CLIMATE ACTION

European Commission

Capacity building workshops for effective policy implementation under the Effort Sharing Decision (ESD)

9 April 2014
EU House, European Commission
Representation 124 G.S.
Rakovski str. 1000 Sofia, Bulgaria

Interventions for tackling transport GHG emissions in the Metropolitan Area of Thessaloniki, Greece

Dr. Ioannis Politis

Aristotle University of Thessaloniki

Dept of Civil Engineering

Presentation Outline

- Air Pollution Facts in Greece and Thessaloniki
- The City of Thessaloniki
- Interventions and Policies to Reduce GHG emissions
- S.W.O.T. Analysis
- Final Conclusions

Greece and Thessaloniki Air Pollution Facts

N	Region	Country	Annual Mean PM2.5	Year
1	WprLMI	Mongolia	63,0	2008
2	Afr	Madagascar	59,0	2003
3	EmrHI	Kuwait	51,0	2003
4	Afr	Ghana	49,8	2008
5	Afr	Senegal	38,0	2010
6	AmrLMI	Peru	32,8	2010
7	EmrLMI	Lebanon	31,0	2004
8	AmrLMI	Chile	28,9	2006-2008
9	EurLMI	Poland	28,7	2008
10	**EurHI**	**Greece**	**27,0**	**2008**
11	EurHI	Italy	25,3	2008
12	EurHI	Slovakia	25,1	2008
13	AmrLMI	Mexico	25,1	2009
14	Afr	Tanzania	23,0	2005-2006
15	WprLMI	Philippines	21,0	2007
16	EurHI	Austria	20,4	2008
17	EurHI	France	20,1	2008

Greece and Thessaloniki Air Pollution Facts

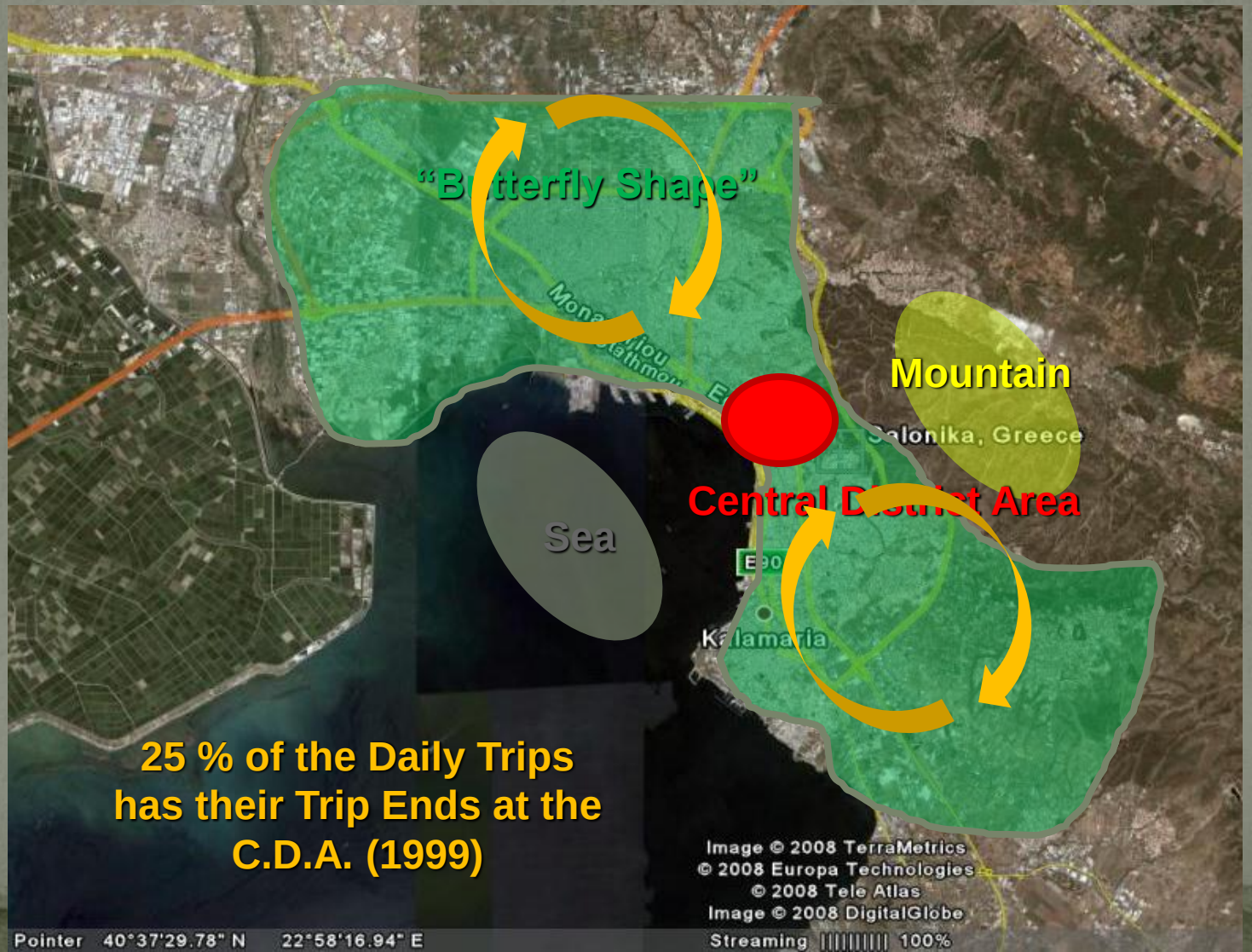
N	Region	Country	Annual Mean PM10	Year
1	EurLHI	Bosnia&Herzegovina	117	2008
2	EurLHI	FYROM	66	2008
3	EurLHI	Turkey	66	2008
4	EurHI	Bulgaria	60	2008
5	EurHI	Israel	59	2009
6	EurHI	Cyprus	53	2007
7	**EurHI**	**Greece**	**44**	**2008**
8	EurLHI	Servia	43	2008
9	EurLHI	Romania	42	2008
10	EurLHI	Latvia	39	2008
11	EurHI	Italy	37	2008
12	EurHI	Malta	35	2007
13	EurHI	Croatia	33	2008
14	EurLHI	Poland	33	2008
15	EurLHI	Russia	33	2008
16	EurHI	Slovenia	30	2008
17	EurHI	Spain	29	2008

The City of Thessaloniki

The City of Thessaloniki

- The **second largest** city in Greece
- Severe **traffic** and associated **environmental** problems
- One of the **most atmospherically polluted cities** within the European Union (most polluted city in Greece)
- Probably the only city in Europe populated over 1.000.000 inhabitants remaining **without a fix route transport system** in operation
- Morphology **particularities**

Thessaloniki Area



Thessaloniki Transport Facts

- Private Vehicle Fleet: 400.000 cars
- Taxi Fleet: 1870
- One Private Bus Operator: (OASTH)
- OASTH Buses: 621 diesel buses (EURO IV&V)
- OASTH Bus lines: 76 (including 17 regional lines)
- Bus Ridership: ~180 mio passengers
- Bus Ridership: >500.000 daily passengers
- Bus Output: 42 mi. bus-kms (92% serv. kms)
- Public Transport fare: 0,80 €

Thessaloniki Transport Facts

- Person Trips
  - 1.600.000/daily (1999)
  - 2.400.000/daily (2010) +50%

	1999	2010*
Car	⇨ 44%	52-58%
PuT	⇨ 27%	19-21%
Taxi	⇨ 7%	3- 6%
Motorbike	⇨ 6%	6-10%
Walk	⇨ 12%	9-10%

* estimations

Thessaloniki Transport Facts

- Approximately 140.000 vehicles at morning peak period
- Average network travel speed: 14,7 km/h
- Bus average commercial speed:
  14,2 km/h in bus lanes
  11-17 km/h in the rest network
- Average daily traffic volume at the Ring Road: 160.000 pcus'
- During Peak Hour:
  112.000 liters of gasoline consumed
  3 tn of CO emitted

Policies Presented

#1: Sustainable Urban Mobility Plan
#2: The Metro System
#3: Bicycle Network
#4: University Mobility Plan

Policy #1

Development of Sustainable Urban Mobility Plan (S.U.M.P.) for the Metropolitan Area of Thessaloniki, Greece

Policy #1: Thessaloniki SUMP

- Developed by THEPTA (2010-2013)
- Within the Framework of a SEE project called "ATTAC"
- Strategic Plan with Emphasis in Public Transport
- The first SUMP ever developed in Greece
- Following ELTIS + guidelines
- Wide consultation process

Policy #1: Thessaloniki SUMP

- Adapted to particularities of the area

- Mobility Forum: Basic Consultation Instrument
  - ✓THEPTA Board
  - ✓Policy Makers
  - ✓Municipalities
  - ✓Institutes
  - ✓Citizens' Associations
  - ✓Technical Chamber

- Support from the translational partners

Policy #1: Thessaloniki SUMP

SUMP Stakeholders 'Mobility Forum' members

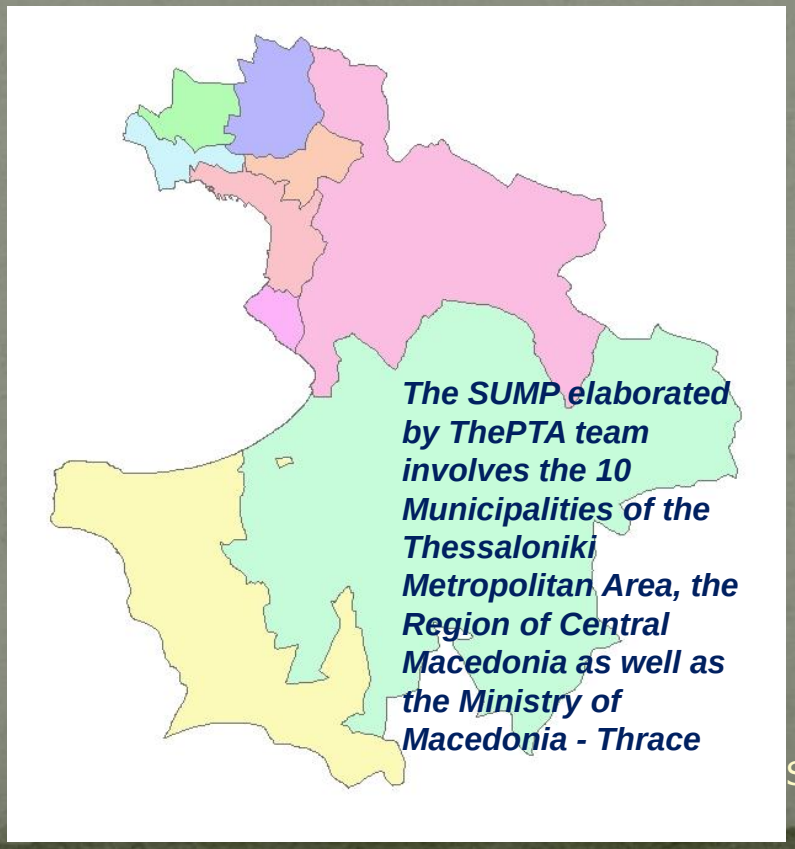
ThePTA Identified, mobilized and committed all stakeholders involved in the design of the Metropolitan Area mobility and transport

Technical Chamber of Greece

Institute of Transport Planners

ATTIKO METRO

Association for Rights of Pedestrians



ECOCITY – ECOMOBILITY

Passengers Association

Cyclists Association

Aristotle University of Thessaloniki

Policy #1: Thessaloniki SUMP

Strengths	Weaknesses
❑ Availability of large scale plans ❑ Availability of human resources ❑ Interdisciplinary approach (education) ❑ Maturity of viable projects (Metro) ❑ Fuel prices and development trends	❑ Strong position of road building and cars ❑ Lack of knowledge management in larger scales ❑ Incomplete reporting of management interventions ❑ Institutional framework of project developments (long periods)
Opportunities	**Threats**
❑ Favorable social climate for sustainable mobility ❑ Create a metropolitan mobility body ❑ Increased private sector participation (in collaboration with the public sector) ❑ Favorable legal and institutional framework for the implementation	❑ Development (economic and social) ❑ Uncertain political developments ❑ Unemployment

Thessaloniki SUMP
3+1 key scenarios developed

Scenario 0.
Do Nothing

Scenario 1.
Business As Usual, Do Minimum

Scenario 2.
Intermediate Development of Public Transport

Scenario 3.
Intensive Development of Public Transport
(UITP Target PTx2 until 2025)

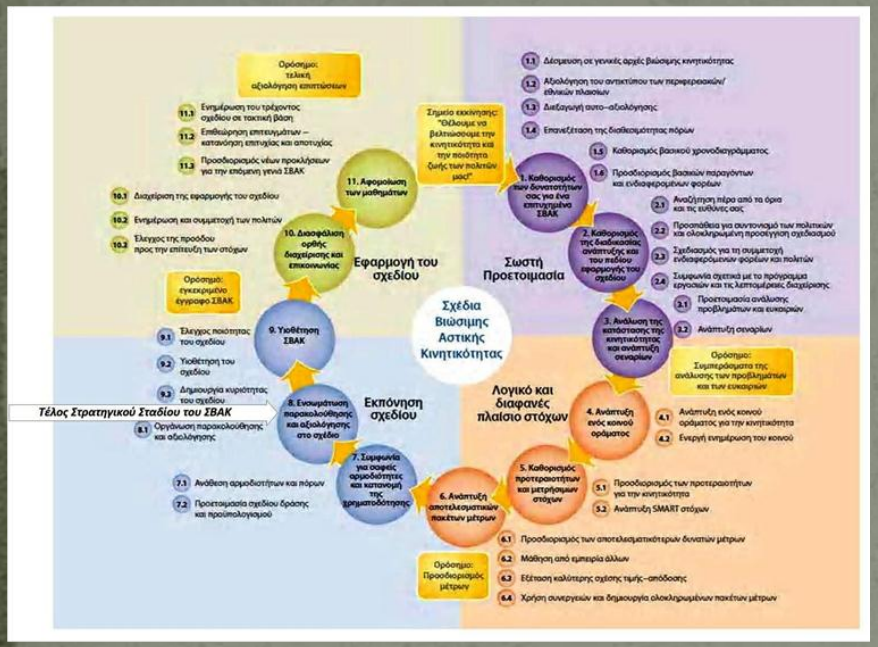
Policy #1: Thessaloniki SUMP

Effective Measures

1. Smart and Integrated Ticketing and Integrated Payment System
2. Bus Rapid Transit, Bus priority at traffic lights
3. Awareness campaigns for discouraging the use of private car and promoting use of Sustainable Transport Modes (PT, Cycling, Walking)
4. Promotion of Tram system, complementary to the Metro with new ways of financing, restructuring bus routes and accompanying urban regeneration
5. Intermodality between Metro/Tram/Bus
6. Seaborne Transport System in the Thermaikos Gulf
7. Flexible Transit Systems including restructuring Taxis services
8. Integrated Parking Policy (Park and Ride, controlled on street parking system, Parking charges as deterrent to car use and to raise revenues)
9. Pedestrianization and public space regeneration
10. Cycle lanes and priorities
11. Bike Sharing System (communal city bikes)
12. Congestion Charging and Access Control

Policy #1: Thessaloniki SUMP

SUMP Next Steps



9.1: Check the quality of the Plan

10.3: Check Progress towards achieving the objectives

11.2: Review achievements – understand success and failure

- **Continuation of Mobility Forum**, meeting every 6 months as consultation with all stakeholders
- **SUMP Unit** at ThePTA, to monitor the progress of the strategic SUMP and advise on Municipal SUMPs and implementation
- **Surveys,** regarding the proposed packages of measures
- **Financial sources** to be found

Policy #2

Construction and Operation of a Metro System in the Urban Area of Thessaloniki, Greece

Policy #2: Thessaloniki Metro System

Project Scope

- To **offer a reliable Public Transport** alternative to existing PT system (based on buses only)
- To facilitate transport policies towards **less dependence** from private cars
- To offer opportunities for **urban space regeneration**
- To offer opportunities for better **urban and transport planning**
- To secure/strength/promote the **transport system sustainability** (long term intervention)

Policy #2: Thessaloniki Metro System

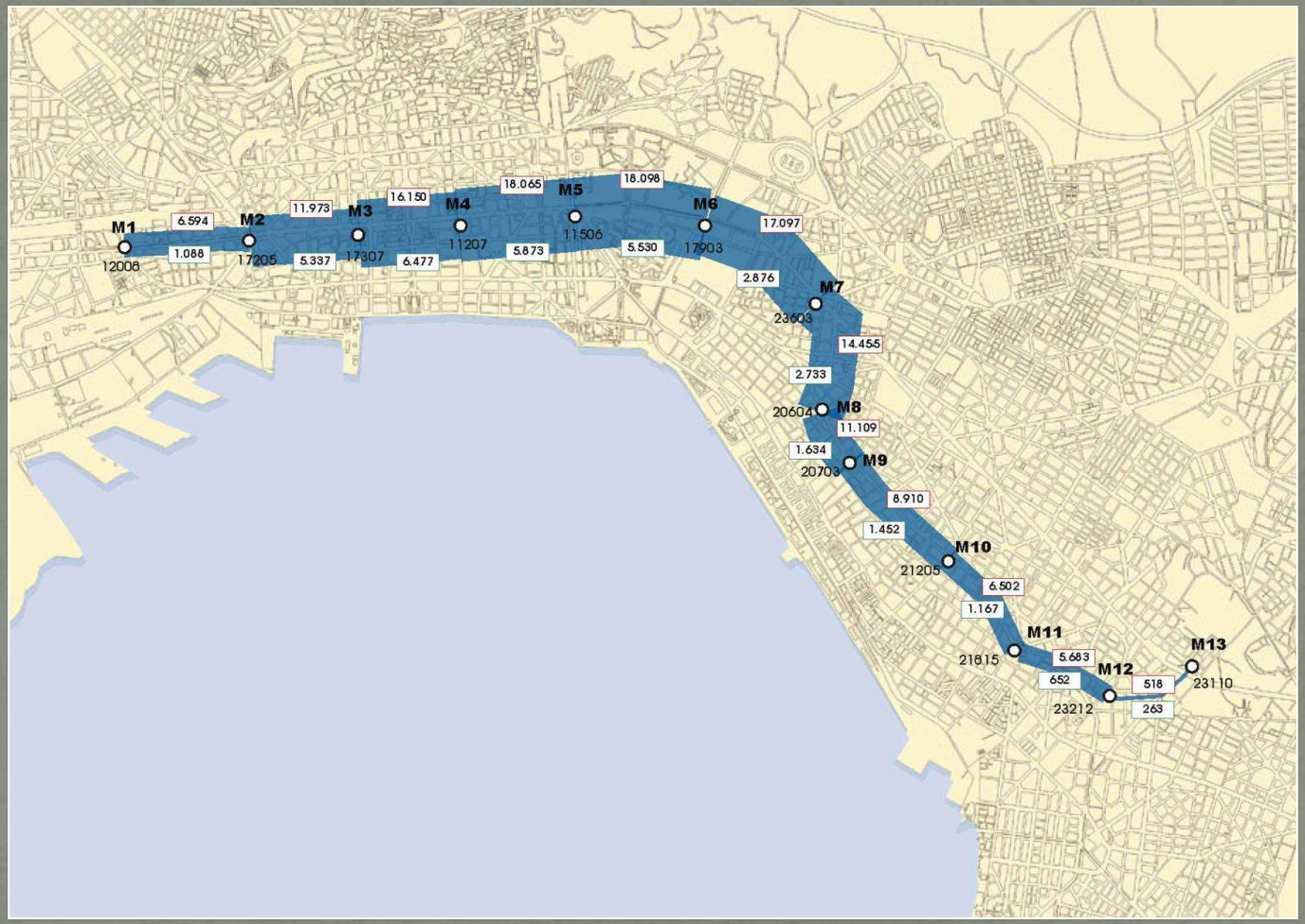
Thessaloniki Metro – An overview

- Underground system of **9,2 km** length and **13 stations**
- **18 trains** of 450 passenger minimum capacity during the first period of system operations
- The System includes a **50 train capacity depot** and an administration building
- The project cost was estimated at **1,0 billion €** (VAT excl.)
- **A second line** will extent the network to the area of Kalamaria. 5 new stations are anticipated. Additional cost 400 mi € for 5,5 km length
- Completion of project (for both lines) **estimated for 2017** (?)

ΣΧΕΔΙΟ ΑΝΑΠΤΥΞΗΣ ΓΡΑΜΜΩΝ ΜΕΤΡΟ ΘΕΣΣΑΛΟΝΙΚΗΣ

Επιχειρησιακό Πρόγραμμα Μακεδονίας - Θράκης 2007-2013
Με στόχο την ανάπτυξη και σεβασμό στον άνθρωπο και το περιβάλλον
Με την συγχρηματοδότηση της Ελλάδας και της Ευρωπαϊκής Ένωσης
ΕΣΠΑ 2007-2013
ΥΠΟΥΡΓΕΙΟ ΥΠΟΔΟΜΩΝ ΜΕΤΑΦΟΡΩΝ & ΔΙΚΤΥΩΝ
ΑΤΤΙΚΟ ΜΕΤΡΟ Α.Ε.

Metro Passenger Demand – Line 1



Policy #2: Thessaloniki Metro System

Expected/estimated Impacts

- Changes in modal split (PuT ap. 32%)
- Socio-economic Cost Benefit Analysis
  - Travel Time Savings
  - Operating Cost Reduction
  - Road Safety Improvement
  - Environmental Benefits
  - Other benefits

Metro System effects [1]

- Economic and social benefits to users and non users (reduction of external costs)
- Economic benefits to existing PT operator
- Improved road safety – benefits to all citizens
- Better efficiency of used resources
- Cost internalization (users pay for the metro use for maintenance and operation)
- Employment increase during construction and operation
- Urban space regeneration
- Improved quality of life (reduction of air pollutions and traffic congestion)

Metro System effects [2]

- Positive environmental effects
- Substitution of fuel energy from electric energy
- Opportunity for other major changes (PT restructuring, Park & Ride facilities, etc)
- Regeneration of specific areas around the metro stations
- Long term effects – relocation of specific land uses closer to Metro catchment area

Policy #2: Thessaloniki Metro System

Barriers

- Major delays at the construction of the project due to:
  - Financial Crisis
  - Archaeological Excavations
- Initial Date for kick-off
  - 2012
- Negative Impacts
  - Traffic & Environmental
  - Economical

Policy #3

Construction and Operation of a Bicycle Road Network in the Urban Area of Thessaloniki, Greece

Policy #3: Bicycle Road Network

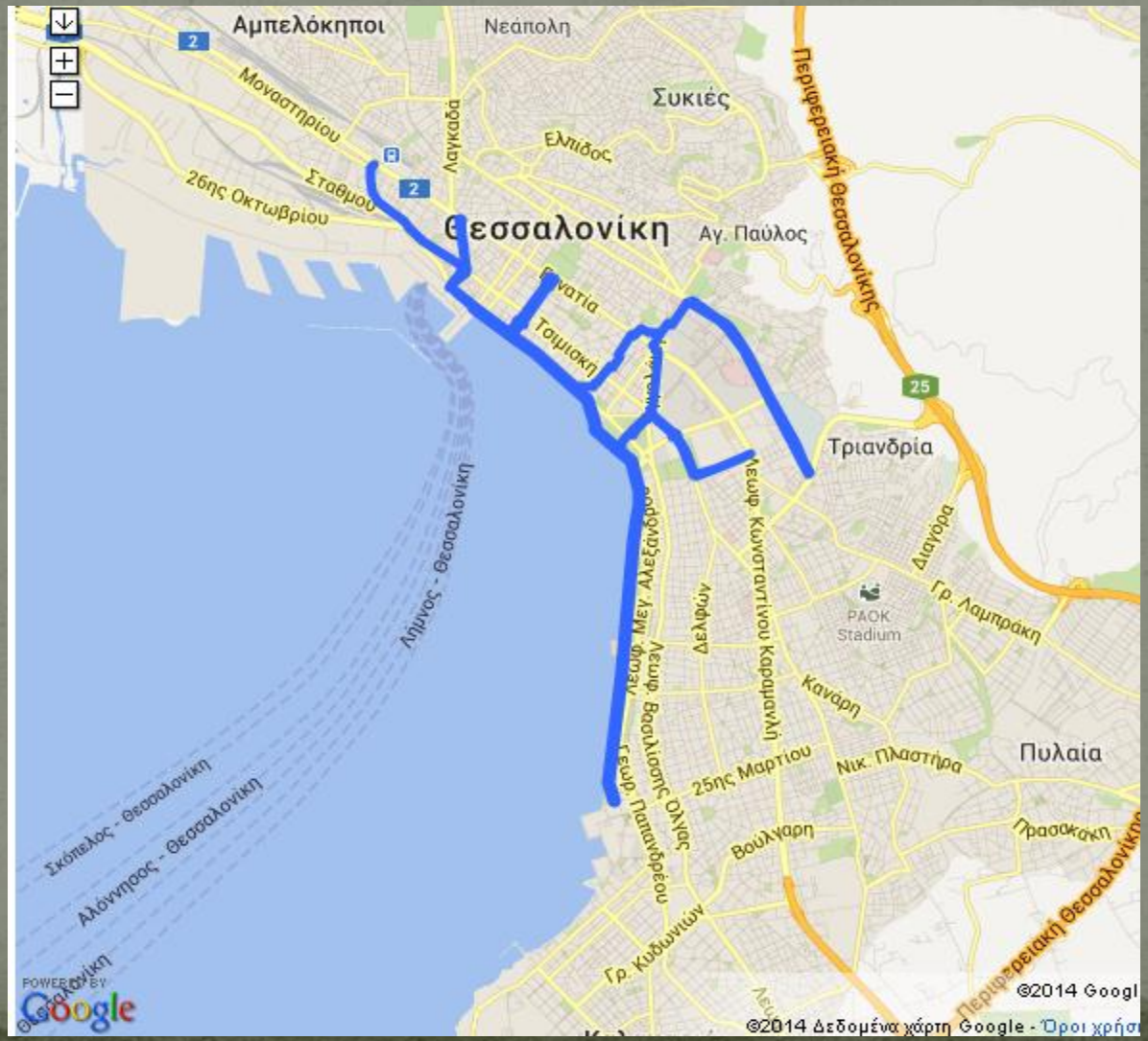
- Operates since 2001
- A single bicycle lane with a length of 2.9 km was built along the city's coastal zone
- Was mainly used for recreational purposes
- In 2009, the Municipality of Thessaloniki decided to upgrade and extent the bicycle network.

Policy #3: Bicycle Road Network

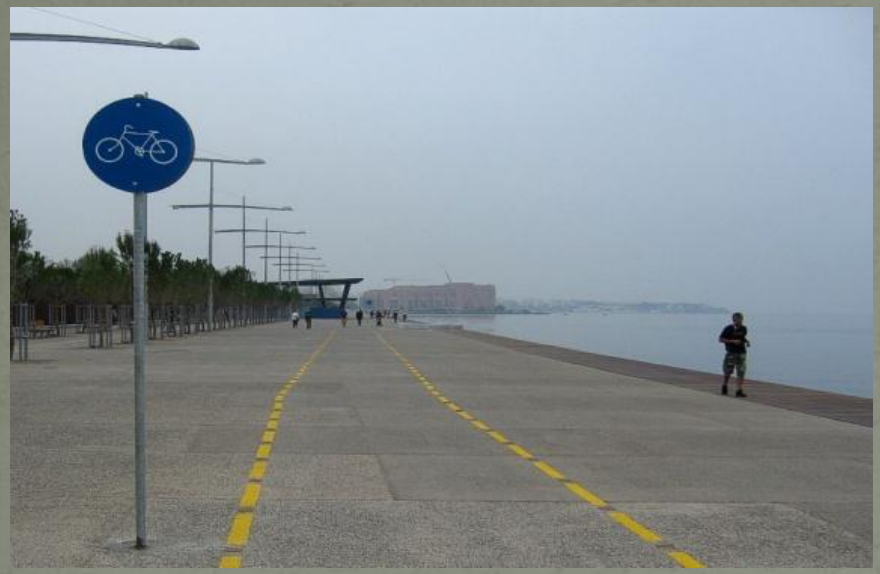
- Today, the integrated bicycle network of the city has a total length of 11.7 km (studies ready for another 5 km)
- Due to the financial crisis in Greece, the demand for biking is very high
- A lot of discussion is active in the city whether the specific network is efficient and well designed to serve this demand or not

Policy #3: Bicycle Road Network

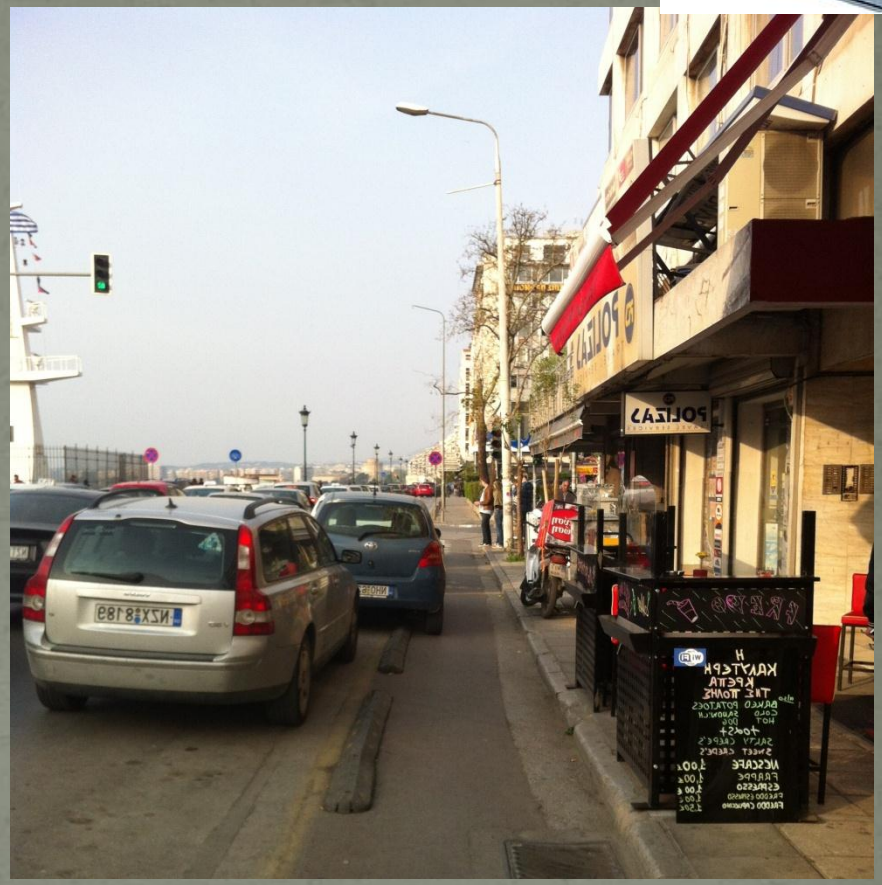
Current Network



Policy #3: Bicycle Road Network



Policy #3: Bicycle Road Network



Policy #3: Bicycle Road Network

User Assessment

- The majority of the users (47%), are doing bicycle for more than 1 hour daily, primarily for healthy/training reasons (43%)
- They indicate (42%) that most important reason to make them not use the bicycle is the lack of appropriate infrastructure
- 25% stated that they do not feel safe when they are using the bicycle road
- Among other proposals the users stated most that *"they would like to see more bicycle roads at the city"* and to have *"better/safer integration with the rest road network"*

Policy #4

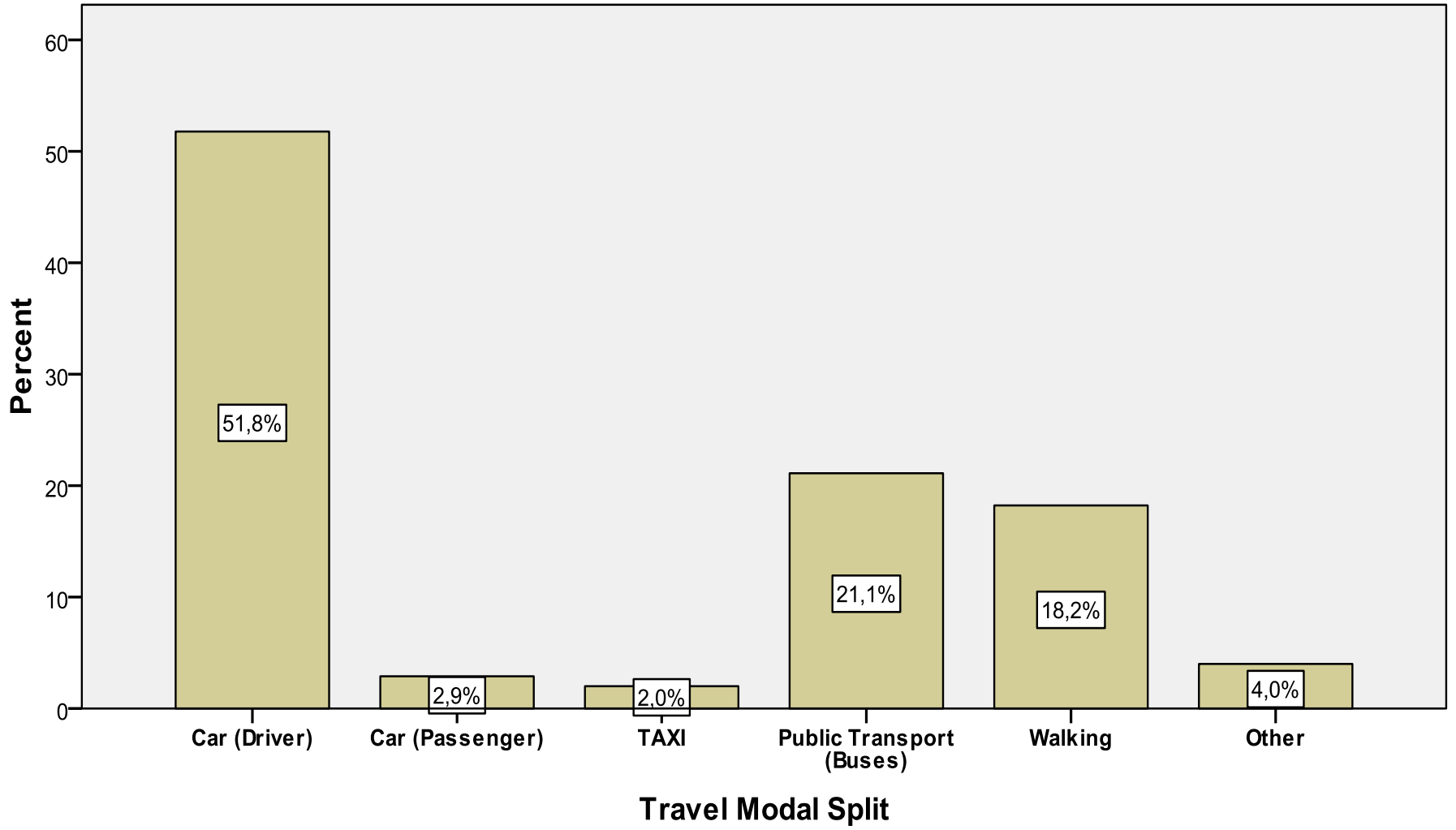
Development of a Sustainable Mobility Plan at Aristotle University of Thessaloniki (A.U.Th.)

Policy #4: Mobility Plan at A.U.Th.

The University

- One of the largest Universities in the Balkan area
- 42 faculties and departments
- 80.000 active students and 4.000 employees
- 429 square meters at the C.D.A.
- Implementation of a "soft" parking management policy (preferential parking available only to employees)
- Absence of an organized Mobility Management Plan for the Employees (teaching and administrative staff)

Modal Split to the University – Employees (2010)



Policy #4: Mobility Plan at A.U.Th.

The Plan

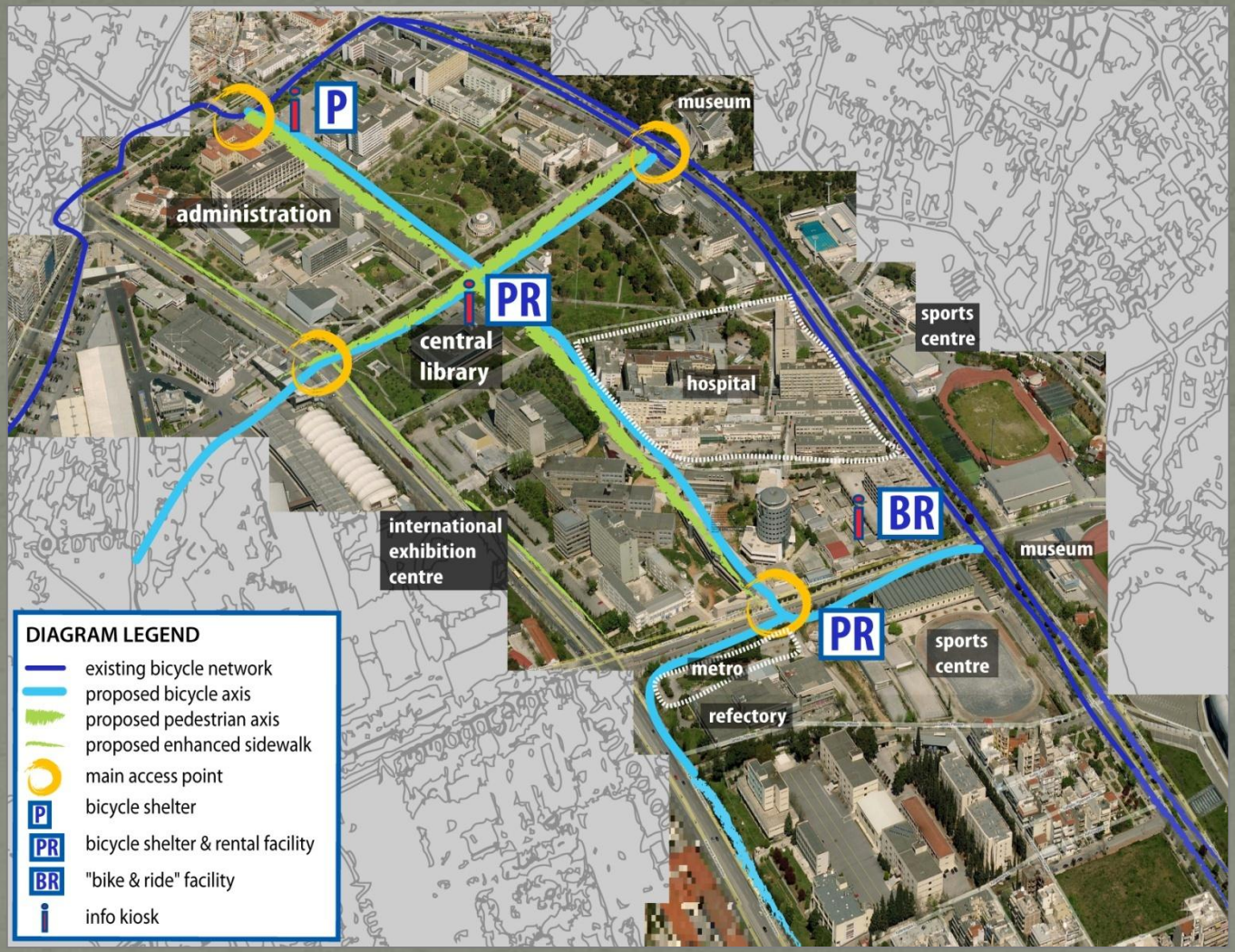
- Objective:
  - ✓ Development of a mobility management plan for the improvement of mobility profile at the campus
- Targets:
  - ✓ Gradual restriction of the private car usage
  - ✓ Promotion of alternative ways of travel (bicycle, walking etc)
- Priorities:
  - ✓ Upgrade of existing infrastructure (pedestrian and bicyclists)
  - ✓ Effective management of the demand to/from the campus

Policy #4: Mobility Plan at A.U.Th.

The actions/measures

1. Parking management at the campus
2. Design of pedestrian and bicycle paths at the campus
3. Development and operation of a website for issues related with the mobility from/to the university
4. Routing of 4 university buses to transfer employees and students to the University for free
5. Operation of a Mobility Office to provide information services
6. Awareness and information actions
7. Behavioral Surveys
8. "Car Free Day at Aristotle" at 22nd of September

Policy #4: Mobility Plan at A.U.Th.



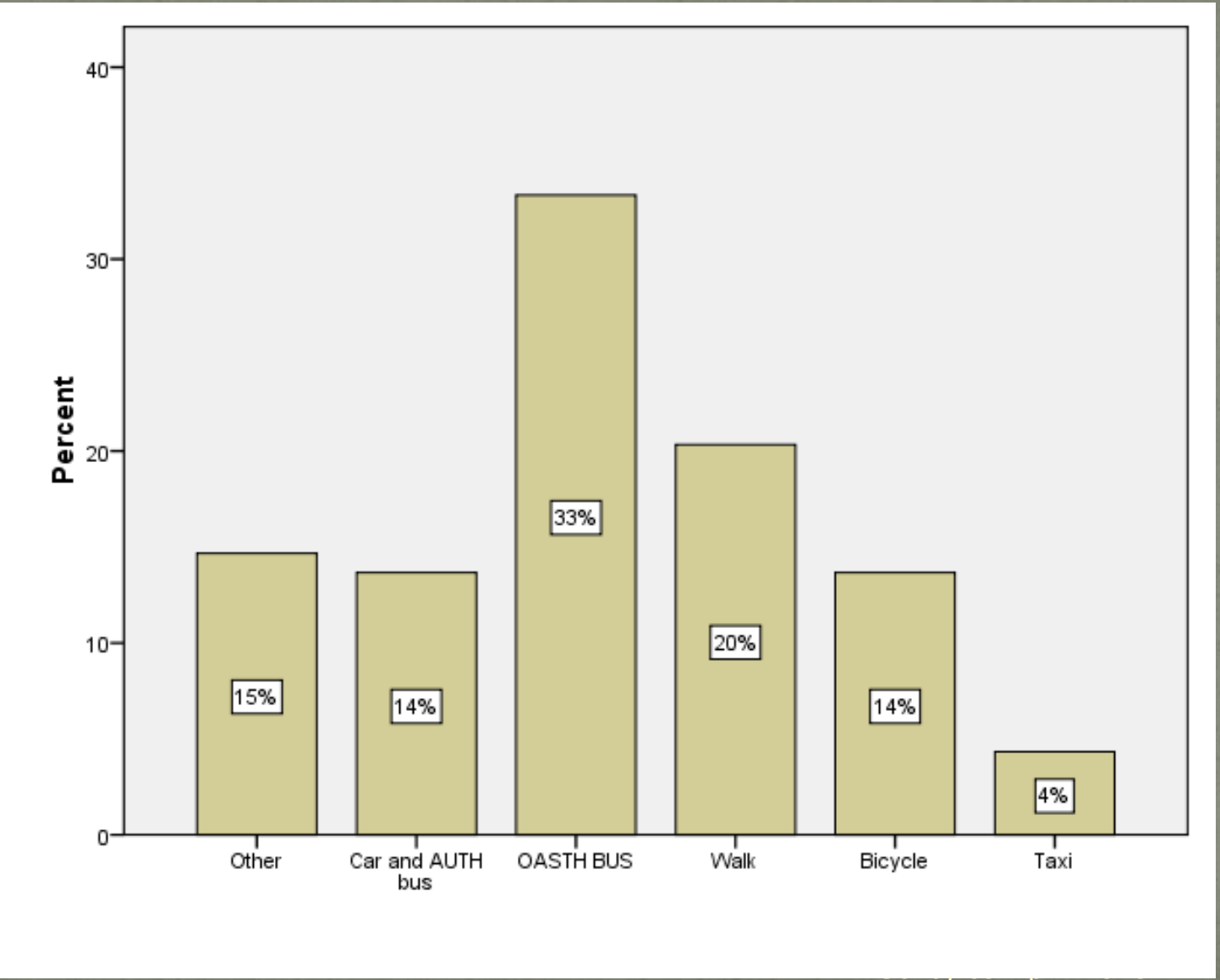
Proposed Pedestrian and Bicycle Network at AUTh

Policy #4: Mobility Plan at A.U.Th.

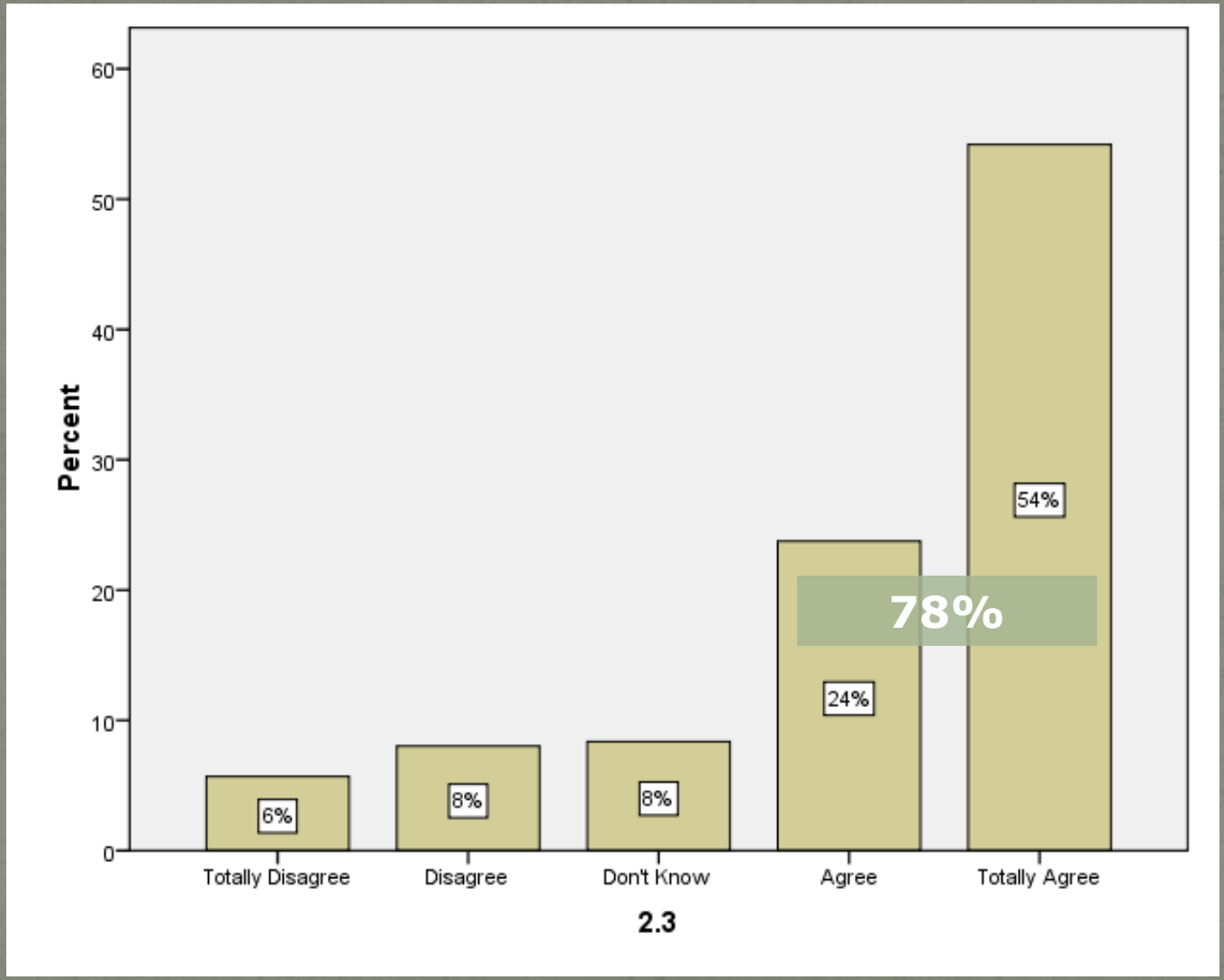
- ✓ A day Without Car at Aristotle was organized in 22/09/2010 within the framework of Mobility Week
- ✓ It was the first time since 1950 that cars were not permitted to enter the campus

- ✓ Two university buses were used to collect the employees and the students
- ✓ The parking of a nearby theatre was used for P&R purposes
- ✓ An ex-post evaluation study was conducted

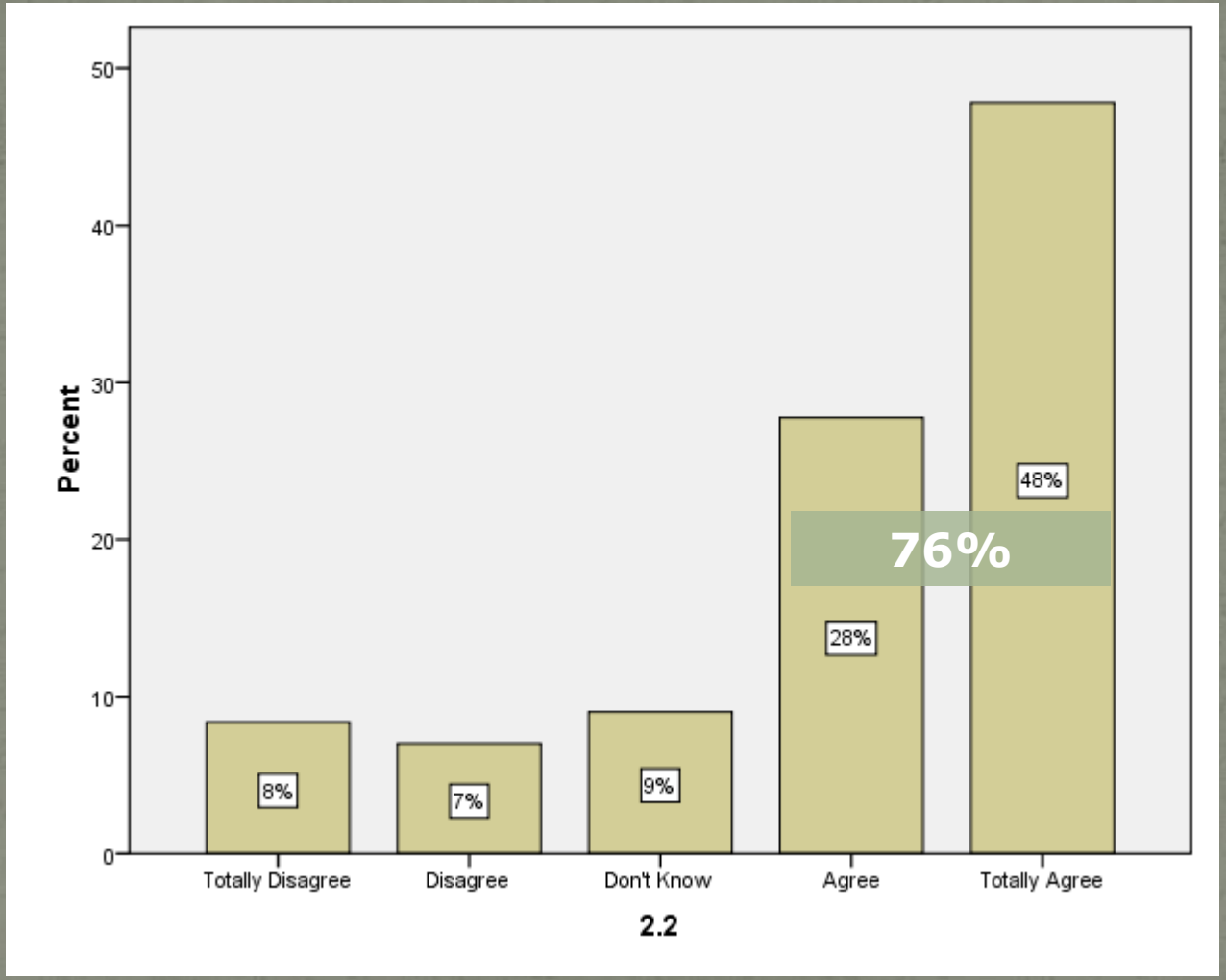
Modal Split to the University – Car Free Day



Car Free Day – Support the measure



Car Free Day – To be repeated more often



S.W.O.T. Analysis

Interventions for tackling transport GHG emissions in the Metropolitan Area of Thessaloniki, Greece

SWOT analysis

Strengths

1. The problem is well known and well documented
2. The introduction of a new mode (metro) is a good reason to make people think different
3. Good weather conditions in Greece is in favor of walking and cycling

SWOT analysis

Weaknesses

1. Absence of a Metropolitan authority to coordinate the actions and measures
2. Most measures are primarily considered as “traffic mitigation measures” instead of traffic and environmental mitigation measures”
3. High financial risks to invest
4. Political support and continuation between the parties is not secured

SWOT analysis

Opportunities

1. New financial reality in Greece, turns people to alternative to the car solutions
2. Awareness of global community for the greenhouse effect
3. Good and Bad Practices exchange between countries/cities
4. European and national legal framework can set new rules (limits, monitoring, taxes etc)

SWOT analysis

Threats

1. Lack of coordination between policy takers can make people loose their support to the measures
2. Misspecification about the positive impacts of a measure
3. Financial problems

Final Conclusions

- Thessaloniki indeed should be considered as a case study for GHG emission reduction
- Various measures have been implemented or being implemented
- The measures are (and should) cover various aspects of policy planning (strategic, meso and micro analysis, short and long term planning etc)
- Coordination of the actions is essential (stakeholders and users involvement in the decision making process)
- Monitoring and Evaluation tools should be applied to measure the impacts (air pollution measurements, behavioral surveys, traffic modelling simulations, etc)

Thank you all for your attention!!

Ioannis Politis

Transportation Planner (MSc, PhD)
Transport Engineering Laboratory
Department of Civil Engineering
Aristotle University of Thessaloniki
Greece
E-mail: pol@civil.auth.gr
url: http://users.auth.gr/pol