2050 CliMobCity

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Measure packages & forecasts for Thessaloniki's Action Plan Development

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CITY OF THESSALONIKI

20th June 2023, Final Final Dissemination Event

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Presentation Overview

- ❑ **Introduction to 2050CliMobCity proposed scenarios/measures**
- ❑ **2050CliMobCity Alternative Scenarios**
  - ✓ BaU Scenario
  - ✓ Description of 2050CliMobCity Scenario Pillars
- ❑ **Model Inputs and Outputs**
  - ✓ BaU Scenario for 2030
  - ✓ *2050CliMobCity Alternative Scenarios*
  - ✓ Comparative assessment with base year 2021 and the alternative scenarios for 2030
- ❑ **Conclusions**

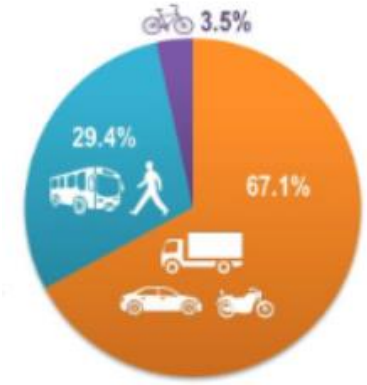
Introduction to 2050CliMobCity proposed scenarios/measures

Thessaloniki basis for developing the 2050CliMobCity Action Plan

As part of **2050CliMobCity project** and by leveraging on the city's existing SUMP (2021) strategy and interventions, the project team has **developed a mix of measures and strategies for reducing GHG emissions on the basis of**:

- Enhancing and further elaborating measures considered by Thessaloniki's SUMP which is also the result of a consultation procedure between the Municipality, the local stakeholders and the citizens
- Testing & calculating the impact of proposed measures using the HIT's transport model of Thessaloniki
- Elaborating accompanying measures, mainly related to Thessaloniki citizens' behaviour changes

The measures are pillared on the intervention areas defined by 2050CliMobCity project, namely:



Modal shift

Innovation

City Logistics

Energy

CliMobCity measures included in the SUMP scenarios for Action Plan validation

Scenario reference	A. Modal shift pillar	B. Innovation pillar	C. City Logistics pillar	D. Energy pillar
SUMP 2021 (base year)	Current (2021) mobility status for comparison before & after	Current (2021) mobility status for comparison before & after	Current (2021) mobility status for comparison before & after	Current (2021) mobility status for comparison before & after
SUMP 2030 intermodal public transport strategy & scenario (BAU scenario for 2050CliMobCity)	• Pedestrianization and public space reallocation in the city • METRO operation • Bus Network reorganization & redesign • Maritime Public transport • New Bike infrastructure (total 46 km of bike lanes) • West Suburban railway	• Advanced traffic management & Control • Park & ride (1500 places) •	• New supervision to the parking slots for deliveries • Development of SULP	
2050CliMobCity scenario for 2030 (Electromobility and awareness raise campaigns)	• Shared electric mobility introduction scenario considered from municipality participation to MOMENTUM project) (2030) • Triggering behavioural changes through awareness campaigns for citizens' mode choice and the, associated to the choice, impact for the environment, the city and the individuals	• Electric fleet in bus network (2030 & 2050) • Cooperation with and use of THESSM@LL services for fact-based and data-driven decision making in sustainable mobility management and planning	• Electrification of the Municipal fleet	• Energy savings from street lighting
Final Scenario of 2050CliMobCity Project for 2030 (Combination of 1st and 2nd scenarios)				

Description of 2050CliMobCity Scenario Pillars

2050CliMobCity Scenarios

A: Modal shift pillar

Shared electric mobility introduction (a.1)

Car sharing supply and demand models developed by CERTH/HIT within **MOMENTUM Project** (Horizon 2020, CIVITAS initiative) (municipality of Thessaloniki also being a partner)

2050ClimobCity scenario tested:

- establishment of **17 electric car sharing stations** (red dots in the figure): 13 within the Municipality of Thessaloniki and 4 in the neighbouring Municipalities of Kalamaria and Pilea-Hortiatis, where points of interest (i.e., the mall "Mediterranean Cosmos" and the shopping centre of IKEA) or terminals of the new metro line (Nea Mikra) are located.
- Radius of 500 metres walking distance around the location of the stations (picked up the model as the zones where the users of the service can begin/ end their trips)
- Station – based car sharing scheme: electric car sharing trips assigned between the stations
- Two sub-scenarios regarding the electric car fleet tested (and the average values considered for the results):
  - 100 electric car vehicles, with each station operating with 5 parking slots
  - 200 electric car vehicles, with each station operating with 10 parking slots

MOMENTUM model: locations of the electric car sharing and areas of 'access'

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A: Modal shift pillar

Awareness raise campaigns (a.2)

Awareness raising and information of the citizens must concern all sectors of mobility in order to increase their effectiveness. All these relevant campaigns and actions should not be fragmented, but should be repeated on a regular basis in order to achieve in a progressive way the development of sustainable mobility behaviours and patterns for all citizens.

The 2050Climobcity scenario adopts the implementation of the campaign entitled “The citizens part of the solutions for sustainable mobility”. In this context, the following are foreseen:

a) citizens’ real-time information on traffic conditions through THESSM@LL services (link to Innovation Pillar, action b.2)

b) “my alternatives” campaign, comparing for the citizens performing trips with private cars among city areas their real cost (out-of-the-pocket money, time, delays, etc.) with the one for making the same trip with available (sustainable) modal alternatives.

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B: Innovation pillar

Electrification of public bus fleet (b.1)

- Based on the re-designed public bus network of Thessaloniki, as this proposed by CERTH/HIT for Thessaloniki's SUMP and used in the study for the "Renewal of the Urban Bus Fleets for the cities of Athens and Thessaloniki" of the Greek Ministry of Transport (2022)

- As part of the Ministry's study, CERTH/HIT proposed **the electrification of bus lines based on the following assumptions**:
  - maximum bus range = 130 daily kilometres for depot-charging and up to 290 daily kilometres for opportunity charging
  - total 100 passengers capacity of electric buses (midi = 45 passengers and standard vehicles = 100 passengers considered)

- 2050CliMobCity scenario further examined the most "optimistic" scenario of electric bus vehicle penetration. A further analysis of the vehicle kilometres run from the buses of the proposed electric lines has been conducted through CERTH/HIT's public transport model, based on the following "geographical clustering"*:
  i. Bus lines operating at the "heart" of the Municipality of Thessaloniki (historical centre)
  ii. Bus lines operating at the level of core urban areas, having a part running within/ through the geographical borders of the Municipality of Thessaloniki
  iii. Bus lines operating outside core urban areas, having, though, a part running within/ through the geographical borders of the Municipality of Thessaloniki

** For case i. mentioned above, all the vehicle kilometres run by the buses are allocated within the Municipality of Thessaloniki and were estimated by the Public Transport model. For cases ii. and iii. above, only the vehicle kilometres run within the borders of the Municipality of Thessaloniki were estimated by the traffic model for the purposes of the project.*

2050CliMobCity Scenarios

B: Innovation Pillar

Cooperation with and use of THESSM@LL services for fact-based and data-driven decision making in sustainable mobility management and planning (b.2)

Thessaloniki Smart Mobility Living Lab (THESSM@LL) is one of Europe's largest Living Labs. **The entire city of Thessaloniki is a platform for testing technological and innovative solutions for mobility**, cooperative and autonomous vehicles and will soon be extended to freight transport. Thessaloniki is now in the list of smart cities in the mobility sector, and this would not have been possible without the involvement of stakeholders that make up the ecosystem of the city, which has been created over the last decade and is constantly growing. In this ecosystem, various stakeholders, such as local institutes, businesses and public transport operators are involved in providing data or expertise to create the right conditions for the exploitation of this infrastructure for the benefit of citizens. It is a communication channel between the city and its residents that can change their behaviour and decision-making concerning mobility. With real time information, citizens can schedule their activities more effectively and make decisions about the most suitable transport mode, the selection of a shorter path etc. in order to save time and resources.

Thessaloniki Smart Mobility Living Lab includes, among others:

- Real time traffic data in Thessaloniki
- Short-term predictions of traffic conditions from multiple sources
- Exporting and formulating mobility and activity patterns
- Extended Internet of Things (IoT) equipment

This action will aim at an MoU for activating city's participation in THESSM@LL and for using THESSM@LL data and activities towards:

a) Traffic and mobility improvement and integration
b) Measures validation
c) Citizens' engagement and behavioral change (link to modal shift pillar, action a.2)
d) Data-driven decision making for sustainable mobility

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C: City Logistics pillar

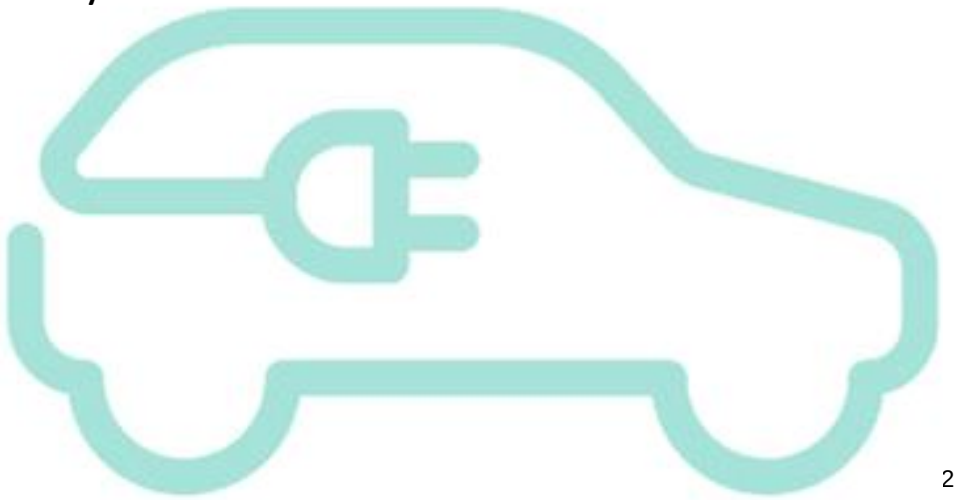
Electrification of the Municipal fleet (c.1)

Despite several initiatives, according to the yearly average traffic data of the municipal fleet, by the year 2030 the 80% of the vehicle kilometres will come from diesel vehicles, 12% from gasoline vehicles and only 8% from electric vehicles.

The department of Business Planning & Monitoring of Development Programs foresees a new procurement program of municipal vehicles.

In order to improve the environmental efficiency of the municipal fleet, the program follows a new strategy, in order to be aligned with the EU Directive 2019 /1161. According to this directive, an electric vehicle penetration index is adopted as follows:

- 25,3% of clean light vehicles on the total number of the municipal fleet to be electric by 2030
- 10% of clean heavy vehicles on the total number of the municipal fleet to be electric by 2030
- 47% of clean buses on the total number of the municipal fleet to be electric by 2030



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D: Energy Pillar

Energy savings from street lighting (d.1)

According to the planning of the Municipality, all future lighting (100%) will be of LED technology until 2030, and the power supply will come totally from underground network. With these interventions, a reduction of 51% in energy consumption is estimated compared to 2021.

However, the Municipality of Thessaloniki in order to **improve the energy efficiency of the street lighting system, should investigate the possibility of implementing *a smart lighting system***. Smart street lighting – known as adaptive lighting – includes smart illumination solutions based on efficient, remotely controlled, LED public illumination. The light of the lamp is dimming when the sensors detect no movement, and brightens when there is activity. It can be set up to suit only road traffic, or can be combined with monitoring of vehicle traffic, the weather and the amount of natural light that is available.

Smart street lighting can reduce energy costs and operational costs due to intelligent on/off switching, to targeting progressive dimming and to efficient management of the energy consumption.

It is worth mentioning that this action is not being examined by the traffic simulation model, but it is going to be part of Thessaloniki's 2050CliMobCity Action Plan.

2050CliMobCity Scenarios

Final Scenario

The final scenario is the combined implementation of all the actions described above.
This approach is selected, as none of the proposed actions, actually, operates against each other resulting in discontinuities in the transport planning of the Municipality. Therefore, the combined implementation of all the proposed actions is selected, in order to achieve the best results for the efficiency of the transport system of the Municipality of Thessaloniki.
These actions are:

- **Shared electric mobility introduction (a.1)**
- **Awareness raise campaigns (a.2)**
- **Electrification of public bus fleet (b.1)**
- **Cooperation with and use of THESSM@LL services for fact-based and data-driven decision making in sustainable mobility management and planning (b.2)**
- **Electrification of the Municipal fleet (c.1)**
- **Energy savings from street lighting (d.1)**

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Thank you!