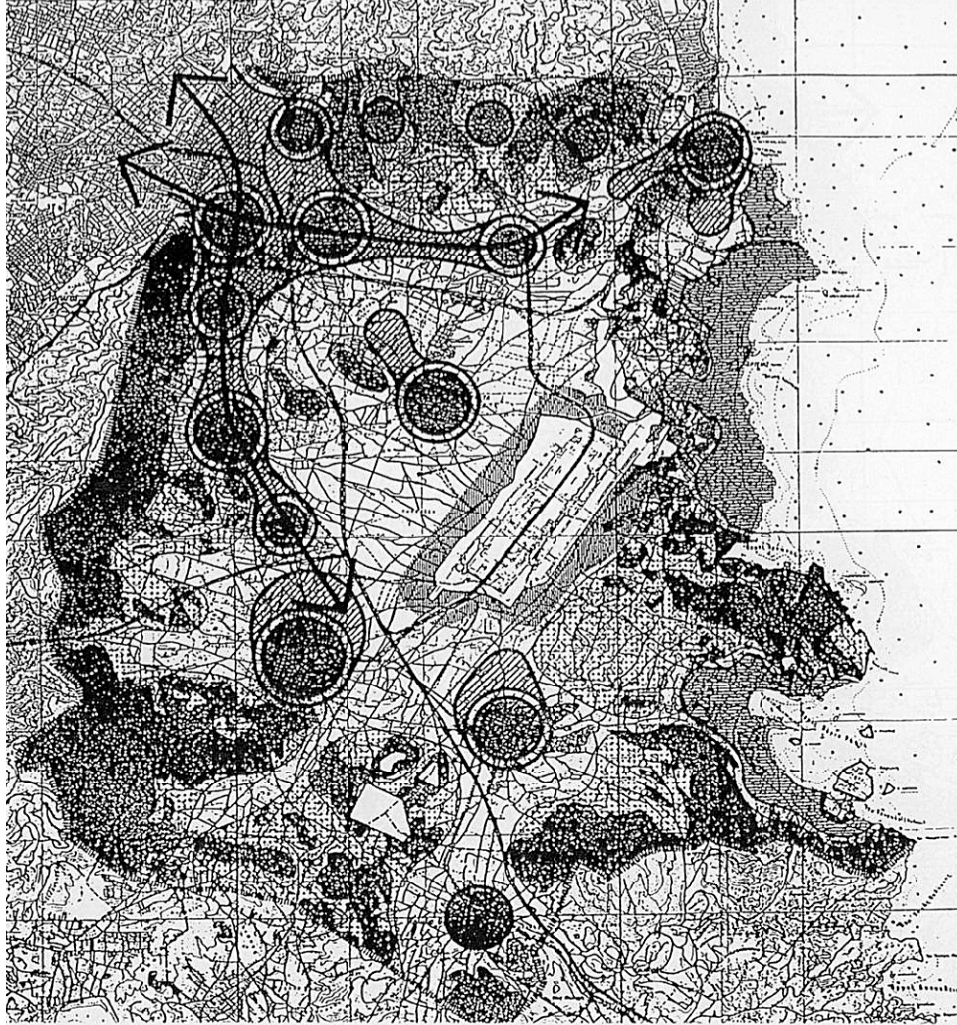
(Source: RDI 1, 1996; own processing)

⁴⁰ In the 1990s industrial and commercial land uses were attracted chaotically along new transport axes (Konsolas and Karaganis, 1996: 5).

In 1999 strong demand for offices was being reported in the press along Lavrion Avenue and Pallinnis Avenue, the principal road axes of the Messogheia plain (TA NEA 24/4/1999).

2. *Limitation of 1996 development tendencies (Fig. 17)*

Fig. 17: Messogheia future spatial development scenario with policies limiting 1996 development tendencies

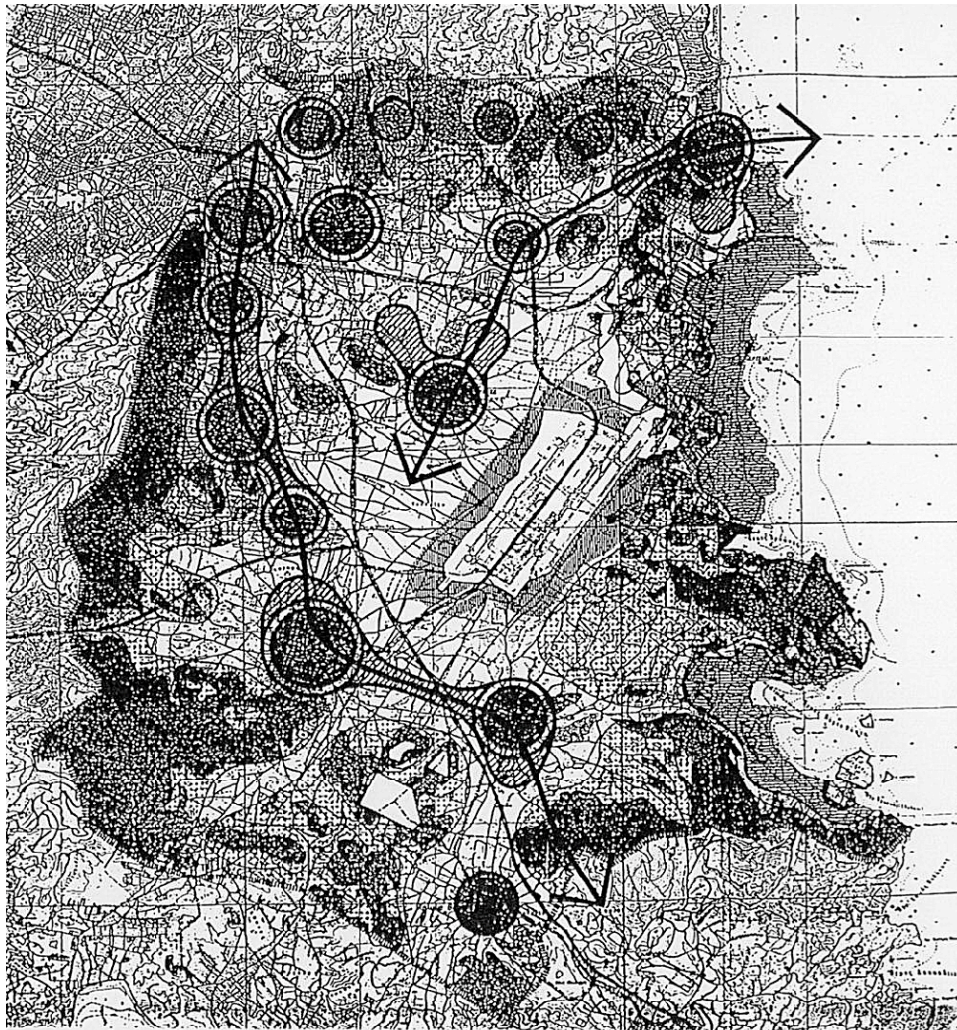


(Source: RDI 1, 1996)

3. *Development distributed between the urban centres around EV (Fig. 18)*

This scenario constitutes a great opportunity for the Messogheia plain (Polychronopoulos and Serraos, 2001: 74-5). Inspired by Ebenezer Howard's Garden Cities and Hillebrecht's works on the development of peripheries of cites, the same authors describe the potential to maintain and develop a polycentric periphery. This pattern reflects the *edge city* (Newton, 1997 cited in Banister and Berechman, 2000: 120) encouraging development at selected peripheral nodes and investing in orbital roads to link the edge cities.

Fig. 18: Messogheia future spatial development scenario with development distributed between urban centres



At the end of the first phase of the study, the RDI came to the conclusion that:

a definite prerequisite will be certain policies of restricting, shrinking or transposing the present trends of the Messogheia urban development, which will be definitely intensified on account of the new airport in Spata

[present author's emphasis] (RDI 1, 1996)

If unregulated, spatial development in the Messogheia plain will in 20 years likely result in the area facing the same problems as many municipalities of the Athens basin, i.e. poor build quality, excessive densities, traffic, incompatibly mixed land uses etc. (RDI 2, 1998: 3-4).

The planning priorities that guided the RDI were thus (RDI 1, 1998):

- The control of urbanisation along the Stavros-Peania-Koropi-Markopoulo and Stavros-Pallini-Pikermi-Rafina transport axes.
- The provision of the infrastructure necessary for regional development to take off.
- The spatial concentration of similar economic activities to minimise their burden on the area.
- The protection of the environment and farming activity.

The RDI (1998: 14-5) suggested it would be feasible and desirable to attract businesses:

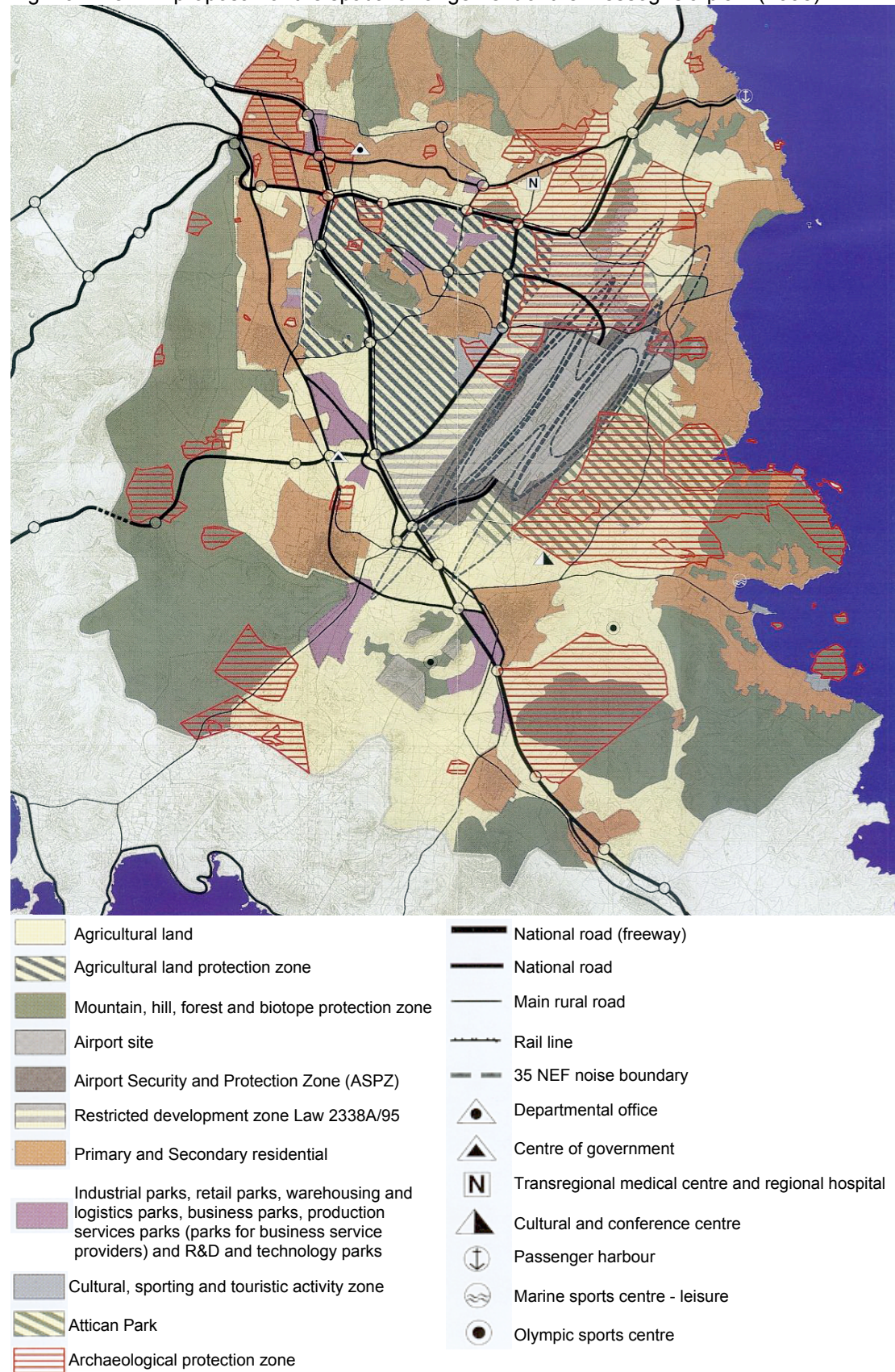
1. *Directly related to the airport*, e.g. catering companies, aircraft fuel suppliers;
2. *Indirectly related to the airport*, e.g. logistics, warehousing and freight companies
Hi Tech Research & Development and Corporate headquarters & Business Service Providers; and
3. *Attracted to locate near an international airport*, e.g. Hi-Tech, R&D and Corporate headquarters & Business Service Providers

The RDI planning proposal (Fig. 19) delineated primary and secondary residential areas and proposed that businesses should be encouraged to locate or relocate to specially organised and serviced locations,⁴¹ in purple in Fig. 19 (Loukakis, 2001: 54). A “zero development” ASPZ (Airport Security and Protection Zone) around the airport, was also proposed. It was meant to provide security to the airport and to mitigate the impact of aviation hazards, noise nuisance and low-level pollution on surrounding areas. The size and shape of the ASPZ was based on the 35 NEF^v noise contour, recognised internationally as the limit beyond which noise becomes a significant disturbance to residential areas.⁴²

⁴¹ Industrial parks, retail parks, warehousing and logistics parks, business parks, production services parks (parks for business service providers) and technological parks (RDI 2, 1998: 15).

⁴² Although the new AIA is legally both a civilian commercial and military airport, and thus may be used by military jets which are much noisier during takeoff and landing, the RDI was obliged by the ORSA to consider only commercial airliners in the calculation of the noise contour.

Fig. 19: The RDI proposal for the spatial arrangement of the Messogheia plain (1998)



(Source: RDI, 1998; free translation of key)

The Messogheia Urban Development Control Zone (MUDCZ) (2003)

Based on the RDI proposal of 1998 and after five years of formal and informal consultation a new UDCZ was legislated in 2003,⁴³ two years after the inauguration of EV and twelve years after the tendering process began for its construction in 1991. This UDCZ supersedes the Attica UDCZ (chapter 2) for the Messogheia plain.

Two important departures from the RDI proposal were made in the MUDCZ:

First, the GTPs of municipalities were extended significantly further than the RDI had suggested. This makes the planning priorities that guided the RDI in its research and proposal (pp. 49) harder to achieve.⁴⁴

Second was the choice not to incorporate the ASPZ, with the argument that the existing Restricted Development Zone (RDZ)⁴⁵ in conjunction with the Vravrona archaeological protection zone (see Figs. 18 and 21), where no development is permitted, would have the same net effect. Offices, commercial, industrial and warehousing uses are not allowed in this RDZ. Residential land uses, which are most likely to be disturbed by excessive noise, although not nominally allowed, may arise through exceptions (Karka, Sapountzaki and Wassenhoven, 2000: 10).⁴⁶

⁴³ Presidential Decree published in the Government Gazette, Fourth Issue N° 199, 6/3/2003

⁴⁴ Based on its proposed GTP extensions and the effects of EV and associated transport infrastructure, the RDI predicted the population of Messogheia would rise from 132,000 in 1996 to 300,000 in 2020 (RDI, 1998: 12). With the greater GTP extensions included in the MUDCZ the population is now expected to exceed 500,000 in 2020 (Loukakis, 2004).

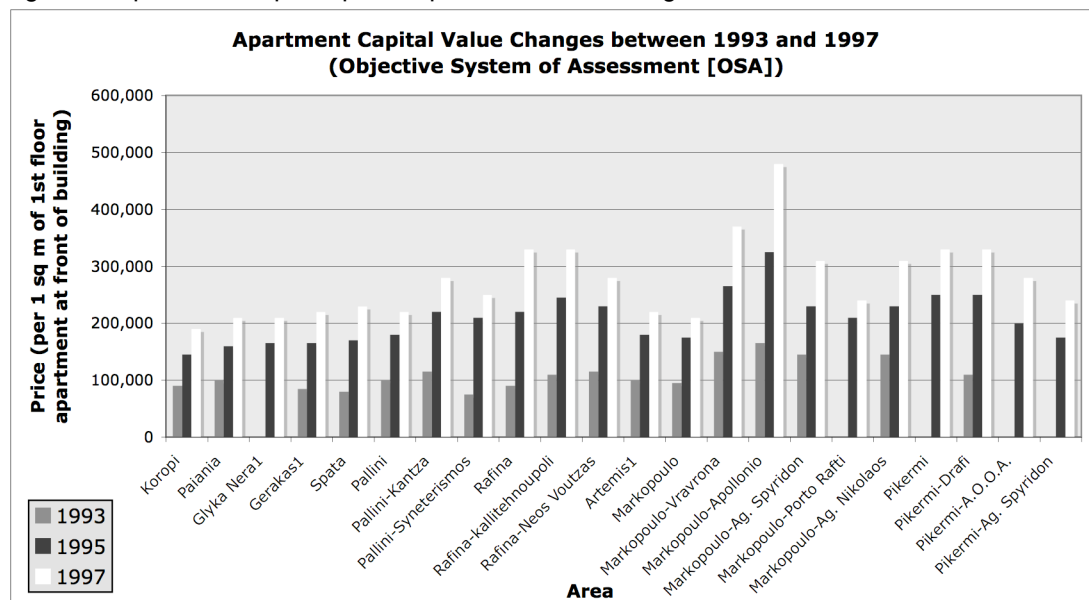
⁴⁵ Defined in the Airport Development Agreement (ADA) ratified by Law 2338/95

⁴⁶ “Even the definition of the Restricted Development Control Zone was a result of the Airport Company’s will to avoid disturbances from urbanisation in the surrounding area” (Karka, Sapountzaki and Wassenhoven, 2000: 13).

The economic impact of EV international airport in Messogheia

By 1998 “the prospect of a new Airport [had] already greatly influenced the development of the area” (RDI 2, 1998: 13) (Fig. 20). Similar increases in capital values only began to be observed in the rest of the Greater Athens area after 1995. In Messogheia, land values rose by more than 330% and apartment prices by more than 125% between 1993 and 2003 in anticipation of EV’s opening (Manolas, 2003: 20; Fidikakis, 2003: 21).⁴⁷ The increasing prices of essentially rural land reflected the expectation of future urban land uses (Sidiropoulos, 1998: 7).

Fig. 20: Capital values per sq m of apartments in Messogheia between 1993 and 1997



(Source: Sidiropoulos, 1998: 14)

The temporary effect on the demand side of the economy appear mainly in the employment of 3,500 people during the construction phase, while the non-temporary effects include the employment of 14,000 people from the commencement of operation (www.aia.gr).⁴⁸ If, as planned, EV is extended and achieves passenger traffic of 23 m p.a. in 2020, employment at the airport may be expected to increase to

⁴⁷ In 1998 purchasing interest in Spata and other areas of the Messogheia plain was, according to real estate agents and members of construction companies, due to the new airport and [the AO] road axis works (Kotsikopoulos, 1998: 43).

⁴⁸ EV attempts to recruit as many of its employees as possible from the residents of Messogheia.

30,000.⁴⁹ A combined indirect and induced employment multiplier of 2.0 was predicted in 1998 (Schill, 1998: 56 cited in Karka, Sapountzaki and Wassenhoven, 2001: 13) (Fig. 21). The jobs created in and around EV represent economic growth for the Messogheia plain and its municipalities, although in essence they may, in part constitute a transfer of jobs from in and around Elliniko AIA.⁵⁰

Fig. 21: Population and employment change in the Messogheia plain

Year	1996	2020	2020*
Population of the Messogheia plain	132,000	500,000	222,000
People employed in the Messogheia plain residing in the same area	40,100	152,000	67,000
People employed in the Messogheia plain residing in the Athens metropolitan area		68,400	
Total employment in the Messogheia plain		≈ 220,000	

*Counterfactual: if EV had not been built in the Messogheia plain

(Source: Konsolas and Karaganis, 1996: 12; RDI 2, 1998: 12; own processing)

Property market and spatial development impacts in Messogheia

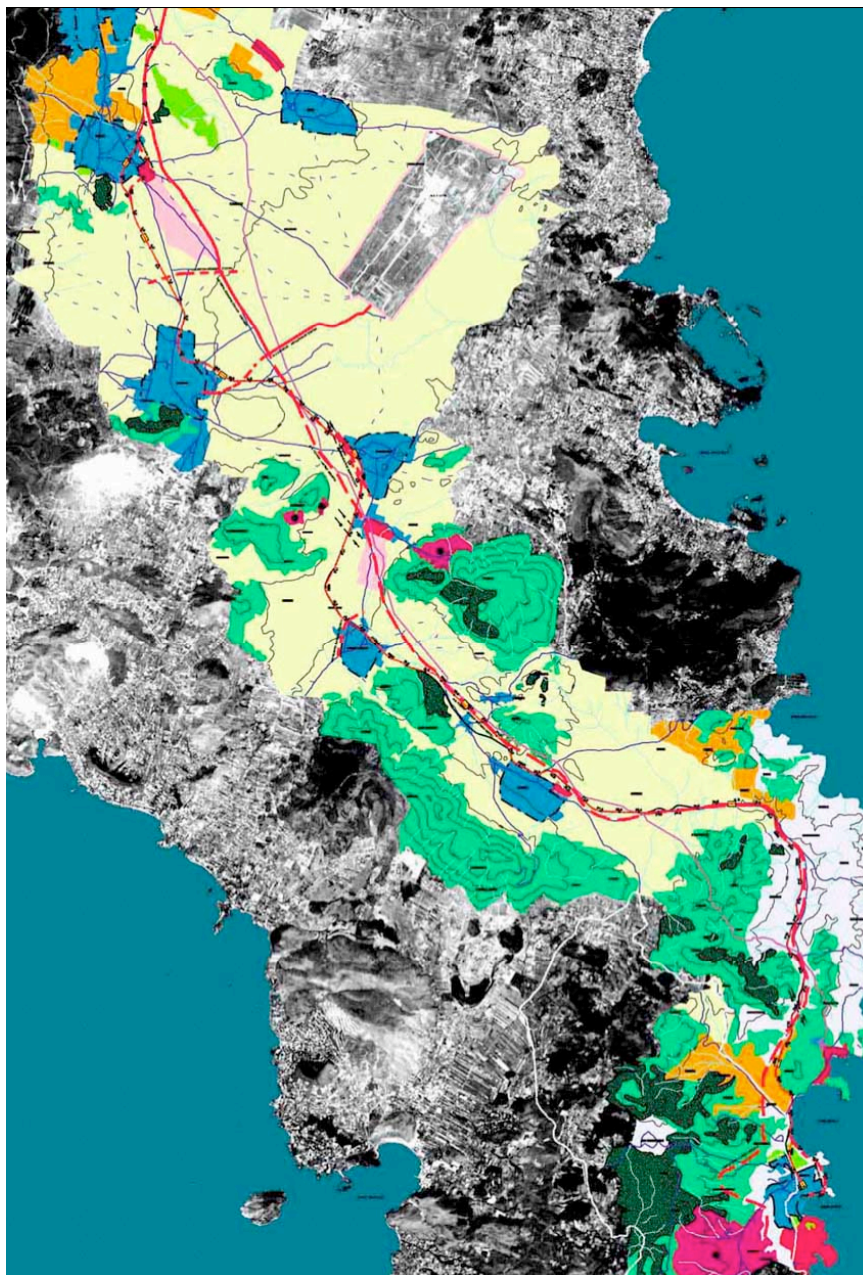
Owing to Messogheia's constrained location, land and property values are expected (Romanos, 2004: 180), as predicted by Flyvbjerg (2003: 66-7), to continue to increase more swiftly than in the rest of Greater Athens, even when the degree of urbanisation reaches comparable levels to those of the Athens basin.

EV has led a wave of development around Athens. The port of Piraeus, saturated by both passenger and cargo traffic and with little space for expansion is undergoing redevelopment as a dedicated cargo port and intermodal transfer point to road and rail networks. The port of Lavrion in southeast Attica (Fig. 16) is to take over as Athens' primary passenger port. Its selection is based mainly on the space available

⁴⁹ In its first year of operation EV registered passenger traffic of 10.5 m and employed 14,000, a ratio of 750 passengers to every employee. Similar ratios have been recorded for London's Heathrow airport (Banister and Berechman, 2000: 294). Thus, if passenger traffic increases to 23 m in 2020 (Konsolas and Karaganis, 1996: 13) one might expect EV to employ 30,000 people in the same year.

⁵⁰ Remember in this dissertation we are investigating local economic effects so that any economic growth in either of the areas is valid and worth mentioning. (I have not located any data regarding airport-related job losses in the Elliniko area.) If we were looking at the regional economic effect of the relocation, this "transfer" rather than "creation of new" jobs would be much more important.

for expansion, compared with Rafina, which is to remain a secondary passenger port (Sidiropoulos, 1998: 5). The RR network is being extended northeast to Chalkis, southeast to the port of Lavrio and west to Corinth in the Peloponnese. This has instantly converted settlements such as Megara and Chalkis, 60 and 80 km from Athens respectively, into potential future commuter towns, sparking investors' and developers' interest.



Map 3: East and southeast Attica showing Eleftherios Venizelos, the new AIA (black and white rectangular area at top centre), AO (red line), protected mountain/forest areas (green), built up areas (blue) and the port of Lavrion in the extreme south east (red area).

The RR is one of the most positive aspects of the airport relocation project for the urban future of the Messoghei plain. It is identified as a welcome departure from the US model of car-centred access (Sarigiannis, 2001: 55). It is common knowledge in Western Europe that the construction of more roads is unsustainable, leading only to more congestion (Banister and Lichfield, 1995; Banister and Berechman, 2000).

In light of the importance which contemporary development theories place on ICT and infrastructure addition to transport, one should note the under provision of high-speed ICT and even of basic infrastructure such as drainage and electricity and the poor maintenance of local roads. This in an area planned to become Athens' new centre of business, research, hi-tech industry and commerce. Combined with the relative dearth of measures to eliminate bureaucracy and provide economic incentives compared with examples such as Singapore's strategy for attracting distribution centres, the draw of the area for multinationals and hi-tech industries, the stated goal according to the RDI and the MUDCZ might be compromised.

If, however, these infrastructure shortcomings are overcome, incentives are offered to businesses and the MUDCZ is implemented and enforced. The current property boom in the area can be expected to continue.

The residential sector can be expected to do very well in the northwest of the plain. In Artemida it will not do as well as this area will suffer the greatest noise nuisance. The southeast coastal areas of Messogheia should do very well out of the relocation, benefiting from greatly improved accessibility and not suffering much noise nuisance. The southwest and northeast are not likely to do as well as the northeast but neither

as poorly as Artemida. Theory would direct residential development to a distance from the AO and RR where noise will not be a nuisance.⁵¹

The industrial sector can be expected to excel in Koropi and Markopoulo benefiting from AO and RR access. As a land use it will not be disturbed by noise. If the infrastructure fundamental for industrial development is installed, then one can expect the greatest industrial property values and rentals to emerge in the *industrial parks*: south of Koropi; between Koropi and Peania; and between Pallini and Pikermi.

Enhanced accessibility and a growing population stand to cause a booming of the retail sector in the centres of settlements. The success of the retail park on the airport site⁵² bodes well for the retail parks in the MUDCZ. Much of the success of the airport retail park may be related to the proximity of the airport RR/metro station. The theory has told us that retail is the sector that benefits most from rail transit access. Thus, it is clear that all the retail parks should benefit from direct access by RR/metro as well as by road.⁵³

The Peania office park is set to witness the greatest demand and values as it has direct access to the AO and RR/metro, is the closest to Athens and is furthest from the 35 NEF noise contour. However the other office parks south of Markopoulo, between Koropi and Peania and the two to the north of Spata stand to do very well as offices are relatively insensitive to noise. All this will however depend again on the provision of the requisite infrastructure, especially high-speed ICT.

⁵¹ Some crime (e.g. theft) tends to be attracted at rail transit stations: another reason to develop residential uses at some distance.

⁵² It is within EV airport's remit, according to the Airport Development Agreement (ADA), to develop eight predetermined areas of the EV airport site to stimulate development in the region. One area let as a retail park hosts two successful superstores.

⁵³ By providing direct access by rail one will achieve higher rates of public transport patronage, one of the goals of sustainable urban development (Banister and Lichfield, 1995: 3).

Airport related office occupiers in Elliniko, were expected to move to Messogheia after the relocation was announced in 1995. This has not happened. Office occupiers have been following a wait-and-see strategy and preferring half-way relocations within the Athens basin to areas with good access to the new AIA, such as Messogheion Avenue and the AO's intersection with Kifissias Avenue (Kostikopoulos, 1998: 43; TA NEA, 24/4/1999: 132). This course of action reflects the choices made by freight forwarders and logistics companies in Hong Kong in 1997 (see Box 2, Chapter 4). Warehousing and logistics companies have been following the same strategy preferring to remain along Vouliagmenis Avenue or in Thriassio Pedio (Map 1).⁵⁴ Relocating to Messogheia entails a number of unknowns and disadvantages: the area lacks infrastructure and toll charges on the AO are a substantial cost.

If rapid, focused and organised development is to take off in the “parks” legislated, development and location incentives cannot be emphasised enough. In Singapore a great variety of economic incentives have been employed to attract distribution centres to great effect (see Box 3, Chapter 4). Attracting large-scale office developers and occupiers will depend more on such incentives than will retail and industrial development. Greenfield office locations, with poor infrastructure provision, particularly ICT are a risky venture compared with locations in one of the secondary Athens CBDs (Walmsley and Perrett, 1992: 128). This does not hold for retail and industrial developments for which large Greenfield sites are likely to be very appealing.

⁵⁴ Thriassio Pedio (Map 1) is emerging as the principal intermodal freight and cargo interchange offering access to the P.A.T.H.E. motorway, the AO and the RR and thus gaining access to Eleftherios Venizelos airport and the port of Piraeus. This parallels the pattern observed in Hong Kong where warehousing and logistics tenants have been attracted to Kwai Chung, near the container port and with good access to the airport (Jones Lang LaSalle, 2004: 5).

Developers of the business, technology and innovation parks could be convinced to contribute to the construction of RR/metro interchanges with potential local transit systems to the parks themselves, or to the integration of the stations themselves into the parks in exchange for “air rights” allowing them to construct above a station (Walmsley and Perrett, 1992: 129).

The creation of a quasigovernmental local development agency⁵⁵ to undertake the arduous task of consolidating land and property titles and acquiring pre-approval for developments (Walmsley and Perret, 1992: 129, 136) and facilitating cooperation between businesses (Sapountzaki and Karka, 2001: 424-5) could stimulate development in the business parks. This agency could also stand for local interests and negotiate with large developers for their contribution to integrating their developments and the areas transport networks harmoniously.

⁵⁵ Quasigovernmental organisations (quangos) and development agencies have been successful in attracting distribution centres to Singapore (Goh: 202); in promoting businesses to agglomerate in London’s docklands in the 1980s; in improving efficiency during the relocation of Hong Kong’s airport by acting as a liaison between the government and non-government agencies (Box 2); and, in some cases, in the field of rural development elsewhere in Greece (Sapountzaki and Karka, 2001: 420). Stakeholder committees representing a number of local authorities have effectively defended local interests against powerful development pressures in the hinterland of Baltimore/Washington airport (Sidiropoulos, 2008: 6).

The redevelopment of the Former Airport Site (FAS)

Increasing open green space in Athens has been a consistent target of planning (Sapountzaki and Karka, 2001: 419). Yet Athens is among the world's capital cities with the fewest square metres of communal green space per inhabitant.⁵⁶ Restricting development is too costly both financially and politically, there being no mechanism to realise the positive externalities which more open space would certainly create.

Article 9 of the Airport Development Agreement (ADA – Law 2338/1995) stipulates that the majority of the FAS is to be converted into a Green Metropolitan Park after the relocation of AIA. Despite this between 1995 and 2002 the FAS was facing great pressure to maximising its commercial exploitation (see Fig. 11).^{vi} Some criticism even came as it were from within the park lobby.^{vii} These pressures attracted heavy criticism from planners, architects, environmentalists, local municipalities and the inhabitants of the area. Although the “park lobby” was led by political and social, rather than planning and economic arguments, through support in numbers it has been remarkably effective.

In 1999 the National Metsovo Polytechnic (NMP) was commissioned by the ORSA to carry out a study and plan for the redevelopment of the FAS. This was the first study to recommend that the majority of the site be converted into a park, as the ADA stated, selling some of the plot for “mild residential development” in order to finance the establishment of the park. However, the “park lobby” has deemed the dedication of *any* of the FAS to development unacceptable. In 2001, the MEPPW announced an open international tender for designs for the future use of the FAS, with the specifications that they should incorporate a large metropolitan park, a convention/exhibition centre and cultural/sporting facilities. DZO Architecture,

⁵⁶ Just 2.5m², compared with 12m² in London and 50m² in Washington DC.

Philippe Coignet, Ryosuke Shimoda and Erwin Redl submitted the winning tender (www.minenv.gr/hellinikon-competition).

In the run-up to the Athens 2004 Olympic Games, the regeneration of the FAS was deferred until after the games. It was decided to regenerate the southern seaboard from the Aghios Kosmas sporting complex on the seaboard in front of the FAS north-westwards towards Piraeus, for the Olympics incorporating various sports venues. Several of these venues including the softball and canoeing facilities would be constructed on the FAS. A tram network was constructed in the 2003-4 period granting access to the FAS and Faliro from central Athens along the coast. Metro line 2 is being extended south-eastwards and is planned to reach the FAS in 2009, making the site accessible from the centre of Athens in 14 minutes.

The debate as to the future of the FAS was in deadlock until after the Olympics. In the spring of 2005, the liberal *New Democracy* government announced that the FAS redevelopment project was to recommence and invited the winners of the 2001 design tender to prepare an updated in-depth plan by October 2005. Of the total 530 Ha, 100 Ha (20%) will be sold for luxury residential development,⁵⁷ the revenues from which are to be used to establish a 400 Ha⁵⁸ (75%) metropolitan park and a number of smaller parks across parts of the Athens basin lacking green space. The remaining 30 Ha comprised mainly of the old east terminal and customs warehouses, under the management of *Greek Tourist Real Estate S.A. (Ellinika Touristika Akinita A.E., Ελληνικά Τουριστικά Ακίνητα Α.Ε.)* since 2001, are to be converted into a convention/exhibition centre and luxury hotel. The exploitation of the Olympic sports

⁵⁷ The intended development of 20% of the FAS as high quality, upper class housing to be sold at the highest attainable market price does not strive for values of sustainability in terms of the mixing of upper and lower class housing, together with subsidised and social housing as in the case of Munich's Messestadt Riem airport redevelopment (Avgouropoulou, 2001: 104).

⁵⁸ Making it the largest park within an urban area in Europe (Hyde Park [London], 255 Ha; Parc de la Villette [Paris], 55 Ha; Jardin du Luxembourg [Paris], 25 Ha; Parc des Buttes Chaumont [Paris], 23 Ha; Parc del Buen Retiro [Madrid], 120 Ha; Parc Guel [Barcelona], 17 Ha) (Daliani, 26/3/2005: N18).

facilities falls under the auspices of Olympic Real Estate S.A. (*Olympiaka Akinita A.E.*, Ολυμπιακά Ακίνητα Α.Ε.).⁵⁹ The proportion of green space to the total area of the FAS is well in excess of that in the case of Munich Riem's redevelopment (see Box 1, Chapter 4), where less than 50% of the site was devoted to green space. Of course the priorities in each case were different: in Munich the site was to become a semi-autonomous satellite settlement for the city of Munich, whereas in the case of the FAS in Elliniko, there was never a stated intention to make the redevelopment autonomous. The priorities, in the case of Elliniko, were issues of sustainability and lack of open/green space in Athens.

The proposed establishment of *ad hoc* agencies to take over Elliniko park project and other regeneration projects across Athens, such as the regeneration of Elaionas industrial district (NTUA, 1998), is a first for Greece (Sapountzaki and Karka, 2001: 422).

Observed and anticipated property market effects around the FAS

From the relocation of AIA, the creation of a park on a substantial portion of the FAS and the regeneration of the Saronic waterfront, we can safely anticipate a number of effects. The hazard and noise nuisance of having an airport in the midst of a built up area has been removed, the low-level pollution resulting from constant landings and take-offs (Janic, 1999) will no longer be present and nor will the congestion of the area's road network with vehicles on their way to or from the airport.⁶⁰ The 1997 Harvard University ISOPOLIS study argued that the creation of a 400 Ha park on the

⁵⁹ (Sources: www.in.gr/news/article.asp?lngEntityID=611021; Daliani, 26/03/2005: N18; www.business2005.gr/eC_NewsItem.asp?id=10900&lg=GR; Paschalidou, 22/03/2005)

⁶⁰ The decisions to relocate Hong Kong's and Singapore's airports were based on growing passenger traffic but also location of the former airports within built-up areas with all the dangers and noise nuisance this incurs. Land reclamation was used in both cases to create the necessary land for a take-off and landing noise footprint almost entirely over water, save for the airport site itself.

FAS would not significantly improve the Athens basin micro-climate (not central enough), but it would lower temperatures in the Elliniko area by up to 1°C (Koumoundouros, 2001: 95).

Regardless of the exact proportion of the FAS dedicated to a park, the relocation of the airport away from Elliniko is likely to make the municipalities bordering on the site more desirable locations for residential and commercial property (Thaka and Mavrogonatou, 2002: 142).⁶¹

Even though apartment prices in the four municipalities bordering on the FAS increased by on average 84% between 1998 and 2001 in anticipation of the airport's closure and the regeneration of the area for the 2004 Olympic Games (Fig. 22), demand for residential property is expected to increase yet further beginning in 2005 (MEPPW, 2001). Small increases in values are expected even in the municipalities of Faliro, Glyfada, Voula, Vouliagmeni, Varkiza, and Vari, already amongst the most expensive areas in Greece and, apart from Glyfada, not immediately adjacent to the FAS. The greatest increases in values are expected in the municipalities of Elliniko,⁶² followed by Alimos and Argyroupoli, where although values almost doubled in the 1998-2001 period they remain at significantly lower levels than those recorded in Glyfada. The residential property sector in these municipalities depends most closely on the nature of the FAS is redevelopment. Capital values in Elliniko are anticipated to reach comparable levels to those in Glyfada (Thaka and Mavrogonatou, 2002: 142).

⁶¹ The higher the proportion of the FAS redeveloped as a metropolitan park the more substantial the increases in residential values in the four neighbouring municipalities: house prices can be expected to rise by between 5.9% and 18.9% in the municipality of Elliniko depending on whether 25% or 80% respectively of the FAS is developed into a park (Thaka and Mavrogonatou, 2002: 142).

⁶² 83% of Elliniko municipality is part of the FAS, compared with 10% of Alimos and 5% of Argyroupoli, the last also being a rather densely built area without access to the seafront.

Fig. 22: Changes in population and residential property values around the FAS in the 1990s

Municipality	1991-2001 Population Increase	1998-2001 Residential Price Increase	Neighbourhoods within municipality with relatively low residential prices
Elliniko	13.8%	83.2%	Northeastern Elliniko
Alimos	19.3%	74.1%	Kalamaki, Ano Kalamaki and Trachones
Argyroupoli	5.6%	92%	Kato Argyroupolis and close to boundaries with Ilioupolis and Elliniko
Glyfada	26.1%	84.9%	Terpsithea, Ano Glyfada

These are the neighbourhoods likely to see the greatest increases in residential property prices as a result of the amelioration of the living environment resulting from the relocation of AIA, the potential creation of a Metropolitan Park, the regeneration of the waterfront and the improved access to the area by tram and metro.

(Source: MEPPW, 2001 own processing)

The retail and office sector is experiencing higher than usual vacancy rates. However, retail is expected to do particularly well out of the FAS redevelopment in Argyroupoli, while neighbouring municipalities, such as Glyfada, already have more developed retail sectors. Alimou Avenue, linking the coastal Posidonos Avenue with the inland Vouliagmenis Avenue is expected by the MEPPW (2001) to continue to rise in retail importance, despite showing 50% retail land use already, and has over the last couple of years been attracting much construction activity, particularly at the intersections with Posidonos and Vouliagmenis Avenues, as there are still plots available.

Two very important developments for the retail sector around the FAS are the existing tramline along Posidonos Avenue and the metro that will run along Vouliagmenis Avenue from 2009 onwards. Retail has been shown to be the property sector that benefits most from the proximity of rail transit stations. As Alimou Avenue is short and lies between these two lines, it stands to benefit substantially.

The section of Vouliagmenis Avenue just before the FAS on the way out of central Athens is expected by the MEPPW (2001) to continue to show moderate retail intensity, with a small number of hyperstores benefiting from good road access. The section of Vouliagmenis Avenue leading from the FAS further out of Athens is the

most expensive and has the advantage of passing through high-income areas (MEPPW, 2001).

The currently declining property market is doing worst in the office sector since has been overinvestment in new office space over the last five years. Thus, vacancy rates are high and rents and values have dropped noticeably (DB Real Estate, 2003: 6-8). Airport related office occupiers began to move since 1995 from Posidonos and Vouliagmenis Avenues to Messogheion, Kifissias and other locations in the Athens basin with good access to the new AIA.⁶³ Offices on Vouliagmenis however, are finding new occupants as many large office occupiers, such as shipping companies, are moving out of Piraeus in search of newer office stock with better access by car. The MEPPW (2001) expects Vouliagmenis Avenue to be competing in the office sector with the secondary CBD of Kifissias soon.

Decline can only be anticipated with some certainty in the logistics, warehousing and freight property sector. This sector is still showing some resilience along Vouliagmenis Avenue but competition can be expected to convince companies to relocate in the medium to long-term, whether to the Messogheia plain or Thriassio Pedio.

⁶³ The half-way relocations described in the previous section regarding the Messogheia plain.

Chapter 6: Conclusions

Numerous large infrastructure projects of the last decade⁶⁴ are transforming the city of Athens, Greater Athens and Attica at large. The project to relocate AIA, together with the AO and RR links to the rest of Attica, has been the most significant of these infrastructure projects for spatial development at all scales.

The replacement in 2001 of the airport at Elliniko by a state-of-the-art facility with a passenger and freight capacity well in excess of current levels agrees with the long-term strategic goals of the Attica RDP 2000-2006, namely national and metropolitan economic growth, as well as promoting Athens as the gateway to Greece and the eastern Mediterranean and as a Global City.

The urban development of Messogheia over the past four decades has been characterised by the contravention planning regulations, including the Attica UDCZ and the Athens Master Plan. The AO and RR networks providing access to AIA have since 2001 rendered this previously remote location one of the most accessible areas in Attica. Combined with the new airport and the growing importance of the ports of east Attica, the development pressures on the area have been greatly amplified.

Planning for the effects of the relocation on the Messogheia plain did not begin until 1995. The RDI, commissioned to carry out the study, identified a tendency toward uncontrolled urban sprawl and incompatibly mixed land uses along the length of the new transport axes. The plan they submitted in 1998 suggested moderate extensions to GTP areas; the concentration of business activities in serviced “parks”; the

⁶⁴ Relocation of Athens International Airport, AO, RR, metro network, tram network regeneration of central Athens, regeneration of the Saronic waterfront, sporting and cultural infrastructure for the Athens 2004 Olympic Games

creation of an Airport Security and Protection Zone (ASPZ) around the airport site to mitigate aviation hazards and noise and pollution nuisance; and the preservation of areas of natural and cultural heritage.⁶⁵

The MUDCZ which resulted after five years of consultation extended the GTPs by more than was proposed by the RDI, so that the population of the plain is expected to rise from 132,000 in 1996 to over 500,000 in 2020 instead of 300,000 according to the RDI plan. The ASPZ was omitted so that various land uses may now develop through planning exceptions in close proximity to the airport site. Most importantly from a property market perspective, the “serviced” business, technology, warehousing and logistics, and retail parks, have not been provided with the necessary infrastructure, such as good local level transport networks, drainage and sewerage, ICT and electricity infrastructure, to say nothing of some of the more daring incentives offered by governments elsewhere.⁶⁶

The residential property sector can be expected to continue to rise in the northwest of the plain and on the southeast coast. The northeast coast is likely to suffer from noise nuisance affecting values and rents. The industrial sector is likely to do very well around Koropi and Markopoulo, benefiting from excellent intermodal access to the airport, the ports of Piraeus and Lavrion and the motorway and rail networks to the rest of the country. Rapid industrial sector growth may be expected if the infrastructure necessary for the take-off of the industrial parks is provided. Office sector development will at least in the short and medium-term depend on businesses benefiting from proximity to EV AIA rather than businesses directly or indirectly related to the airport. The latter have since the late 1990s preferred half-way relocations from Elliniko. Office sector growth based on the location in Messogheia of

⁶⁵ Agricultural, mountain and forest, and archaeological areas.

⁶⁶ e.g. Singapore (see Box 3, Chapter 4)

large corporate headquarters hinges on the provision of excellent ICT infrastructure, far from the case at the moment. Retail has been the most successful of the property sectors in Messogheia since the relocation. Already two superstores have located on land owned by the airport company and more retail development of this nature can be expected along the length of the AO and RR, particularly at RR stations if incentives and infrastructure are provided. The relocation of freight and logistics companies to Spata has not been as marked as anticipated, owing to the lack of infrastructure and the cost of tolls on the AO. Maintaining existing facilities such as at Thriassio Pedio⁶⁷ is an attractive alternative.

The FAS was threatened with complete commercial exploitation in the late 1990s. In 2001 a design tender was held with the winners proposing the use of the majority of the site as a park. Redevelopment was interrupted for the use of the site to host sporting venues for the 2004 Olympic Games. The waterfront around the FAS was regenerated in the run-up to the games and has benefited from a new tram, to be complemented in 2009 by metro access from central Athens.

The winners of the 2001 tender have been invited to submit an updated plan to the MEPPW by the autumn of 2005. It seems likely that 20% of the FAS will be sold for commercial residential property development. A luxury hotel, a conference centre and some super-regional infrastructures⁶⁸ will be hosted on-site and approximately 70% of the site will be devoted to a metropolitan park.

In the municipalities of Elliniko and Alimos the residential property sector is likely to rise to among the most expensive in southeast Athens. The luxury housing to be constructed on 20% of the FAS will contributing to the residential sector boom. Retail

⁶⁷ At the intersection of the AO and RR with the P.A.TH.E. motorway and the national rail network, with access to the ports of Piraeus and Lavrio.

⁶⁸ e.g. air traffic control and Olympic sporting facilities

is expected to continue to do well along Posidonos Avenue and increasingly well on Alimou Avenue benefiting from access by tram and in the latter also by metro from 2009. Having suffered the worst of the property market downturn over the last couple of years, the office sector will pick up along Vouliagmenis Avenue as occupiers of old, poor quality offices in inaccessible Athens neighbourhoods seek better accommodation. A land use change to be noted⁶⁹ is the continued loss of freight and logistics companies to areas that are better intermodally connected.

Chronic weakness of the Greek planning system to legislate and enforce comprehensive plans and to limit urban expansion may be endangering the urban future of Messogheia, as well as hindering its economic take-off. In view of Elliniko airport's closure the municipalities around it have also witnessed booming property markets since the mid-1990s. Intermittent planning for the future of the FAS has resulted in approximately 70% of the site being dedicated to a 400 Ha metropolitan park, and 20% to high-end residential development, both contributing to the development of the property market of the municipality of Elliniko in particular. Delays in planning and legislation are particular problems since the spatial and urban development effects of large infrastructure projects, thus take hold before the instruments are in place to regulate them.

What can the AIA relocation project learn from and contribute to international experience? Maybe the clearest lesson has been that just as in Hong Kong (see Box 2, Chapter 4) freight, logistics and warehousing companies take into serious consideration other factors such as well-connected intermodal exchanges, as well as the location of an international airport, as proved by wait-and-see strategies and half-way relocations. Second, the hope to facilitate the development of the Messogheia

⁶⁹ Other than the change of the FAS itself from an international airport to a sporting venue for the 2004 Olympic Games, to a Metropolitan Park and high-end housing development.

plain concentrating activity in organised, serviced locations requires not only stringent enforcement of planning rules but also the employment of inventive economic incentives and the use of non-governmental development authorities, such as have been used in Hong Kong and Singapore (see Boxes 2 and 3, Chapter 4). Third, the assertion that strategic investment in new transport infrastructure can accelerate a region's economic development is being supported. Hopefully, in future the upgrading of travel infrastructure such as extensions to EV airport and the RR network will take place with foresight in advance of the saturation of existing facilities, as in the case of Singapore (see Box 3, Chapter 4), raising long-term economic growth rates. Finally and on a more optimistic note, the anticipated redevelopment of approximately 70% of the FAS as a metropolitan park suggests that sustainability priorities can stand up to development pressures even under the adverse planning conditions that have prevailed in the recent past in Greece.

WORD COUNT: 10,876

Epilogue

The limited space available to develop this dissertation's argument has meant the exclusion of substantial portions of the theoretical material, international experience information and current insights from news media. In the case of the last, this may be for the best as events are unfolding so rapidly in both locations that today's news may well be out of date by tomorrow.

The time required to collect, analyse and present the variety of information in this dissertation has prevented me from carrying out any primary data analysis. Accurate and up-to-date data on the Greek property market is hard to come by. The most reliable information can be obtained from international property consultancies such as DB Real Estate, Jones Lang LaSalle, DTZ or FPD Savills, and a couple of Athens based consultants. However, only general property market overviews are easily obtainable from these sources. Primary property data is on the other hand easily obtainable from the Objective System of Assessment (OSA) (taxable value) kept by the Ministry of Economics,⁷⁰ and the Relative Price System of the Revenue Offices (RPSRO) kept by the Revenue Offices of the municipalities. Prices under the OSA are significantly lower than the market values of properties and only reflect them through their level relative to those for other areas and in how they change over time. Future work on the topic could incorporate time series analyses of property values from the OSA and the RPSRO.

Through the course of this dissertation I have become increasingly interested in the spatial and urban development of the region around greater Athens and the impact

⁷⁰ "The Objective System of Assessment (OSA). The OSA was created in 1988, changed in 1993 and were completed in 1995. The last revision was done in 1997. The system covers most of the main traditional built up areas as well as new ones which were created by civil co-operatives during the last years" (Sidiropoulos, 1998: 8).

on this development of improving transport connections and varieties of transport modes.

The interplay of regional and metropolitan governance and local and regional economic development has also sparked my interest.

The protection and enhancement of areas devoted to open and green space in Athens have been recurring thoughts throughout the research for this dissertation. Yet, year on year Athens encroaches upon the largest expanses of mountainous open spaces in close proximity to the city: Mt. Ymittos, Mt. Aegaleo, Mt. Parnitha and Mt. Pendeli. Surely, it is easier to preserve a fairly well defined green area and improve access to it for the public than to create or preserve open space in the midst of a city or an economically booming area.

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Appendix

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Map of central Attica showing the population catchment of a 400 Ha park on the former airport site (red) and areas in west Athens lacking green space more greatly than the Elliniko area	87

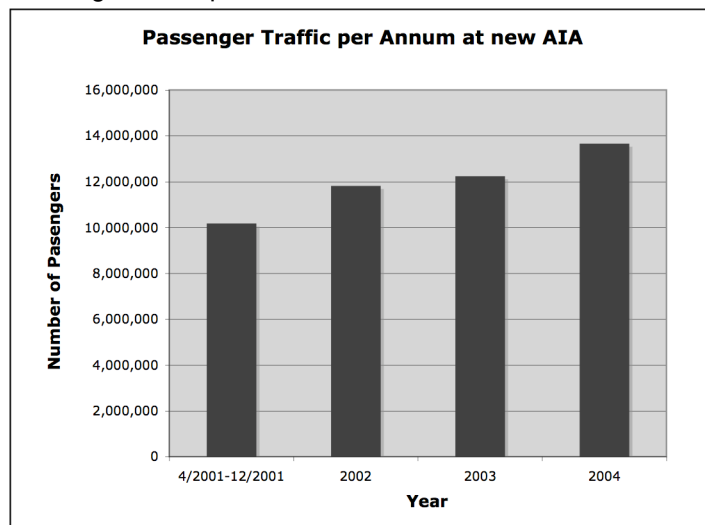
Athens “Eleftherios Venizelos” international airport summary figures

Case: Elliniko replaced by Eleftherios Venizelos
<i>Elliniko year of opening: 1937</i>
<i>Elliniko year of closure (duration of operation): 2001 (64 years)</i>
<i>Elliniko distance from city centre: 11 km</i>
<i>Elliniko site: 530 Ha</i>
<i>Elliniko passenger traffic: 11 m (2001)</i>
<i>Elliniko cargo traffic: -</i>
<i>Eleftherios Venizelos year of opening: 2001</i>
<i>Eleftherios Venizelos distance from city centre: 26 km</i>
<i>Eleftherios Venizelos site: 1,750 Ha</i>
<i>Eleftherios Venizelos passenger traffic: 13.7 m (2004)</i>
<i>Eleftherios Venizelos cargo traffic: 119,000 tonnes (2004)</i>

(Sources: Hadjihambi & Deriziotis, 2002; www.aia.gr; own processing)

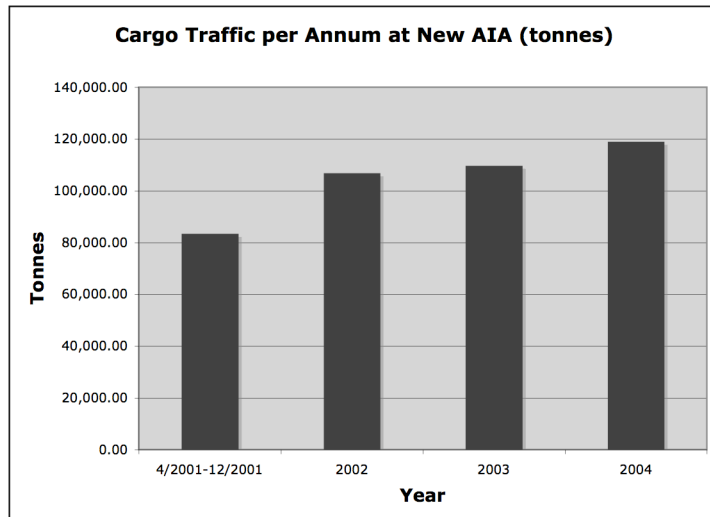
After the 11th September 2001 terrorist attack, six months following AIA’s opening and the resulting slow down in the air transport market, traffic figures have been growing strongly (see Figs. 15, 16 & 17 below). EV is on course to achieving the predicted passenger traffic of 23 m p.a. and 350,000 tonnes of cargo p.a. in 2020. The airport will have been extended by then reaching its maximum design capacity of 50 m passengers p.a. and 950,000 tonnes of cargo p.a. (www.aia.gr; Konsolas and Karaganis, 1996: 13; own processing).

Passenger traffic per annum at Eleftherios Venizelos, the new AIA:



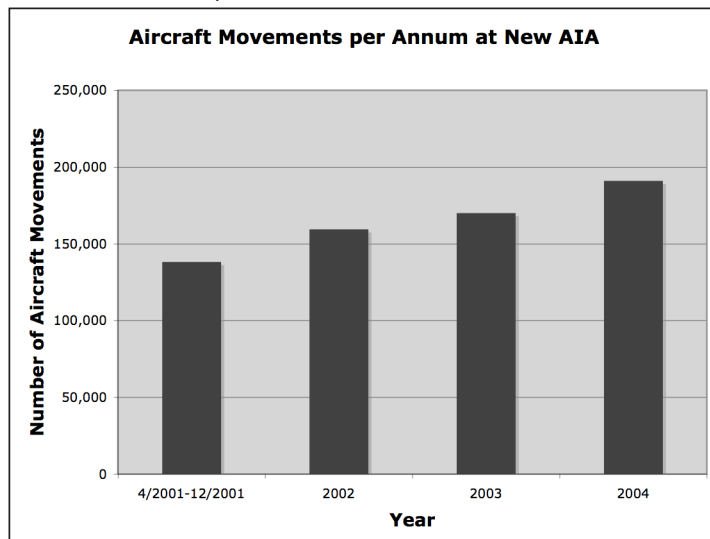
(Source: www.aia.gr, own processing)

Cargo traffic per annum at Eleftherios Venizelos, the new AIA:

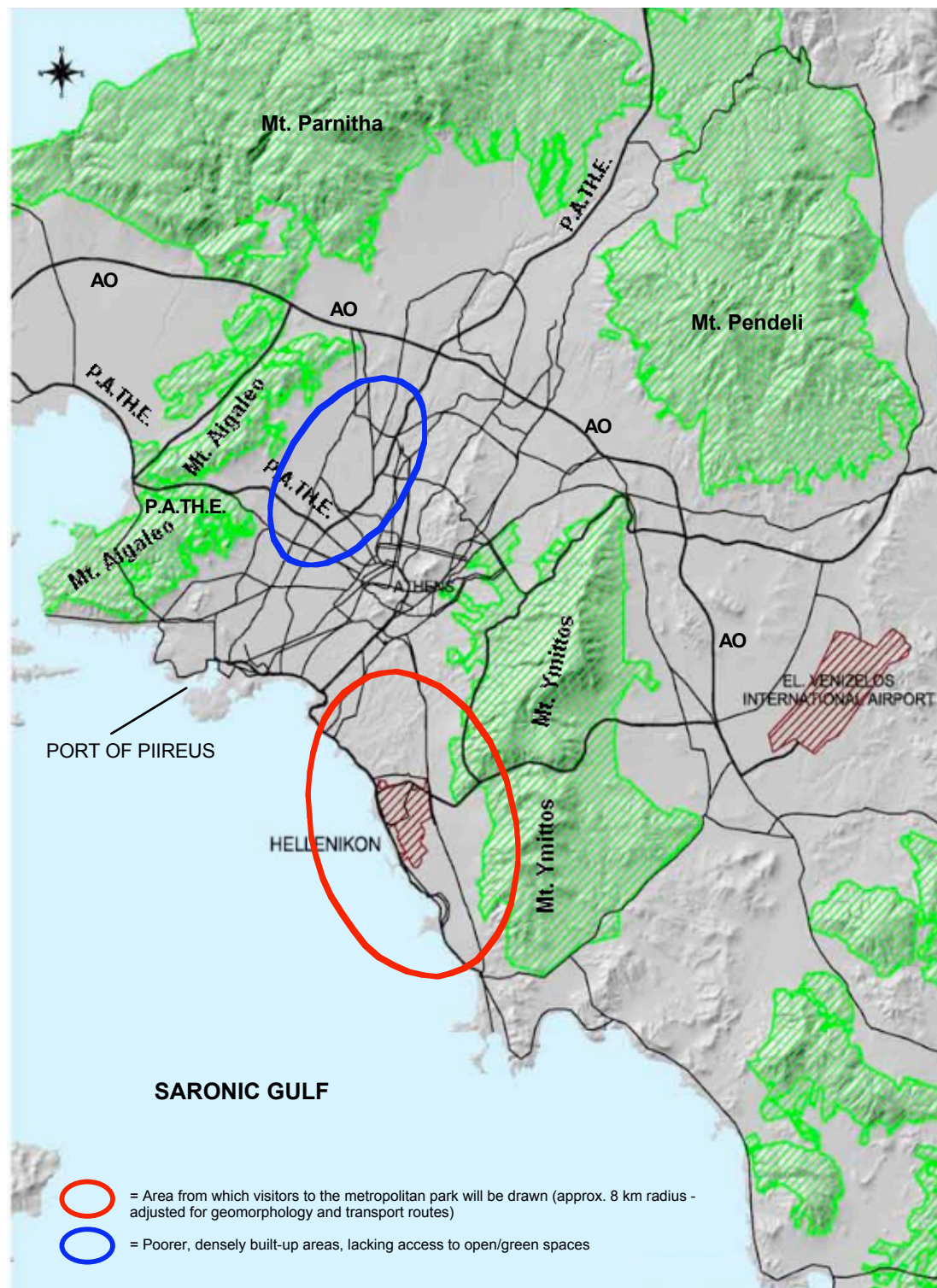


(Source: www.aia.gr, own processing)

Aircraft movements per annum at Eleftherios Venizelos, the new AIA:



(Source: www.aia.gr, own processing)



Some have criticised the intention to create a 400 Ha park in an area that is anyway:

- less densely built-up compared with many areas of central and west Athens;
- less densely populated, so that the park would benefit fewer people as a parks of this size is expected to draw people from an 8 km radius (see in the appendix the map showing the area that would benefit from a park in Elliniko [red oval] and the areas in Athens most needing green space [blue oval]);
- lacking less in green space than many areas of central and west Athens.

Endnotes

ⁱ The Study commissioned by the Ministry of the Interior, Public Administration and Decentralisation proposes the creation of a Metropolitan Regional Authority with an appointed Secretary General and elected Metropolitan Council holding executive power while others suggest a Metropolitan Association of Local Authorities (Getimis and Hlepas, 2002).

ⁱⁱ Romanos (2004), refers to Ymittos Mountain's hindrance of Athenian urban sprawl into the Messogheia plain to highlight a difference of approach in Greece. Whereas in many urban areas outside Greece geomorphological features (mountains, rivers, hills etc.) are highlighted to bring variety to the urban form of the city and give it a character, in Greece these features are perceived as a hindrance to a "right" to unimpeded development in all directions: hills are often flattened or completely covered in buildings and rivers are covered to create space for motorways and ring-roads instead of preserving them as beautifying landmarks.

ⁱⁱⁱ

... The lowering of the price of infrastructure services [an external benefit of a large infrastructure investment] will... First, ... increase the demand for that service by both private individuals and businesses, and secondly, it will increase the level of profits made by businesses... the effect will be rather limited in the short-term as the profit increase primarily comes from a substitution of... factors of production (the effect from a change in the relative prices of factors of production. This short-term effect on business will be reflected in the national accounts as a contribution to economic growth.

In the medium term... [if the infrastructure greatly improves access to a nearby but previously inaccessible region] where land is plentiful and therefore cheap,... the lowering of the cost of making use of the infrastructure may give rise to relocation effects.

[In the long-term]... assuming that land is plentiful [in the now accessible areas], then expansion, through relocation or through further additions to capacity, will take place... [and t]here will be further economic growth in certain regions, and maybe also in a country as a whole. If it is assumed, on the other hand, that land is not plentiful, then the only consequence of the infrastructure is that land values will increase... [Only in the former case] will that growth be accompanied by increased employment and investment in capital and facilities.

(Flyvbjerg, 2003: 66-7)

^{iv} Incentives offered by the Singapore government to investors:

Investment Incentives & Schemes	Tax Concession
Pioneer Status	Exemption of corporate tax on profits arising from pioneer activities
Development and Expansion Incentive	Corporate tax rate of 13 percent instead of the current 25 percent
Investment Allowance Incentive	Exemption of taxable income of an amount equal to a specified proportion (up to 50 percent) of new investment in productive equipment
Approved Foreign Loan Scheme	Full or partial exemption of withholding tax on interest payments
Approved Royalties	Full or partial exemption of withholding tax on royalty payments
Venture Capital Incentive	Losses incurred from the sale of shares, up to 100 percent of equity invested, can be set off against the investor's other taxable income
Operational Headquarters (OHQ)	Income arising from the provision in Singapore of approved services will be taxed at 10 percent. Other income from overseas subsidiaries and associated companies may also be eligible for effective tax relief.
Business Headquarters (BHQ)	Incentive under the EEI Act
Double Deduction for R&D Expenses	Double deduction of qualifying R&D expenses against income

(Source: Goh: 203-4)

^v Noise Exposure Forecast (NEF):

- Less than NEF 30 – essentially no complaints expected; noise may interfere with community activities.
- NEF 30 to NEF 40 – individuals may complain; group action possible
- Greater than NEF 40 – repeated vigorous complaints expected; group action probable
- A reduction of one NEF unit is equivalent to a reduction of about two percent in the number of people highly annoyed and equal to a reduction of about 14 percent in the area exposed to the same level of noise exposure.
- The Department of Housing and Urban Development (USA) considers properties within NEF 30 unacceptable.
- NEF 35 = Ldn 70 (Ldn: Day/Night Average Noise Level)

(Source: www.faa.gov/programs/en/impact/1976ANAP/Part2.cfm)

^{vi} The sale of all the FAS is most heavily protested against as this land was expropriated originally (in some cases without compensation) for public benefit. So its sale, simply to raise income to bring down public debt or to finance public spending elsewhere is vociferously opposed.

The planning proposals in the 1990s for redevelopment of the FAS were opposed by planners, architects, environmentalists, local municipalities and the inhabitants of the area lobby as they advocated developing large parts of the FAS. The principal studies were the INTRATECH Ltd. study (1994), which did not consult with the four municipalities involved (Koumoundouros, 2001: 94); the Harvard University ISOPOLIS study (1997), which although informed of them chose to ignore the municipalities' opinions (Koumoundouros, 2001: 94-5); the IOBE study (1999), which proposed a 3 Ha park and the development of 12,500 "model dwellings" for permanent or semi-permanent occupation by wealthy Europeans (Koumoundouros, 2001: 95) [The prevailing opinion of what was to become of the old Elliniko airport site in 1999 was that it should be exploited residentially and commercially (Biris, 1995 cited in Caves and Gosling, 1999: 361)]; and, finally the MEPPW-ORSA-National Metsovo Polytechnic (NMP) study (1999), which was the first to support a mainly "green" use of the FAS (as dictated by the ADA [Law 2338/1995]) (Koumoundouros, 2001: 95-7). The NMP study was interrupted by the need to conduct a study for the temporary use of a portion of the FAS to host several Olympic Games sports facilities for the 2004 Games.

Unlike any of the abovementioned proposals, Biris (1995, cited in Caves and Gosling, 1999: 361) suggested the retention of a STOL (Short TakeOff and Landing) runway on the FAS for a limited number of business flights, in the likeness of the London City airport, and that the remainder of the site could “provide a green ‘lung’ for the city”.

ECOACTION put a monetary value on the *annual* benefit of planting the whole of the FAS of between 50 bn GRD (€ 144 million) and 100 bn GRD (€ 288 million). When compared to the expected public revenue of 300-400 bn GRD (€ 863-1,151 million), this would suggest that over a 4-8 year horizon, the social benefit of a green park covering the entirety of the FAS would exceed the private benefit of selling it for development. The problem with this study is that it does not propose a financing mechanism for maximising the green space, such as a local, city-wide or national tax, or a tax on the limited commercial uses of site such as the convention/exhibition centre. It is all good and well putting a monetary value to something to highlight its importance but unless a market is created for it (as with the CO₂ emissions-trading mechanism emerging internationally) there is usually no result. (Koumoundouros, 2001)

^{vii} Some criticised the intention to create such a large park in an area that is anyway:

- less densely built-up compared with many areas of central and west Athens;
- less densely populated, so that the park would benefit fewer people as a parks of this size is expected to draw people from an 8 km radius (see in the appendix the map showing the area that would benefit from a park in Elliniko [red oval] and the areas in Athens most needing green space [blue oval]);
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