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Urban Sustainable Mobility in Focus: Student Education, Community Involvement and Participative Planning

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Urban Sustainable Mobility in focus: student education, community involvement and participative planning

SUMP Scenarios *Glyfada, Greece*



June 2021

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PART 1. Necessity of Sustainable Urban Mobility Planning

1.1 Why do we need Sustainable Urban Mobility Plans (SUMPs)?

Sustainable Mobility is the term used to describe the urban mobility aspect of the future sustainable city. The term refers to securing safe and friendly mobility conditions for all citizens while limiting energy consumption and CO₂ emissions. This is accomplished through an integrated system of combined transport, limiting the role of the private car to where its use is absolutely necessary, and allowing other alternative transport means to become competitive to the car for certain transport objectives, time periods and routes. Alternative transport means, like the public transport, cycling, walking, car pooling and car sharing are upgraded in this combined transport paradigm and become its main components.

Why are we trying to replace the private car with other alternative means of urban mobility? Why are we trying to shift a paradigm that has been dominant in urban mobility worldwide? The pollution or the noise that come with the car are valid answers; however, the modern technological progress is expected to provide solutions to the pollution and noise problems soon – the electric and autonomous cars technologies are advancing fast and promise to minimize both the pollution and noise produced by cars, as well as reduce the number of cars on the road with ridesharing capabilities and reduce the urban CO₂ emissions by 80% worldwide.

The main problem with the car-dominated urban mobility paradigm is its impact on the availability and quality of urban space. Car infrastructure has already taken up a great part of the public urban space in European cities and continues to do so, with more demand for parking space and new road networks to facilitate the increasing traffic. The problem of space is especially evident in the historic centres of European cities, built before the invention of the car and therefore lacking the space necessary to support increasing car traffic (Chronopoulos, 2015). Moreover, SUMP is promoting a change of approach in planning, from the offer of means of transport, to the offer of mobility options. A shift from transfer to mobility: The citizen is no longer regarded as a passive passenger to be transported to a destination, but as an active citizen able to choose the best way of reaching a destination. The focus is no longer on means of transport (e.g. private car, public transport) but on the citizen and on the choices offered to travel in the city in a friendly, safe, comfortable and healthier way in terms of physical exercise and lower levels of stress.

1.2 Why is it important to involve residents, businesses and civil society into a participative SUMP planning?

The participation of the local community in Sustainable Urban Mobility Planning is a core component of the SUMP concept. Active citizens' participation is in fact key to any contemporary spatial planning action, whether related to land use planning, urban regeneration projects, or urban mobility planning. Involving the local community in an informed and active manner guarantees that the needs and vision of the citizens for their neighbourhoods and cities are taken into account, and

the local community is in a position to understand the overall planning strategy and support the interventions made in this framework. Moreover, active civic participation plays a central role in promoting local democracy.

One of the most important aspects of civic participation is the essential participation in the planning of the city where we live and work. Urban planning in general and SUMP in particular have, with their application in the city, serious implications for the way the city operates, affecting our quality of life on a daily basis. However, although the participation of citizens in spatial planning and decision-making processes at the local level is a prerequisite in many European countries - as only through their participation the citizens are informed and aware, in Greece there is poor experience in quality participation. Young people and women in particular are usually absent from consultation procedures. The reasons behind the insufficient involvement of citizens in spatial planning processes reflect the weaknesses of both civil society and local authorities, and are related to ignorance and lack of awareness on environmental issues, such as climate change and SUMP policies, but also social issues such as the perception of the "common good" and the need to implement participatory planning processes at all levels (Information, Consultation, Dialogue, Partnership). Lack of participatory planning tools and techniques that will inspire confidence in citizens, and a sense of inadequacy due to lack of necessary knowledge or skills, are also deterring factors (Vlastos, Bakoyannis, 2019). This stresses even more the importance of the project's activities regarding the involvement of residents, the civil society and the local authority in Glyfada.

Indeed it is the first time a SUMP Task Force is created in the Municipality of Glyfada, involving representatives from the City Council, the municipal departments, civil society organisations, the local school education community and experts, to research and map the urban mobility issues through a SUMP approach and develop SUMP scenarios for the future of a case study area. The interest and dedication demonstrated by the Task Force members throughout the work of the Task Force, as well as their contribution in mapping urban mobility issues through walking on the streets of the case study area and using a platform for collaborative mapping in mobile devices (Siftr – www.siftr.org), and in collaboratively formulating the SUMP Scenarios, reflect the need for such participative approaches in SUMP and their potential effectiveness.

1.3 Aims of the document

This document aims on one hand at facilitating the project activities foreseen within the Urban SCOPE project, and on the other hand at providing documentation and a basis for discussion regarding the future of SUMP in Glyfada, especially in light of the formulation of the first Sustainable Urban Mobility Plan for the city to commence soon. In specific, the objectives of the present document are presented below.

Objectives relating to the Urban SCOPE project:

- To provide a basis for the learning material to be developed in following phases of the project (Learning Methodology and Learning Course for secondary education) to be applied in a secondary school of Glyfada

- To be employed as reference with regard to the SUMP Competition foreseen in Greece

Objectives relating to SUMP in Glyfada:

- To raise awareness of the residents and stakeholder organisations (including the City Council and other local authority officials) on SUMP in Glyfada, raise the topic on the local agenda and encourage public discussion on the SUM vision
- To encourage SUMP interventions in the case study area, through the approval of an Action Plan based on the preferred SUMPO Scenario by the City Council
- To provide documentation and proposals, as well as good practice examples with regard to participative planning, especially in light of the formulation of the SUMP of the Municipality of Glyfada
- To provide a basis for educational and awareness raising activities in schools of Glyfada

PART 2. Preparation and Analysis

2.1 Planning context

The city of Glyfada does not have a Sustainable Urban Mobility Plan in place, or any integrated policy regarding the SUM approach to urban transport. Like the vast majority of Greek cities, Glyfada is a city of the private car. However, the municipality's vision is to take decisive steps towards introducing SUMP policies and interventions. This will of the local authority is evident in the proposals made in the framework of the urban mobility guidelines included in the Glyfada Urban Plan, soon to be approved and guiding the city's spatial development for the next 20 years.

The urban mobility strategy expressed in the Glyfada Urban Plan through guidelines and general proposals for interventions, that have to be further examined and specialised in an integrated SUMP for the city, adopts the SUMP approach to urban mobility and disregards the traditional car-based strategy expressed by a transport plan prepared 8 years ago for the city of Glyfada (but never approved by the city council). It accepts that the approach recognising car use as the necessary factor to support the various commercial and recreational land uses in the city centre has been rendered obsolete by the recent European developments in urban mobility policy and practice. Consequently, the Plan proposes to establish a low traffic zone in the city centre that takes away space from cars (street and parking space) and allocates it to space for safe walking and cycling options to access the centre. This will be achieved through an integrated parking policy and the re-design of public space, including the maintenance and redesign of pavements, and the creation of pedestrian ways and an integrated cycleway network. Moreover, through the development of a wide esplanade that connects a green space next to the city centre with the – soon to be regenerated – seafront, it aims to encourage local residents and visitors to take long walks for recreation purposes. The Urban Plan's strategy also includes a proposal for gradually reducing the car speed limit to 30km/h (from 50km/h) in all residential neighbourhoods of the city, and proposes

design solutions to promote walking and upgrade the position of the pedestrian when met with car traffic by unifying the pedestrian space (see Image 6 below). As a rule, with the exception of the 2 main road arteries crossing the city in a north to south direction, the strategy proposes to decrease the car speed on busy streets by introducing roundabouts (see Image 7).

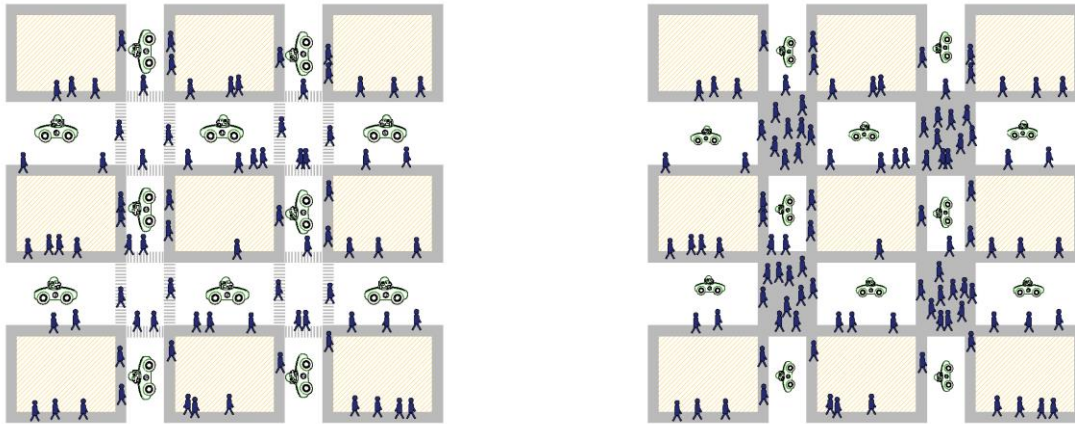


Image 1: The diagram on the right presents an alternative to the conventional model on the left regarding the pedestrian crossings. Source: General Spatial Plan of Glyfada, PRISMA, 2016



Image 2: The roundabouts can help in maintaining constant traffic flows at lower speed. Source: General Spatial Plan of Glyfada, PRISMA, 2016

The urban mobility strategy of the Urban Plan also refers to the concept of Flexible Transport Systems. These cover the gap between the more flexible but also more expensive taxi service, and the less flexible conventional public bus service; they include a wide range of means like minibus service, and demand-responsive transport, as well as special transport services (e.g. for disabled persons or school pupils).

Car-pooling and car-sharing are also included in the urban mobility services proposed for Glyfada; the strategy proposes the creation of a “mobility office” in the local authority that will be responsible for coordinating the implementation of the SUMP and related interventions, including

the management of car-pooling and car-sharing online platforms dedicated to offering secure and safe service to users.

Finally, the urban mobility strategy proposes the development of a wide cycling network and promotes the creation of a municipal system for bicycles to rent in order to encourage potential cyclists to use the bicycle for their everyday trips for work or recreation – it estimates that a fleet of 300-400 bicycles and 25-35 bicycle stops would be sufficient for the starting phase of the system.

2.2 Main problems and opportunities

Glyfada, similar to other cities forming the Athens Metropolitan Area, has been developed with the private car at the centre of the urban transport approach. Located at a distance of around 12 km south of the centre of Athens, and still not connected through fixed track means (e.g. railway, tram, metro), the city has always depended heavily on the private car use. This has had a profound impact on both the layout of the city – with 2 major road arteries crossing it and a significant part of the city surface being dedicated to road and parking infrastructure – and the mentality and attitudes of the local residents and businesses strongly in favour of the car. A steep population increase through the decades has led to Glyfada being expanded to its natural limits (mouth Hymmetus to the east and the sea to the west), reaching its maximum population capacity, and resulting in an ever increasing number of cars on the roads. These factors, together with the city's strong dependence on the private car and motorcycle, and a chronic problematic planning enforcement common to the majority of Greek cities, have also led to alternative mobility means and their corresponding infrastructure falling into contempt.

Walking, the simplest autonomous mobility option to cover small and medium distances, has to a large extent been stripped of its minimum necessary infrastructure: pavements offering safe and free passage to pedestrians, including citizens with special mobility needs (i.e. disabled, parents with baby strollers etc.). Although the city plan allocating sufficient width to pavements has been implemented in practice, the existing pavements often are not in a condition to facilitate pedestrian mobility. They are often blocked by municipal waste bins, public utility infrastructure, parked cars or motorcycles, trees and plants etc., they have often been turned into gardens or parking spaces by the local residents, or have been damaged to such an extent that no longer offer a safe passage. As a result, in the case study area it is common for pedestrians to use the street to walk, putting themselves in danger from oncoming traffic, or engaging in a slalom to avoid obstacles on the pavements. The situation is even worse when it comes to citizens with special mobility needs, like the elderly, disabled persons on wheelchairs or parents with baby strollers.

Although cycling is popular in the case study area among teenagers who often cycle at leisure for short distances to access a local sports facility or meeting place, cycling is hardly a reliable mobility mean for everyday trips in Glyfada. The lack of cycling infrastructure like cycle lanes or cycle ways that can offer a safe space for cyclists, as well as bicycle parking facilities, together with the mentality of the average Greek driver against sharing the street with other users, do not encourage locals to cycle.

Public transport in the case study area is limited to main line bus routes. Although main line bus service covers a good part of the case study residential areas, its limited reliability in terms of punctuality, the delays resulting from it being subject to traffic jams, and the lack of reliable live information on estimated times of arrival and trip duration, do not render it competitive against the use of the private car.

The municipal bus service operating in Glyfada in the last few years could prove an important instrument in connecting residential areas to main destinations in Glyfada and the Metro station just outside the city borders. However, the 2 available routes were designed as circular in order to cover a bigger area of the city and therefore facilitate a greater number of citizens, sacrificing direct access to destinations and resulting in long travel times.

The dominance of the private car is evident when it comes to parking. The great number of cars on the streets of Glyfada does not correspond to the available parking spaces, especially during rush hours in the city centre and local neighbourhood centres. Cars park on pavements, double or even triple park on the streets, and block access to private car parks or access ramps on pavements. Until now there has not been a parking control system, and the work of the municipal police has not been effective in reducing the illegal parking phenomena.

Regarding the SUM situation described above, we need to take into account that until today there has not been any SUM Plan or an integrated SUM policy in place by the municipality. However, this is about to change; the current mayor and the city council have openly declared their commitment to developing a SUM Plan for the city, having for the first time assigned the formulation of the Plan to an experienced team of experts. Moreover, the city council has approved the new Urban Plan of Glydafa which includes a framework for developing SUM interventions. In addition, the municipality participates as a partner in the Urban SCOPE project; the project gives a precious opportunity for participative planning involving the residents and the civil society, raising the SUMP topic in the local agenda, and launching related educational and awareness-raising activities in Glyfada.

The following tables present a SWOT analysis with regard to SUMP in the city of Glyfada:

Strengths	A framework of SUMP guidelines is included in the city's Urban Plan, currently under approval.
	Recent Urban Plan covering the whole municipality and planning the urban space in 6 new operational neighbourhoods, each including residential areas and the necessary services for the residents (commercial centres, education and sports facilities, open and green spaces etc.), thus supporting the adoption of a SUMP that promotes alternative and competitive mobility options to the private car to cover shorter distances on a daily basis (15-minute city approach).
	Municipality's participation in the Urban SCOPE project as partner and implementation of project activities key for promoting a SUMP approach to urban mobility, like the following: <ul style="list-style-type: none"> - SUMP Research for Glyfada and the case study area - Creation and effective collaboration of a SUMP Task Force, involving a wide range of local stakeholders - Documentation and mapping of SUM issues in the case study area - Formulation of SUMP Scenarios for the case study area - Presentation of the SUMP Research and Scenarios in an event with 70 participants, engaging the local community in a discussion about SUMP in Glyfada and raising the topic in the local agenda
	Strong political support by the Mayor and the City Council for developing and implementing the Glyfada SUM Plan
	Presence of an active civil society, committed to engage in collaborative planning processes and to participate in the SUMP process
	Generally adequate width dedicated to pavements throughout the city street network
	Operation of a municipal bus service, complemented by independent bus stops equipped with a seating area and electronic information board

Weaknesses	Absence of a Sustainable Urban Mobility Plan and municipal SUM policy framework
	Local authority's lack of experience in participative approaches to planning and processes of SUMP monitoring
	Two major metropolitan highways cross the city (Poseidonos Highway and Vouliagmenis Highway), acting as barriers to the mobility of pedestrians and bicycles/scooters from the residential areas of the city to the city centres and the seafront
	Current mobility practice and attitude of the residents strongly in favour of the private car use, based on decades of car domination in urban mobility; lack in education and awareness-raising on the subject of SUMP

	Pavements are in their majority not friendly for pedestrians and citizens with special mobility needs like the disabled and parents with baby strollers; they are either blocked (by plants, trash bins, amenity infrastructure, street furniture etc.), taken over by other uses (e.g. turned into private gardens or parking spaces by the residents), absent or in need of repair, and lack access ramps. As a result, most pedestrians have to walk on the streets.
	Absence of Metro stations in the city, connecting it to other destinations in the Athens Metropolitan Area
	Municipal bus service routes are circular, planned to cover as many areas of the city as possible, but not taking the mobility demands of the residents into account; this results in long trips, making it noncompetitive to the private car.
	Main line bus service is not popular among residents, due to the outdated bus stops, lack of live information on the bus arrival, inconsistency of bus arrivals etc.
	Minimal and fragmentary bicycle infrastructure (e.g. cycle lanes, cycle ways, bicycle parking spaces), absence of an overall plan for a bicycle network
	Problems related to car parking, especially in commercial areas (e.g. city centre); cars are parked on pavements, blocking residential car parking ways, or are double-parked especially during rush hours. Lack of clear policy by the municipality on car parking in crowded and popular areas, such as the city centre.

Opportunities	Formulation of the Glyfada Sustainable Urban Mobility Plan, which has just been contracted out, covering the whole city and foreseeing participative planning processes involving the residents and civil society.
	The existing and foreseen SUMP infrastructure on the city seafront (pedestrian ways, cycle ways, car parks) and proposed crossings for pedestrians and bicycles on the 2 major metropolitan highways, could integrate into an overall SUMP for the city.
	The education and awareness raising campaign foreseen in Glyfada in the framework of the Urban SCOPE project (including the SUMP Competition) could encourage a more friendly attitude of the residents and businesses towards SUMP, their active participation in the formulation of the SUMP of the city, and the support of the local community towards the SUMP interventions.
	The knowledge and experience gained by the Municipality through the participation in the project activities of UrbanSCOPE, i.e. the SUMP Research, the collaborative work of the SUMP Task Force and the formulation of SUMP Scenarios, could be used further to establish participative planning processes and SUMP monitoring protocols.
	Glyfada could be promoted as the first SUMP city in the Athens Metropolitan area, investing in civic pride and attracting investments related to SUMP infrastructure and to other fields.
	Restructuring the municipal bus routes, utilising the existing bus stops infrastructure and complementing it, in order to address the mobility needs of the citizens by offering a competitive option to the private car for everyday trips.
	Taking advantage of modern smart city applications regarding car parking and combination of mobility means.

	<p>The future creation of 3 Metro stations in Glyfada, as foreseen in the expansion plans of the Metro company (Attiko Metro), can be integrated to the SUM Plan in order to offer more mobility options with regard to combining the Metro with other autonomous mobility means (walking, cycling, scooters etc.) and other public transport means (main line and municipal bus networks).</p>
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Threats	<p>The dominant attitude of the local community (residents, businesses) in favour of the private car, together with a general reluctance for a change in lifestyle and everyday mobility practices, may lead to a SUM Plan that lacks the brave decisions and important interventions needed to make Glyfada a city friendly for the pedestrian and the bicycle.</p>
	<p>The lack of experience and administrative capacity of the Municipality' services in developing SUMP interventions, monitoring their effectiveness and engaging in effective participative planning processes, may limit the potential impact of the SUM Plan.</p>
	<p>The simple and yet crucial interventions needed to make Glyfada a city friendly to pedestrians, including citizens with special mobility needs, may require substantial funding that may not be easily secured. In addition, requiring the financial contribution of real estate owners in the city to repair and re-design the pavements (as is foreseen in the municipality regulations) may incur political cost.</p>
	<p>Taking into account that the city of Glyfada is a south suburb of the Athens Metropolitan Area, neighbouring with urban municipalities to the north and south and in effect being part of a continuous urban area, it is necessary to collaborate with the neighbouring municipalities at the planning stage in order to make sure their SUMP complement each other and offer maximum benefits to their citizens. For example, a cycling network in Glyfada should not stop at the borders of the municipality, but should connect with the respective networks of adjacent cities. Unfortunately, there is no substantial collaboration experience between municipalities in the Athens Metropolitan Area and this could put this integrated approach in danger.</p>

2.3 Options for the future

Technology to substitute the conventional car

Sustainable Urban Mobility is the mobility paradigm of the future city, aimed at reducing the CO₂ emissions produced by conventional urban transport in cities across the world. A key objective of SUM is the reductions of the private car and motorcycle's role in everyday urban mobility, as the main polluters, and the promotion of cleaner alternatives and their combination, as competitive options in terms of economic, health, social and environmental criteria. But what if the conventional car was substituted by a cleaner vehicle?

The electric car is on its way to future cities as a clean alternative to the conventional, internal combustion engine car we use today. How clean the electric car really is, depends on how clean the source of the electric power it uses really is; in Greece today most of the electric power produced is still not carbon-free, coming from burning natural gas and lignite (63% in 2019). Moreover, the prevalence of the electric car will not solve the issue of the increasing number of cars on our streets and the need for increasing investment in infrastructure to accommodate for their needs in terms of space (roads, parking spaces etc.).

Another vehicle coming even further in the future to substitute the conventional car, is the autonomous car, i.e. the electric vehicle that can drive itself with little or no involvement of the human passenger; the idea is that autonomous vehicles could transport passengers on demand with safety and comfort, and the passengers would not own such a vehicle but would pay for the service. In terms of urban mobility, the arrival of the autonomous car would bring many benefits, ranging from the need for a much smaller number of vehicles on the streets, to less space needed for their use and parking. However, important issues are still to be resolved before the fully autonomous cars become a reality in our daily lives in cities; issues not limited to the field of technology, but also to legal issues and philosophical issues. The autonomous car will probably not come soon, and the planet is running out of time.

The role of new technologies in SUMP

The emergence of new technologies in the field of urban transport can have an important impact on the way we drive, the way we cycle, even the way we walk, and on our ability to offer feedback and participate as active citizens in the design of the urban mobility policies.

New technologies focusing on the car can make it safer for other street users; technologies that can help monitor and regulate the car speed, the visibility of the car driver, detect the driver's tiredness and map his/her attitude as a driver based on information collected by car sensors. Moreover, modern GPS technology can navigate drivers away from traffic congestion areas and help limit the aimless car trips: there are a great number of aimless car trips every day, a classic example being the case where a driver is searching for a parking space; GPS technology can provide solutions by offering live information on the availability of a parking space, also giving the option to book it.

GPS technology can also be employed in the field of bike sharing, making it no longer necessary to develop costly bicycle stations by equipping all new generation bicycles with GPS. In this way, the

bicycles can be traced through a mobile device (smartphone, tablet), picked up through a mobile application and left at the user's destination, wherever that is. Dockless bike sharing can have an immediate impact on Greek cities, because private dockless bike sharing companies are now in a position to make available a great number of bicycles in Greek cities within a very short time, thus encouraging citizens to use the bicycle and broadcast a SUMP message wide and clear.

The GPS and telematics technologies can also find effective applications in public transport, offering to the passengers waiting at a stop or station live and reliable information on the estimated time of arrival of a bus or train, while inside the vehicles the system can offer valuable information regarding the itinerary, alternatives for combined use of different public transport means, as well as information on places of interest and life in the city.

Finally, the internet and ICT applications in the field of crowdsourcing and communication, can enhance the way citizens can offer feedback or proposals for interventions in the city. Such proposals may include improvements to the walkability or cyclability of certain areas, pointing out problems and dangers in the transport network and suggesting solutions. Moreover, they can enhance civic engagement and participation of citizens of different profiles (ages, genders, educational backgrounds, etc.) to planning.

The city we want

Through the interviews, the online survey, focus group meetings and the work of the SUMP Task Force in Glyfada, there was an effort to paint the picture of the future city in terms of urban mobility. Participants shared their views on the SUMP future of Glyfada, focusing on the case study area. Future Glyfada would have the following characteristics:

- A city friendly to pedestrians: The current issues related to walking in Glyfada were raised by the majority of the participants. Turning Glyfada into a city that is friendly and safe for pedestrians, including citizens with special mobility needs, was stressed as a crucial part of the future city. Providing safe and suitable infrastructure for walking like pavements and pedestrian ways, as well as safe crossings and complementary infrastructure like benches and green spaces that can be enjoyed and appreciated by pedestrians, are necessary in order to encourage citizens to walk more.
- A city that welcomes the bicycle and scooter: The bicycle was recognized as an ideal mean for covering short and medium distances in the city; moreover, the electric bicycle can help cyclists with the steeper gradients of neighbourhoods closer to the foot of mount Hymmetus. The scooter and the electric scooter are also becoming more popular among the citizens of Glyfada. Both the bicycle and the scooter are autonomous mobility means that cover greater distances faster than walking and can be easily combined with other mobility means like public transport (bus, metro, tram) or the car. However, both means need to be protected when they come close to car traffic, and also need a space separate from pedestrians in order to be safe and effective in terms of travel time on an everyday basis. They need to be welcomed in the city as reliable options for covering everyday mobility needs, and not just for leisure.

- A city with municipal transport services that respond to the mobility needs of citizens: Municipal bus service in future Glyfada must respond to the actual mobility needs of the citizens, filling in the gaps of main line bus transport, and not just providing more main line bus routes. It needs to be flexible and provide a competitive option against using the private car.
- A city connected through key public transport networks, like the Metro: The development of Metro stations in Glyfada has been a long-standing request of the city council and the local community. The creation of 3 Metro stations in Glyfada, as foreseen in the extension plans of the Attico Metro company, will offer quick connection to Athens and other areas in the Athens Metropolitan area, and will boost the SUMP potential of Glyfada by offering more options to the citizens.
- A city where the role of the car is respected but controlled: The private car and the motorcycle cannot be banned from Glyfada, as they are used by the vast majority of the citizens today for their everyday mobility needs. However, although in the future city the role of the car in urban mobility is respected, it should also be controlled, leaving room for alternative means and combinations of means to become competitive, and also promote combinations of the car and other mobility means (e.g. Park and Ride approaches). Moving away from the car is a gradual process that will take time, especially in a city like Glyfada which depends on it. It will require SUMP infrastructure and measures to make alternative mobility choices competitive to the car, together with a dedicated education and awareness raising campaign.

PART 3. Alternative scenarios

The SUMP Task Force has developed 3 SUMP Scenarios, corresponding to different levels of intervention and periods of implementation:

1. The Scenario of Mild Intervention with implementation in the short term (2021-2022)
2. The Scenario of Medium-Dynamic Intervention with implementation in the medium term (2022-2025)
3. The Scenario of Restoration of Urban Sustainable Mobility in the City, with implementation in the long term (2025-2030)

The proposed scenarios are, in summary, the following:

Scenario 1 – Mild Intervention: It focuses on improving the movement of pedestrians and selectively of bicycles, while it foresees improvements in the municipal bus services, the adoption of a parking control system in areas where there is a high concentration of cars (Glyfada city centre), measures to discourage illegal parking and the allocation of parking spaces for people with disabilities and bicycles.

Scenario 2 – Medium/Dynamic Intervention: It focuses on the creation of an integrated cycling network and the gradual replacement of municipal bus vehicles with electric vehicles, the application of electronic information on the routes and timing of buses, the construction of multi-storey parking spaces where there is a concentration of vehicles and phenomena of illegal parking, the creation of electric car charging stations, and the introduction of incentives for switching to electric vehicles and car sharing. The Scenario also foresees the full restoration and re-design of pavements for unhindered pedestrian mobility.

Scenario 3 – Restoration of Sustainable Urban Mobility in the City: The traffic of conventional cars is drastically reduced and the charging stations and incentives for electric cars are increased, the walking and cycling networks are maintained so that the movement is seamless and safe, the replacement of municipal buses with electric vehicles is completed and the municipal bus network is expanded acquiring the main role for the mobility of citizens with vehicles and the connection of all the areas of the Municipality with the transport means of fixed track (metro, tram), on-demand municipal bus service is introduced for the areas further away from the centre, and the integrated cycling network and the multi-storey parking buildings are completed.

The proposed Scenarios are presented in detail below, with regard to their foreseen interventions.

3.1 Scenario 1. Mild intervention

Approach: The role of the car is not limited, but walking and cycling are strongly facilitated. The proposed interventions in this scenario are divided into top priority interventions (within 2021 in blue) and priority interventions (in 2022).

Implementation of the corresponding Action Plan: Immediate (2021-2022)

Priorities:

1. Improving the walkability of pavements through

- Removal of obstacles (see Image 3) or construction of small technical works to ensure the minimum width for free passage of pedestrians and wheelchairs (1,50 m or in the case of existing pavements of smaller width, 0,80 m).

Priority for immediate intervention in 2021:

- Removal of the municipal waste bins in places where the width of pedestrian passage is reduced below 80 cm, and especially from pavement corners where they prevent access to accessibility ramps.
- Removal by the Municipality of low vegetation which reduces the passage width of pedestrians
- In cases of big trees and public utility infrastructure (e.g. electricity poles) which reduce the passage width to less than 80 cm, the width of the pavement is extended locally at the expense of one car parking space.
- Repair of pavement surfaces (see Image 4) — activation and improvement of the Municipality's regulations on the responsibility for the construction, reconstruction and repair of municipal pavements.

Priority for immediate intervention in 2021:

- Repair/construction the surfaces of pavements that fall under the responsibility of the Municipality (e.g. in front of municipal buildings), by municipality workers.
- Repair by municipality workers of the pavements especially where deep potholes or steps are observed and create "traps" for pedestrians and wheelchairs, putting them in danger of injury. Pavement surfaces should be normalized In areas where private parking ramps create obstacles to the movement of wheelchairs – a common phenomenon. In cases where the obstacle cannot be removed, a coloured marking should be placed to warn the pedestrians.
- Cooperation with the Municipal Police for the removal of cars parked on the pavements (see Image 5), placement of physical barriers along the pavement and warning signs for the imposition of fines and removal of cars in case of parking on the pavement.

Priority for immediate intervention in 2021:

- Imposing a fine on cars parked on the pavement

- Placement of physical barriers along the pavement, in areas where the phenomenon of parking on the pavement is more often observed (e.g. at the Glyfada city centre)
- Placing “No Parking” signs with an image of a crane removing a car, to warn that trespassers’ cars will be removed



Image 3: Pavement layout by the Municipality for placing the waste bin, which in practice cancels the pavement. Socratous Street.



Image 4: The pavement has been transformed into a green area by residents. Corner of Socratous and Meg. Alexandrou Streets.



Image 5: Cars parked on the pavements in residential area.

2. Pedestrian crossings

Priority for immediate intervention in 2021:

- Immediate improvement of street marking on pedestrian crossings (renewal of markings, most of which are erased) – see Image 8.
- Location of pedestrian crossings: Need to review the location of crossings in areas which are dangerous for pedestrians (e.g. near street corners), remove obstacles in contact with the crossings and place access ramps at the length of the crossings (see Image 6) — Need for immediate intervention!
- Highlighting the marking of pedestrian crossings especially when they are not accompanied by traffic lights and offer access to places of gathering (e.g. schools, sports and/or green areas, public and municipal services, etc.), with red columns, signs and lights with a button for the pedestrians – see Image 7. Considering redesigning the crossings by raising the crossing level to the level of the pavement, forcing cars and motorcycles to reduce speed (see case of Image 9). Especially in school areas, volunteers (e.g. among the school staff or parents) can attend to the safe arrival/departure of students.
- Suggestions to the Municipality for the design of new pedestrian crossings in the case study area, in places that facilitate access for pedestrians to gathering points (e.g. schools, sports areas and/or green, public and municipal services, etc.)
- Design of overpasses over Vouliagmeni Highway at points close to schools (e.g. at the intersection with R. Feraiou street).
- Reducing the speed limit in residential areas to 30 km/h, placing signs — Need for immediate intervention!



Image 6: Pedestrian crossing without accessibility ramps



Image 7: Example of signposted pedestrian crossing with solar panels on D. Gounari street (Source: www.zafeiropoulos-sa.gr)



Image 8: Crossing on D. Gounari street (tennis courts) without an accessibility ramp and high speed traffic



Image 9: The marking of the crossing near a school is not clear.

3. Public and Municipal Transport

Priority for immediate intervention in 2021:

- Review of all bus stops with regard to passenger safety (e.g. Image 8, Image9)
- Review of the municipal bus stops, with a view to changing the routes so as not to cross too narrow streets
- Review of the routes of the municipal bus service, connecting the routes to the nearest metro station, also taking into account the school schedules to facilitate arrival and departure of students.
- Offering information about routes and stops. At municipal bus stops, the available electronic panels should be activated in order to offer live information about the bus arrival.
- Design of the bus stops so that there is an access ramp for wheelchairs or baby strollers. Construction of platforms at bus stops where necessary in order to reduce the elevation between the bus entrance and the stop, thus facilitating the boarding of citizens with special needs (e.g. seniors)



Image 10: Bus stop on Vouliagmenis Highway. There's no adequate pavement or acces ramps. Very small waiting area and at a very short distance from the high speed traffic.



Image 11: Municipal bus stop on D.Gounari street. Very small waiting area and at a very short distance from the road (high speeds of oncoming traffic).

4. Parking

Priority for immediate intervention in 2021:

- Allocation of parking spaces for people with disabilities in all areas where parking is permitted
- Allocation of spaces for bicycle parking in schools and outside municipal buildings and places of gathering
- Allocation of parking areas specifically for motorcycles, forbidding illegal parking concentrations (Image 12)
- Adoption of a parking control system by placing parking meters in shopping areas, the city centre being a priority.
- Creation of the parking spaces foreseen in the Glyfada Urban Plan for cars and motorcycles around the city centre.



Image 12: Illegal parking of motorcycles on the Lambraki pedestrian street

5. Cycling

Priority for immediate intervention in 2021:

- Creating a cycling route in the new municipality project, the Peripheral Road of Aixon, turning a lane (or part of it) of the new road into a cycling lane, with the appropriate marking.
- Examine the alternative proposal for the creation of a cycling route along the M.Alexandrou street, a street parallel to Vouliagmeni Highway, wide enough to facilitate the creation of a cycling lane that allows the movement of bicycles on the North-South axis. This cycling lane can be connected to a new cycling lane on R.Feraios street offering access to the 2nd Gymnasium of Glyfada, that will cross the Vouliagmenis Highway, connect to the existing cycling route of Agios Nikolaos street and reach the Glyfada Golf with one branch, while with another branch it can reach the planned seafront cycling route through the Lambraki wide pedestrian street (see Image 13).
- In the framework of the Glyfada SUMP formulation, the proposal to introduce one-way traffic streets should be examined, in order to provide for wider pavements and/or the creation of cycling ways. This proposal should especially be examined with regard to the two-way residential streets of the case study area, east of Vouliagmeni Highway.



Image 13: Proposal for a local cycling network that connects the case study area with the city centre, the Glyfada Golf and the seafront area.

6. Education and awareness raising campaign

- A campaign to inform and raise awareness among the residents of Glyfada on the benefits of SUMP, with the cooperation of Municipality and civil society organisations, research centres and academic organisations (e.g. Sustainable Urban Mobility Team of the National Technical University of Athens). The campaign, which will aim to inform residents about sustainable urban mobility measures adopted and implemented, as well as raising awareness about SUM, may include:

Priority for immediate intervention in 2021:

- Design and creation of electronic and printed information material
 - Social media campaign
 - Organisation of Workshops/Conferences
 - Organisation of open workshops where citizens will be invited to share their views and proposals on SUMP in Glyfada
 - Presence in the media (radio, television)
- Implementation of educational activities in the schools of the Municipality, with the participation of students' parents.

7. Administrative capacity of the Municipality towards sustainable urban mobility

Priority for immediate intervention in 2021:

- Establishment of a Sustainable Urban Mobility Department in the Municipality, responsible for:
 - The implementation of the Glyfada Sustainable Urban Mobility Plan
 - Monitoring and evaluating the impact of interventions in the field of SUM, and offering feedback to the Plan;
 - The cooperation with other departments and services of the Municipality so that any interventions in other fields (e.g. cleaning, technical infrastructure etc.) take into account the guidelines of sustainable urban mobility.
 - The coordination of information and education/awareness raising activities of the Municipality in the field of SUMP
 - Representing the Municipality in cooperation/promotion networks in the field of SUMP, in Greece and at European/international level

3.2 Scenario 2. Moderate/Dynamic Intervention

Approach: The private car traffic is selectively reduced, the free movement of pedestrians and bicycles is restored, the municipal transport is significantly improved.

Horizon of implementation: Medium-term (5 years)

This Scenario includes the measures and interventions foreseen in Scenario 1, and in addition foresees:

- Creation of a cycling network that will serve the entire case study area, and municipal bicycles are installed for use of a few hours.
- The municipal bus vehicles are gradually being replaced by electric vehicles.
- Public and municipal transport is reinforced by redesigning routes based on research and passenger needs analysis in Glyfada in order to offer targeted transport services.
- Electronic information tables are installed to all bus stops, and applications for mobile devices with live information on bus arrival times at stops are introduced for citizens.
- The traffic of private cars and motorcycles is selectively restricted (e.g. on central commercial roads, which are redesigned as low traffic streets introducing traffic calming interventions)
- Creation of electric car charging stations, introduction of incentives for electrification and car sharing.
- Extension of parking control to the areas of neighbourhood centres.
- The construction of the planned multi-storey parking buildings for cars and motorcycles (foreseen by the Glyfada Urban Plan currently under approval) around the city centre begins.
- The number of pedestrian crossings is increased, their clear marking is established and strict fines are foreseen for cars that do not stop when pedestrians cross.
- All obstacles from the pavements are removed, ensuring the minimum width of free passage; pavements are equipped with access ramps and the Municipality's regulation on pavements is fully enforced.
- The communication and awareness raising campaign unfolds further.

3.3 Scenario 3. Restoration of Sustainable Urban Mobility in the City

Approach: Use of the car is drastically limited, the networks of unobstructed mobility of pedestrians and bicycles are completed, municipal and public transport takes on a key role in citizens' mobility.

Horizon of implementation: Long-term (10 years)

This Scenario includes the measures/interventions foreseen in Scenario 2, and in addition:

- The traffic of cars is restricted in many areas of the city,
- Priority is given to electric cars with regard to parking, especially in shopping areas and places with high demand for parking
- Car-sharing is strongly promoted
- Municipal transport service on demand is introduced for the most remote areas of the city
- The cycling network connected to Metro stations and public transport stops is completed.
- The multi-storey parking buildings around the Glyfada city centre are completed

Part 4. Discussion and evaluation of scenarios

The Scenarios developed by the SUMP Task Force of Glyfada and presented above do not contradict each other; on the opposite, the approach employed by the Task Force was to develop the 3 Scenarios based on their implementation timeline, representing 3 different levels of SUM integration – the Scenario of Mild Intervention in the short term, the Scenario of Moderate/Dynamic Intervention in the medium term, and the Scenario of Restoration of SUM in the City in the longer term.

In relation to the Scenario of Mild Intervention, it is worth to point out that although it represents the first stage of SUMP integration, it does not lag behind the other 2 Scenarios in terms of intensity, as it foresees a great number of important interventions to promote safe walking and accessibility for all citizens, the integration of the bicycle in urban mobility as a reliable option, the upgrade of the role of municipal bus services, the promotion of SUM amongst the local community through education and awareness raising activities, and the administrative capacity building necessary for the Municipality to further unfold and monitor SUMP in the city. Although the interventions proposed under this Scenario spread across a wide range of themes related to SUMP and constitute important steps towards SUM in Glyfada reflecting a substantial shift in the city's urban mobility paradigm, the Task Force deemed them as the minimum necessary – and in some cases urgent – interventions to direct Glyfada towards SUM. The following Scenarios of “Moderate/Dynamic Intervention” and “Restoration of SUM in the city” represent different levels of SUM integration, built upon the directions and interventions of the first Scenario.

The Scenarios were presented to the city council members, local authority officials, experts in SUM, representatives of the local civil society and school education community, as well as citizens of the case study area, through a public consultation event held at the courtyard of the 2nd Gymnasium of Glyfada (located at the centre of the case study area) on 28th June 2021. Due to the pandemic restrictions still in place in Greece at the time of the event, requiring the participants to be seated at a distance from one another and wear masks, the number of participants was limited to 70 persons, although the local community showed a great interest in attending and given normal circumstances the number of participants would have been greater. The event gave the floor to SUM experts in Greece who presented the SUM strategies promoted at European level and their potential adoption in Glyfada, as well as current trends and good practices for developing SUM models. In addition, Task Force members presented the Urban SCOPE project, the findings of the SUMP Research carried out in Glyfada, and the 3 SUMP Scenarios formulated. Following the presentation of the Scenarios, the floor was given to several participants who offered their feedback on the proposed scenarios.

The interest shown by the event participants was reflected in the number of comments and views expressed, resulting in the delay of the event's closing time by an hour. All the participants expressed their support and appreciation in the collaborative work carried out by the Task Force, and the SUMP Scenarios presented. There was discussion regarding the

current issues related to walking, cycling and public transport, as well as the city's heavy dependence on the private car, evident in many neighbourhoods of Glyfada through phenomena of the car's dominance over the urban space dedicated to other uses and mobility means. The majority of the participants also expressed the urgent need for change in order to reduce CO₂ emissions and fight climate change, while at the same time employ healthier, more affordable and less stressful mobility lifestyles and enable residents and visitors of Glyfada to enjoy the city by walking and cycling.

Although the urgent need for intervention was widely recognized among the participants, there was also a concern regarding the pace of the SUM integration approach to be adopted and to what extent the proposed package of interventions in each Scenario is realistic. Taking into account that the 1st Scenario proposes interventions that are at this stage realistic to implement, while also paving the path towards a deeper SUM integration and allowing the Glyfada SUM Plan process (commencing soon) to unfold and integrate in its proposals the foreseen Scenario 1 interventions while also taking into account the proposed interventions in the two Scenarios that follow, the majority of the participants (including the vast majority of the city council members) decided on the Scenario 1 – Mild Intervention as the preferred scenario.

The interventions foreseen in the preferred Scenario will be included in an Action Plan to be presented for approval by the City Council. The Action plan will outline all interventions foreseen and will include a timeplan and an indicative cost per intervention.



Image 14: Photo from the public consultation event in Glyfada – 28 June 2021