



Traveling the Country: Transportation Challenges and Mobility Management

19

Régis Darques

Abstract

Territorial fragmentation, abrupt mountain reliefs, insular nature, outermost regions, limited land management capacity, and major shortages in crucial infrastructure: There is a longer list of obstacles to movement in post-war Greece. These elements constitute a basis for a bleak scenario further evidenced by a high number of road accidents, acute traffic congestion, and degraded travel conditions. However, it is often ignored that, as compensation, Greece has been able to set up a highly functional bus network, operate and develop effective airport facilities across the country, and maintain active ferry connections with a great many islands, thus securing access to remote places.

The country developed around a mobility model centered almost exclusively on the automotive sector. The efficiency of this “automobile pact” system and its ability to serve a strong demand now hardly needs to be demonstrated. However, the post-1974 crisis years generated side effects, especially impacting urban mobility and inter-city connections. Saturation and crumbling infrastructure are required to rethink the whole system, achieve faster transport, and reach environmental sustainability goals.

The analysis will focus on the many advances registered these last years in improving mobility, especially through the angle of regional and international passenger traffic. Surprisingly, there seems to be a global slowdown in internal mobility while external travels show positive momentum.

Keywords

Transportation · Bus network · Mobility · Connectedness · Road traffic · Air traffic · Shipping

Transportation is an area where the inventiveness of Greek people found the ideal means of expression. As in the construction sector, the chronic weakness of state investment generated “spontaneous” solutions able to answer a strong demand for mobility. High mobility is the hallmark of Greek people, be it in the area of city-countryside connections, urban travel, or international transport, both within and outside the diaspora networks. Mobility has long been a sure way to escape land compartmentalization and remoteness. It is also an essential prerequisite for combining multiple jobs in multiple places as was -and still is- often the case in Greece for many professionals in the working-age population.

Furthermore, transport and mobility are of strategic importance for land control, management, and planning. There is a considerable number of isolated mountain areas and islands in Greece, for which the availability and efficiency of transportation are not only a matter of comfort but a survival issue. Access to transport is a question of life and death for hundreds of local communities, economically and politically dependent on decisions taken by the central authorities. The geography of Greece may thus be understood as an outcome of a dynamic system where seamless connection with the “outside” allows for further development or decay. In rural areas, deserted villages tell us about the inability of entire communities to take on the challenge of mobility -the issue being closely related to demography. Similarly, fast-developing territories are intricately linked to easy and efficient transportation means able to support growth. It is thus easy to understand that transport management and planning are a way to maintain land and sea control. These play a key role in the exercise of territorial

R. Darques (✉)
CNRS, UMR 7300 ESPACE, Aix-en-Provence, France
e-mail: regis.darques@univ-amu.fr

sovereignty, especially in border areas submitted to external pressure.

Between spatial integration and dislocation, our attention shall turn to transport dynamics, mainly focusing on passenger traffic and leaving aside freight and its specific features. Land, sea, and air transport shall be addressed, without targeting an “all-encompassing” perspective, but with the intent to cover different dimensions of mobility: Urban and rural areas, mainland and islands, internal/regional and international connections. Indeed, dissociating internal and external flows does not make sense, all the more so since the huge rise in air traffic significantly changed the balance over the 2008 crisis years. We shall also explore the issues at stake in the metropolitan area of Athens -the nexus of the national transportation system- where all pressures, challenges, and opportunities concentrate (Vlastos & Milakis, 2009). All this should allow us to better understand the major territorial discrepancies that transport solutions are supposed to compensate -if not solve.

Buses and Cars, the Road Traffic Revolution. Improving Territorial Consistency Through Enhanced Mobility

Greece is a country where automobiles met considerable success. Considered after WWII as an expensive product, the number of vehicles increased slowly from the 1950s to the 1970s, then steadily until the late 1980s, and sharply until 2007. The economic crisis put an end to the surge, stabilizing the automobile fleet and eventually limiting car traffic (Moschovou & Tyrinopoulos, 2018). The maturity of the market arrived quite recently as regards Western standards, for many reasons, including the specific rural-urban relationships. In the absence of almost any railway system, as long as Greece succeeded in maintaining a viable agricultural population, cars, trucks, and buses were an optimal mobility solution. But with the growing concentration of people in cities, fossil-fuel vehicles reached their limits both in terms of environmental impact and movement fluidity. All this is nothing new. However, one has to understand Greece’s specific characteristics:

1. Until the 1960–1970s, still heavily populated rural areas required that the national road network expansion program be pushed to its limits (Fig. 19.1). Hundreds of mountain villages seriously damaged by the wars, or simply “forgotten by history” long waited for the “advancement of civilization” through the deployment of efficient communication and energy networks, and transport means. Besides, urban-rural relationships were maintained at a high level, with the common practice of multi-place, cumulative jobs, and multiple dwellings.

This implied the development of an adapted road network and transport solutions, not based on daily urban-suburban mobility, but on a limited number of journeys requiring to reach remote settlements that people would not want to abandon to their fate.

2. Greece’s territorial pattern shows a high degree of fragmentation (mountains, islands). This implies managing complex, tense situations where breaching isolation often supposes developing heavy technical and financial solutions. Road network development was a way to solve the issue in mainland areas. The second vector of the strategy consists of developing other “disruptive” transport means, i.e., sea and air transport.

To put it otherwise, transport policy took the best from all effective, costless solutions and the authorities adapted their answer to a moving geographical, financial, economic, and demographic context. Flexibility and adaptability were the hallmarks of Athens’s policy. Heavy investments shall differ.

A perfect example of this high resilience capacity, i.e., the ability to provide state-of-the-art answers is the KTEL bus network (Darques, 2002). The KTEL (*Mutual Bus Recovery Funds*) is an old institution dating from the early twentieth century, but created and organized by Law 2119/1952 using the national department (*nomi*) framework as a basis for its organization. The KTEL network emerged from the war and its destruction, and its objective was to meet the increasing demand in mobility at a time of reconstruction. It is also rooted in the great rural exodus movement that swept away hundreds of thousands of peasants from their ancestral lands. The system represents the adaptive, ingenious, efficient solution adopted by indigent people: The art of “getting by” reaching a climax through institutionalization.

The rules driving the network did not much change over the years. KTELS were federations of independent bus owners organized so they could manage customer services and other logistical matters on a common basis. KTELS are by law a voluntary joint administration and management of individual independent services, i.e., they form a “forced cooperative” where the ownership of buses belongs to shareholders. Most KTEL buses belong to one legal owner (4100 buses for 7500 owners/shareholders of whom 80% were drivers in 2009). Departmental KTELS are independent legal persons under private law. Bus owners are the only people authorized to be shareholders. Line distribution follows an equal treatment principle: Independently from its line attribution, each bus has to travel about the same number of kilometers as its counterparts. Operating and maintenance expenses are allocated on a principle of cost sharing. At the end of the year, all benefits are equally shared among each KTEL cooperative independently from route profitability and passenger demand. It is thus clear that the system is intended to fully cover and serve as many places as possible.

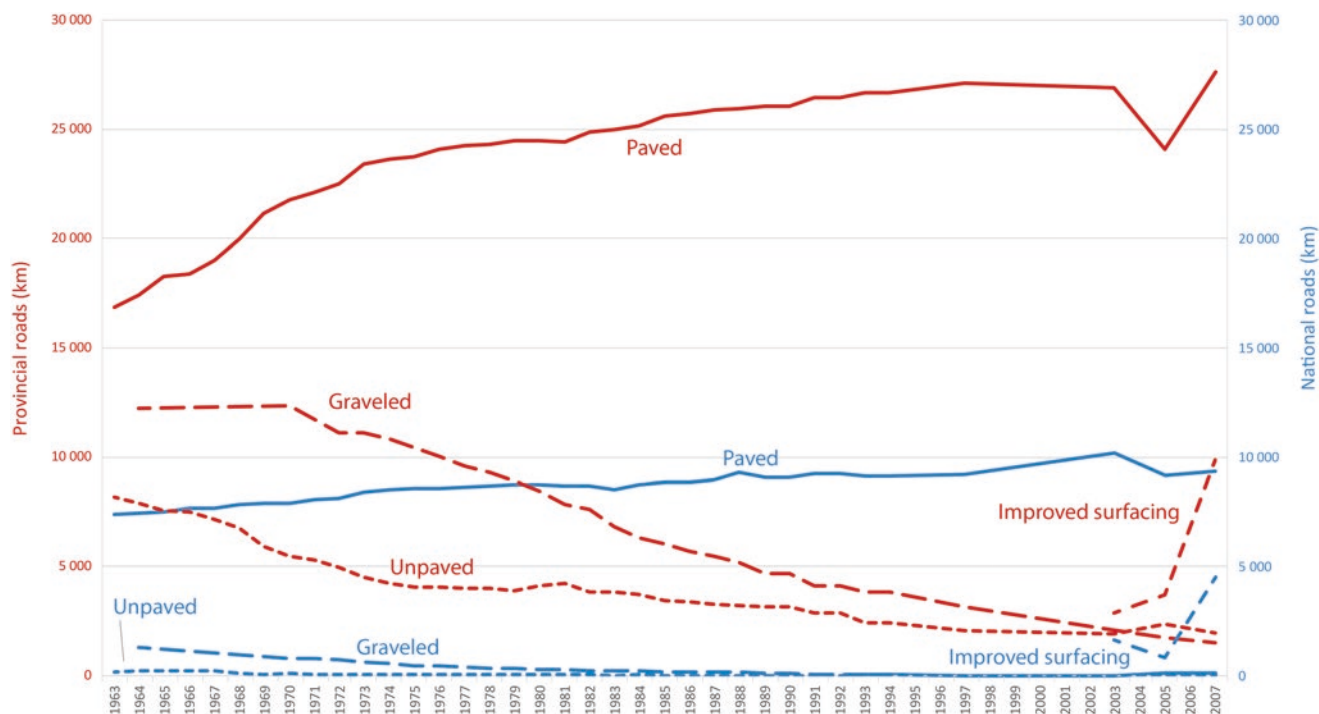


Fig. 19.1 State of the road network, 1963–2007. (Source: ELSTAT, Ministry of Environment, Planning and Public Works)

Data collection and publication have become scarce over the last years, as a result of deregulation/new regulation of the statistical system and/or the outcomes of budget cuts under EU auspices. There are no data after 2007, and motorways do not appear because of their late introduction. Improved surfacing: A265 concrete, anti-slippery. The sharp increase in road qual-

ity dates back to the 1950–1970s in the provincial network. However, surprisingly, progress was still registered until the end of the 1990s, which corresponds to the timetable of KTEL development. Graveled and unpaved roads were an issue to be addressed until recently, and this may also explain the late commitment to motorway development programs. The sudden drops registered in the early 2000s are probably artifacts deriving from the introduction of an “improved” pavement category

Originally, the KTEL system used to include both the urban and interurban line services, but Law 1437/1984 instituted a division between branches.

These historical institutions illustrate how local and national authorities granted a predominant position to private action in managing core “public” sectors such as daily mobility. The success of the operational network is unprecedented. In 1939, the total number of interurban buses in circulation reached 1635, in 1952 3311, and since the 2000s about 4000. These now cover about 80% of passenger traffic in Greece, leaving aside private cars.

But the experience is much more than that. Interurban KTELS were and still are -although to a lesser extent- a key element for land management. The number of destinations was about 6000 in the 2000s -as many connections as there were communes and municipalities before the administrative reforms. KTELS were the main pillar of Greece’s mobility before private vehicles gained momentum. However, they maintained and even developed their services during the private car mobility expansion phase (Fig. 19.2). KTEL urban lines peaked in the late 1960s. For interurban connections, the high point was reached a decade later, and the situation stabilized until the 2000s. To put it otherwise, private car development encroached on KTEL operational capacity

without entering into full competition. The systems operated in parallel, the use of private cars being a natural complement to the lasting KTEL success, both within cities and for intercity connections.

However, network saturation and the inadequacy of collective transport solutions became apparent earlier in the area of urban transport. For instance, bus urban lines long struggled to cover the most basic needs of suburban dwellers, particularly in Athens. The situation is a bit different with interurban lines: Considerations of profitability, especially about declining rural lines serving depopulated, remote places, imposed a revision of the management model. The network of KTEL stations tended to develop and concentrate on major intercity bus lines at the expense of minor connections. However, the basic principles of land control and public service obligation prevailed. Until the crisis and initiating events.

The last available statistics about KTEL activities (the year 2002) indicate that 15,000 employees succeeded in allowing 150 million passengers to travel 300 million kilometers yearly (interurban lines only). KTEL buses were the arterial network allowing for the survival of thousands of mainland and island villages. They maintained an organic bond with modern urban centers.

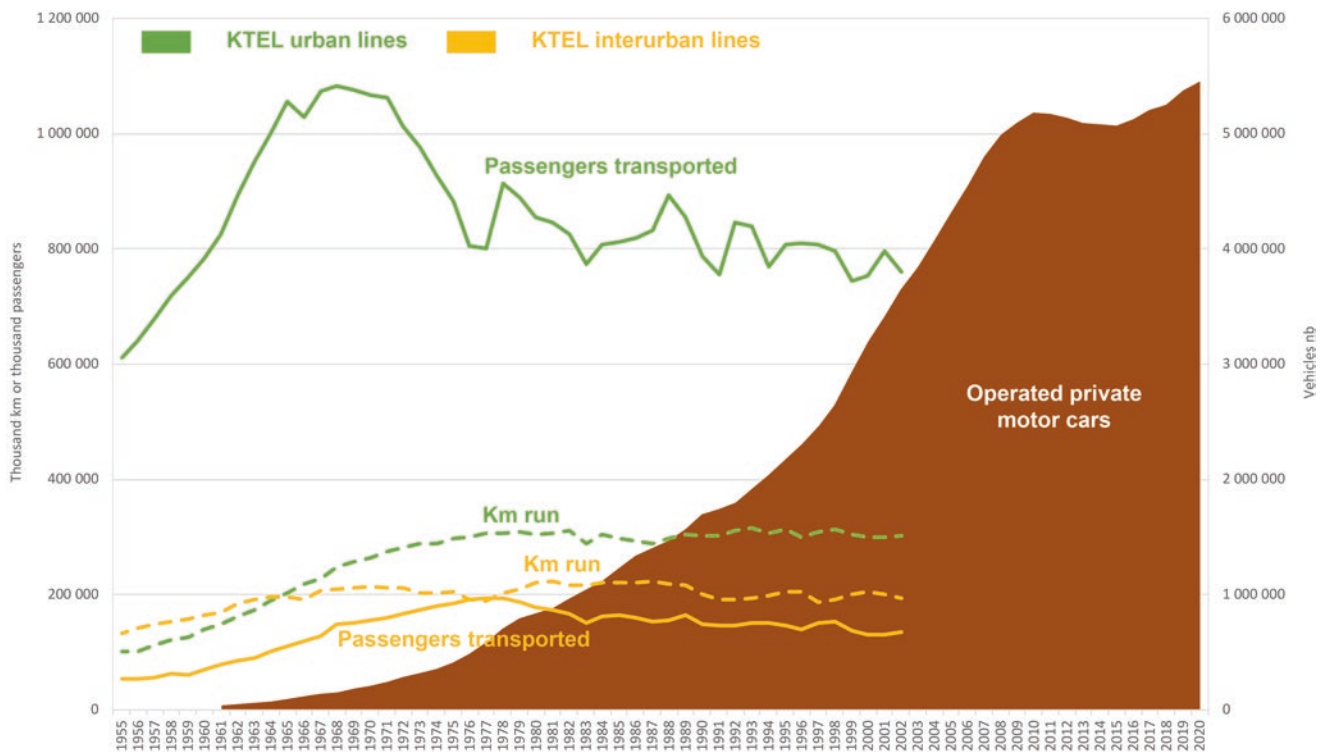


Fig. 19.2 Road traffic in Greece. Public vs. private modes of transport, 1955–2020. (Source: ELSTAT)

After the 2001 status change, the ELSTAT stopped gathering data about the KTEL network. This participates in the overall deterioration of met-

rics in Greece with major information made inaccessible. The KTEL urban lines considered here only cover EAS (Athens-Piraeus), OASTH (Thessaloniki), Patras urban KTEL, and RODA (Rhodes)

KTEL buses were safe, used both for passenger traffic and parcel transport, the frequency of trips was high, and they provided for affordable mobility solutions to dependent populations (elderly, young people, students, soldiers); they also limited car traffic in overloaded urban centers. The advantages were many, which explains the astounding and lasting success. One negative aspect, however, especially for foreigners and tourists, was the non-centrality of stations within major urban centers. As a consequence of its federal structure, bus stations were dispersed across the urban fabric, which could be a little disturbing for people in search of connectivity hubs, although the efficiency in terms of connection, geographical closeness to the main streets, and traffic were excellent. Much effort of the federation is now directed towards the creation of major Central Stations. In Thessaloniki, the Macedonia Intercity Bus Station opened in 2002 and is still by now the largest bus terminal in Greece. But Athens stands behind and the construction of a new station at Eleonas as a replacement for the old-aged Kifissou Station is planned (Fig. 19.3).

In other words, the KTEL services were perfectly adapted to the “deep” road national network now considered by some as obsolete, mostly because of the decreasing rural needs resulting from the global aging/depopulation process.

In 2001, anticipating future requirements, and in compliance with EU directives about the opening up to market competition, the institution status changed by becoming a limited company (*société anonyme*). This event coincides with the return of central authorities in the grand game of transport and facility investment under the EU auspices and within the framework of “easy credit” after the Eurozone integration. The movement comes along with the reinforcement of centrality through different EU incentives -despite the official promotion of regional decentralization, in Greece EU-led reforms often took the form of re-centralization. The State pushed forward to become a central governing agent in the face of “chaos.”

In fact, after 2001 and the general improvement of inter-urban accessibility through the opening of highways, the network evolved with difficulty. The fleet was upgraded to modern vehicles more adapted to widened, higher-speed express roads and highways, but the federation had to face the breakdown of its monopoly over intercity connections in 2016.

Although no data are available after 2002 about KTEL activities at a national scale level, one may observe the extent of damages in the Ioannina District using local traffic timetables (Figs. 19.4 and 19.5). In 1998, the KTEL buses in

Fig. 19.3 Athens' KTEL Kifissou Station. (© Regis Darques, 2002)



Ioannina achieved about 3.5 million kilometers, handling one million passengers (internal lines, about the same volume for external lines). Today, the fall in connection numbers reaches roughly estimated –50%, which tells us what the dimensions of the issue are. Be it as a backdrop of the economic crisis, the global population aging, or the COVID-19 pandemic, the in-depth country seems to have been sacrificed. The traditional, integrative KTEL model would be currently running on empty –until a further bounce. The life of most maintained local bus lines hangs now only by a thin thread. The future of the network is clearly attached to interurban lines rather than local services.

Addressing a reverse situation, in Athens, might also be worthwhile. Fortunately, this is made possible because the ELSTAT continues to gather information about the Athens-Piraeus area. With its unique electric railway line connecting Kifissia with Piraeus since the late nineteenth century, Athens entirely relied on buses vs. trolley buses to satisfy the demand for an increasing number of users in the post-war period (Nathetas et al., 2007). The peak in bus passen-

ger service was reached as early as 1965–1967. Afterward, private cars started to take the lead and changed the city into an “organized chaos” revolving around car traffic, the eternal need for parking places, endless traffic jams, taxi shuttles, and the resulting pollution. The fall in bus traffic is impressive: From 750 million passengers transported in the late 1960s, the number decreased by 50%, to reach a low in 1983 (338 million). The saturation of road traffic within the capital started then to limit the expansion of the “full-car” model, opening on a new impetus for collective transport solutions (Fig. 19.6).

The situation stabilized until the crisis and new inputs changed the deal. The economic downturn, sharp population decrease in downtown Athens, significant expansion of suburban areas, especially towards the east, the opening of the Attiki Odos, the inauguration of a new tram, and two metro lines impacted the global functioning within the capital city. In 2019, the number of transported passengers fell to 270 million (–30%). But the coronavirus crisis also produced deleterious effects. In 2020–2021, only 134 million passen-

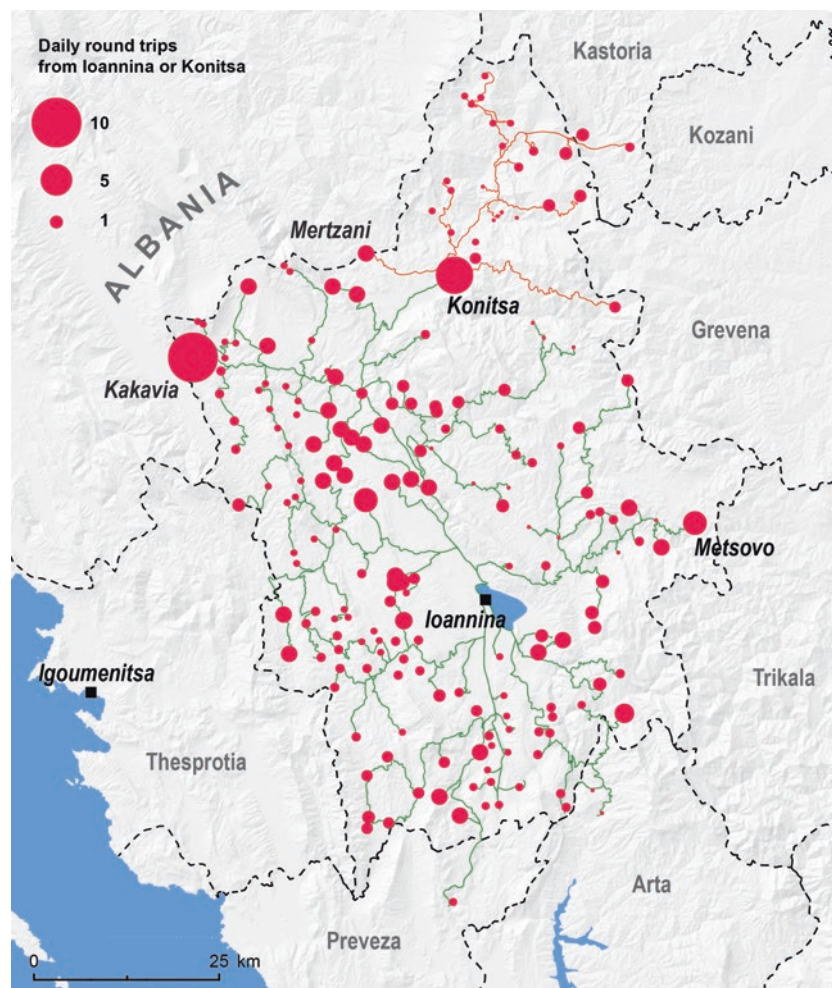


Fig. 19.4 KTEL network in the Ioannina District, 2002. Daily round trips. (Source: KTEL Ioannina)

The Ioannina District is a deeply depopulated mountain area revolving around an almost unique center, Ioannina (65,000 inhabitants). At the end of the 1990s, the region was still isolated, especially distant from Athens and Thessaloniki. Bordering Albania, the nomos is, however, irrigated by different kinds of traffic flows, including Albanian workers and migrants, through the Kakavia border gate. Reaching Metsovo (on

top of the Pindus range) and Igoumenitsa (the transit port on the Ionian Sea) using tiring, twisty roads could be a risky business. Leaving aside the 12 extra-district connections, there were 69 official lines serving the region, starting from Ioannina (green roads) and the Konitsa substation (orange roads). Within the department, about 190 cities, villages, and settlements are connected on a regular basis. The KTEL network fully carries out its public service mission and plays a key role in retaining residents in remote places

gers still used the bus. People massively abandoned collective transport to fall back on private means. This may explain the recent small surge in circulating car numbers (Fig. 19.3). And nothing tells us that the situation may change in the near future.

One may see in this general collapse a direct consequence of inappropriate resources (thermal, polluting, slow buses). By contrast, sustainable, electric, efficient railway solutions would have become increasingly attractive to consumers. This is partially true. The awaited opening of four tram lines in southern Athens, the modernization of Line 1 and the opening of two metro lines surely participated in reducing bus use, but it cannot be denied that the transport “revolution” had in fact a limited impact locally, despite a consider-

able announcement effect. For instance, the observed passenger traffic on lines 2 and 3 never exceeded 190 million people, which means that:

- The volume is extremely limited as regards the global demand in the capital region. This would prompt the authorities to urgently launch further programs to attract more people.
- The dimension of the project did not globally change the city’s operational model. Fast-growing suburban areas just seem to remain out of reach. The *proastiako* (suburban) system promotes the development of quite remote cities (Corinth, Chalkis), but all other mid-distant places beyond the Attiki Odos are left aside.

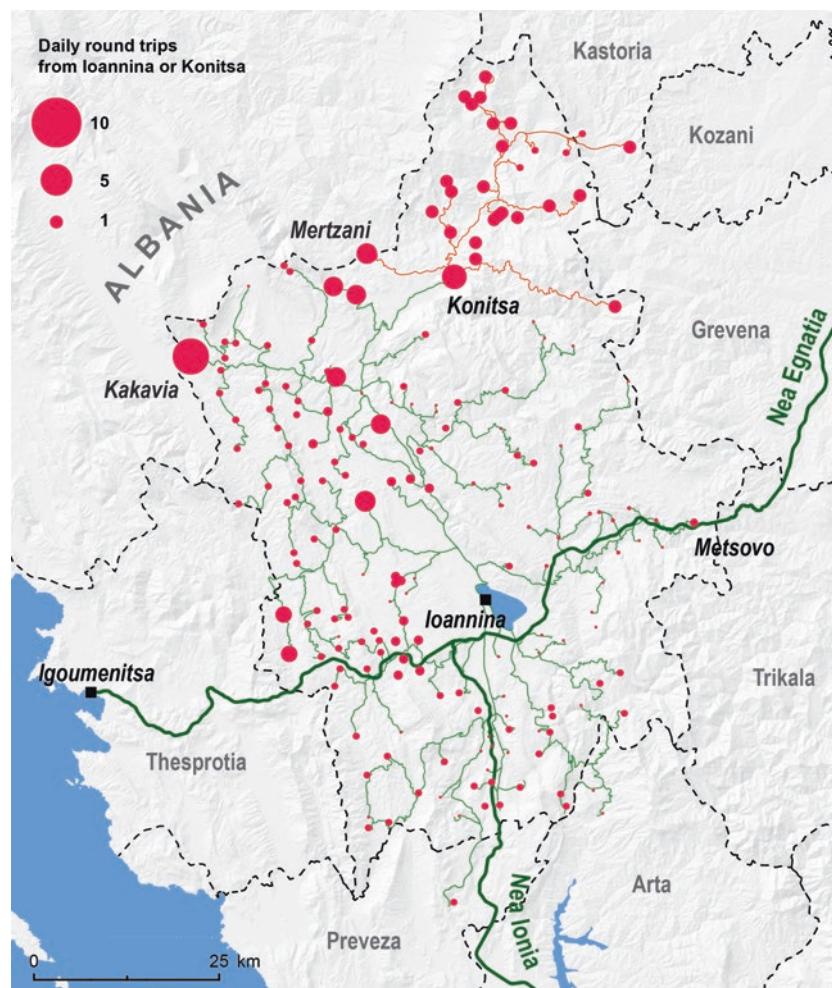


Fig. 19.5 KTEL network in the Ioannina District, 2022. Daily round trips. (Source: KTEL Ioannina)

Twenty years later, the situation worsened considerably for the local KTEL. The network remains committed to serving a high number of places, although the overall number of trips decreased sharply. The vast majority of settlements are now served by a single bus, once or twice a week. About 20 internal lines were deleted or reconfigured (grouped with others). The fall observed in Metsovo is not significant because this final station is now mainly referred to as an intermediate station on the road to

Thessaloniki and Athens. Other reductions illustrate the worsening situation: Pramanda (south-east) decreased from two connections per day to two connections per week. The KTEL network was deeply impacted by the opening of the Nea Egnatia and Nea Ionia motorways and most settlements bordering these highways witnessed an acute deceleration in their population retainment capacity. As a paradox, the northern border areas seem to better resist the crisis, despite the sharp decrease in cross-border transit flows through Kakavia as if priority was granted to cordon sanitaire operations for the most remote places along the Albanian boundary

- (c) The COVID-19 pandemics heavily impacted the modern, expensive metro system the same way it did for buses (−45% between 2019 and 2020–2021) (Kopsidas et al., 2021).

The Athens-Piraeus area fell into a paradoxical situation: The collective means and investments dedicated to transport development are at historic highs, but the actual demand -not the potential one- has never been so low. This means that private car still remains the last massive way to address the demand. In 2021, collective solutions managed to serve 307 million passengers only, whereas local authorities almost attained one billion people transported

in 1965. This is without considering the 40% population increase observed in the Attica region over the same period.

Athens -but this is also true for the whole of Greece- suffers from a chronic, unsolved collective transport underdevelopment problem that may explain ex-post the long-standing success of “homespun” solutions (intercity KTEL buses and urban taxis). To put it otherwise, local, national, and EU governing authorities failed to perform better than private initiatives. Besides, all this “validates” the population decrease observed in central urban areas, especially in Athens, as an answer to the urban transport stalemate.

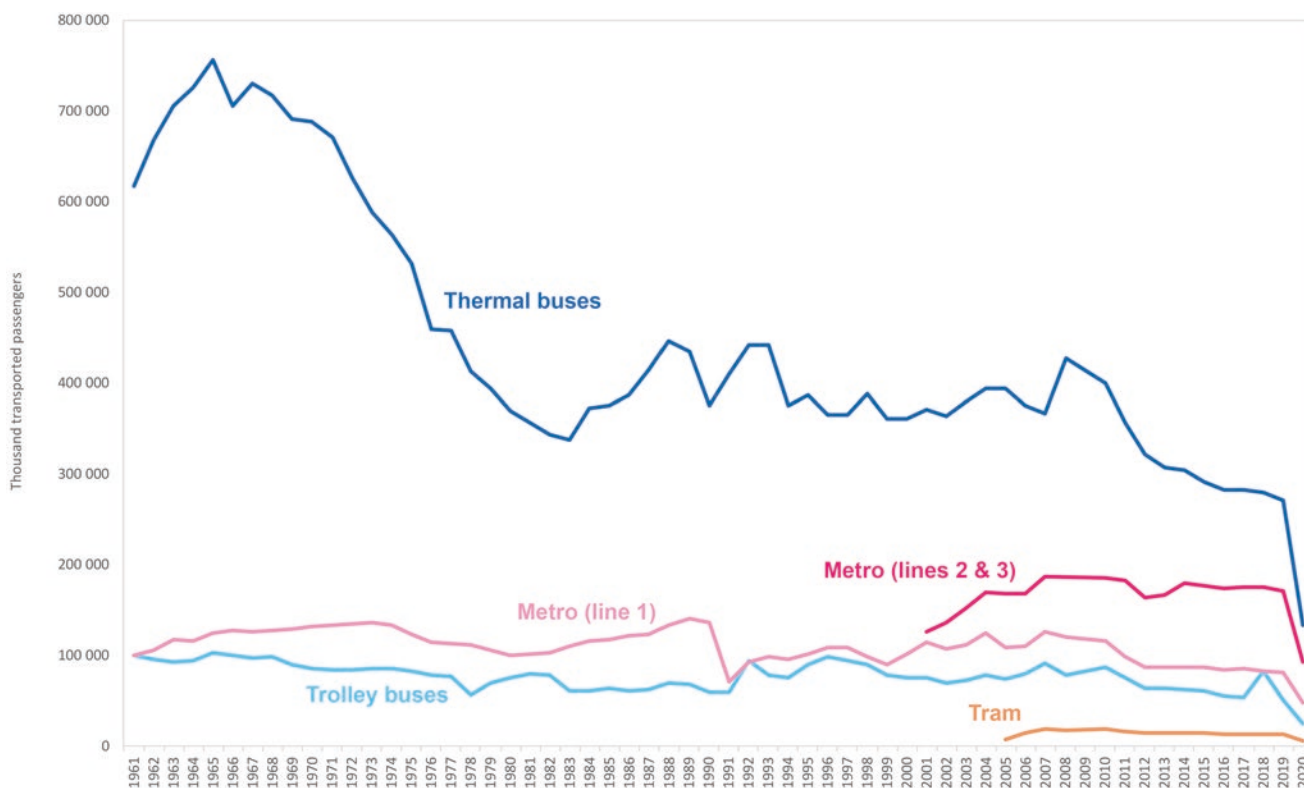


Fig. 19.6 Public transport in the Athens-Piraeus area, 1961–2020. (Source: ELSTAT, OASA (Transport for Athens), STASY (Urban Rail Transport SA), OSY) Thermal buses (OSY): formerly ETHEL, SEP, EAS, KTEL

Trolley buses (OSY): formerly ILPAP, IEM
 Metro, line 1 (STASY): formerly ISAP
 Metro, lines 2&3 (STASY): formerly AMEL
 Tram (STASY)

Disruptive Transportation. Connecting the Inside and the Outside

Addressing disruptive transport services shall provide a wider perspective on the transport issue while introducing the specific case of international connections. As a consequence of the semi-underdevelopment of mainland vs. continuous transport solutions, air and sea transport were -and still are- extremely important, complementary areas in Greece. Ports and airports are privileged platforms able to compensate for the limits of land connections wherever physical and technical constraints apply.

The pace of change and development dynamics differ significantly from what was observed with land transport. The global air traffic in Greece showed a consistent growth over the 1960–2000s, with only minor temporary downturns (the Junta, the fall of the Iron Curtain and political troubles, the Eurozone integration, and the 2007–2012 economic crisis) (Fig. 19.7). However, the year 2012 introduced a break in the trend. From 2012 to 2019, a major traffic surge was observed (37–64 million passengers, +73%). This is entirely due to the increase in tourist activity during the economic crisis, i.e., to international connections focused on a limited number of destinations.

Looking more closely at the timeline, we can unbundle domestic movements from international flights, and the results are quite surprising. The peak activity for domestic connections in Greece was reached in the 1980s with about five million passengers transported. Since then, it seems that faster road and sea connections have caused a serious downfall (2.8 million passengers in 2008). International flights follow another pattern. The first peak was reached in the mid-1990s and the situation stabilized before the “crisis surge” following the global restructuring of the air market and the rising power of low-cost companies. Two worlds thus live side by side: The depressed domestic market, deeply impacted by a crisis going back to the 1980s and the first difficulties faced by Olympic Airways; and the international market, boosted by an enhanced opening to foreign destinations as a support to tourist development.

Neither world would be able to resist the COVID-19 pandemic. The registered fall is –72% for national lines and –59% for international flights. The difference between domestic and international flights has reached a 2.5 to one ratio, with fewer and fewer native people using airplanes. In the 1980s, the ratio was almost similar, but reversed in favor of domestic attendance.

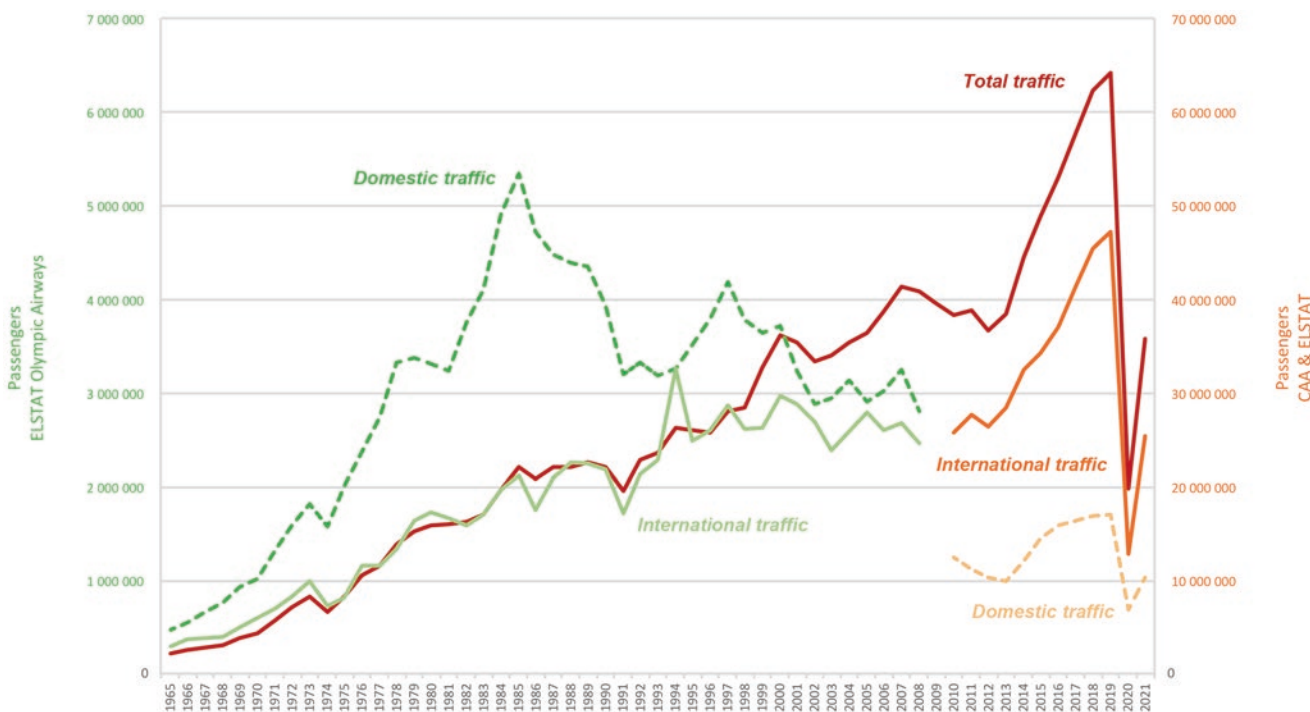


Fig. 19.7 Domestic and international air traffic (passengers), 1965–2021. (Source: ELSTAT, Civil Aviation Authority) As happened with the KTEL network, there is a discontinuity in data series with the Olympic Airways status change operated in 2009, the

privatization of the historic company, and the overall restructuring in the aviation industry. In green: Old ELSTAT series (Olympic Airways, no charter flights). In orange: New ELSTAT vs. CAA series (all companies, scheduled & not scheduled flights)

This bimodal and reverse pattern has no equivalent in the area of shipping (Fig. 19.8). The dominance of the internal market is overwhelming (95%, 580,000 against 12 million in 2021, excluding transborder ferries). There is no real dissonance between the internal and external markets. Passenger traffic reached its maximum in the early 2000s, and the subsequent period has seen a sharp, chaotic, decrease in international traffic, while national movements stabilized. To understand this change, one has to remember different parameters:

- (a) Considering the crushing weight of Athens-Piraeus within the city-archipelago system, coastwise shipping activities may be seen as an indicator of connectiveness, i.e., they measure the intensity of economic relationships between the capital city and its insular foreland (Lekakou, 2007; Chloumoudis et al., 2007).
- (b) Before the air transport restructuring, Athens used to manage the access to most islands, be it through air or sea transit. With the development of direct international connections, this hub function was reduced significantly.
- (c) This indicator might also be seen as the expression of a specific relationship between the capital city and its suburban vs. insular foreland-hinterland, i.e. all islands used for vacation homes by the Athenians.

Combining data from Figs. 19.7 and 19.8 (air and sea traffic) allows us to understand how much the situation has become critical over the years. The islands and their historic tourist boom during the past 20 years -leaving aside the coronavirus crisis- express an enhanced dependence on external subsidies. During the 2008 crisis, Greece refocused on core tourist activities, promoting tourist services as an antidote to the downfall in industrial areas and other basic productive activities. This was made at the expense of traditional relationships and connections. To put it otherwise, the archipelago gained independence against the decrease in economic activity within mainland Greece, and against the sharp demographic decrease observed in central Athens.

As regards the spatial distribution of flows, important imbalances appear. The domination of Athens within the global transport system is overwhelming. However, the capital had to face serious challenges over the years. In 1940, Greece revolved around two main airport platforms, Athens and Thessaloniki, used both as national and international hubs (Fig. 19.9). Significantly, leaving aside international flights, the first instituted regular lines focus on mainland Greece, with connections in Ioannina, Agrinio, and Drama. The islands are completely ignored, with few exceptions in Heraklion, Corfu, and Mytilene. It seems clear that active airlines are those serving distant cities, badly connected by road.

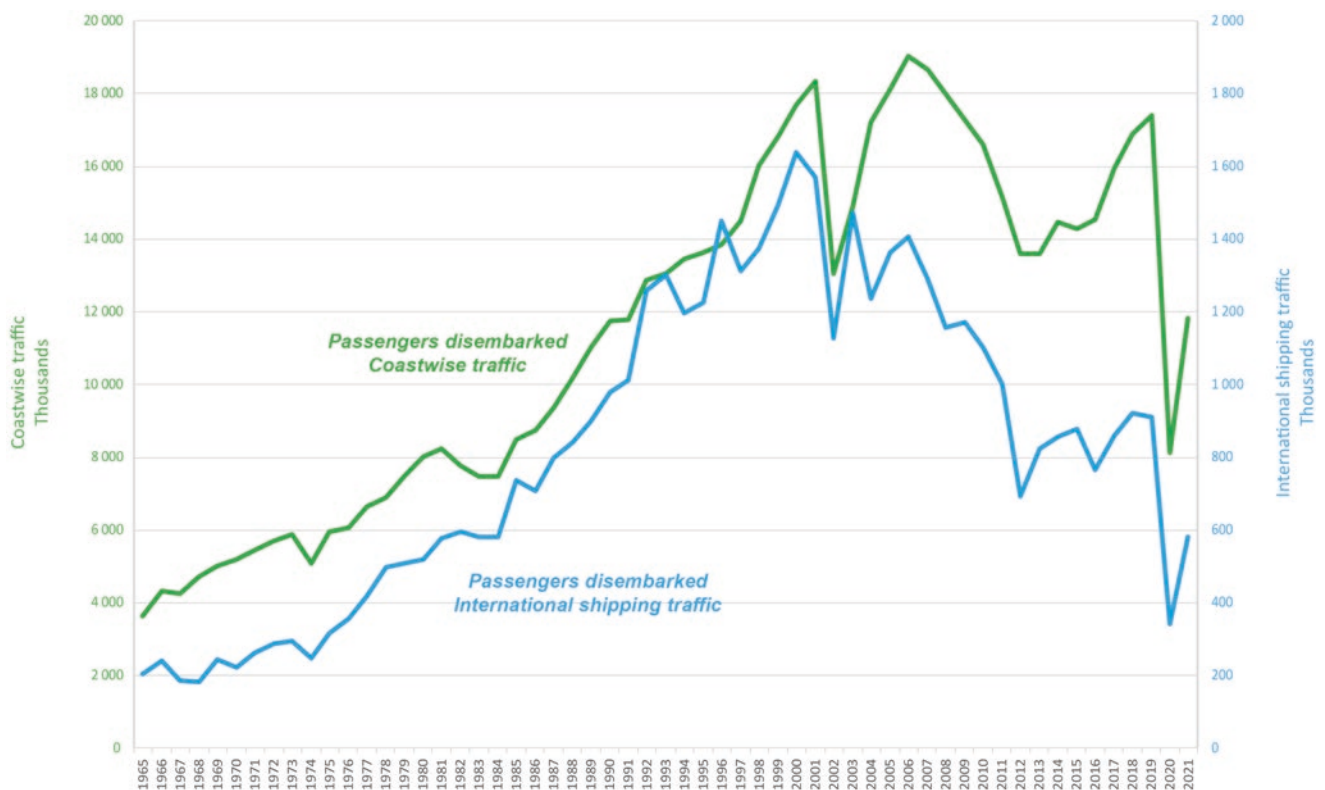


Fig. 19.8 International and coastwise shipping traffic (passengers), 1965–2021. (Source: ELSTAT)

To allow for further comparisons, especially with Figs. 19.14 and 19.15, passengers disembarked are those using coastwise shipping lines, excluding transborder and flat-bottomed ferries (*Porthmeio* in Greek. A usually open-air landing ship covering very short distances, for instance between two close islands or both sides of a strait)

The sharp rise in international shipping traffic (Adriatic and Ionian Sea) is related to the ups and downs of road connections across (former) Yugoslavia. During the Yugoslav Wars (1991–2001), traffic was diverted to the West, through the ferry boats departing from Venice, Ancona, Bari,

and Brindisi. Once the situation became better, and thanks to the improvements made to the motorway system, road travel regained momentum, which explains the downfall in international shipping (reduction by two-third). The arrested development of internal traffic is more surprising. The first negative signal is dated 2002, and the second one 2012–2013 is more logical: It expresses the outcomes of the crisis over internal shipping connectivity. Development was stopped but there was nonetheless no major downturn, rather drawbacks, meaning that shipping connections are vital to dependent local populations and that they cannot go down too far without major consequences on people's lives. The real stop signal is dated 2020 with the first COVID-19 period (–50%)

The historical increase in air traffic after the War did not much change the global balance of power (Fragoudaki, 2000). Athens and Thessaloniki reinforced their lead, as they did in the demographic and economic areas at the expense of other declining urban centers and regions. The role played by Olympic Airways in the 1950–1990s, i.e., before the opening up of the market to competition is central, and the same applies for the (former) Elliniko Airport – a central facility located south of Piraeus, right in the middle of the urban area, with all the corresponding pollution and noise nuisance.

But time passing by, two main changes occurred (Fig. 19.10):

1. The islands gained momentum, increasing sharply their market share since direct international flights were authorized (Law 276/1991). In 2021, 39 airports were reported (11 mainland, 28 islands). The domination of the islands

is an established fact: They received about 15 million foreign passengers in 2021, whereas all inland airports only admitted 10.5 million. Even in the area of domestic flights, the islands gained importance (4.2 million passengers against 6 million, 70% of market share).

2. Although all major airports mainly based their development on international connections, 19 minor airports live exclusively on domestic flights, most of them being located in the northern Aegean. Mytilene, Paros, Chios, and Alexandroupolis are examples of dynamic cities-islands generating internal transport needs (local universities and/or tourism), but almost entirely disconnected from the international flight network.

The Santorini case is emblematic of the change observed in the Central Aegean Islands. In the mid-1980s, only 60,000 passengers (domestic and international) were disembarked yearly in the local airport entirely devoted to the Olympic

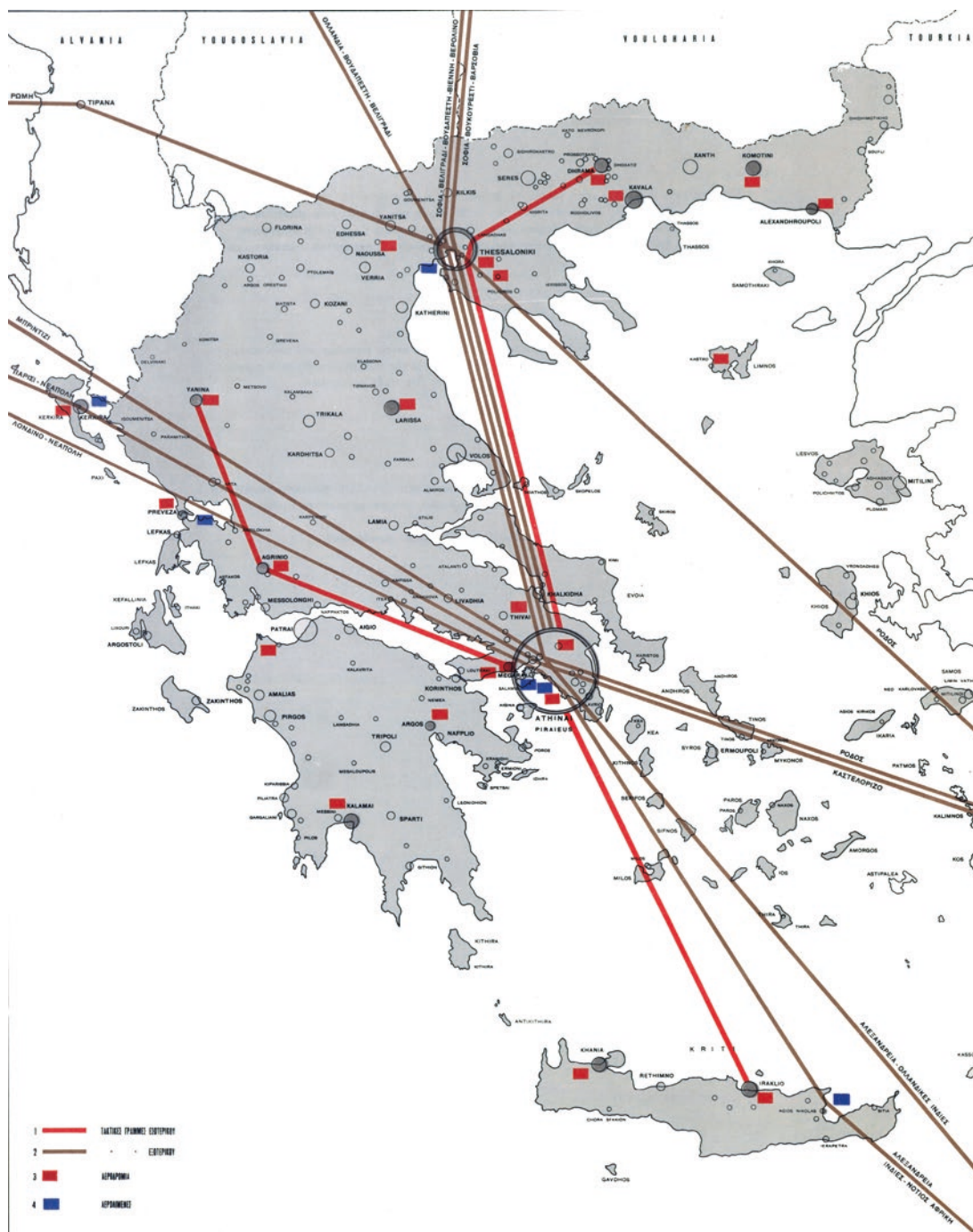


Fig. 19.9 Airline and airport connections in Greece, 1940. (Source: David Rumsey Map Collection, (Ministry of Public Works, 1946))
 Red lines: regular domestic lines; brown lines: regular international lines; red squares: airfields; blue squares: airports
 The connection with Rhodes appears in brown because the Dodecanese were still Italian in 1940. Connections with South Africa, Alexandria,

Brindisi, Napoli-London, and Napoli-Paris are mentioned starting from Athens. Leaving aside the Tirana-Rome connection, Thessaloniki serves the northern Balkan and central European area (Sofia, Bucharest, Budapest, Belgrade, Berlin, Vienna, and Warsaw). This is a “traditional,” ante-Cold-War framework

Airways company. With the opening to charter flights, the traffic increased to about 400-500,000 in the 1990–2000s. But with the development of mass-tourism “hotspots,” the traffic reached 1.5 million passengers disembarked in 2021.

One can easily imagine the impact of such flows on a 70 km² island. The same change in attractiveness applies to Paros, Naxos, Mykonos, and Milos, with 200% to 500% increase over the last 20 years.

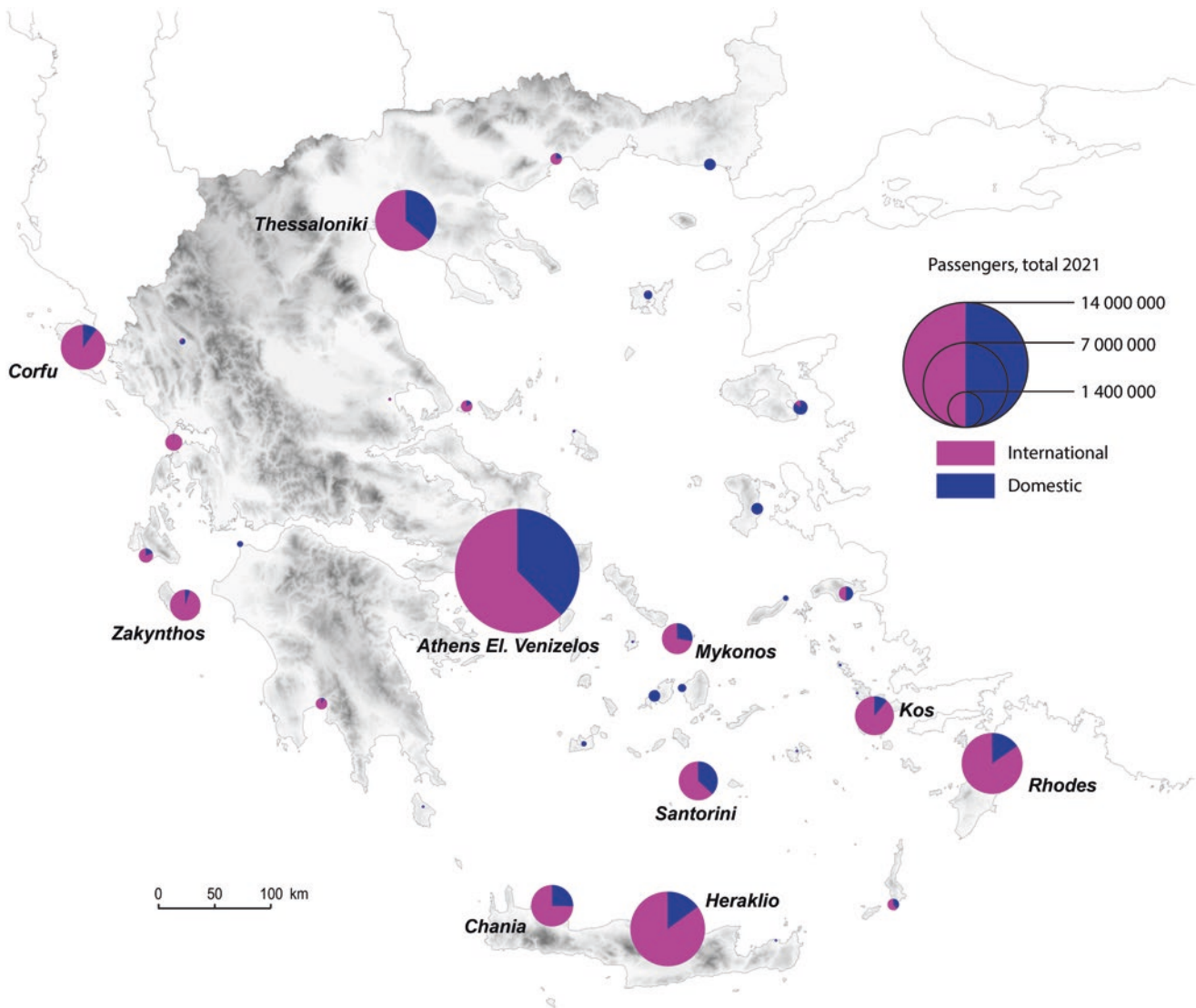


Fig. 19.10 International and domestic air traffic by airport in 2021. (Source: ELSTAT)

Such an explosion of formerly minor destinations deeply impacted the global transport system (Figs. 19.11 and 19.12). For instance, the place of Athens as a central hub is now clearly challenged. The opening of the Eleftherios Venizelos airport in Mesogeia was supposed to bring about a definite solution to the obsolete, heavily congested platform and to keep pace with the development of air transport. But statistics are merciless. The increase in air traffic happened before the opening of the new airport. Since the early 2000s, Athens's attractiveness decreased by about 10% (from 14 million passengers to 12 million today). The centrality of Athens as a capital city is increasingly challenged in this area. There is once again a discrepancy between the great works undertaken at the national level and the fluid movements of reality, especially in these times of economic-geopolitical instability.

This change in pattern and flow distribution is also visible when one focuses on the worldwide geography of flight connections (Fig. 19.13). Athens remains the only platform allowing reaching intercontinental destinations directly. There is still a correspondence between this spatial scattering and the Greek diaspora pattern abroad, especially in the United States and Canada, but different historical destinations are now missing, especially in South Africa and Australia, including the former Soviet World (Caucasus, Central Asia). Seen through this angle, Greece appears as an active south-east European dependency, quite disconnected from the Mediterranean. Most passengers travel from northern European countries, with a clear tropism towards the United Kingdom, the Netherlands, and Germany (vs. Central Europe). Entire areas in the Eastern vicinity are "missing:" The "Russian world," the "Turkish lands," and

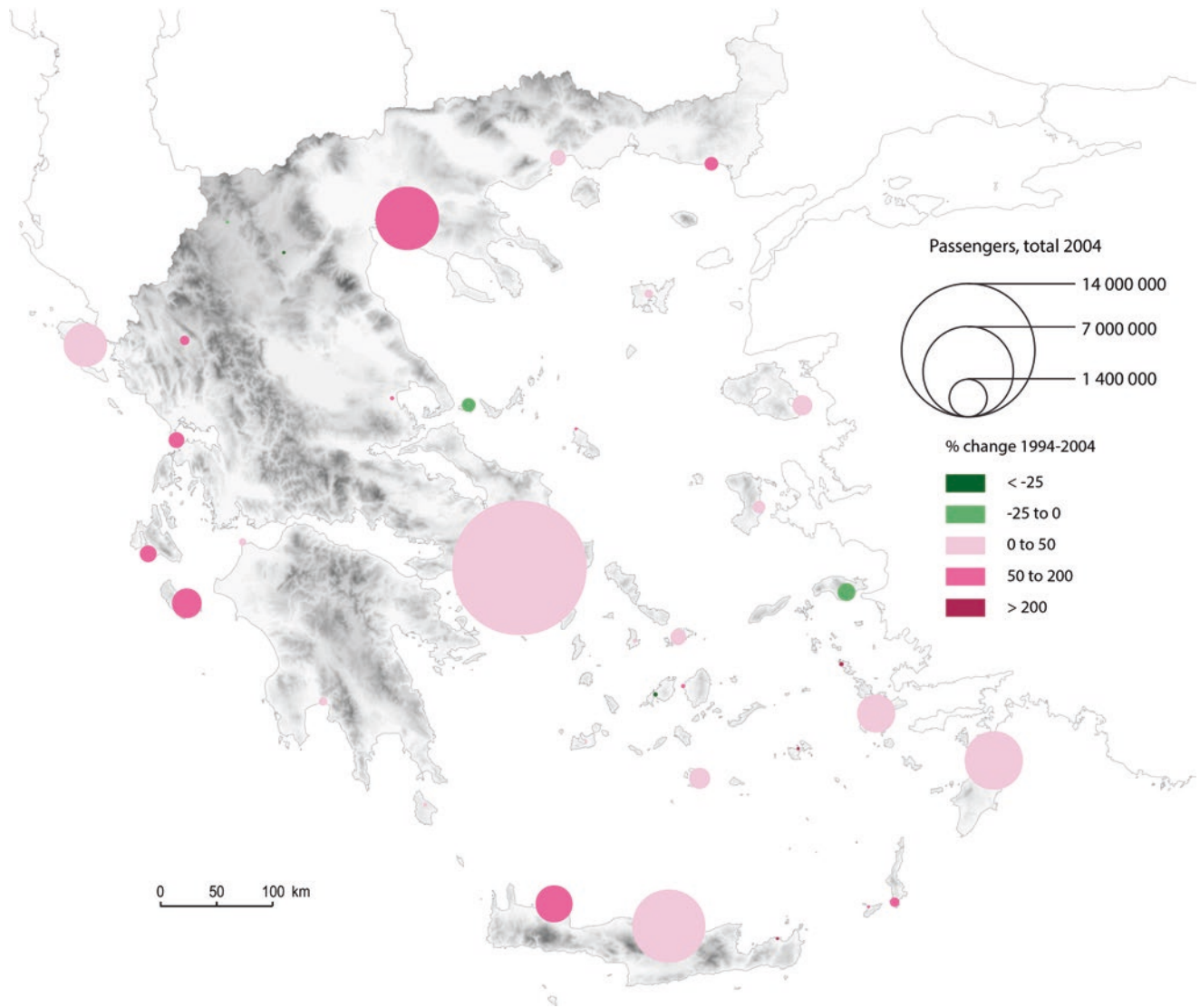


Fig. 19.11 Passenger traffic by airport, 1994–2004. (Source: ELSTAT) This decade is extremely significant because Greece gained a new place within the new “open world” after the fall of the Iron Curtain and the normalization of international relationships with Eastern Europe. Not

surprisingly, Thessaloniki is increasingly important and achieves to attract different new flows originating from Russia, Eastern Europe, and former Soviet countries. “Tourism” intermingles with repatriation movements for Greek populations from the Caucasus and Central Asia

the Middle East. The situation expresses a withdrawal from the Eastern Mediterranean and the Black Sea. The “small business of tourism” thus collides and interferes with major historical events: The accelerated retraction of Greece from historical diasporic communities in the East.

Not surprisingly, the air transport dynamics resonate positively with shipping (Rigas, 2009; Pallis, 2007). As regards sea transport, the islands are naturally placed at the core of the system, with different bridgeheads scattered along the mainland coast. The main difference lies in the place granted to Athens. The capital is not the international hub observed in the air area. The situation is reversed:

(a) At the international level, Piraeus is only the fourth port in terms of passenger traffic (Table 19.1), behind Igoumenitsa, Patras, and Corfu, and its situation worsened over the years. External shipping connections represent less than 1% of the total. Furthermore, there is a reversal behind the reversal. Patras used to be the leading port for international traffic up to the early 2000s. But Igoumenitsa had made some great gains at the expense of all its competitors. The Yugoslav Wars reinforced its position, and the opening of the Nea Egnatia motorway dealt a heavy blow to Patras and even Corfu. As a result, Patras lost 50% of its traffic, while Igoumenitsa more

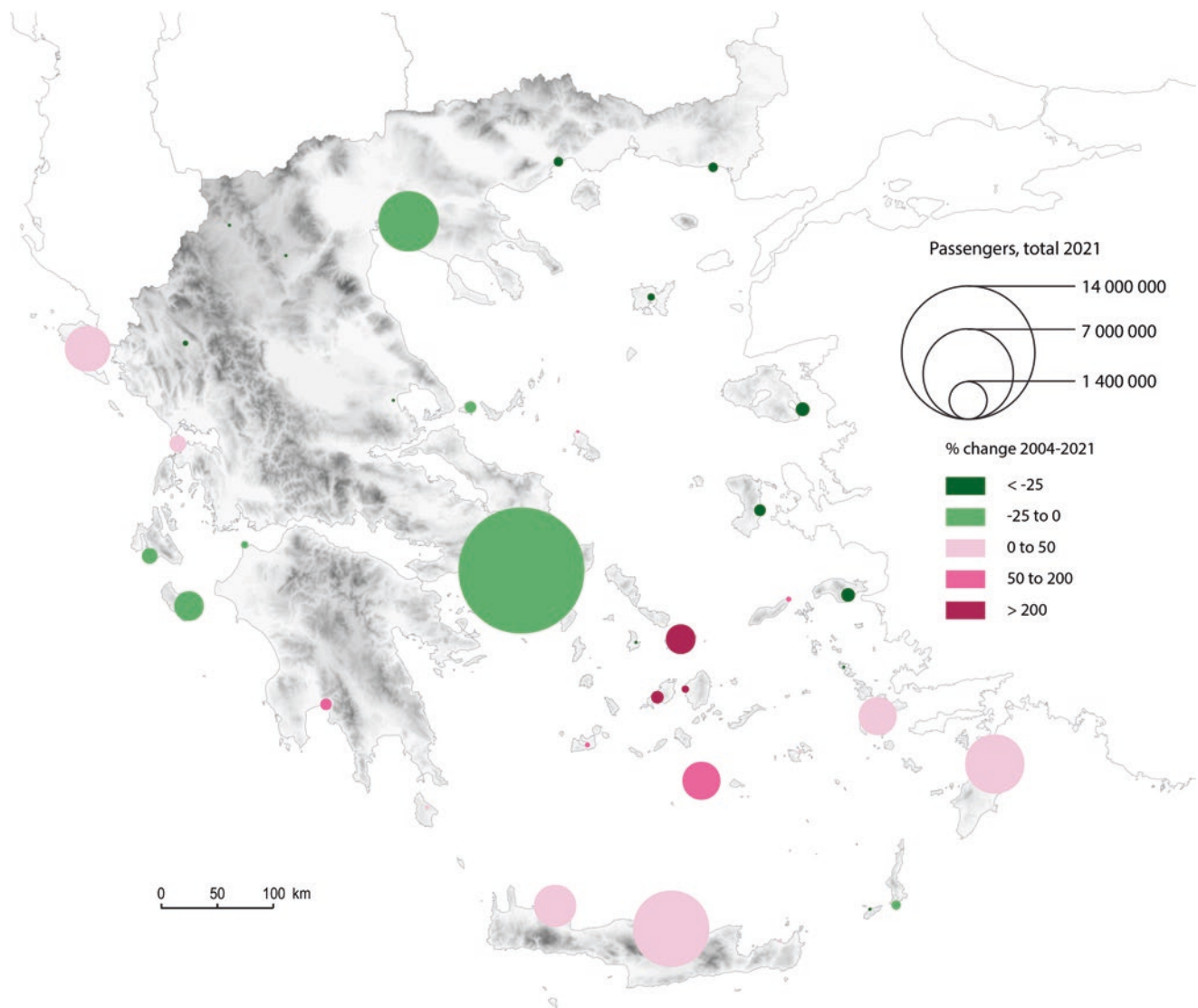


Fig. 19.12 Passenger traffic by airport, 2004-2021. (Source: ELSTAT) This second phase of air traffic development introduces different changes as regards the post-WWII pattern. Mainland airports face a decrease in their influence and the distribution of people rebalances for

the benefit of southern Aegean destinations. Some peripheral areas get a fresh boost while other destinations facing a mass influx of illegal migrants go into a recession (Mytilene, Lesbos, Chios). Estimating the unequal “resistance” to the COVID-19 effect is quite difficult for now

than tripled the number of passengers served. But this is without considering the impressive fall in international connections over the last decade.

- (b) At the national level, i.e., when dealing with domestic connections, Piraeus has a dominant market position, the same way the Athens Venizelos Airport was in a leading position (Figs. 19.14 and 19.15). And the same negative dynamic applies. Its place within the system is more and more challenged. In the first 1981–2001 period, Piraeus managed traffic development with the archipelago. The global increase (+55%) will be almost annihilated by the subsequent period withdrawal (−30%). In other words, the present activity level observed in Piraeus is the same as the one seen in the 1980s.
- (c) The number of “main lines” (inter-departmental) referenced by the government in 2020 reaches 329, of which 127 run from Piraeus, 40 from Rafina, and 26 from Lavrio. Besides these, there are 157 “local” lines (intra-departmental), which build up a complex system of interconnected islands numbering over 110.
- (d) Local situations are extremely contrasted, with ports and lines developing fast and others disappearing into oblivion. Agios Konstantinos (Samos) fell victim, for instance, of the latest restructuring decided by the central authorities and lost 98% of its traffic (75,000 passengers in 2001 to 1800 in 2021). Parallels are here to be found with the restructuring of the KTEL network in mainland areas. As compensation, other destinations become stronger.



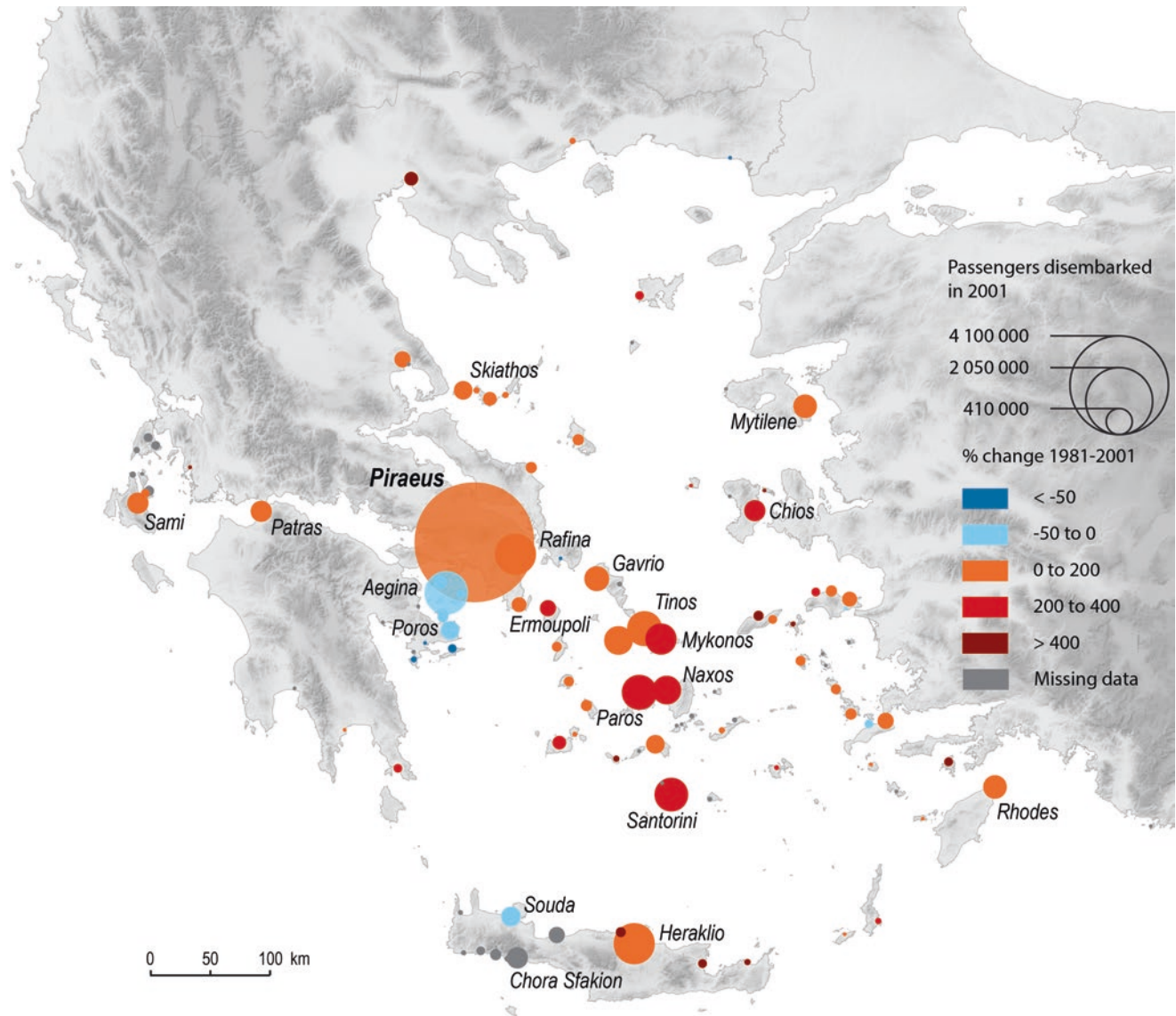
Fig. 19.13 Domestic and international airline connections from Athens, Thessaloniki, Santorini, and Mytilene in October 2022. (Source: www.flightconnections.com) Such figures allow for the identification of obvious “imbalances.” Greece seems to be “trapped” in some European network. But from a historical perspective, this situation is incongruous. In particular, Mediterranean, Middle Eastern, and Russian connections are “missing,” as if the former Iron Curtain had been reintroduced on the eastern flank, and even extended to eastern Mediterranean destinations.

Despite its importance, Athens fails to achieve international leadership compared to places such as London, Paris, or Istanbul. Within the hurly-burly of international connections, the relationships within the Hellenic diaspora do not appear to exert much influence. The diaspora expresses “weak signals.” Globally, Athens is apparently placed in a blind corner of the EU, which might be interpreted as the result of a long integration process, with the fall of the Iron Curtain as a historical parenthesis without much consequence, apart from the opening to Central Europe

Table 19.1 Disembarked passengers by port, international traffic, 1981–2021

	1981	%	2001	%	2021	%
Igoumenitsa	85,998	14.9	647,829	41.2	379,355	65.2
Patras	301,896	52.4	670,327	42.7	147,574	25.4
Corfu	124,823	21.7	160,994	10.2	53,405	9.2
Piraeus	35,260	6.1	26,877	1.7		
Others	28,293	4.9	65,263	4.2	1348	0.2
Total	576,270	100.0	1,571,290	100.0	581,682	100.0

Source: ELSTAT

**Fig. 19.14** Passengers disembarked, by port (coastal – ferries traffic), 1981–2001. (Source: ELSTAT)

The development of shipping transport in Paros, Mykonos, Naxos, and Santorini preceded and accompanied the expansion of airport traffic in

the same island areas. Except in a small number of ports west of the Saronic Gulf, the archipelago is part of an evolving positive dynamic. The same applies to the islands facing the Turkish coast. Enhanced territorial integration is the hallmark of this era

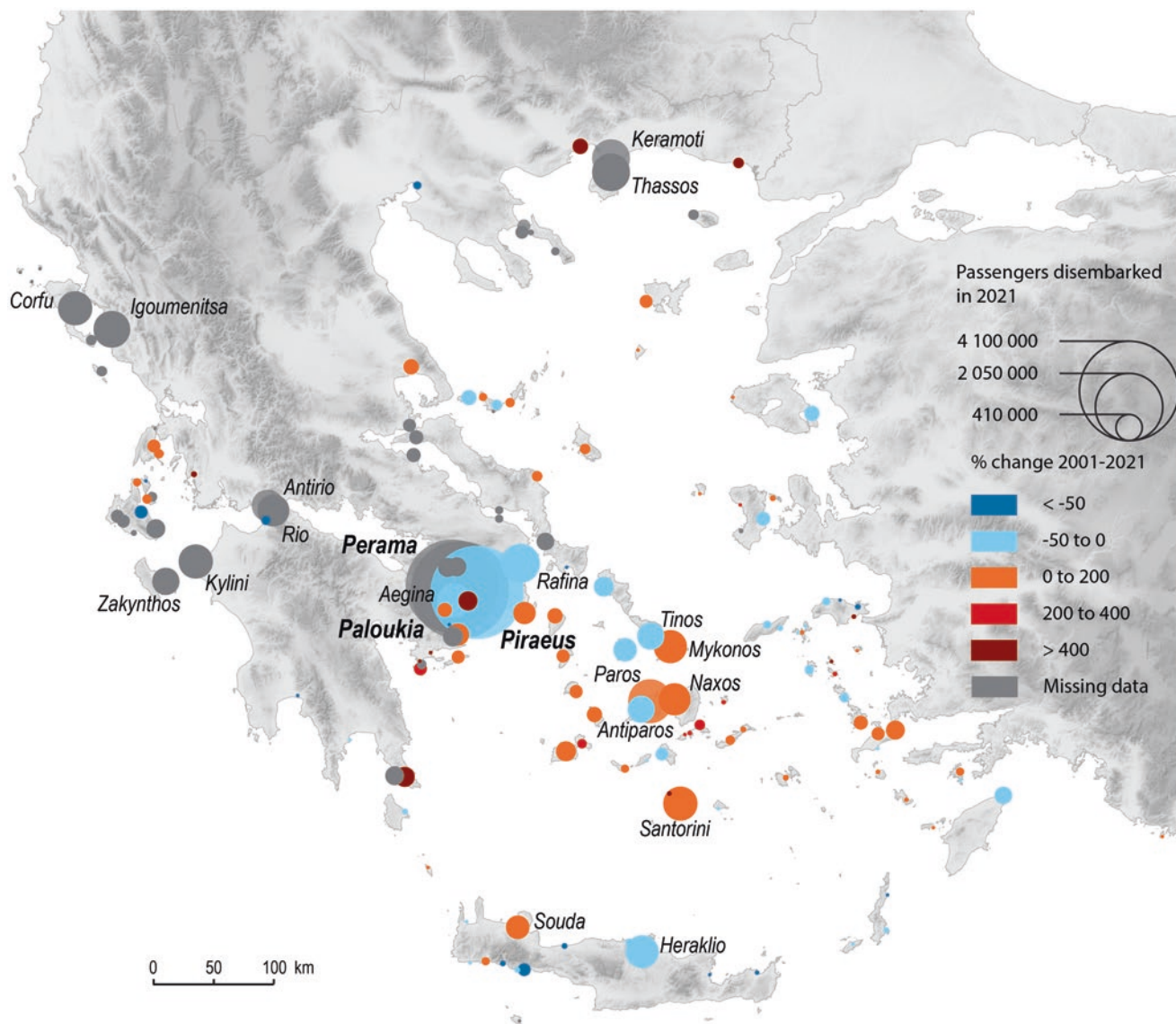


Fig. 19.15 Passengers disembarked, by port (coastal – ferries traffic), 2001–2021. (Source: ELSTAT)

Data collection changed over the years. Transborder and bac ferries are now integrated, which means that gray circles determine traffic for short-distance dipoles or multi-poles, such as Rio-Antirio, Keramoti and Thassos, or Perama Piraeus-Paloukia Salaminas. As opposed to the previous period, development in the Southern Aegean is more spatially

restricted and happens at the expense of central port facilities in Attica. Sea traffic changed into an activity less dependent on Piraeus. Paros succeeded in doubling its passenger market share over the last 20 years. The port is nowadays the second main facility in Greece, way ahead of Heraklion. Traffic volume on this island is now a record 28% of the one measured in Piraeus (against 6% in 1981). Territorial discrepancies increased, and “maritime” Greece appears now to be much more divided

The emergence of Folegandros Kyklades (from 1600 passengers in 1981 to 40,000 in 2021, without a severe drawback during the crisis) is a reverse example. This small island benefitted from the spillover effect of the explosion in air traffic on the neighboring Santorini Island.

- (e) Globally, recession in maritime traffic has been less important than the one observed with the KTEL network -its land equivalent. For two main reasons: (1) local populations are much more dependent on public transport because no alternative solutions exist, and (2) the system was significantly and positively impacted by the island tourist boom and the desire of foreign air

travelers not to remain entrapped on small islands during their stay.

- (f) There is an increased global imbalance between the Ionian Sea and the Aegean Sea for domestic connections, with an enhanced bipartition between the western, internationally open ports and the eastern basin, entirely dedicated to domestic transport, with its “hard” boundary with Turkey. Alternatively, the Northern Aegean appears as a semi-desert when compared with the intense flows passing through the Southern Aegean Sea where connections with the Black Sea and “local” flows from Piraeus overlap (Fig. 19.16).

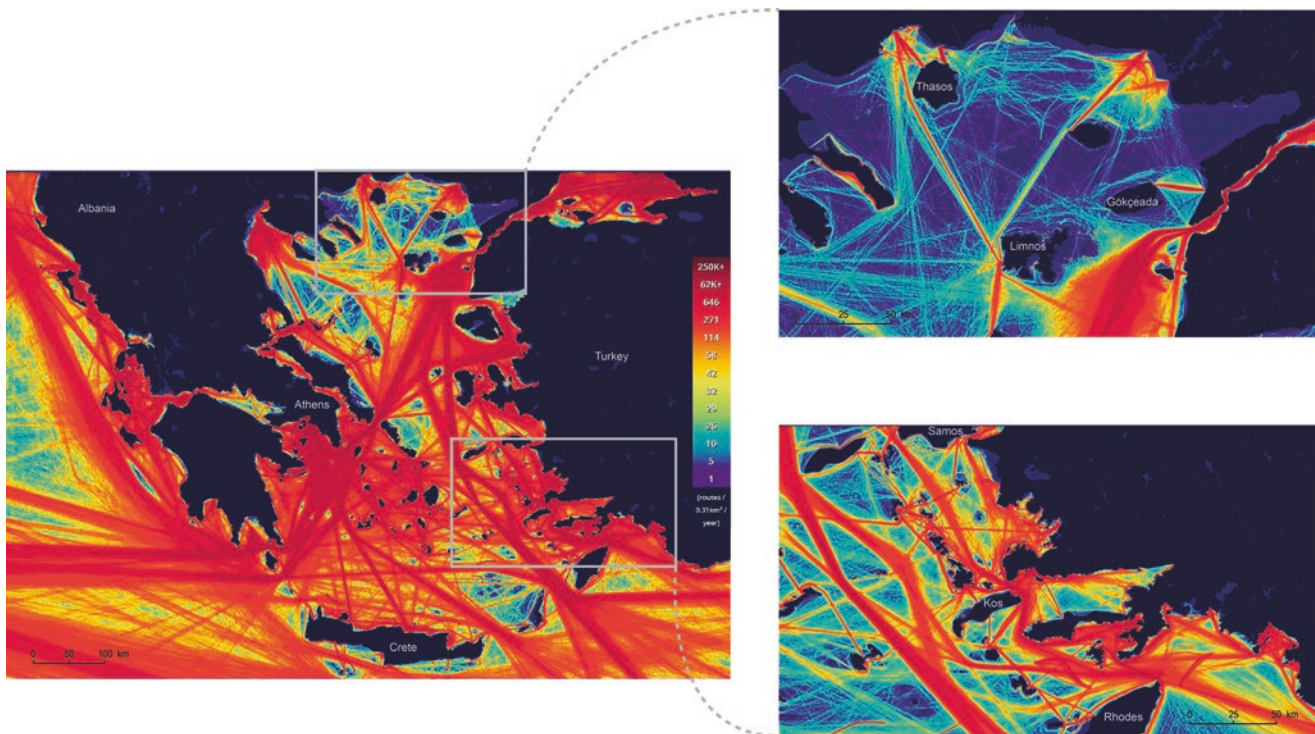


Fig. 19.16 Maritime traffic in Greece, density map (2021), all vessels. (Source: www.marinetraffic.com)

Disentangling local and international connections is uneasy in this route mapping. However, different structural characteristics emerge from this document. (1) Greece's internal waters are made of isolated cells. Local basins connect a group of islands with their corresponding port facilities on the continent. Zante, Lefkada, and Kefalonia form such a basin off Patras and its Gulf. (2) These also define "empty" areas distant from the main routes. The northern Aegean east of Mount Athos and, more surprisingly, the Karpathio Pelagos (western Dodecanese)

are good examples of marginalized sea areas. (3) Besides these, sea motorways structure the area and their position depends on the geography of straits and channels. The Dardanelles Strait is, of course, a hot spot. But other less known "locked" paths are the Steno Kafirea (south of Euboea), the channel between Mykonos and Ikaria (Ikarian Sea), the Karpathos Strait (south of Rhodes), and the Elafonisos Canal (southern Peloponese). (4) Along the Turkish coast, contrary to appearances, traffic is strongly partitioned. Greek coastal navigation and its Turkish equivalent belong to two separate worlds, with very limited cross-boundary connections

Conclusion

From the elements presented above, it becomes clear that adaptation to change is a difficult task. The transport industry has been marked by an accelerating pace of change, with severe downfalls registered in many transport areas. In most cases, the recession was so acute that half a century seems to have been lost. Furthermore, what could have been compensation mechanisms -modernization, and mass infrastructure investment- did not reverse the trend. Innovation and progress appeared as pointless operations delayed in time and unsuited to the current spatial conditions.

Heavy infrastructure investment programs have seemingly changed the face of Greece. The old road system evolved towards a more integrated, effective network allowing for faster transit, and the frequency of international direct air connections successfully helped entire local communities emerge from isolation "independently" from the central authorities in Athens. Similarly, the expansion and modernization of public transport in Attica significantly altered former land development programs towards an enhanced

opening of suburban areas. However, as usual, dynamic change determines winners and losers. Space-time globally contracted: Long distances shortened and short distances lengthened, meaning that global progress in interconnectedness left many places by the wayside. It is very clear that the principle of differentiation applies, maybe the wrong way because such a policy seems to produce counteractive effects, i.e., they enhance rather than reduce already important geographical variations.

Within this context, many paradoxical situations logically appeared. The fragmentation of Greece seems to have gained huge proportions, despite the alleged strong "integration" promoted by major public and private investors. The opening to international flows and the benefits generated by large infrastructure are successful operations, but the economic crisis and the COVID-19 pandemic created an unprecedented historical recession impacting mobility in Greece as it never did before. Transport dynamics are extremely sensitive to the background changes they eventually reflect. Be they cyclical or structural phenomena, these chaotic events both expressed and exacerbated previous changes rather than created a new momentum.

Within the transport system, there seems to be a disconnect between the objectives defined by the EU and the real needs and demands of people. One thing is to manage the development of major European corridors and offer increased connectivity allowing for an enhanced “upper-scale” territorial integration. Another thing is to accommodate major projects with local vs. national contingencies and, more particularly, variability. And the least one can say about recent years is that chaos has become a full part of the system.

Seen from an external eye, the Greek situation, especially as regards the development of mass tourism, is one of a geographical shift. Greece would have turned into a new “mono-industry” tourist resort. This perspective arises from the practical disconnection between Athens and its backcountry, be it continental or insular. The “integrated” European model produces a land “disintegration” effect. Land planning and harmonized development plans generate spatial gaps and distortions because scale transfers are randomly considered effective issues to be addressed by the authorities.

The question arises as to whether these disturbances shall fall short and Greece can be brought back into the fold through a rapid return to “normality.” For now, nothing could be less certain, because the analysis revealed structural causes lying behind the upheavals of history. The next few years will be decisive.

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Régis Darques is a geographer whose research area is at the crossroads of human and environmental geography. His expertise covers remote sensing techniques, photogrammetry, advanced GIS, database management, statistical analysis, and complex systems. A research fellow at the National Centre for Scientific Research (CNRS-UMR 7300 ESPACE, Aix-en-Provence, France), his interests focus on Balkan geography and Mediterranean Studies. He has been working in the Balkan area since the mid-1990s, with Greece as his main subject of scientific investigation. He has been teaching GIScience and geoinformatics to postgraduate and PhD students in different French universities. Editor in chief of *Mediterranee, Journal of Mediterranean Geography*, published by the Aix Marseille University, his book publications include *Thessaloniki in the 20th Century: From the Ottoman City to the Greek Metropolis* (2000) and *Mapping Versatile Boundaries: Understanding the Balkans* (2017).