

Intra-Urban Mobility and Suburbanisation Influences on the Urban Form

Agapi Fylaktou Cattaneo

1-17 Palmer Street, Westminster, London SW1H 0AB
A.Fylaktou-Cattaneo@archi.demon.co.uk

ABSTRACT: According to 2001 census data, around one third of the Hellenic population (3,761,810) lives in the Athens Metropolitan Area, as opposed to the 450,000 inhabitants in 1920. At that time, Athens and the port of Piraeus were two separate entities, which expanded around themselves. After World War II rapid and continuous urban population growth resulted in their physical connection and today's extensive suburbanisation. Other aspects that have contributed to this phenomenon include rise in disposable income (acquisition of property/cars), escape from urban areas with environmental problems, overcrowding. Extensive numbers of immigrants and refugees now live in districts previously occupied by Athenians who moved to the suburbs. Today, voluntary residential allocation accounts for the majority of household moves in Athens. Since housing is the largest consumer of space, the influence it exerts on the metropolitan area and in particular on neighbourhoods/districts is extensive. In this paper, the relationship between intra-urban mobility and suburbanisation is examined together with its effect on the urban form. For this purpose, a case study of a run down inner city quarter (Psiri) and a relatively affluent coastal suburb (Palaio Phalero) has been undertaken.

Keywords: urban, mobility, suburbanisation, sustainability, sprawl, tramway, Athens

1. BACKGROUND

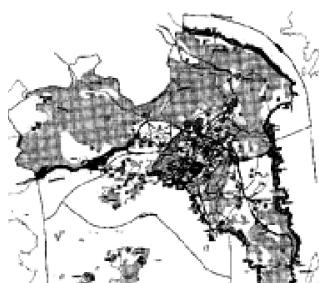
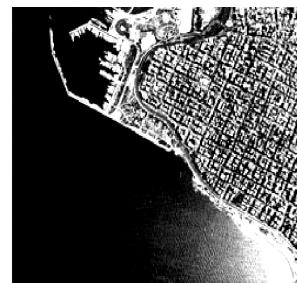


Figure 1a: Athens Structural Plan [1]



b. Aerial / City Centre [2]



c. P. Phalero Suburb [2]

The Athens metropolitan region has 3,761,810 inhabitants (2001 Census) [3]. The city is dominated by six hills, all laying within the metropolitan area that spreads over a flat plain surrounded mainly by mountains, neighbouring the port of Piraeus and with an opening to the Saronic Gulf (Fig.1a&c) [4].

Athens' geographical position, topography, rapid population increase, slow application of land/conservation and environmental policies, have contributed to some of the city's ad hoc expansion. The city's urban growth has been rapid and continuous. It is characterised by widespread almost uncontrollable development. Travel patterns and energy efficiency have been influenced by urban sprawl that has brought about, among others, environmental and ecological problems, loss of natural resources and rural land, the decline of certain

city centre areas and gradual overpopulation of suburbs. The transfer of one area's problems to another, rather than finding solutions in place, has brought about the urbanization of the Palaio Phalero suburb and the disintegration of Psiri, which is located in the historic centre (Fig. 1b&c).

Following years of debate and past efforts to establish a unified regional plan, in 1985 the Hellenic Parliament passed law L.1515/85 - the Structural Plan and Environmental Protection Programme of the Greater Athens Region (Fig.1) - an instrument of law which sets out the policy, general directions, measures and planning framework for sustainable development. Structural Plan policy is being implemented by General Urban Plans that deal with the requirements of individual municipalities, most of which are currently undergoing major changes.

2. FACES OF URBAN GROWTH

2.1 Local and Immigrant Mobility

The Athens municipality has a population of 745,514 inhabitants (2001 Census), a mixed-use city centre with numerous green/open spaces in between high and low density areas, as well as government buildings and archaeological sites (Fig.1b) [5]. Affluent and low-income suburbs are mainly located in the north/south/south-east and west/north-west areas respectively.

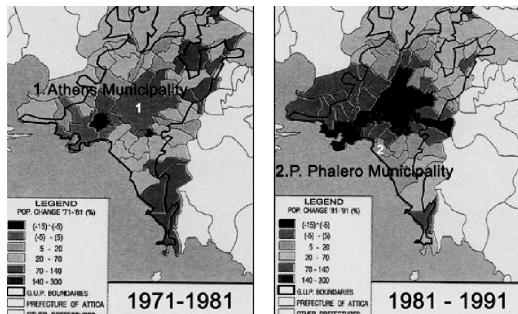


Figure 2: Plans - Athens / Population Change [1]

The city's population increase throughout the 20th century is mainly a consequence of numerous migration/immigration waves (Fig. 2&3). The movement of people between rural/urban areas seeking a better life (1951-1981), and the 1920s arrival of over 200,000 Hellenic refugees from Turkey are but two examples.

The Athenian Municipality has therefore embraced a great number of people. This has led to an inhabitant rise of approximately 64% between 1920-1940 and 84% between 1940-1981 (Fig.3). The need to provide a lot of housing in a quick cost effective manner was great and led to the eventual introduction of blocks of flats, usually 5-8 storeys high that were easily erected. Gradually these buildings took over the city centre, replaced houses, destroyed open/green areas, encroached on archaeologically and ecologically sensitive sites and fragmented the urban fabric. Rural and agricultural land that surrounded the city (as well as coastline areas) has had a similar fate due to urban sprawl (Fig.1b&c).

The overpopulation and associated environmental problems of the Athens Municipality reached their peak in the early 1980s. The gradual reduction in population started in 1981 following a record number of 885,737 inhabitants. By 2001 a total of about 140,000 residents had relocated to surrounding suburbs.

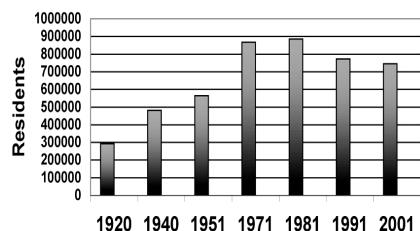


Figure 3: Population/Athens Municipality

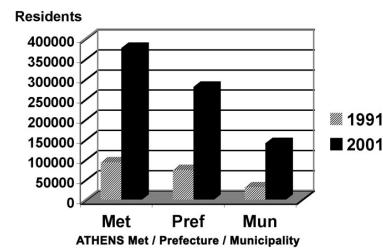


Figure 4: Foreign Population

An increasing number of foreign residents (particularly since the early 1990s) gradually moved in the previously abandoned areas. By 2001 they had reached a total of 140,626 hence completely replacing their displaced local counterparts. Therefore between 1981-2001 there has been a 16% reduction in population while incoming foreign residents have increased by an unprecedented 357%. Over 19% of the municipality's total population is now composed of foreigners.

Additionally National Statistics reveal that the number of immigrants identified in Hellas is over 10% of the country's total population of 10,964,020 inhabitants. Almost half of the foreign residents live in the metropolitan area and about 141,000 in the Athens Municipality (Fig. 4&5) [3]. Over 70% are from less developed countries. It has also been estimated that the number of illegal immigrants is higher than that of their legal counterparts.

Immigration and associated movement of population is therefore a major feature of 21st century Athens, as hundreds of thousands of people mainly from the ex-eastern block, Asia, the ex-USSR and Africa have settled in Hellas and particularly in the Athens Metropolitan Area. These inhabitants are beginning to display patterns of mobility similar to those of the local population i.e. intra-urban mobility depending on the socio-economic status of the people concerned.

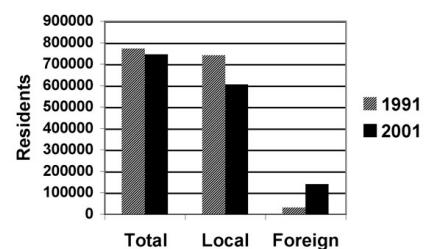
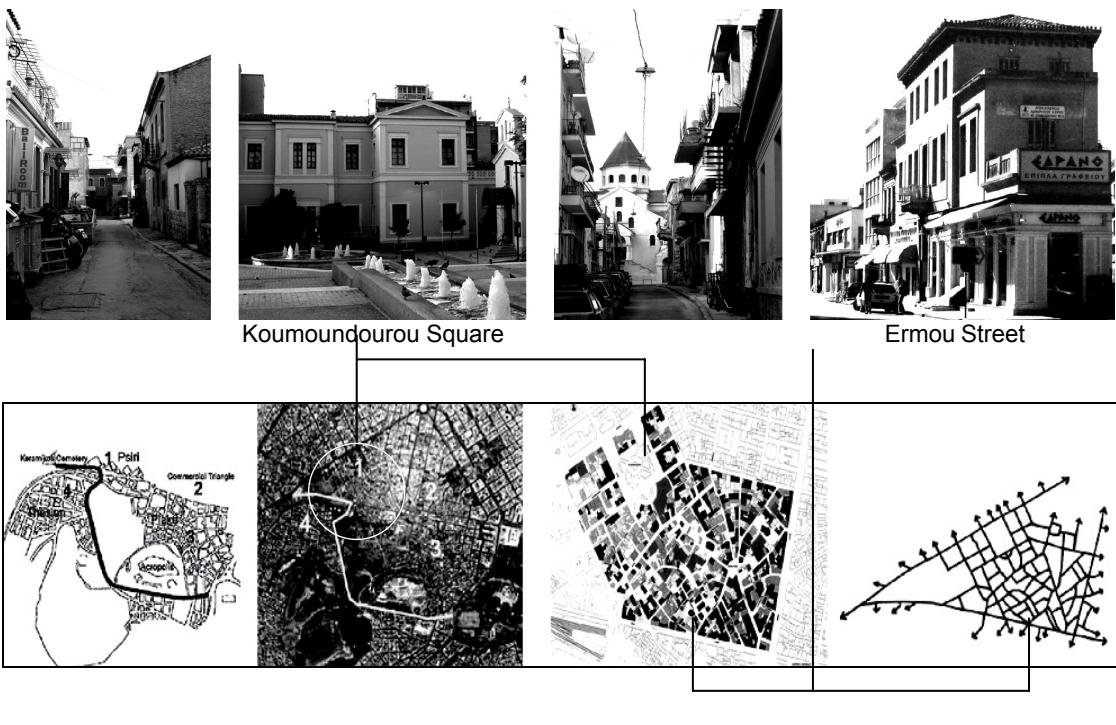


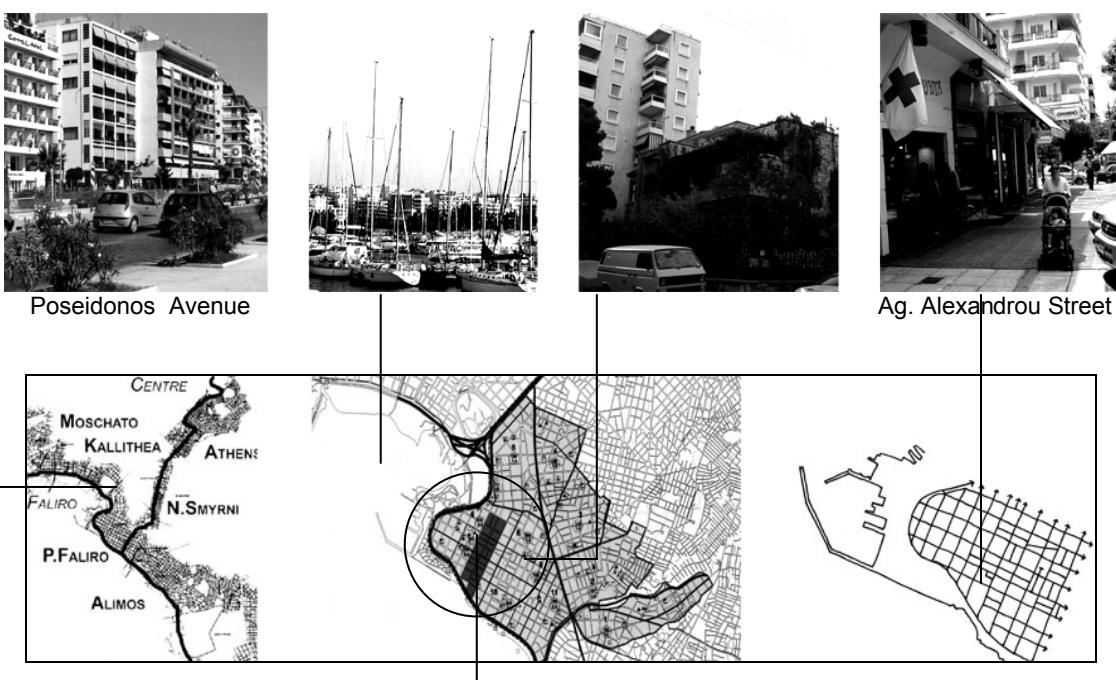
Figure 5: Local & Foreign Population

The gradual urbanization of suburbs is therefore inevitable (as in the case of P. Phalero) due to the housing demands of an increasing population that is fleeing overcrowded and environmentally polluted city areas. Nevertheless semi-abandoned districts (such as Psiri) are undergoing a partial residential revival due to the previously mentioned immigration influx, incoming businesses, implementation of rehabilitation and restoration works.



a. Pedestrian Route [6] b. Aerial of Psiri [2] c. Land Uses Plan [7&8] d. Street Network Diagram

Figure 6a, b, c & d: Psiri - General aspects / views / plans / diagrams



a. Area /Tram Network Plan [4&9] b. Land Uses Plan [1] c. Street Network Diagram

Figure 7a, b & c: Palaio Phalero - General aspects / views / plans / diagrams

2.2 A Rundown District

Psiri has been a predominantly residential and mixed-use area since the beginning of the 19th century. Currently, it is a low-density district of approximately 1,400 inhabitants with urban characteristics still following some patterns of medieval Athens (Fig.6) [3]. Psiri is located in the historic centre, a few steps away from the Acropolis Hill and archaeological sites. It is near the city's political/economic hub, sandwiched between Pireaus/Athinas Streets, Keramikos Ancient Cemetery and the Commercial Triangle (Fig.6a&b). It also borders with the Thesion and Plaka districts - two of the most expensive residential/mixed-use city areas due to their recent gentrification (Fig.6a & 9).

Psiri has retained its past residential size but not the character. Buildings are mainly 1-3 storeys high with an internal courtyard. Small building blocks define streets/squares and the finely meshed street grid depicts partial permeability (Fig.6d). The pedestrian network is not extensive. Land uses include residential / offices / parking but recreational and commercial are in the majority (Fig.6c). Open/green spaces are few and include church courtyards and small squares, the Keramikos Ancient Cemetery and newly rehabilitated Koumoundourou Square (Fig.6).



Figure 8: Immigrant Shops (left) & Houses

This once traditional working class area has lost its neighbourhood/artisan spirit but most of the original building stock has survived due to current land uses. Housing is no longer a dominant feature as the area has experienced years of gradual abandonment. The few remaining original households are surrounded by numerous cafés/bars/clubs. Immigrants have moved in to semi-derelict buildings replacing the gaps left behind by many locals and their traditional artisan activities/businesses (Fig.8).

The main reasons behind the abandonment of Psiri include the need of residents to move due to income/employment improvement, escape from overcrowding and better environmental conditions.



Figure 9: Junction of Thesion, Plaka and Psiri

Previously owner-occupied buildings have been turned in to rented accommodation, a few have been subdivided into flats/business units, and others have been left vacant due to high maintenance/restoration costs. The acquisition of certain properties by affluent incomers/businessmen has made former residents/prospective buyers unable to afford the rising prices connected to the area's recent recreational culture and gentrification. Additionally the implementation of existing legislation relating to land use changes, restoration and rehabilitation works is not systematically pursued.

Nevertheless the whole historic centre area is undergoing a regeneration process that is part of the state's effort for inner city revitalisation. Squares have been rehabilitated (i.e. Koumoundourou, Syntagma, etc.), hundreds of buildings have been restored. Streets/major traffic routes like D. Aeropagitou, A. Pavlou and Ermou have been either totally or partially pedestrianised creating a pedestrian route that does not only connect the districts it crosses (i.e. Thesion, Plaka, Psiri), but through the unification of the nearby archaeological sites, promotes sustainability via the engagement of urban and environmental conservation options [6]. The reclaimed public spaces of these streets and the rehabilitation of parts of their degraded areas, have achieved improvement in the quality of life of residents. This is mainly due to the reduction of pollution, improvements in pedestrian movement, maintenance/increase of green areas, better accessibility to sites and public transport, visual and physical connectivity (Fig.6a,b & 9) [5&6].

Psiri therefore also possesses, by association, sustainable attributes due to its proximity with the districts of Plaka and Thesion, the archaeological sites, as well as areas protected by law. The current low percentage of residential use is mainly due to unaffordable house/plot prices, many areas/buildings in need of rehabilitation/restoration, high number of bars/clubcafes, an increasing population of low-income immigrants who work and live there (Fig.8).

2.3 An Overcrowded Municipality



Figure 10: Promenade / Poseidonos Ave

Palaio Phalero is a southeast coastal residential suburb, approx.10km away from central Athens, located next to Phalero Bay, bordering three other municipalities and the Poseidonos/Syggrou avenues (Fig. 7&10) [4]. In the beginning of the 20th century affluent Athenians started to build villas/vacation houses as the location was considered of particular beauty and proximity to the city desirable. Gradually this fishing village, surrounded by rural/agricultural land, developed into a residential suburb that in the early 1940s became a municipality of 9,087 residents.

After World War II rapid urban growth started to develop and inhabitant numbers rose again. Between 1981-2001 there was further population increase of almost 21%, while the Athens Municipality was witnessing a 16% decrease in population. Today Palaio Phalero is a high-density suburban residential municipality of 64,759 inhabitants (2001 Census) [3]. Buildings are usually 5-8 storeys high with balconies and small gardens. The increasing pressure for housing created by the incoming population is evident in the area's almost total urbanisation. There are but a handful of remaining villas and the municipality is displaying signs of displacement as more residents are relocating to less crowded and traffic congested metropolitan locations.

The area depicted on plan, equal in area with Psiri but 4.4 times more populated (6,160 inhabitants as opposed to 1,400 approximately), is a typical section of the municipality which displays uniformity in terms of building stock and socio-economic/cultural characteristics. The high percentage of residential use is mainly attributed to the high percentage of individual flat/building ownership and proximity to other densely populated municipalities (Fig.7b). Big building blocks, a regular street grid that indicates certain permeability, and open/green areas along coastal Poseidonos Avenue define the urban grain of this suburb (Fig.7b&c). Blocks of flats are now the area's dominant building feature having replaced most mansions and their large gardens. The aesthetic monotony of the area is broken, every now and then, by the rare site of a villa that has survived the demolition/building frenzy of the last thirty years.

The views and proximity to the sea/beaches/marinas, the new Phaleron Bay athletic/recreational complex, the Port of Piraeus and central Athens, new/upgraded transportation modes still make it a desirable residential location for displaced Athenians and higher-income immigrants, the number of which has risen by 46% between 1991-2001 as opposed to the 5.5% increase of their local counterparts. Other land uses include commercial, recreational and tourism. Most businesses/banks/offices are located along Ag. Alexandrou Street (Fig.7). Additionally, the recently redeveloped Phaleron Bay has promoted sustainability via the rehabilitation of its abandoned coastline strip of land, and association with the new tramway [4].

3. TRAMWAY NETWORK

Car ownership in 1996 amounted to 250 cars per 1000 residents [4&9]. In the same year approximately 6,8 million trips were undertaken daily [4&9]. Private transport took 46% of these trips while 34% was by public transport and 20% by taxi and/or foot [4&9]. All this, coupled with the dramatic increase in residents together with weak transport infrastructure, contributed to the city's crowded/environmentally unfriendly image. Problems such as pollution, poor public transport, lack of pedestrian space and insufficient car parking plagued Athens. Streets, particularly in the centre, accumulated heavy traffic especially during peak hours. Estimated average noise levels ranged between 75-81dB(A) (i.e. D.

Aeropagitou - now pedestrianised) [10]. Additionally, atmospheric pollution in central Athens and southern N. Smyrni municipality (nearest monitoring station to P. Phalero) reached its highest levels in 2000 and then gradually declined coinciding with the Metro's operation, application of new traffic policies/extensive pedestrianisation (Fig.11) [3]. Therefore relief from environmental problems has/can be achieved by implemented projects such as 1) the Athens Metro - operation from 2000 with two lines carrying 650,000 people [11]; 2) the new Tramway - operations from summer 2004 carrying approx. 48,300 people daily and over one million during the Olympic Games [9].

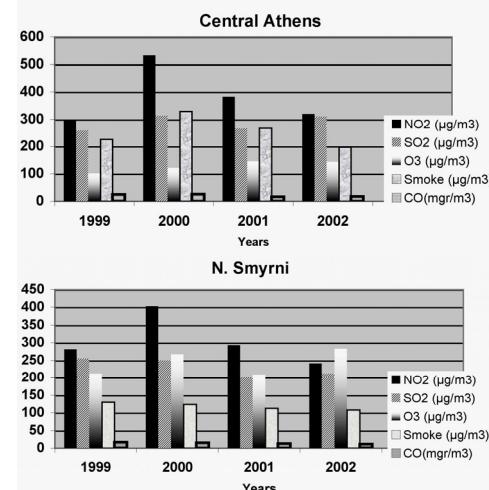


Figure 11: Pollutants / Highest values

The new tramway network has a total length of approx. 24km of double track trams. Each tram is 2.4m wide and 30m long and has the capacity to carry 190-256 people, an estimated 80,000 passengers per day. The two-tramway lines already implemented (Athens Central-Phalero, Phalero-Glyfada) are phase one of a larger tramway system that will serve other metropolitan locations in the future [4&9] (Fig.12). It connects central Athens with southern suburbs passing through the P. Phalero/N. Smyrni municipalities reaching and running parallel to coastal Poseidonos avenue terminating at the Moschato municipality in one direction and Glyfada in the other. Trams pass by, among others, parks/archaeological sites, residential/mixed-use areas, seaside/athletic resorts.

In 1996 a study conducted by Attico Metro S.A recorded an average density of over 180 inhabitants per hectare, 250m either side of the tramway's lines [12]. Car ownership was established to be between 215-385 vehicles per 1000 inhabitants with the higher numbers relating to the mainly suburban / high-density municipalities of N. Smyrni, P. Phalero and Glyfada. According to National Statistics (excluding Athens municipality) the total population of the 7 municipalities traversed by the tram is 406,703 inhabitants (2001 Census) of which 73,986 and 64,759 live in N. Smyrni and P. Phalero respectively, making this part of the network the most effective as about half of their residents are located approx. 250m either side of the tramway's route [4&12].

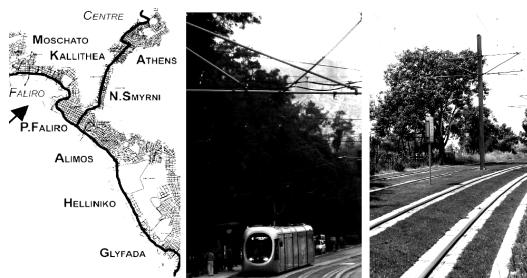


Figure 12: Plan and views of new Tramway

Works for phase one started in 2002 and finished in 2004. Interventions along tram routes included soft/hard landscaping and upgrading of certain districts because of street redevelopment necessary for tramway urban fabric integration, which achieved morphological continuation to previously chaotic areas, increased pedestrian movement by the removal of many illegally parked cars, provided better access to various locations. The strengthening of green networks in the areas it passes through is achieved by the introduction of grass lanes along the tracks adding smooth co-existence with pedestrian crossings (Fig.7a&12) [4]. Additionally, the tramway is electrically driven and therefore environmentally friendly as it is a non-polluting transportation system that produces no emissions in the areas it crosses.

Finally, the tramway network also complements the other mass transit systems by providing transfer opportunities to three central Athens metro stations and Phalero's Electric Railway station, making accessible a multiplicity of locations along the city's north-south corridor. Tram and bus stops are near each other for possible interchange, serving locations not reachable by metro. This provides an alternative to car/taxi and has already improved traffic and atmospheric pollution conditions due to vehicular decrease (a study of which is near completion and therefore not included in this paper).

4. CONCLUSION

The spatial structure of Athens has moved away from its emphasis on the monocentric form and suburban sprawl of the 20th century. Suburbs are gradually being urbanized, and there is an increase in density/regeneration of former semi-abandoned city-centre districts with a previously strong residential identity. This is mainly due to the concept of sustainability that has influenced planning policies at both national/local levels (i.e. Structural Plan of Athens), the influx of immigrants and mobility of the population.

The recently implemented urban interventions are proof that appropriate legislation when combined with public/private incentives can achieve mutually beneficial developments that serve socio-demographic, structural, environmental and cultural requirements. The creation of pedestrian networks, the new tramway, reclaimed public spaces have all brought about significant improvements in the quality of life of the inhabitants while promoting sustainability [4,5,6]. Yet, pockets of deprivation and displacement are increasing due to the unexpected large number of

low-income immigrants who tend to move around and/or live close to regenerated and traditional residential areas. Additionally permanent but displaced residents tend to relocate further afield because the previously less populated suburbs are now in the process of partial and/or total urbanization.

The restructuring of the urban form in Athens is therefore directly related to the density, social characteristics and mobility of the population. There is an exchange of residents between municipalities as well as an increasing number of new arrivals. Immigrant transition areas exert pressure on the urban fabric/environment and play an important role in its restructuring as the segregation of particular groups is emerging, at the same time the intra-urban mobility of the general population facilitates these changes and vice-versa. This in turn promotes the urbanisation of suburban areas, suburbanisation of rural areas, city expansion and an increase of associated environmental problems such as pollution. Facilitating a widespread distribution and limiting the numbers of new incoming residents will promote spatial integration, prevent further displacement and environmental damage, make the implementation of the Athens Structural Plan easier.

ACKNOWLEDGEMENT

The author wishes to thank EAXA S.A, OPEPA, the Ministry for the Environment / Physical Planning and Public Works, the National Statistical Service, and Mr V. Kostovassilis for the provision of invaluable information, documentation/maps and most of all their time.

REFERENCES

- [1] Organisation for Planning and Environmental Protection of Athens (OPEPA), Athens 2004
- [2] Ministry for the Environment, Physical Planning and Public Works, Athens 2006
- [3] Greek National Statistical Service, Athens 2006
- [4] A. Fylaktou Cattaneo, "Transportation and Urban Development", 22nd PLEA Conference, Beirut 2005
- [5] A. Fylaktou Cattaneo, "Public Space and Interconnectivity", 22nd PLEA Conference, Beirut 2005
- [6] A. Fylaktou Cattaneo, "Urban Conservation and Sustainability", 21st PLEA Conference, Eindhoven 2004
- [7] EAXA S.A (Unification of Archaeological Sites S.A), Athens 2004
- [8] G. Aggelide-Karka, "Study of the Psiri Area" for EAXA S.A, Athens 2002
- [9] Tram S.A, "Modern Tramway System in Greater Athens", Athens 2001
- [10] Phoebe Ltd, "Environmental Impact Study", Athens 1999 for EAXA S.A
- [11] OASA (Athens Urban Transport Organisation), Athens 2004
- [12] Attico Metro S.A, "Modern Tramway in the Athens Area", Athens 2000