REMEDIO - Regenerating mixed-use MED urban communities congested by traffic through innovative low carbon mobility solutions

Communication under REMEDIO Project

Deliverable L2.1 | January 2020 | Dissemination Level: Public

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List of abbreviations

ARPAV - Regional Agency for Environment Protection in Veneto Region
AUTH - Aristotle University of Thessaloniki
CNTL - Collaborative network fostering REMEDIO results at transnational level
COHPCC - Communication outputs for the Horizontal Project and COM&CAP events
CML - Municipality of Loures
CS - City of Split
ESTeSL - Lisbon School of Health Technologies
HP – Horizontal Project
IMPALMLC - Informative materials on pilot activities in local mother language - Croatia
IMPALMLG - Informative materials on pilot activities in local mother language - Greece
IMPALMLI - Informative materials on pilot activities in local mother language - Italy
IMPALMLP - Informative materials on pilot activities in local mother language - Portugal
IST – Instituto Superior Técnico
LEETCC - Local events, encounters & tailored communication - Croatia
LEETCG - Local events, encounters & tailored communication – Greece
LEETCI - Local events, encounters & tailored communication - Italy
LEETCP - Local events, encounters & tailored communication – Portugal
LP – Leading Partner
MDAT - Metropolitan Development Agency of Thessaloniki I.S.A.
MP – Modular Project
MT - Municipality of Treviso
PCCHPP - Participation at COM&CAP events under direction of Horizontal Projects or Programme
PHPP – Participation at COM&CAP events under direction of Horizontal Projects or Programme (only for training)
PP – Project Partner
RiMC – REMEDIO in Media – Croatia
RiMG – REMEDIO in Media - Greece
RiMI – REMEDIO in Media - Italy
RiMP – REMEDIO in Media - Portugal
TEEVC - Tailored educational & empower events – Croatia
TEEVG - Tailored educational & empower events – Greece
TEEVI - Tailored educational & empower events – Italy
TEEVP - Tailored educational & empower events – Portugal
TEEVP - Tailored educational & empower events – Spain
USE - University of Seville

Executive Summary

This document summarizes all information and outputs regarding the Communication Deliverables foreseen under Interreg MED REMEDIO Project. The success rate of each communication deliverable during the lifetime of the project is described in the Table 1.

Table 1. Overview of the Communication Deliverables developed in the framework of Interreg MED REMEDIO.

Deliverable ID	Description	Planned Value / Reached Value	% Completion / Success rate	Individuals Reached
2.1.1	Project Communication Plan	1 / 1	100%	n.a.
2.2.1	Participation at COM&CAP events under direction of Horizontal Projects or Programme	2 / 5	250%	350
2.3.1	Communication outputs for the Horizontal Project and COM&CAP events	14 / 19	136%	826
2.3.2	Participation at COM&CAP events under direction of Horizontal Projects or Programme	6 / 14	233%	1225
2.4.1	Local events, encounters & tailored communication	30 / 30	100%	
2.5.1	Collaborative network fostering REMEDIO results at transnational level	4 / 21	525%	1925
2.6.1	Tailored educational & empower events	20 / 24	120%	55186
2.7.1	Informative Materials on pilot activities in local mother language	30 / 49	120%	n.a.

n.a. – not applicable

Overall, a total of 163 items (in the several sections) of the communication of the project were developed during the lifetime of the project, reaching a total of 59512 individuals.

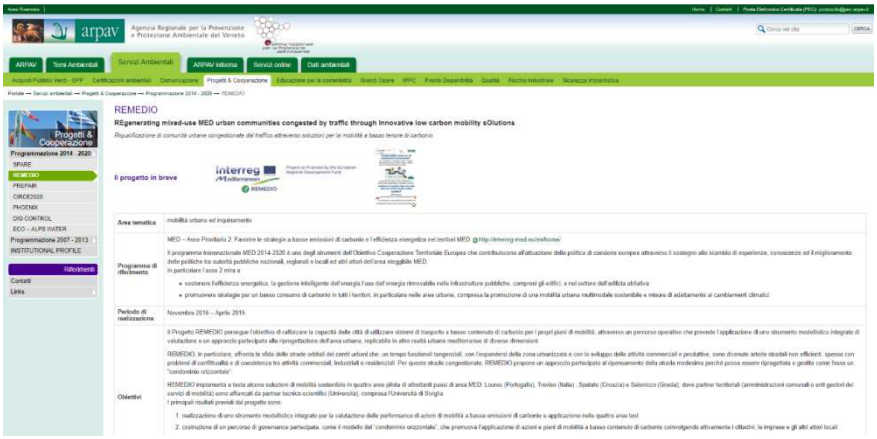
In addition, all project partners published on their institutional websites ("where such website exists") a short description of the operation, as set forth in the Regulation (EU) No 1303/2013 (Annex XII, Article 2.2 paragraph 2.a). Partners also included the project logo and the reference to the EU co-financing, both set in a visible place, and complying with the publicity rules herein detailed. A link to the project website in the Interreg MED platform was also be added.

1. Communication Obligations

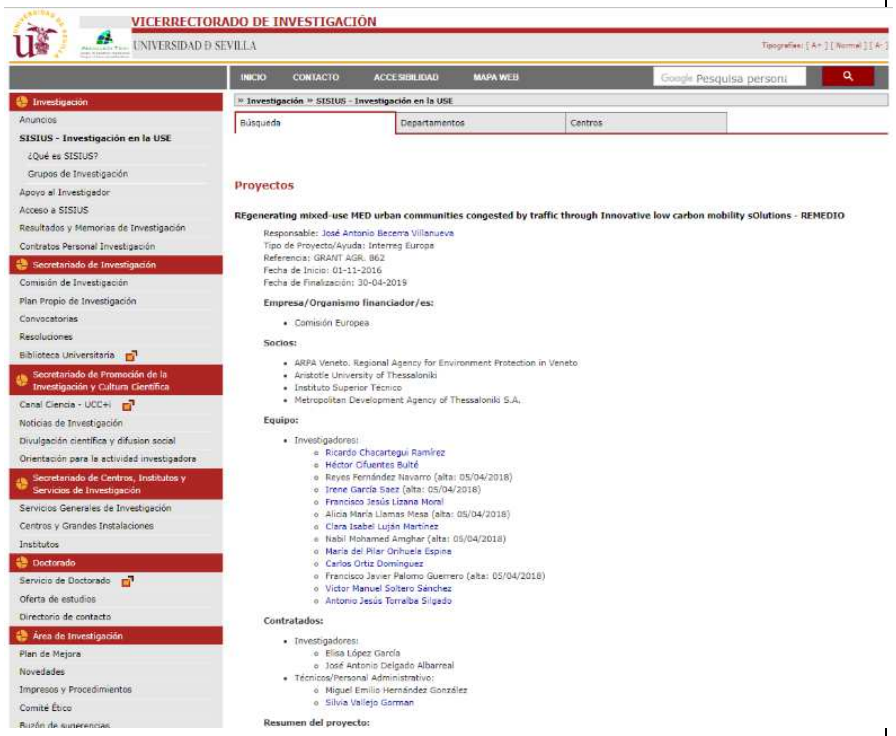
1. REMEDIO Project in Institutional Website

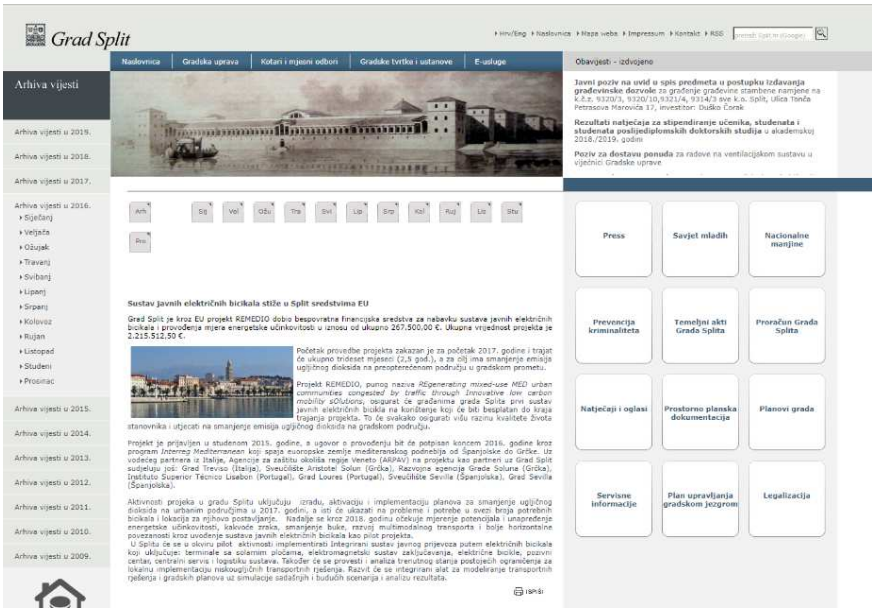
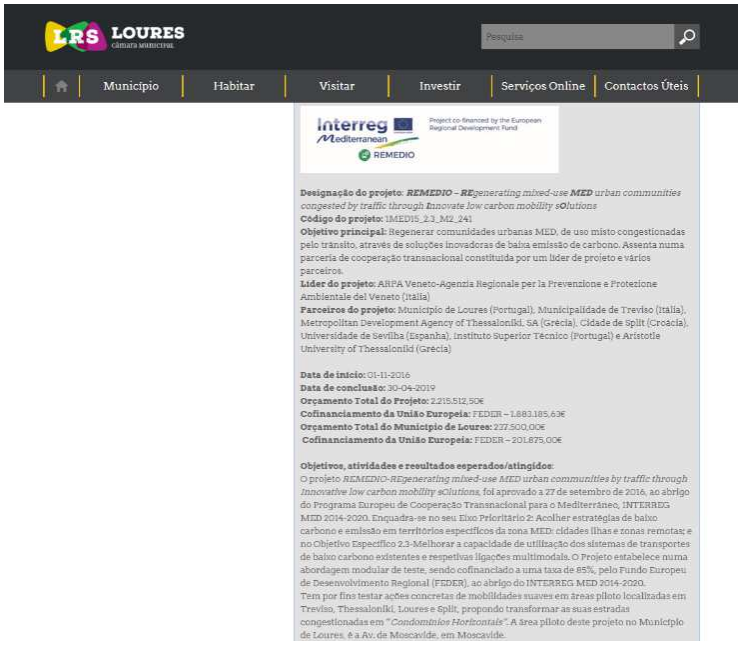
All Partners added a page in their own website referring REMEDIO project and its participation under the consortium. The links from each PP are presented in the Table 2 (and were visited on 24th of January 2019).

Table 2. Pages of REMEDIO in the institutional websites of the REMEDIO partners.

Partner	Link
ARPA Veneto – Regional Agency for Environment Protection in Veneto Region (ARPAV)	http://www.arpa.veneto.it/servizi-ambientali/cooperazione/programmazione-2014-2020-1/remedio 
Municipality of Treviso (MT)	http://www.comune.treviso.it/remedio/ 

Aristotle University of Thessaloniki (AUTH)	http://lap.physics.auth.gr/index.asp?lang=en 
Instituto Superior Técnico (IST)	http://c2tn.tecnico.ulisboa.pt/index.php/the-center/about-c2tn/projects-and-funding/34-the-center/projects-funding/370-remedio 

University of Seville (USE)	https://investigacion.us.es/sisius/sis_proyecto.php?idproy=27939 
Metropolitan Development Agency of Thessaloniki S.A. (MDAT)	https://thessaloniki.gr/math 

City of Split (CS)	http://www.split.hr http://www.split.hr/Default.aspx?art=8477 
Municipality of Loures (CML)	https://www.cm-loures.pt/Ligacao.aspx?DisplayId=748 

2. Communication Deliverables

This deliverable concerns the final version of Deliverable A2.1 - Overall WP Communication coordination regarding REMEDIO project.
This document intends to provide information regarding all the activities developed within the framework of the project. This deliverable gathers information regarding all deliverables planned within WP2 – Project communication [2016-2019].

2.1. Activity 2.1 - Overall WP Communication coordination

2.1.1. Deliverable 2.1.1. Project Communication Plan

Project Communication Plan and all produced newsletters are part of the deliverable 2.1.1.

2.1.1.1. REMEDIO Communication Plan

REMEDIO Communication Plan was a live-document used as a manual where it was possible to find all Communication Rules (L2.1.1_Project Communication Plan).

2.1.1.2. REMEDIO Newsletters

2.1.1.2.1. Newsletter #1

Launch date: 2 January 18 | **Number of recipients:** 336 stakeholders
Total number of pages: 5
Short description: The first newsletter is available online, either on the website or on the Facebook page. The main topic of the first REMEDIO newsletter was the presentation of the project, its goals and some of the activities developed.
Link: https://mailchi.mp/926a03b789c2/remedio-newsletter

Figure 1 – 1st Newsletter of REMEDIO.

2.1.1.2.2. Newsletter #2

Launch date: 11 May 18 | **Number of recipients:** 336 stakeholders
Total number of pages: 4
Short description: The second newsletter is available online, either on the website or on the Facebook page. Its main topic was the Participatory Approach under REMEDIO Project.
Link: https://mailchi.mp/a941df0ff2d9/2nd-newsletter-remedio

Figure 2 – 2nd Newsletter of REMEDIO.

2.1.1.2.3. Newsletter #3

Launch date: May 18 | **Number of recipients:** n/a

Total number of pages: 3

Short description: The third REMEDIO Newsletter was launched only on REMEDIO's website due to the new GDPR guidelines. The main topic of this newsletter was the event held in Thessaloniki, Greece, in May 2018.

Link: https://us16.campaign-archive.com/?u=ef153471d97765962376883ba&id=2c262d37ea

Figure 3 – 3rd Newsletter of REMEDIO.

2.1.1.2.4. Newsletter #4

Launch date: Jul 19 | **Number of recipients:** n/a

Total number of pages: 3

Short description: The fourth REMEDIO Newsletter was dedicated to the IMT and Opening of the Public Bike Sharing in Split, with additional information about team members and next events, such as the Final Event of REMEDIO at Treviso, Italy.

Link: https://mailchi.mp/0e67f6fc2ce4/4-remedio-newsletter-imt-and-opening-of-the-public-bike-sharing-in-split

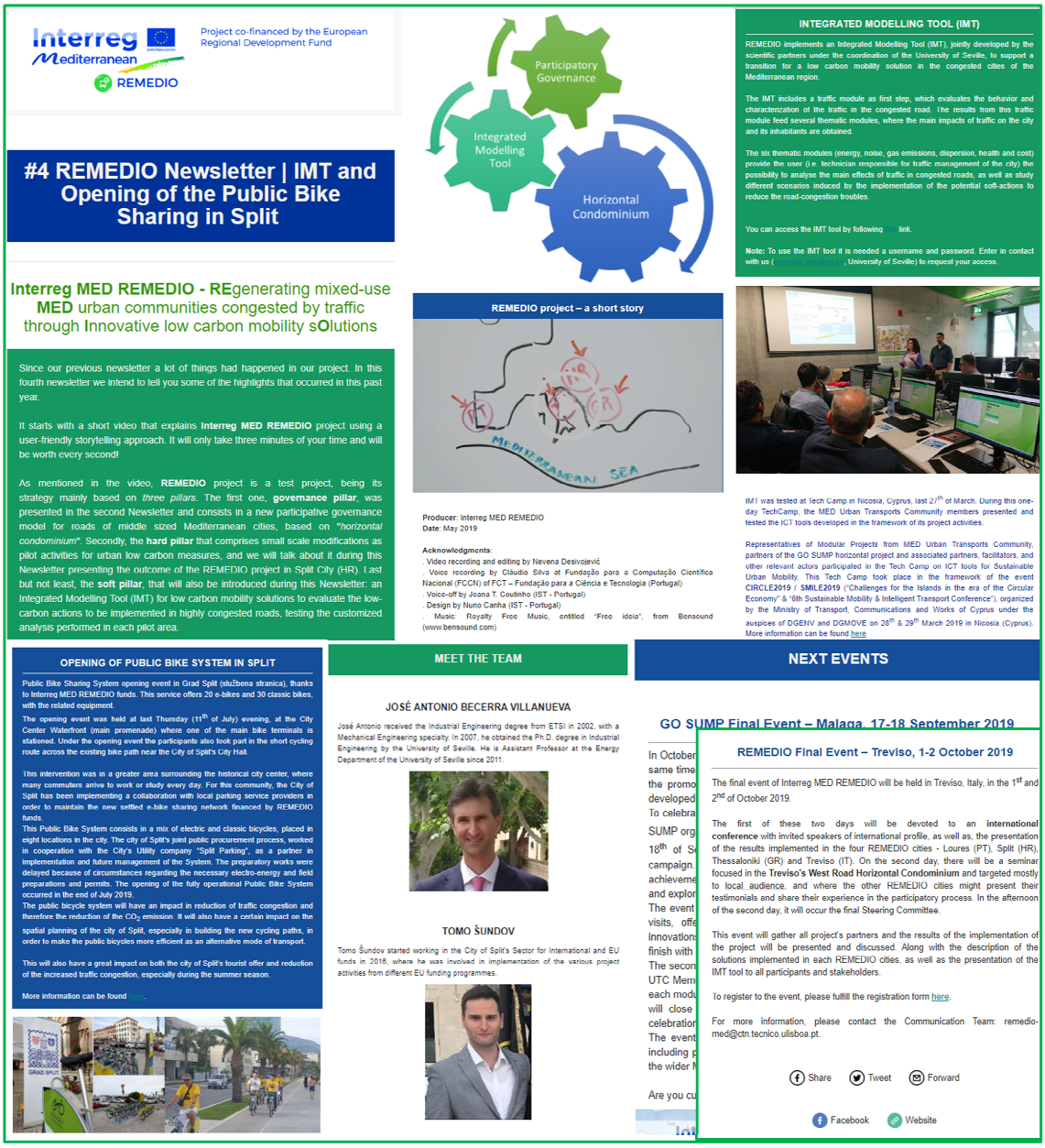


Figure 4 – 4th Newsletter of REMEDIO.

2.2. Activity 2.2 - REMEDIO experiences for Programme Communication activities

2.2.1. Deliverable 2.2.1. Participation at COM&CAP events under direction of Horizontal Projects or Programme

This section presents the participation of REMEDIO project in events organized by the MED Programme (or other European Programmes) or Horizontal Projects, which main aim was to provide training to maximise the execution of activities and/or outputs of REMEDIO project. No formal presentations and/or communication outputs were performed in these events.

2.2.1.1. PHPP01 - Lead Partner Seminar

Event: Lead Partner Seminar
Date: 8-9 November 16 | **Venue:** Centre Universitaire Méditerranéen (Nice, France)
Promotor: Interreg MED Programme | **Type:** International | **Partner involved:** ARPAV and IST
Individuals reached: 40
Short description: This event gathered partners from all projects funded Interreg MED projects, both Modular and Horizontal. This event accounted with the participation of ARPAV (F. Liguori and L. Da Rugna) and IST (M. Almeida Silva).

2.2.1.2. PHPP02 - We are MED

Event: We are MED - Going beyond thematic communities
Date: 17 May 17 | **Venue:** Alicante, Spain
Promotor: Interreg MED Programme | **Type:** International | **Partner involved:** ARPAV and AUTH
Individuals reached: 100
Short description: The event was the occasion to work together on a common work methodology, aiming to build a strong Interreg MED community. Team members of ARPAV (F. Liguori and L. Da Rugna) and AUTH (A. Poupkou) presented REMEDIO project in the event under the umbrella of the GO SUMP Urban Transport Community project.

Figure 5 - Participants from "We are MED - Going beyond thematic communities" event.

2.2.1.3. PHPP03 - MADE in MED event

Event: MADE in MED event
Date: 18-19 April 18 | **Venue:** Rome, Italy
Promotor: Interreg MED Programme | **Type:** International | **Partner involved:** ARPAV, AUTH and IST
Individuals reached: 100
Short description: The MADE in MED event presented the first results of Interreg MED 90 projects through a conference and an exhibition. These two days provide not only the opportunity to convey the idea and values of co-work, knowledge sharing and innovation, but also to look towards the future of cooperation in the Mediterranean. Team members of the ARPAV (F. Liguori), AUTH (A. Poupkou) and IST (M. Almeida Silva) presented REMEDIO in the stand of the GO SUMP Urban Transport Community project "Let it go, let it flow! Relieving congestions to reduce urban mobility drawbacks".

2.2.1.4. PHPP04 - Advocacy Bootcamp

Event: Advocacy Bootcamp
Date: 28-29 June 18 | **Venue:** Faro, Portugal
Promotor: Interreg MED and Interreg Sudoe Programmes and CCDR-Algarve | **Type:** International
Partner involved: AUTH and IST | **Individuals reached:** 70
Short description: The Interreg Sudoe and Interreg MED Programmes, with the support of the Algarve Regional Coordination and Development Commission, jointly organized a boot camp training on promotion and lobbying, to support approved projects in their marketing and capitalisation actions. During the event, the participants benefited from practical training in strategy, political influence, storytelling and digital communication; partners and professionals' testimonials from different perspectives complemented the trainers. Participants from REMEDIO project were from the IST (J. Lage) and AUTH (A. Poupkou) partners.
Video of the event can be found at the following link: https://youtu.be/s4yPp_vXpJE
Information regarding the event (photos, workshops and documents) can be found at the following link: https://interreg-med.eu/events/advocacy-bootcamp/

Figure 6 - REMEDIO partners (left) and all participants (right) in the Advocacy Bootcamp at Faro, Portugal.

2.2.1.5. PHPP05 – MED for YOU: Unfolding a strong narrative for policy change

Event: MED for YOU: Unfolding a strong narrative for policy change
Date: 24 October 19| **Venue:** Athens, Greece
Promotor: Interreg MED | **Type:** International
Partner involved: ARPAV and AUTH | **Individuals reached:** 300
Short description:
The event "MED for YOU: Unfolding a strong narrative for policy change" was promoted by Interreg MED Programme in order to promote this capitalisation event of all Interreg MED projects and their results, along with which are the best strategies to policy change. This event was held in 24th October 2019 in Athens, Greece.
REMEDIO project was presented by Francesca Liguori, REMEDIO's project coordinator from ARPAV, and Anastasia POUPKOU, from AUTH, with a presentation entitled "REMEDIO – Horizontal condominiums as living lab for renewal of high congested roads".
Interreg MED Programme also created the "MEDforYOU - Project Photo competition", where all projects presented a photo to illustrate their project. REMEDIO also participated with a photo of Loures' pilot area.
More information about the event can be found here.
https://interreg-med.eu/sq/events/med-for-you/

Figure 7 - REMEDIO participation in MED for YOU event with F. Liguori (ARPAV) and A. Poupkou (AUTH).

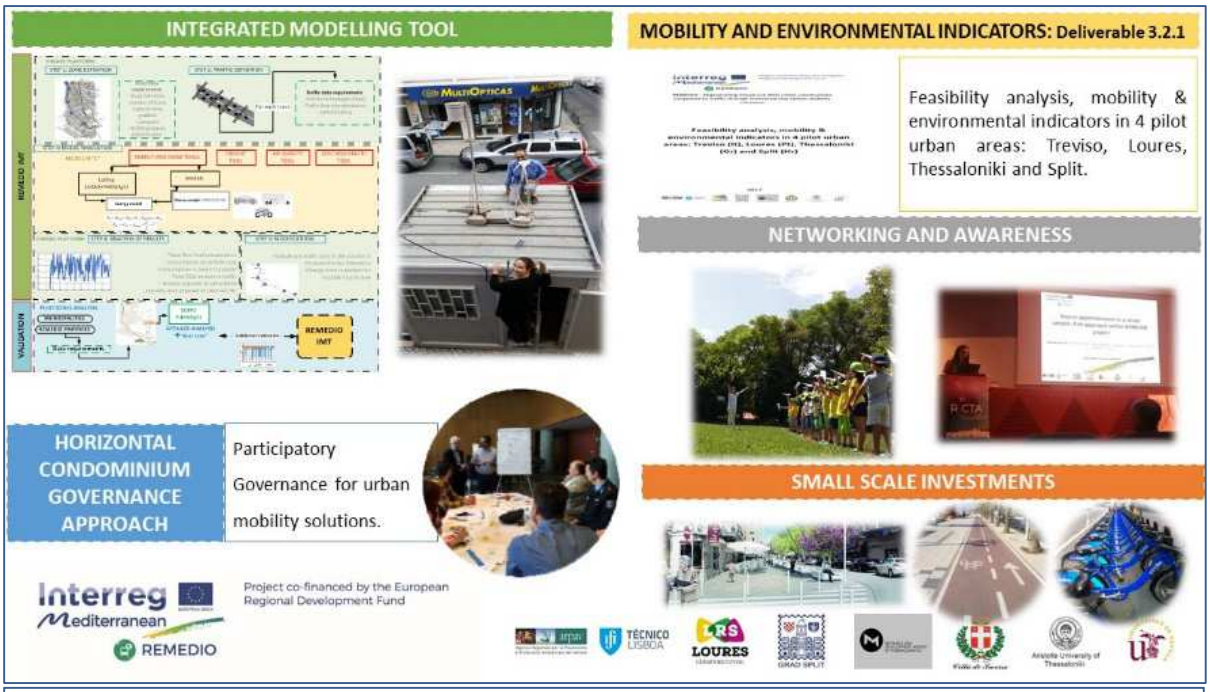
2.3. Activity 2.3 - REMEDIO experiences for COM&CAP events of Horizontal Projects

2.3.1. Deliverable 2.3.1. Communication outputs for the Horizontal Project and COM&CAP events

ARPAV, AUTH and IST in collaboration with all other REMEDIO partners prepared some presentations and communication materials for the Horizontal Project and COM&CAP events.

2.3.1.1. COHPCC01 - Capacity Building – Synergies in Community

Event: Capacity Building – Synergies in Community (GO-SUMP Workshop)
Date: 25-26 September 17 | **Venue:** Torres Vedras, Portugal
Promotor: Interreg MED and HP GO SUMP | **Type:** International
Partner involved: ARPAV, AUTH, IST and CML | **Individuals reached:** 70
Short description: HP GO SUMP invited all Modular projects, including REMEDIO Project, to participate in the event "Capacity Building – Synergies in Community", where team members of ARPAV (F. Liguori), IST (M. Almeida-Silva), AUTH (M. Spandou) and CML (F. Noivo) participated.
Roberta Lixia (Project Officer Interreg MED Programme JS) performed a presentation about the state of the art of modular projects, which included two slides about the progress of REMEDIO activities (Figure 8).
Additionally, a presentation entitled "Low Carbon Transport Modes / Services in REMEDIO project" was performed by F. Liguori, which was included in one of the thematic working group (presentation can be found in the "Annexes" section, sub-section **4.1. A01 - GO-SUMP Workshop**).
The agenda of the event can be found at the following link:
https://www.motivate.imet.gr/Events/GOSUMP_TorresVedras/GOSUMPFinal_agenda_Torres_Vedras_25_26_sept_2017.pdf



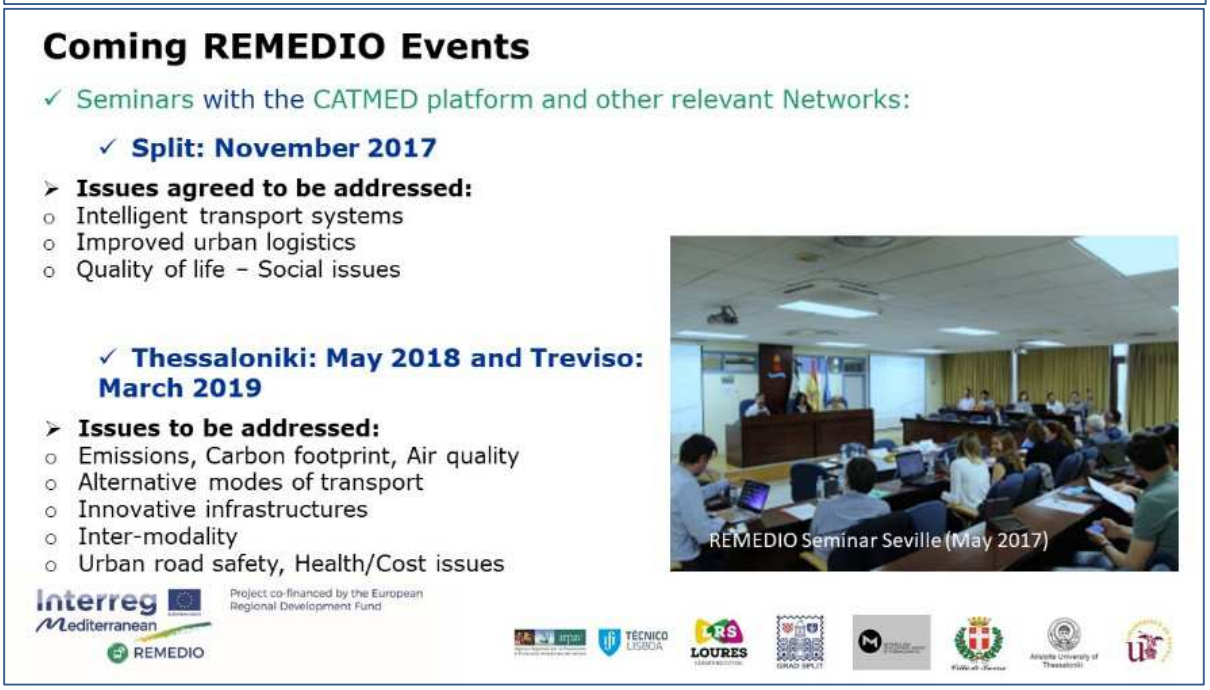


Figure 8 – Slides focusing on REMEDIO activities presented by Roberta Lixia.

2.3.1.2. COHPCC02 - CIVITAS Forum 2017

Event: CIVITAS Forum 2017
Date: 27-29 September 17 | **Venue:** Torres Vedras, Portugal
Promotor: Interreg MED and HP GO SUMP | **Type:** International
Partner involved: ARPAV, AUTH, IST and CML | **Individuals reached:** 475
Short description:
REMEDIO was invited by both Interreg MED Program and GO SUMP project to participate in CIVITAS Forum 2017. This event had the participation of team members of ARPAV (F. Liguori), IST (M. Almeida-Silva), AUTH (M. Spandou) and CML (F. Noivo).
In this event, one movie presentation available at the GO SUMP stand about the Urban Transport Community included a description of REMEDIO project, among other projects. An oral presentation by Marina Almeida-Silva, entitled "Interreg MED Urban Transport: REMEDIO: Integrated Modelling Tool (IMT) and Horizontal Condominium", was done in a session dedicated to "Implementation case studies (INTERREG SUMP projects)" (presentation available in Annexes section - 4.2. CIVITAS Forum 2017).
The list of participants can be found at the following link:
https://civitas.eu/sites/default/files/civitas_forum_2017_participants_list_0.pdf
Information about the programme of the event available at: https://civitas.eu/forum/civitas-forum-conference-2017

Figure 9 – M. Almeida-Silva presenting REMEDIO project in CIVITAS Forum 2017.

2.3.1.3. COHPCC03 - Urban Transport Community Building

Event: Urban Transport Community Building
Date: 17 April 18 | **Venue:** UNIMED – Mediterranean Universities Union, Rome, Italy
Promotor: GO SUMP Project | **Type:** International
Partner involved: ARPAV, AUTH and IST | **Individuals reached:** 50
Short description:
This event, under the theme "Improving Sustainable Urban Mobility Plans & Measures in the Med", had the participation of team members of ARPAV (F. Liguori), IST (M. Almeida-Silva) and AUTH (A. Poupkou). Three different presentations were presented, namely:

1) "Session 2: Participatory Planning & Processes – Sub-session: Urban Transports' participatory process and citizens involvement by surveys" by M. Almeida-Silva (presentation can be found in section "Annexes", Annex A03 - sub-section "4.3. A03 - Community Building Workshop: Participatory Planning & Processes).
2) "Session 1: Low Carbon Transport Modes/Services – Integrated Modeling Tool of REMEDIO) by A. Poupkou (presentation can be found in section "Annexes", Annex A04 - sub-section "4.4. A04 - Community Building Workshop: LCT Modes)
3) "Session 1: Low Carbon Transport Modes/Services – Sub-session: Physical solutions/infrastructure related to sustainable means of transport" by F. Liguori (presentation can be found in "Annexes" section, sub-section 4.4. A05 - Community Building Workshop: ICT)

Agenda of the programme of the event available at:
https://urban-transports.interreg-med.eu/news-events/events/detail/actualites/community-building-event-rome-17-april-2018/

2.3.1.4. COHPCC04 - 5th European Conference on Sustainable Urban Mobility Plans

Event: 5th European Conference on Sustainable Urban Mobility Plans
Date: 14-15 May 18 | **Venue:** Nicosia, Cyprus
Promotor: GO SUMP Project | **Type:** International
Partner involved: ARPAV, AUTH and IST | **Individuals reached:** 80
Short description:
This is Europe's leading annual event for all those involved in putting the SUMP concept into practice. It serves as a forum for policy makers and academics across Europe to network, aiming to debate key issues and exchange ideas on sustainable urban mobility planning.
Team members from ARPAV (F. Liguori), MDTA (C. Kalogirou) and AUTH (D. Melas) led one of the encounter tables, namely D1 session "GO SUMP! Innovative planning strategies from the INTERREG MED Sustainable Urban Transport Community" (14 May 18), with a presentation "REMEDIO: Low carbon mobility solutions for congested urban communities" (it can be found in the "Annexes" section in sub-section 3.6. A06 - 5th European Conference on Sustainable Urban Mobility Plans). One flyer was also produced for distribution in the conference in order to disseminate the REMEDIO project (it can be found in the "Annexes" section in sub-section 3.7. A07 - 5th European Conference on Sustainable Urban Mobility Plans – Flyer).
Full programme of the event and presentations available at:
www.eltis.org/sump2018
http://www.eltis.org/sites/default/files/eltis_5th_sump_conference_-_programme.pdf

Figure 10 – Image of 5th European Conference on Sustainable Urban Mobility Plans.

2.3.1.5. COHPCC05 - Contribution for the "Go SUMP - Data collection and results analysis"

Event: Contribution for the "Go SUMP - Data collection and results analysis"
Date: July 2018 | **Promotor:** GO SUMP | **Type:** International
Partner involved: LP and AUTH in cooperation with local partners
Short description:
REMEDIO's contribution for the "Go SUMP _ Data collection and results analysis", presenting the project, and collecting and describing REMEDIO results and outcomes of the whole project team.

2.3.1.6. COHPCC06 – Urban Transports Workshop "Better ways to move, better places to live"

Event: Urban Transports Workshop "Better ways to move, better places to live"
Date: 25 October 18 | **Venue:** Venice, Italy
Promotor: GO SUMP Project | **Type:** International
Partner involved: ARPAV | **Individuals reached:** 35
Short description:
F. Liguori (ARPRAV) wrote a note with a REMEDIO contribution for the Urban Transports Workshop "Better ways to move, better places to live", on behalf of the whole REMEDIO partnership, which was sent to the Go SUMP team as working document for preparing the round table discussion.
More information about the event is available in the following link:
https://urban-transports.interreg-med.eu/news-events/news/detail/actualites/rethinking-mediterranean-sustainable-mobility-and-tourism-report-of-better-ways-to-move-better-pl/

Figure 11. Urban Transports Workshop "Better ways to move, better places to live" held at Venice (Italy).

2.3.1.7. COHPCC07 – Conference "Mobility Challenges in Mediterranean Urban and Metropolitan Areas"

Event: Conference “Mobility Challenges in Mediterranean Urban and Metropolitan Areas”
Date: 12 – 13 November 18 | **Venue:** Barcelona, Spain
Promotor: GO SUMP Project and SMART MR Project | **Type:** International
Partner involved: ARPAV | **Individuals reached:** 80
Short description:
The conference " Mobility Challenges in Mediterranean Urban and Metropolitan Areas" was organised by GO SUMP and SMART MR Projects. This event gathered partners of the Interreg MED Modular Projects from the Urban Transports Thematic Community together with the participation of the Modular projects from the Efficient Buildings and Renewable Energy Communities. F. Liguori (ARPAV) did a presentation entitled “The REMEDIO project: testing a participatory governance approach for high congested roads in MED cities” in the panel discussion on “Participatory Processes for urban transports and mobility” (Panel IV).
Presentation available at the following link:
https://urban-transports.interreg-med.eu/fileadmin/user_upload/Sites/Urban_Transports/horizontal_project/Mid-Term_conference_Barcelona_12-14_November_2018_presentations_and_other_material/10_REMEDIO_Francesca_Liguori_Participatory_Panel_12_November2018_BCN.pdf
More information at the Urban Transports website:
https://urban-transports.interreg-med.eu/el/news-events/news/detail/actualites/urban-mobility-management-in-mediterranean-coastal-towns-challenges-and-potential-solutions-from-th/

Figure 12. Poster of the Conference "Mobility Challenges in Mediterranean Urban and Metropolitan Area".

2.3.1.8. COHPCC08 - Smart City Expo World Congress

Event: Smart City Expo World Congress
Date: 13 November 18 | **Venue:** Barcelona, Spain
Promotor: GO SUMP Project and SMART MR Project | **Type:** International
Partner involved: ARPAV, AUTH and MDTA | **Individuals reached:** 150
Short description:
The representative of MDAT, Paraskevi Tarani, took part at the Smart Cities Expo World Congress in a specific Session entitled "Smart Solutions for Low Carbon Cities", by presenting Thessaloniki as REMEDIO project case solution. Under the title "Redesigning the road together: a participatory planning process experiment for the city of Thessaloniki", the short presentation aimed to transfer the Thessaloniki solution for the integrated redesign of an urban axis, as an ongoing process smart model where the basic aims are:

- to create a local human ecosystem of knowledge including citizens, users, experts, stakeholders, organisations, local authorities
- to provide collective intelligence and participatory actions
- to provide the model of the 4P effect: Place – People – Participatory Policy

Finally, the organizers also provide technical study visits to Barcelona specific neighbourhood areas where smart mobility solutions have been successfully implemented, such as Poble Nou Neighbourhood and Barcelona Super Blocks areas.
More info available at: www.smartcityexpo.com
Presentation available at the following link:
https://urban-transports.interreg-med.eu/fileadmin/user_upload/Sites/Urban_Transports/horizontal_project/Mid-Term_conference_Barcelona_12-14_November_2018_presentations_and_other_material/04_SmartCityExpo_Thessaloniki.pdf
Video of the event with REMEDIO participaton at the following link:
https://www.youtube.com/watch?v=HDKJZD8JPpg&feature=youtu.be

2.3.1.9. COHPCC09 – CirCIE2019 + SMile 2019

Conference: International Conference CirCIE2019 – "Challenges for the Islands in the era of the Circular Economy" and SMile 2019 - "6th Sustainable Mobility and Intelligent Transport Conference"
Date: 28-29 March 19 | **Location**: Nicosia, Cyprus | **Organizer:** Ministry of Transport, Communications and Works of Cyprus under the auspices of DGENV and DGMOVE

Presenter: A. (AUTH) | **Type**: Oral | **Individuals reached:** 80
Title: A tool for environmental assessment of traffic mitigation actions for high congested roads in Mediterranean urban areas as in REMEDIO project

Short description:

REMEDIO was represented Anastasia Poupkou and Serafeim Kontos (Aristotle University of Thessaloniki), by Francesca Liguori and Massimo Bressan (Regional Agency for Environment Protection in Veneto Region) and by and Corrado Lanera (University of Padoa) in the International Conference CirClE2019 - "Challenges for the Islands in the era of the Circular Economy" and SMile 2019 - "6th Sustainable Mobility and Intelligent Transport Conference", that took place in Nicosia (Cyprus) from 28 to 29 March 2019.

In the session dedicated to "Sustainable Mobility - International Experience - ICT tools", Anastasia Poupkou gave the presentation entitled "A tool for environmental assessment of traffic mitigation actions for high congested roads in Mediterranean urban areas as in REMEDIO project". In the framework of the presentation, the REMEDIO Integrated Modelling Tool (IMT) modules (i.e. energy, noise, pollutant emissions, carbon footprint, air dispersion, health/cost, freight streamlining) were shown, in addition to IMT scientific background and application concept. Finally, results of IMT application for the pilot road axis of Thessaloniki were presented as an assessment of the impacts on the environment of the redesign of the Eastern Horizontal Axis of the city.

More information at found at the conference website available here: https://circle2019.eu/

Presentation of Anastasia Poupkou (in pdf) available here:
https://circle2019.eu/presentation/day1/parallels/2/03%20-%20Poupkou_AUTH_REMEDIO_CircleSmile2019.pdf

Figure 13 – REMEDIO presentation at CirClE2019 + SMile 2019 by A. Poupkou (AUTH).

2.3.1.10. COHPCC10 - Two days event on Sustainable Mobility

Event: Two days event on Sustainable Mobility
Date: 1-2 April 19 | **Venue:** Thessaloniki, Greece
Promotor: Civinet CY-EL, ELTIS kai MDAT SA | **Type:** Local | **Partner involved:** MDAT | **Individuals reached:** 50
Short description:

This training event was promoted by CIVINET Cyprus-Greece (CY-EL) and Eltis gathered 50 participants in Thessaloniki, Greece, from 1-2 April for two days of intense learning and exchange.

The participants came from diverse backgrounds, including local authorities, the CIVITAS Political Advisory Committee, and a plethora of other mobility stakeholders. Together, they debated some of the most urgent topics in mobility. From REMEDIO team, Stella Zountsa (from MDAT) participated in the event.

Information about the event can be found in the following link:
https://civitas.eu/news/civinet-cy-el-and-eltis-training-hones-greek-and-cypriot-mobility-minds
And activities developed in the initiative can be seen in the following video:
www.youtube.com/watch?v=RS6X-UcbRMs&feature=youtu.be

Figure 14 – Poster of the event.

2.3.1.11. COHPCC11 - High Level Training Courses on Sustainable Mobility – "Financing Sustainable Mobility" and "Tourism & Mobility Nexus"

Event: High Level Training Courses on Sustainable Mobility
Date: 11-13 June 19 | **Venue:** Barcelona, Spain
Promotor: GO SUMP Project | **Type:** International
Partner involved: CS and MDAT | **Individuals reached:** 56
Short description:
In the framework of Community Building and Capitalization activities of GO SUMP project, a series of High Level Training Courses on Sustainable Mobility targeting Mediterranean Cities are being developed, aiming to consolidate the capacity building and promote transferability of urban practices among the Interreg-MED Urban Transport Community (UTC) and Mediterranean stakeholders. The topics that were addressed were focused on two key domains identified by the

UTS and were deployed into two parallel training courses: “Financing Sustainable Mobility” and “Mobility and Tourism Nexus”.

REMEDIOs’ contribution for the event was inserted both training courses of “Mobility and Tourism Nexus” and “Financing Sustainable Mobility”.

City of Split (CS) contributed to the session “Mobility and Tourism Nexus” with a presentation entitled “EU project REMEDIO – Traffic Congestion Minimization and Tourism Integration in the City of Split”. This presentation aimed to describe to the event participants the implementation of pilot activity of introducing the public bike sharing system in the city of Split through the implementation of REMEDIO project and the impact that it will have on reducing the traffic congestion through its use by citizens and tourists of city of Split. From CS, REMEDIO members participating were Radojka Tomašević and Tomo Šundov.

MDAT contributed to the session “Financing Sustainable Mobility - International projects”, with a presentation by Anthi Tsakiropoulou with the title “REMEDIO - The Thessaloniki case study: Redesign and upgrade of a major urban axis within a high-participatory approach for the development of the proposal”.

More information about the event and all presentations from the different sessions can be found here:

https://urban-transports.interreg-med.eu/news-events/news/detail/actualites/high-level-trainings-on-sustainable-mobility-11-13-june-2019/

Figure 15 – Participation of REMEDIO team at High Level Training Courses on Sustainable Mobility held at Spain.

2.3.1.12. COHPCC12 - Handbook on Sustainable Mobility in the Mediterranean Area

Material: "Handbook on Sustainable Mobility in the Mediterranean Area: best practices of the Urban Transports Community" by MOBILITAS project
Date: June 19 | **Type**: Dissemination materials – Handbook (English)
Promotor: MOBILITAS project | **Type:** International | **Partner involved:** ARPAV, AUTH, CML, CS, IST and MDTA
Short description:
REMEDIO partners were invited to contributed to the "Handbook on Sustainable Mobility in the Mediterranean Area: best practices of the Urban Transports Community", promoted by MOBILITAS project.
This handbook represents the culmination of the MOBILITAS project and combines the results and best practices of the 7 modular projects of the Urban Transports Community. Among them, Remedio Interreg MED is presented and some of the solutions found in our project are explained, namely:

- Horizontal condominium
- Case of Loures (Portugal): new urban spaces
- Case of Split (Croatia): implementation of public bike systems
- Case of Thessaloniki (Greece): Redesign and upgrade of an urban axis AXIS

Francesca Liguori (ARPAV) participated as consulting editor and all REMEDIO partners contributed to chapters about REMEDIO with information and photos.
The Handbook is available for download in pdf version in the following link:
https://www.riminiventure.it/download/a-handbook-on-sustainable-mobility-in-the-med-area/
A description of the Handbook can be find at the MED Urban tools:
http://medurbantools.com/portfolio_page/handbook-on-sustainable-mobility-in-the-med-area-2/

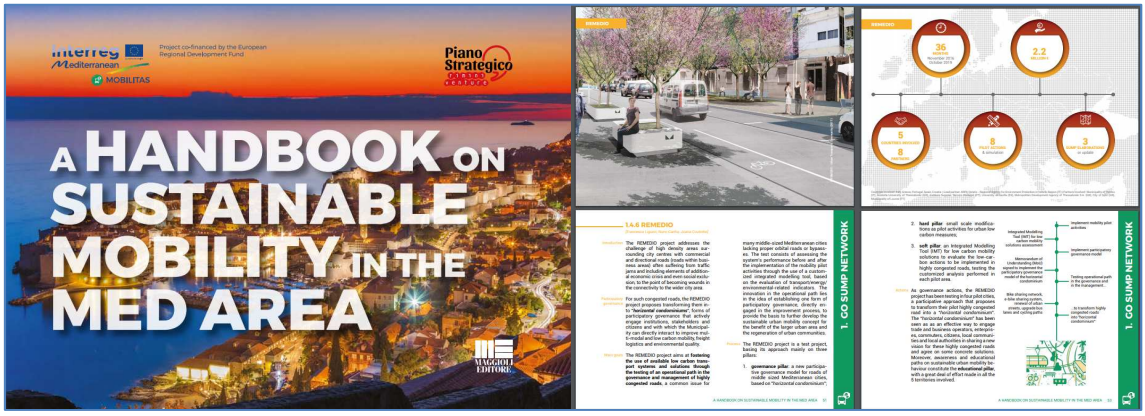


Figure 16 – Example of "Handbook on Sustainable Mobility in the Mediterranean Area: best practices of the Urban Transports Community" by MOBILITAS project, with contribution of REMEDIO.

A video for presentation the Handbook was created (where REMEDIO inputs can be seen) and it is available in the following link:

https://www.youtube.com/watch?v=p53xW1u8-X0

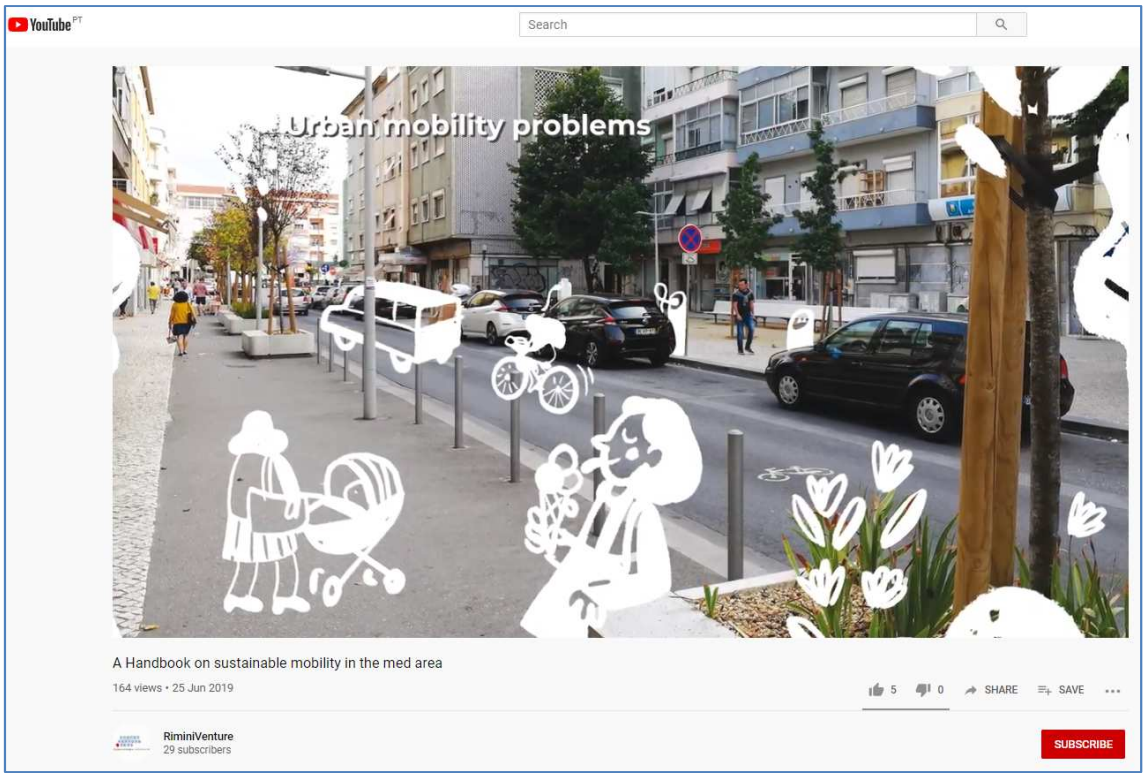


Figure 17 – Youtube video created to disseminated the Handbook on Sustainable Mobility in the Mediterranean Area, with highlight (in this frame) of the Loures' pilot action (Portugal).

2.3.1.13. COHPCC13 – IV International Conference on "CHANGING CITIES: Spatial, Design, Landscape & Socio-economic Dimensions"

Conference: 4th International Conference on "CHANGING CITIES: Spatial, Design, Landscape & Socio-economic Dimensions"

Date: 24-29 June 2019| **Location**: Chania, Crete Island, Greece

Presenter: Paraskevi Tarani (MDAT) | **Type**: Oral | **Individuals reached:** 100

Title: Participatory redesign practices for accelerating integrated multi-modal and low carbon mobility solutions in urban axis

Short description:

The Thessaloniki case scenario under REMEDIO project has been presented during the fourth edition of the international conference "CHANGING CITIES: Spatial, Design, Landscape & Socio-economic Dimensions" by REMEDIO team member, Paraskevi Tarani (from MDAT), with an oral presentation entitled "Participatory redesign practices for accelerating integrated multi-modal and low carbon mobility solutions in urban axis" in the session "Sustainable Urban Planning & Development II". This work had as co-authors: A. Yiannakou, P. Tarani, S. Zountsa, C. Kalogirou, G. Aifadopoulou, K. Chrysostomou, A. Poupkou, C. Meleti and D. Melas.

More information about this conference can be found in the link below:

https://changingcities.prd.uth.gr

Final programme of the conference can be found here:

https://changingcities.prd.uth.gr/cc2019/images/program/FINAL_PROGRAM_CCIV_2019.pdf

2.3.1.14. COHPCC14 - Questionnaire for the production of MPs' video

Output: Questionnaire for the video of the Modular Projects of the Urban Transport Community
Date: July 2019 | **Promotor:** GO SUMP and Onecome company | **Type:** International
Partner involved: LP and CM in cooperation with all REMEDIO partners
Short description:
ARPAV firstly proposed a revised version of the original questionnaire to "**one**com cre**activity**" (www.onecom.es) in order to be more focused on the typology of activities developed by REMEDIO. All REMEDIO PPs then answered at the revised questions, each one focusing on its own task and role.

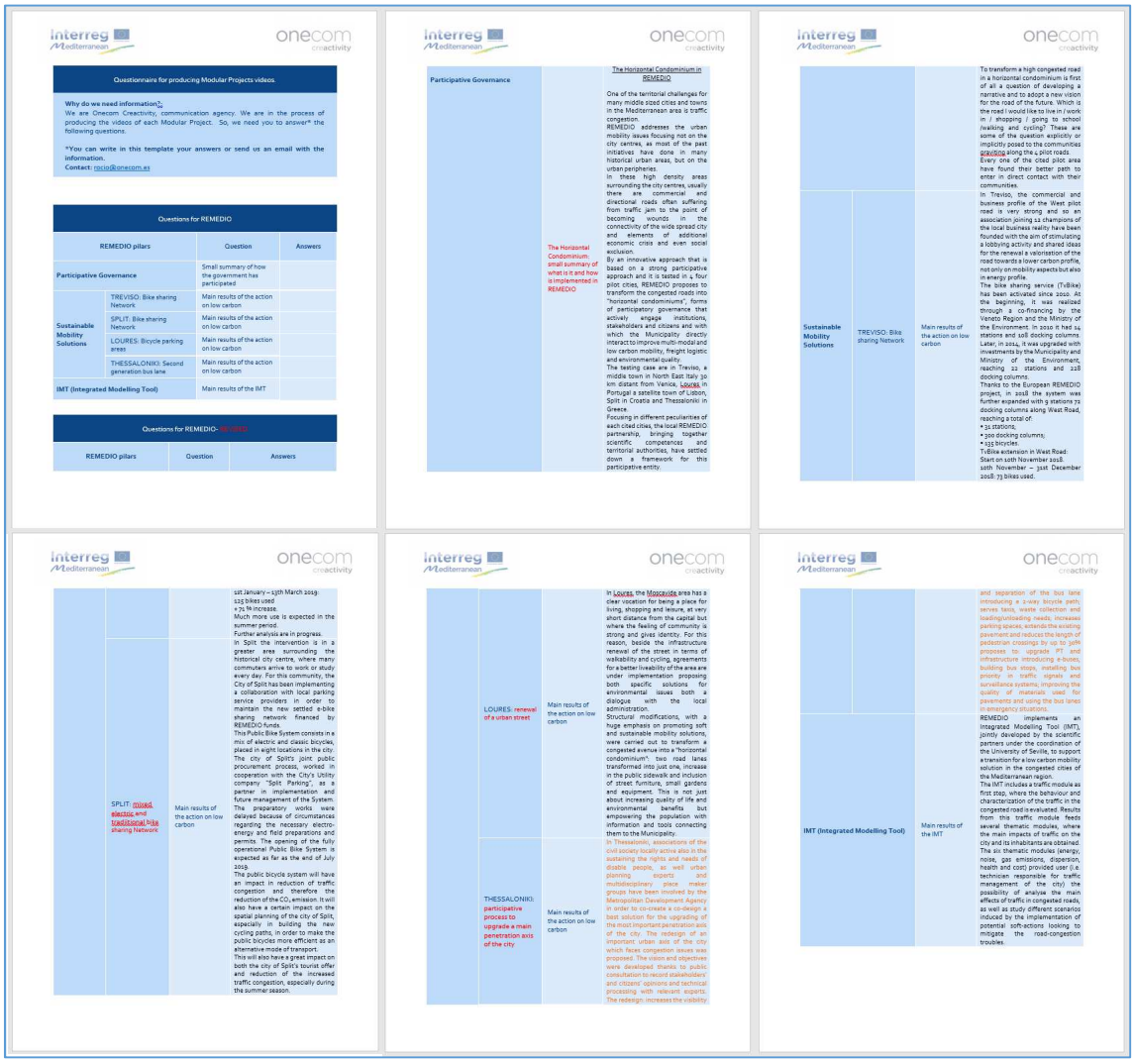


Figure 18. Questionnaire for Modular Project videos

2.3.1.15. COHPCC15 - Contribution for the "Go SUMP – Policy Recommendations Matrix"

Output: Contribution for the "Go SUMP – Policy Recommendations Matrix""
Date: September 2019 | **Promotor:** GO SUMP | **Type:** International
Partner involved: LP and AUTH in cooperation with local partners
Short description:
REMEDIO's contribution for the "Go SUMP – Policy Recommendations Matrix" was to propose, based in the lessons learned and experience of the project, policy recommendations for urban transport policies at different type and level of intervention. The goal was that all proposals from the different projects would be discussed in the final event of GO SUMP.

		Type of intervention								
		Strategy or plan development	Financial policies/ investments	Regulations, incentives or taxes	Innovation support	Communication or guidance	Governance	Public procurement	Data collection & sharing	Others
Level of intervention	EU and Interreg MED level	Inclusion of a more human rights-based approach as a mean of guaranteeing clean air for all and reducing factors that exacerbate climate change. Implement strategies to foster environmental justice and equality against socioeconomic disparities in respect to air pollution exposure.	More European funding is needed to support research on the environmental impacts of traffic. For example, in the "real-world" traffic conditions, traffic environmental impacts are higher than those estimated with computational models (e.g. higher pollutant emissions and carbon footprint resulting to higher pollutant concentrations).Further funded research is necessary to quantify the "real-world" environmental impacts and find appropriate solutions.	a) Regulating soft modes of transportation to ensure safety: The REMEDIO questionnaires revealed a public feeling/opinion for lack of safety, preventing the wide use of soft mobility means of transportation. The definition of a clear legal framework, concerning the space, travel limitations (e.g. speed), rights and obligations of soft mobility users, would facilitate soft mobility by even more people. Up to now, regulations exist mostly for urban cycling but not for the small electric vehicles or scooters used for transportation. b) Investing resources in public transportation (e.g. smart bus lanes, use of clean bus vehicles, improved intermodality between the public means of transportation) in most important MED cities and metropolises.	Integrative Modelling systems for environmental assessment: Technical assistance to public authorities for planning and implementation of sustainable urban mobility to reduce congestion should include the obligatory use of integrated modelling tools to support scenarios building and decision making considering also the multidisciplinary effects of urban mobility. EU recommendations may include references to existing relevant tools and guidelines for their best use (similar EU guidelines exist for air quality modeling).	Updated guidelines at EU level on how to engage citizens and local stakeholders in the sustainable urban mobility planning process (e.g. how to reach a general consent among stakeholders with conflicted interests, how to achieve a lasting key-stakeholders collaboration in all participatory processes, how to increase the interest of authorities for engagement). Fostering educational programs to bring awareness about environmental risks and carbon footprint.	Support participatory planning at all the levels and in all the fields: Participatory planning should become an integral part of the planning in all fields and at all territorial levels. This includes coordination among administrative levels, sectors, as well as non-governmental organisations and citizens. The European Commission should include participation in its decision-making processes and at the same time inclusion of relevant stakeholders must be required in new regulations from all the fields. Planning air pollution intervention taking into consideration equity principle.		Standards for open data collection: e.g. EU databases to collect urban transportation open data having a common description, format and legal framework to allow monitoring of the improvements of urban mobility and development of smart mobility solutions (similar databases exist for pollutant emissions and air quality concentrations). More in-depth cross-city studies in the topic of air pollution and climate change with the potential to highlight best practices both locally and globally.	
	National level	Policies for integrating Urban Freight Transport into urban mobility management systems. The public health sector needs a stronger activism in the transport policy decision-making to incorporate health issue into the national agenda	Sustainable processing, reuse, recycling and recovery schemes.	Reinforcing alternative transportation: Obligation to implement a dedicated soft mobility (e.g. bike) space/lane in each street renovation project. Founding programmes for: Clean Freight vehicles, Clean Public Transport; intermodality from long to short distance (e.g. rail, boat, bike)		Eco-labels for freight transport	Strengthening policies on urban planning: Streets are live elements of a city and a common framework should exist to allow mixed use activities for transportation, commerce, education and social activities balancing environmental effects (e.g. the example of the superblocks in Barcelona).	Public procurement for freight, e-freight, inter-port nodes and service. Green procurement for clean, low emission and energy-efficient vehicles for public authorities to boost the deployment of clean vehicles.		
	Regional level	a) Awareness and educational path on sustainable urban mobility behavior: Environmental strategy led by regional public authorities in cooperation with teaching authorities so as allow children and young people to learn more about the options for sustainable urban mobility and the benefits in the environment, health and economy. B) Integration and harmonization of plans (SUMPS, SEAPS, SECAPS).	Founding programmes and schemes for implementing short distance supply chains and Circular Economy Solutions. Founding and tenders opportunities for strengthening the competitiveness of companies and industries in processing, reuse, recycling and recovery schemes for raw materials and waste such as minimizing environmental impacts.	Reinforcing alternative transportation: e.g. obligation to implement a dedicated soft mobility infrastructures (e.g. bike space/lane) in the framework of each project for street renovation.			Include social approach into policy implementation processes as to equilibrate social impacts of measures against pollutant sources in road transport and domestic heating			
	Local level	Integration and harmonization of plans (SUMPS, SEAPS, SECAPS). For SUMPs development, integration and coordination with the wider territorial planning level, most of all for traffic management, Public Transport Service, authorization procedure of new traffic attractors (for example shop centers), infrastructure intervention for multimodality	Business model for: a) alternative modes of transportation (for example car sharing services in charge of private companies to increase investment opportunities and competitiveness); b) city logistics for urban goods distribution and last mile delivery and collection; c) shared service for waste management and collection; d) maintenance of bike sharing services and park&ride solution in suburban areas.	Implement policies that aim to control vehicle mobility within urban centers, as: (a) circulation-restriction initiatives, (b) alternative initiatives, (c) safety walk and bike home-school paths, (d) differentiated the life time of the city for lowering pick hour congestions, (e) Bus rapid transit (f) bike paths/lanes (g) bike sharing, (h) park&ride or changing parks to PT.	Green platforms and "green technologies" at public transport: Promotion of zero emissions (or almost zero) systems to provide comfort and pleasure to the passengers (e.g. bus stops with local energy production using solar panels on top of the shelter, less energy consumption by reducing or switching off the electric devices (lights and information displays), charging devices with USB ports for smart phones and tables).	a) Communicate the objective not only the measure itself: Sometimes effective solution of a certain problem requires some unpopular measures that might not be positively accepted by the local/regional inhabitants. To avoid this, focus on communicating the objective and not the measure itself, so the acceptance rate will be higher being aware of a greater cause. b) Promotion of ICT to inform and collect feedback. c) Awareness and educational paths on sustainable urban mobility behavior, most of all addressed to young generation using participative approach and experiential laboratories	a) Horizontal Condominium: A participatory tool for street management should be consolidated with engagement of stakeholders and general public following a holistic approach to consider environmental improvements (e.g. noise, emissions, waste collection, etc.) and everyday life benefits (enjoyment of recreation activities, green spaces, etc.). b) Metropolitan governance structures (or agreements) needed for integrated renewal of big axis, for extended bike lanes, etc.		a) Obligation for real-time monitoring data (measured or simulated) of traffic-related conditions (real-time congestion, air quality, noise, carbon footprint) because people should know the state of the streets and have the right to optimise their itinerary to protect health and save time. b) Promotion of ICT to collect real-time data with the participation of citizens e.g. for the traffic conditions, the level of traffic noise and air quality from the use a relevant smart applications.	

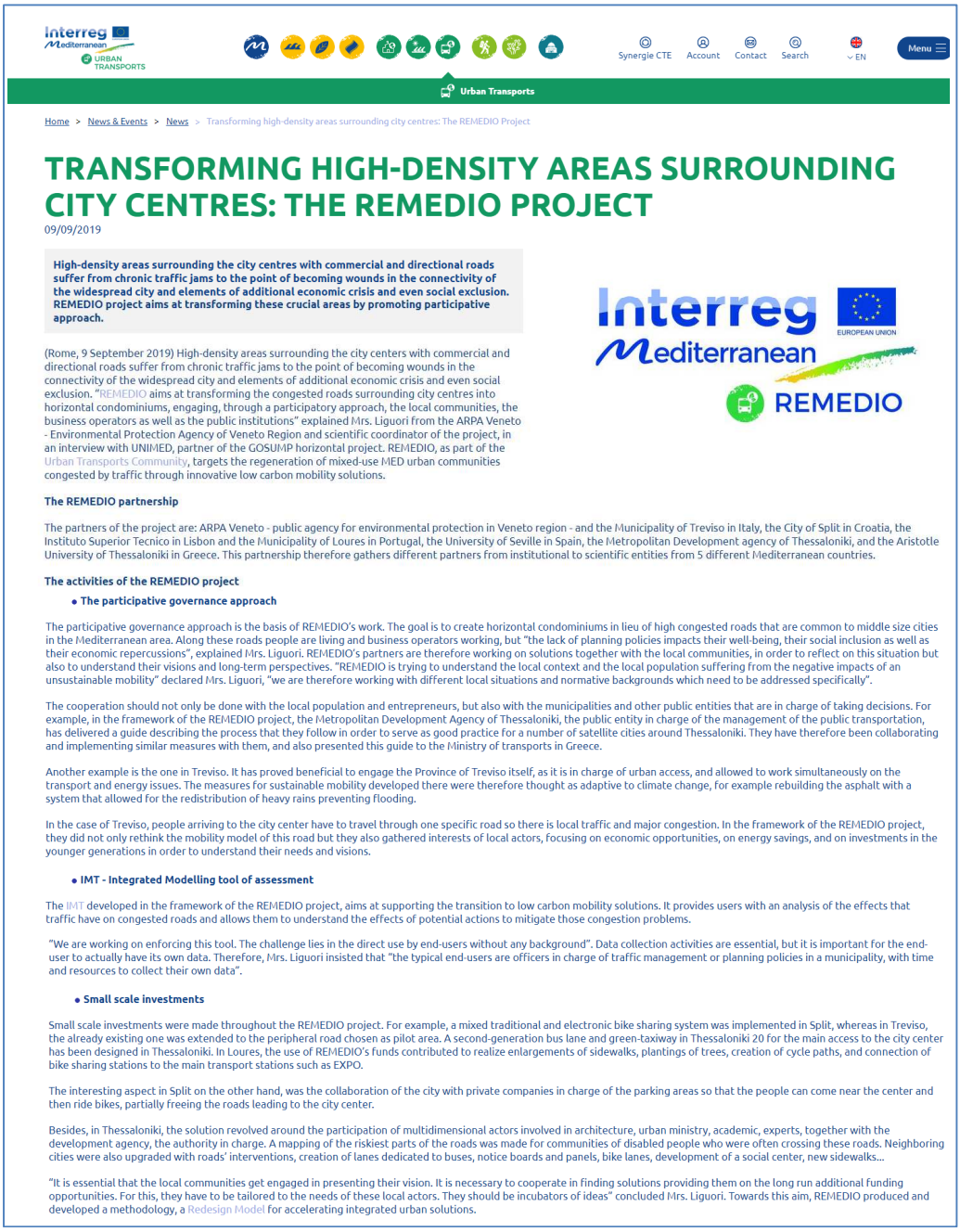
Figure 19. Matrix of Policy Recommendations done by REMEDIO team.

2.3.1.16. COHPCC16 – Interview by UNIMED to Francesca Liguori, as scientific coordinator of REMEDIO

Date: 9 Sep 19 | **Type**: Article (English)

Short description: Short description of REMEDIO project in website of MED Urban Transports Community regarding an interview done by UNIMED to REMEDIO's scientific coordinator, Francesca Liguori.

Link: https://urban-transports.interreg-med.eu/news-events/news/detail/actualites/transforming-high-density-areas-surrounding-city-centres-the-remedio-project/



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Urban Transports

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TRANSFORMING HIGH-DENSITY AREAS SURROUNDING CITY CENTRES: THE REMEDIO PROJECT

09/09/2019

High-density areas surrounding the city centres with commercial and directional roads suffer from chronic traffic jams to the point of becoming wounds in the connectivity of the widespread city and elements of additional economic crisis and even social exclusion. REMEDIO project aims at transforming these crucial areas by promoting participative approach.

Interreg Mediterranean EUROPEAN UNION REMEDIO

(Rome, 9 September 2019) High-density areas surrounding the city centers with commercial and directional roads suffer from chronic traffic jams to the point of becoming wounds in the connectivity of the widespread city and elements of additional economic crisis and even social exclusion. "REMEDIO aims at transforming the congested roads surrounding city centres into horizontal condominiums, engaging, through a participatory approach, the local communities, the business operators as well as the public institutions" explained Mrs. Liguori from the ARPA Veneto - Environmental Protection Agency of Veneto Region and scientific coordinator of the project, in an interview with UNIMED, partner of the GOSUMP horizontal project. REMEDIO, as part of the Urban Transports Community, targets the regeneration of mixed-use MED urban communities congested by traffic through innovative low carbon mobility solutions.

The REMEDIO partnership

The partners of the project are: ARPA Veneto - public agency for environmental protection in Veneto region - and the Municipality of Treviso in Italy, the City of Split in Croatia, the Instituto Superior Tecnico in Lisbon and the Municipality of Loures in Portugal, the University of Seville in Spain, the Metropolitan Development agency of Thessaloniki, and the Aristotle University of Thessaloniki in Greece. This partnership therefore gathers different partners from institutional to scientific entities from 5 different Mediterranean countries.

The activities of the REMEDIO project

- **The participative governance approach**

The participative governance approach is the basis of REMEDIO's work. The goal is to create horizontal condominiums in lieu of high congested roads that are common to middle size cities in the Mediterranean area. Along these roads people are living and business operators working, but "the lack of planning policies impacts their well-being, their social inclusion as well as their economic repercussions", explained Mrs. Liguori. REMEDIO's partners are therefore working on solutions together with the local communities, in order to reflect on this situation but also to understand their visions and long-term perspectives. "REMEDIO is trying to understand the local context and the local population suffering from the negative impacts of an unsustainable mobility" declared Mrs. Liguori, "we are therefore working with different local situations and normative backgrounds which need to be addressed specifically".

The cooperation should not only be done with the local population and entrepreneurs, but also with the municipalities and other public entities that are in charge of taking decisions. For example, in the framework of the REMEDIO project, the Metropolitan Development Agency of Thessaloniki, the public entity in charge of the management of the public transportation, has delivered a guide describing the process that they follow in order to serve as good practice for a number of satellite cities around Thessaloniki. They have therefore been collaborating and implementing similar measures with them, and also presented this guide to the Ministry of transports in Greece.

Another example is the one in Treviso. It has proved beneficial to engage the Province of Treviso itself, as it is in charge of urban access, and allowed to work simultaneously on the transport and energy issues. The measures for sustainable mobility developed there were therefore thought as adaptive to climate change, for example rebuilding the asphalt with a system that allowed for the redistribution of heavy rains preventing flooding.

In the case of Treviso, people arriving to the city center have to travel through one specific road so there is local traffic and major congestion. In the framework of the REMEDIO project, they did not only rethink the mobility model of this road but they also gathered interests of local actors, focusing on economic opportunities, on energy savings, and on investments in the younger generations in order to understand their needs and visions.

- **IMT - Integrated Modelling tool of assessment**

The IMT developed in the framework of the REMEDIO project, aims at supporting the transition to low carbon mobility solutions. It provides users with an analysis of the effects that traffic have on congested roads and allows them to understand the effects of potential actions to mitigate those congestion problems.

"We are working on enforcing this tool. The challenge lies in the direct use by end-users without any background". Data collection activities are essential, but it is important for the end-user to actually have its own data. Therefore, Mrs. Liguori insisted that "the typical end-users are officers in charge of traffic management or planning policies in a municipality, with time and resources to collect their own data".

- **Small scale investments**

Small scale investments were made throughout the REMEDIO project. For example, a mixed traditional and electronic bike sharing system was implemented in Split, whereas in Treviso, the already existing one was extended to the peripheral road chosen as pilot area. A second-generation bus lane and green-taxiway in Thessaloniki 20 for the main access to the city center has been designed in Thessaloniki. In Loures, the use of REMEDIO's funds contributed to realize enlargements of sidewalks, plantings of trees, creation of cycle paths, and connection of bike sharing stations to the main transport stations such as EXPO.

The interesting aspect in Split on the other hand, was the collaboration of the city with private companies in charge of the parking areas so that the people can come near the center and then ride bikes, partially freeing the roads leading to the city center.

Besides, in Thessaloniki, the solution revolved around the participation of multidimensional actors involved in architecture, urban ministry, academic, experts, together with the development agency, the authority in charge. A mapping of the riskiest parts of the roads was made for communities of disabled people who were often crossing these roads. Neighboring cities were also upgraded with roads' interventions, creation of lanes dedicated to buses, notice boards and panels, bike lanes, development of a social center, new sidewalks...

"It is essential that the local communities get engaged in presenting their vision. It is necessary to cooperate in finding solutions providing them on the long run additional funding opportunities. For this, they have to be tailored to the needs of these local actors. They should be incubators of ideas" concluded Mrs. Liguori. Towards this aim, REMEDIO produced and developed a methodology, a Redesign Model for accelerating integrated urban solutions.

Figure 20. Article in the in website of MED Urban Transports Community.

2.3.1.17. COHPCC17 – Contribution for MED Urban Tools website

Output: Contribution for the MED Urban Tools website
Date: September 2019 | **Promotor:** GO SUMP | **Type:** International
Partner involved: LP in cooperation with all REMEDIO partners
Short description:
REMEDIO's partners contributed to MED Urban Tools website with 5 fact sheets about the project's actions, namely:

- Implementation of public bike system in Split
- Implementation of public bike system in Treviso
- Participation process in a road upgrade in Loures (Moscavide)
- Environmental monitoring campaign in Treviso (Italy) to test the Integrated Mobility Tool
- Integrated Modelling Tool (IMT)

These were incorporated in the section dedicated to "Mobility" of the website. Figure 21 presents the MED Urban Tools website and some of the REMEDIO's contributions in it.
Link: http://medurbantools.com/

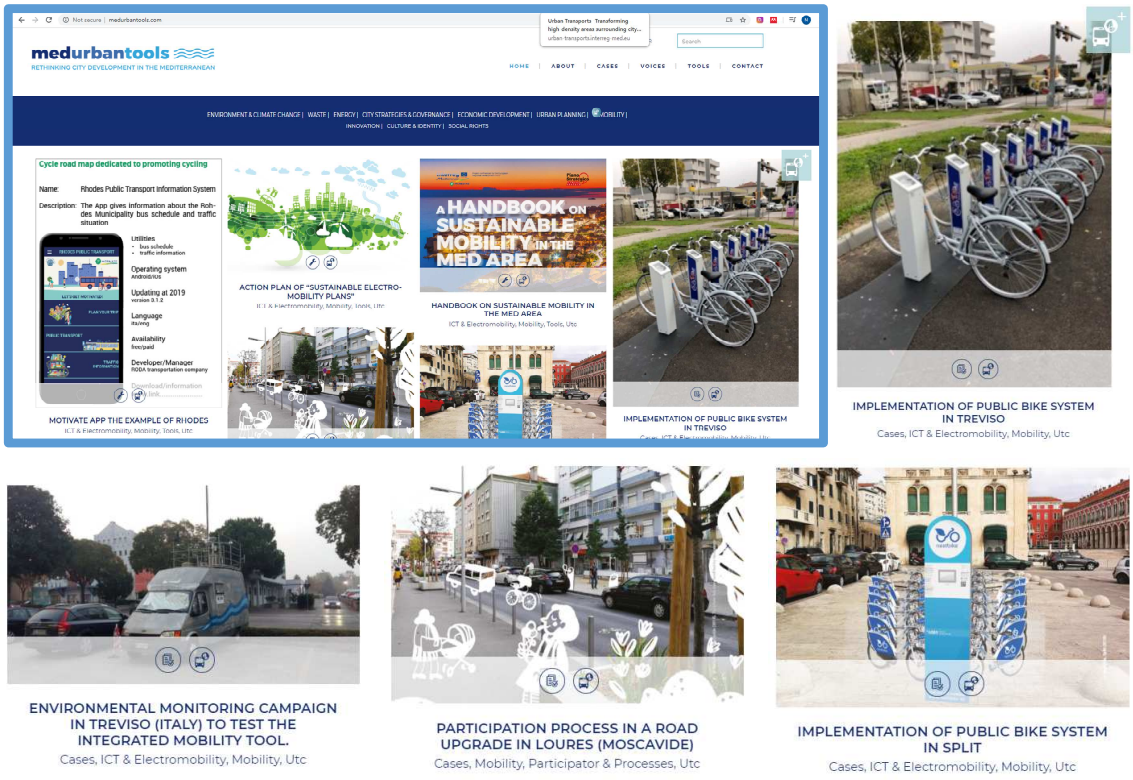

Figure 21. Contribution of REMEDIO to the website "MED Urban Tools".

2.3.1.18. COHPCC18 – Article in European Project ClairCity Website

Date: Sep 19 | **Type**: Article (English)
Short description: A description of REMEDIO project was included in the website of the European Project ClairCity (Citizen-led air pollution reduction in cities), under the section of "Take Action".
Link: http://www.claircity.eu/blog/traffic-congestion-in-mediterranean-cities/

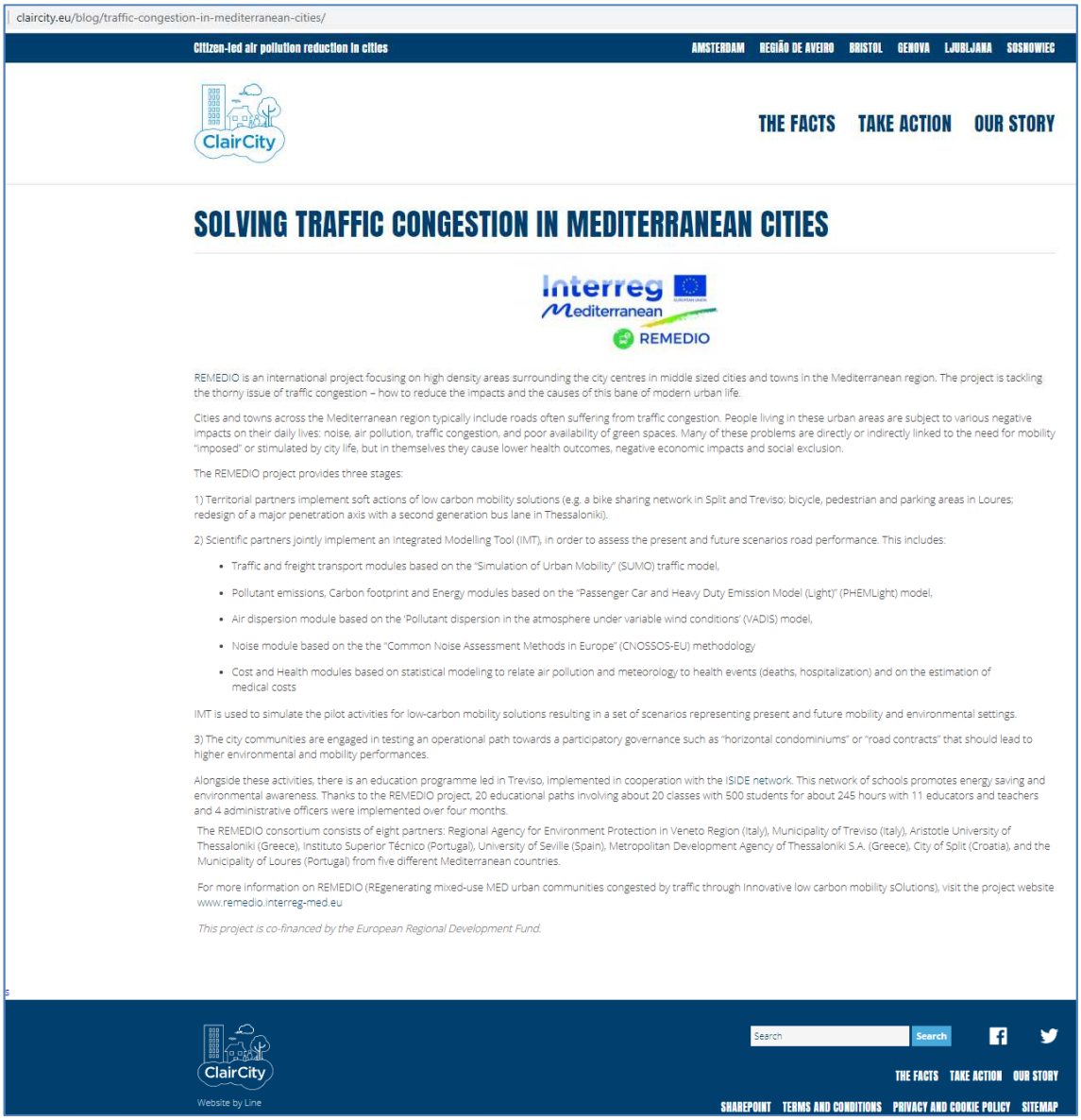

Figure 22. Article in the in website of ClairCity project.

2.3.1.19. COHPCC19 – Article in the Publication of Interact Programme "Interreg makes a difference in sustainable transport"

Date: 26 Sep 19 | **Type**: Article (English)

Short description: The capitalization publication of the Interact Programme, entitled "Interreg makes a difference in sustainable transport", had a full page with a description of REMEDIO project.

Link: http://www.interact-eu.net/library#2705-interreg-makes-difference-sustainable-transport

Direct link to download: here

Figure 23. Article in REMEDIO description in the capitalization publication of the Interact Programme.

Deliverable 2.3.2. Participation at COM&CAP events under direction of Horizontal Projects or Programme

REMEDIO Communication Team and LP have been collaborating with Horizontal Project in all the thematic issues in which REMEDIO is clustered. Under the direction of Horizontal Project, the REMEDIO team participated in the COM&CAP events described below.

2.3.2.1. PCCHPP01 - GO SUMP Kick-Off Meeting

Event: GO SUMP Kick-Off Meeting
Date: 4-5 April 17 | **Venue:** Urban Environmental Observatory (OMAU), Málaga City Council, Málaga, Spain
Promotor: GO SUMP Project | **Type:** International
Partner involved: ARPAV, IST, MT and USE | **Individuals reached:** 50
Short description:
The kick-off meeting of GO-SUMP, a new type of horizontal European Community programme for improving plans and measures for sustainable urban mobility in the Mediterranean, brought together representatives of the six modular urban transport projects that it coordinates, which includes 61 members from 12 countries. In this event, GO SUMP project was presented, along with all modular projects and promoted a discussion about synergies and how to build a community focused on urban transports. Team members of ARPAV (F. Liguori and L. Da Rugna), IST (M. Almeida-Silva), MT (R. Sanfilippo) and USE (R. Charcategui) participated in this event. F. Liguori made an oral presentation about REMEDIO project to disseminate its goals, methodologies and expected results.
Full programme of the event and presentations available at:
https://www.motivate.imet.gr/Events/GOSUMP_KickOff_Malaga/go-sump-kick-off.-programa-(pdf).pdf

Figure 24 – Presentation of F. Liguori (ARPAV) introducing REMEDIO project to the audience.

2.3.2.2. PCCHPP02 - Capacity Building – Synergies in Community

Event: Capacity Building – Synergies in Community (GO-SUMP Workshop)
Date: 25-26 September 17 | **Venue:** Torres Vedras, Portugal
Promotor: Interreg MED and HP GO SUMP | **Type:** International
Partner involved: ARPAV, AUTH, IST and CML | **Individuals reached:** 70
Short description: Description of the event available at section 3.3.1. COHPCC01 - Capacity Building – Synergies in Community. This event had the participation of team members of ARPAV (F. Liguori), IST (M. Almeida-Silva), AUTH (M. Spandou) and CML (F. Noivo) participated.

2.3.2.3. PCCHPP03 - CIVITAS Forum 2017

Event: CIVITAS Forum 2017
Date: 27-29 September 17 | **Venue:** Torres Vedras, Portugal
Promotor: Interreg MED and HP GO SUMP | **Type:** International
Partner involved: ARPAV, AUTH, IST and CML | **Individuals reached:** 475
Short description:
Description of the event available at section **3.3.2. COHPCC02 - CIVITAS Forum 2017**. This event had the participation of team members of ARPAV (F. Liguori), IST (M. Almeida-Silva), AUTH (M. Spandou) and CML (F. Noivo).

Figure 25 - REMEDIO Partners from CML, ARPAV, IST and AUTH (from left to right) at CIVITAS Forum 2017.

2.3.2.4. PCCHPP04 - Urban Transport Community Building

Event: Urban Transport Community Building
Date: 17 April 18 | **Venue:** UNIMED – Mediterranean Universities Union, Rome, Italy
Promotor: GO SUMP Project | **Type:** International
Partner involved: ARPAV, AUTH and IST | **Individuals reached:** 30
Short description:
Description of the event available at section **3.3.3. COHPCC03 - Urban Transport Community Building**. This event had the participation of team members of ARPAV (F. Liguori), IST (M. Almeida-Silva) and AUTH (A. Poupkou).

Figure 26 - The participants during one of the organized workshops at Urban Transport Community Building Event in Rome, Italy.

2.3.2.5. PCCHPP05 - 5th European Conference on Sustainable Urban Mobility Plans

Event: 5th European Conference on Sustainable Urban Mobility Plans
Date: 14-15 May 18 | **Venue:** Nicosia, Cyprus
Promotor: GO SUMP Project | **Type:** International
Partner involved: ARPAV, AUTH and IST | **Individuals reached:** 30
Short description:
Description of the event available at section **2.3.1.4. COHPCC04 - 5th European Conference on Sustainable Urban Mobility Plans.** This event had the participation of team members of ARPAV (F. Liguori), MDTA (C. Kalogirou) and AUTH (D. Melas).

Figure 27 - REMEDIO Partners at 5th European Conference on Sustainable Urban Mobility Plans in Nicosia, Cyprus.

2.3.2.6. PCCHPP06 – Workshop within the UNIMED General Assembly

Event: Workshop within the UNIMED General Assembly
Date: 25 October 18 | **Venue:** Venice, Italy
Promotor: GO SUMP Project | **Type:** International
Partner involved: ARPAV| **Individuals reached:** 80
Short description:
F. Liguori (ARPAV) was an invited speaker in the workshop 2 entitled "Better ways to move, better places to live: sustainable mobility in Mediterranean coastal areas to work, study and visit". This workshop was included in the event already described at section **3.3.5. COHPCC05 – Urban Transports Workshop "Better ways to move, better places to live"**.
Full programme of the event is available in the following link:
http://www.uni-med.net/wp-content/uploads/2018/06/AG2018_Programme.pdf

Figure 28 – Poster of workshop "Better ways to move, better places to live: sustainable mobility in Mediterranean coastal areas to work, study and visit" with participation of F. Liguori (ARPAV).

2.3.2.7. PCCHPP07 – Conference “Empowering territories for a Sustainable Mediterranean” at “Ecomondo: the green technologies expo”

Event: Conference Empowering territories for a Sustainable Mediterranean at “Ecomondo: the green technologies expo”
Date: 6 November 18 | **Venue:** Rimini, Italy
Promotor: Interreg MED programme | **Type:** International
Partner involved: ARPAV| **Individuals reached:** 80
Short description:
F. Liguori (ARPAV) was a panelist of the third panel dedicated to “Governance, citizens awareness and participation for a Sustainable Mediterranean”. More details about this event and the full agenda are available at the following link:
https://urban-transports.interreg-med.eu/news-events/news/detail/actualites/meet-the-med-urban-transport-community-ecomondo-expo/

2.3.2.8. PCCHPP08 - Conference "Mobility Challenges in Mediterranean Urban and Metropolitan Areas"

Event: Conference “Mobility Challenges in Mediterranean Urban and Metropolitan Areas”
Date: 12 November 18 | **Venue:** Barcelona, Spain
Promotor: GO SUMP Project and SMART MR Project | **Type:** International
Partner involved: ARPAV, AUTH and MDTA | **Individuals reached:** 80
Short description:
Participation of F. Liguori (ARPAV), on behalf of the whole REMEDIO partnership, at the panel discussion on “Participatory Processes for urban transports and mobility”. More information available at section **2.3.1.6. COHPCC06 – Conference "Mobility Challenges in Mediterranean Urban and Metropolitan Areas**".

2.3.2.9. PCCHPP09 – Meetings of the editorial board of the “Handbook on Sustainable Mobility in the Med Area”

Event: Meetings of the editorial board of Sustainable Mobility Handbook in the Med Area
Date: 21 January and 12 April 19 | **Venue:** Venice, Italy
Promotor: MOBILITAS Project | **Type:** International
Partner involved: ARPAV | **Individuals reached:** 20
Short description:
Participation of F. Liguori (ARPAV), on behalf of REMEDIO project, participated at two meetings of the editorial board of the Sustainable Mobility Handbook in the Med Area that were held in Venice (Italy), on January and April 2019.

2.3.2.10. PCCHPP10 – Better ways to move, better places to live: improving tourist mobility in Mediterranean cities

Event: Better ways to move, better places to live: improving tourist mobility in Mediterranean cities
Date: 21-20 March 19| **Venue:** Brussels, Belgium
Promotor: HP GO SUMP | **Type:** International
Partner involved: IST | **Individuals reached:** 40
Short description:
This event was promoted by Urban Transports Community - Interreg Med in the framework of the "UNIMED Week in Brussels 2019". In the first day, members of the community UNIMED - Mediterranean Universities Union and representatives from the European Commission discussed the possibilities for the future of the projects. During the afternoon, a session entitled "Strategic Communication Working Group Laboratory" was promoted to evaluate how to engage more stakeholders and make the results of the projects more visible and with a higher impact.
During the second day, Remedio Interreg MED attended the debate on "Improving tourist mobility in Mediterranean Cities" with many different stakeholders and guests engaged with this topic. The debate was organised in the framework of the GO SUMP project, in cooperation with the Interreg Med Urban Transport and Sustainable Tourism Communities.
J.T. Coutinho, from IST team, participated in this two days event in representation of REMEDIO project.
More information can be found in the event's website: http://ow.ly/KCwm50lbNDM

Figure 29 – (left) Poster of the event and (right) activities developed in the event.

2.3.2.11. PCCHPP11 - TechCamp: ICT tools for Sustainable Urban Mobility

Event: TechCamp: ICT tools for Sustainable Urban Mobility
Date: 27 March 19 | **Venue:** Nicosia, Cyprus
Promotor: GO SUMP Project | **Type:** International
Partner involved: ARPAV and AUTH | **Individuals reached:** 100
Short description:
The "TechCamp: ICT tools for Sustainable Urban Mobility" event was organized by GOSUMP in Nicosia (Cyprus), on the 27th March 2019. During this event, the ICT tools of the Modular projects of the MED Urban Transport Community were presented.
REMEDIO was represented by Anastasia Poupkou and Serafeim Kontos from the Aristotle University of Thessaloniki, by Francesca Liguori and Massimo Bressan from the Regional Agency for Environment Protection in Veneto Region, and, moreover, by Corrado Lanera of the University of Padua that cooperates with ARPAV regarding the Health & Cost modules.
The Integrated Modeling Tool (IMT) of REMEDIO was presented in the event with a hand-on exercise performed by the participants. The aim of the hands-on exercise was to allow the participants to:

1. Get acquainted with the IMT user interface and data input process;
2. Understand better the application of the IMT modules (mostly the Pollutant Emissions, Carbon Footprint, Energy and Noise modules);
3. Understand better the IMT output results;
4. Consider the IMT capitalization perspectives.

During the event, Corrado Lanera from the University of Padova, as REMEDIO collaborating institution, contributed to the presentation of REMEDIO regarding the Health and Cost module that aims to assess the urban mobility soft actions in terms of relative differences in health outcomes (and their cost).
The MED Urban Transports Community expressed a big interest for IMT considering it as a user friendly and, at the same time, a powerful and a robust modeling tool to assist the end-users (e.g. authorities) in the assessment of the environmental impacts of sustainable urban mobility actions.

The presentation entitled "Integrated Modelling Tool to Evaluate the Transport, Energy and Environmental related Performance of Low Carbon Mobility Actions" made by Anastasia Poupkou and Serafeim Kontos (from AUTH) to present our IMT can be downloaded in REMEDIO website (here).

More information about the event is available in the following link:
http://www.medcities.org/-/events-capitalising-on-process-in-sustainable-urban-mobility

TechCamp: ICT Tools for Sustainable Urban Mobility

27 March 2019 – NICOSIA (CY)

By the MED Urban Transports Community

Project co-financed by the European Regional Development Fund
https://urban-transports.interreg-med.eu

@interreg_gosump
#TechCampNicosia
#SustainableUrbanMobility

Venue: University of Cyprus, Anastasios Leventis, Panepistimiou, Aglantzia, 1678 Nicosia, Cyprus

Social Activities Building, Building 07, room 018 (Item 8 on the map below)

The MED Urban Transports Community organizes a one-day TechCamp for its members, an occasion for presenting and testing the ICT tools developed in the framework of its project activities. Representatives of Modular Projects from MED Urban Transports Community, partners of the GO SUMP horizontal project and associated partners, facilitators, and possibly other relevant actors will take part in the Tech Camp on ICT tools for Sustainable Urban Mobility.

The tech camp will take place in the framework of the event CIRCLE2019 / SMILE2019 ("Challenges for the Islands in the era of the Circular Economy" & "6th Sustainable Mobility & Intelligent Transport Conference"), organized by the Cyprus Ministry of Transport, Communications and Works on 28th & 29th March 2019 in Nicosia (Cyprus).

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AGENDA

10:00-10:30	*Welcome and registration* *Location: University Campus, Social Activities Building, Building 07, room 018*
10:30-12:30	**Presentation of ICT tools for Sustainable Urban Mobility developed in Mediterranean** Moderator: *Athanasios Kalogeras* _Parking & public transport app developed in Koper & Carpooling app for port workers developed in Valencia *Marios Miltiadou, Aristotle University of Thessaloniki, SUMPORT* _iCiTy strategy for mobility challenges in Palma *Manel Rivera, Lluís de Victoria, Municipality of Palmal* _ICT challenges in the Sfax Tramway project *Riadh Haj Taieb, Technical Services General Manager, Sfax City Council* _Metropolitan mobility trend_Main results of SMART-MR project regarding ICT *Janez Nared, SMART-MR Project Lead Partner*
12:30-14:00	*Lunch*
14:00-17:00	**Workshop to test achieved ICT tools** *Location: University Campus - Building "Information Center – Library": lab LRC 003 (item 17 on the map in p1)* Facilitator: *Athanasios Kalogeras* _Integrated Modelling Tool to evaluate the transport, energy and environmental-related performance of low-carbon actions to be implemented *Anastasia Poupkou, Aristotle University of Thessaloniki, REMEDIO* _Crowdsourcing app to promote citizen's engagement in urban sustainable mobility planning *Andreas Karakatsanis, Municipality of Larnaka, MOTIVATE*
17:00-17:15	*Coffee break*
17:15-17:55	**Open discussion on capitalization** Facilitator: *Athanasios Kalogeras* _Lessons learned during testing, common challenges, replication
17:55-18:00	**Wrap-up** Carlos Sanchez, Malaga City Council

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Figure 30 – Programme of the event.

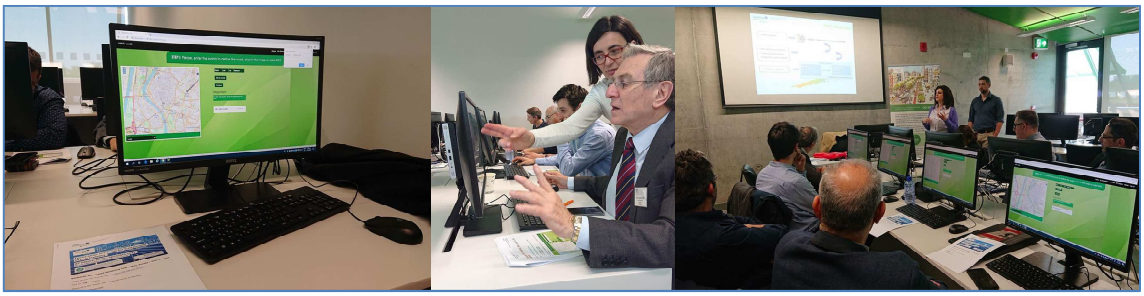


Figure 31 – Presentation of the Integrated Modeling Tool (IMT) of REMEDIO with a hand-on exercise.

2.3.2.12. PCCHPP12 - High Level Training Courses on Sustainable Mobility – "Financing Sustainable Mobility" and "Tourism & Mobility Nexus"

Event: High Level Training Courses on Sustainable Mobility
Date: 11-13 June 19 | **Venue:** Barcelona, Spain
Promotor: GO SUMP Project | **Type:** International
Partner involved: CS and MDAT | **Individuals reached:** 56
Short description:
In the framework of Community Building and Capitalization activities of GO SUMP project, a series of High Level Training Courses on Sustainable Mobility targeting Mediterranean Cities are being developed, aiming to consolidate the capacity building and promote transferability of urban

practices among the Interreg-MED Urban Transport Community (UTC) and Mediterranean stakeholders. The topics that were addressed were focused on two key domains identified by the UTS and were deployed into two parallel training courses: “Financing Sustainable Mobility” and “Mobility and Tourism Nexus”.

REMEDIOs’ contribution for the event was inserted both training courses of “Mobility and Tourism Nexus” and “Financing Sustainable Mobility”.

City of Split (CS) contributed to the session “Mobility and Tourism Nexus” with a presentation entitled “EU project REMEDIO – Traffic Congestion Minimization and Tourism Integration in the City of Split”. This presentation aimed to describe to the event participants the implementation of pilot activity of introducing the public bike sharing system in the city of Split through the implementation of REMEDIO project and the impact that it will have on reducing the traffic congestion through its use by citizens and tourists of city of Split. From CS, REMEDIO members participating were Radojka Tomašević and Tomo Šundov.

MDAT contributed to the session “Financing Sustainable Mobility - International projects”, with a presentation by Anthi Tsakiropoulou with the title “REMEDIO - The Thessaloniki case study: Redesign and upgrade of a major urban axis within a high-participatory approach for the development of the proposal.

More information about the event and all presentations from the different sessions can be found here:

https://urban-transports.interreg-med.eu/news-events/news/detail/actualites/high-level-trainings-on-sustainable-mobility-11-13-june-2019/

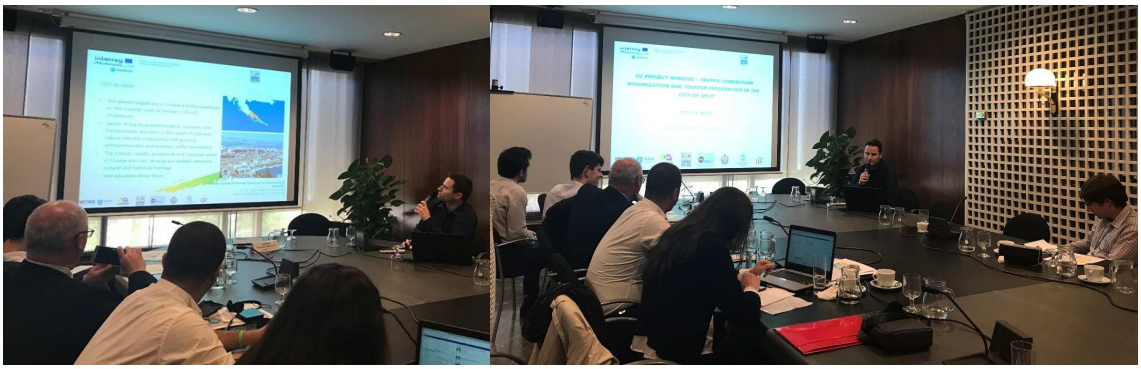


Figure 32 – Participation of REMEDIO team at High Level Training Courses on Sustainable Mobility held at Spain.

2.3.2.13. PCCHPP13 - TechCamp: Smart Cities Innovating Sustainably

Event: TechCamp: Smart Cities Innovating Sustainably
Date: 27-28 June 19 | **Venue:** Toulon, France
Promotor: GO SUMP Project | **Type:** International
Partner involved: AUTH | **Individuals reached:** 60
Short description:
Remedio Interreg MED was present at the latest edition of TechCamp, entitled "Smart Cities Innovating Sustainably" and organized by the European BIC Network (EBN), that was held on 27 and 28 of June in Toulon (France).
Anastasia Poupkou, member of our project and from Aristotle University of Thessaloniki (Greece), participated in the workshop dedicated to "Smart cities innovating sustainable mobility" that aimed to present and test the ICT tools developed in the frame of the MED Urban Transport Community. This workshop was organized by GO SUMP Project.
More information of the event available at:
www.ebntechcamp.eu/

Figure 33 – (left) Oral presentation by Anastasia Poupkou (AUTH) at the workshop "Smart cities innovating sustainable mobility"; (center) family photo of the event's participants; (right) dissemination poster of the event.

2.3.2.14. PCCHPP14 - Final Conference of MED Urban Transports Community

Event: Final Conference of MED Urban Transports Community
Date: 17-18 September 19 | **Venue:** Malaga, Spain
Promotor: GO SUMP Project | **Type:** International
Partner involved: ARPAV, AUTH and MDTA | **Individuals reached:** 100
Short description:
REMEDIO participated in the Final Conference of MED Urban Transports Community that was held in Malaga (Spain), last 17th and 18th of September 2019. This final event of MED Urban Transports Community promoted the discussion of policy recommendations and the future of MED Urban Transports Community with an Experts Round Table and a Marketplace, where all GOSUMP projects participated. Some of the benefits of being in a community exposed by the projects were: i) sharing of small scale investments of the projects; ii) networking; and iii) coordinating efforts.
REMEDIO was represented in the GOSUMP final event by members of ARPAV, AUTH and MDAT, with participation in different activities (round tables, marketplace and others) and the GOSUMP MoU (Memorandum of Understanding) for continuation on collaboration on urban mobility was signed by Francesca Liguori, REMEDIO's coordinator, on behalf of REMEDIO's partners.
More information is available in the following link:
https://urban-transports.interreg-med.eu/news-events/events/detail/actualites/save-the-date-17-18-september-2019-med-urban-transports-community-final-conference/

Figure 34 – (left, up) Signature of MoU - Francesca Liguori, REMEDIO's coordinator, signed on behalf of REMEDIO's partners the GOSUMP MoU (Memorandum of Understanding) for continuation on collaboration on urban mobility; (right,

top) REMEDIO team present at the event in the desk dedicated to our project in the Marketplace; (down – left and right) activities developed in the event with REMEDIO team members.

Figure 35 – Poster of the event.

2.4. Activity 2.4 - Networking at local scale

2.4.1. Deliverable 2.4.1. Local events, encounters & tailored communication

The networking activity is applied at 3 levels: 1) political and governance level; 2) economic level; and 3) social level. This sub-chapter is divided by country.

2.4.1.1. Italy

2.4.1.1.1. LEETCI01 - Sustainable Energy Week

Event: Sustainable Energy Week
Date: 13 June April 17 | **Venue:** Treviso, Italy
Promotor: ARPAV and MT | **Type:** National
Partner involved: ARPAV and MT | **Individuals reached:** 49
Short description:
LP ARPAV in collaboration with MT organized an event ("Workshop – Il Progetto REMEDIO" - Figure 36 presents the poster of the event) within the framework of the Sustainable Energy Week. In this workshop dedicated to REMEDIO project, members of ARPAV (F. Liguori and S. Patti) and MT (P. Pierobon) provided the following presentations to the audience of 49 participants:

1) "Il Progetto REMEDIO e la Qualità dell'aria in Veneto" - Salvatore Patti
2) "Il Progetto REMEDIO" - Paolo Pierobon
3) "Il progetto MED REMEDIO e le sue opportunità: networking internazionale e sinergie con le istituzioni locali" - Francesca Liguori

The presentations are available at REMEDIO website in the following link:
https://remedio.interreg-med.eu/news-events/events/detail/actualites/sustainable-energy-week-in-treviso/

Figure 36 – Poster of the event "Workshop – Il Progetto REMEDIO" at the Sustainable Energy Week 2017 in Italy.

2.4.1.1.2. LEETCI02 – Seminar "La città come cura e la cura delle città"

Event: La città come cura e la cura delle città
Date: 11 December 17 | **Venue:** Venice, Italy
Promotor: IUAV University of Venice (School of Architecture) | **Type:** National
Partner involved: ARPAV | **Individuals reached:** 50
Short description:
IUAV University of Venice a seminar entitled "La città come cura e la cura delle città" (*the city as healing and the healing of the city*), focused on urban requalification, which one of the sessions was dedicated to "Mobilità e spazi urbani condivisi" (*mobility and shared urban spaces*) where F. Liguori (ARPAV) presented the REMEDIO project with a presentation entitled "La riqualificazione urbana di strade congestionate nel progetto MED REMEDIO". The audience gathered 50 participants: 20 from IUAV and 30 architects.
The presentation is available at REMEDIO website in the following link:
https://remedio.interreg-med.eu/library/la-citta-come-cura-e-la-cura-delle-citta/

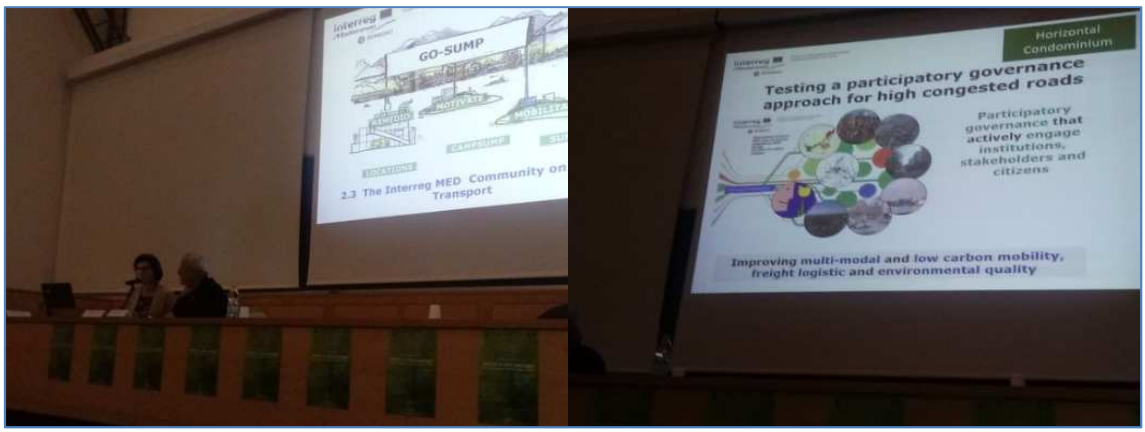


Figure 37 – Presentation of F. Liguori at the seminar "La città come cura e la cura delle città".

2.4.1.1.3. LEETCI03 – Capacity building event within REMEDIO Final Conference

Event: Capacity building event within REMEDIO Final Conference
Date: 2 Oct 19 | **Venue:** Casa dei Carraresi, Treviso, Italy
Promotor: ARPAV, MT | **Type:** National with REMEDIO partners as testimonials of the EU MED project | **Partner involved:** All partners | **Individuals reached:** 80
Short description:
Within the Final Conference of REMEDIO, the Workshop/Capacity Building Event "Paving the way to new ideas: the Horizontal Condominium of West Road" was held at Treviso on 2nd of October 2019. All partners of REMEDIO project participated in this event.
The morning was dedicated to the Capacity Building event mostly targeting at raising the awareness and interest of local actors and communities toward the Horizontal Condominium entity of the West Road. In addition to the interventions of the local institutional actors in REMEDIO, as the

Municipality of Treviso and the Province of Treviso (which are associated partners in REMEDIO), that talked about the urban mobility and energy efficiency, speakers were invited to give their testimony about successful stories on urban freight logistic and cycling mobility. For instance, an important intervention was the one from the President of the Association "I love Strada Ovest in Classe A", the horizontal Condominium born within the REMEDIO framework. Overall, a total of 22 presentations were done during the two days event by the different participants.
To know all the information about the event, all presentations from the participants and photos, check the project's website (http://remedio.interreg-med.eu/) or this direct link.

Figure 38 – Family photo of REMEDIO's partners at the Final Conference of REMEDIO held at Treviso, Italy.

2.4.1.2. Greece

2.4.1.2.1. LEETCG01 - Urban Transport in Thessaloniki

Event: Urban Transport in Thessaloniki
Date: 26 May 17 | **Venue:** TIF HELEXPO (Thessaloniki, Greece) | **Individuals reached:** 80
Promotor: Egnatia Odos SA and Ministry of Infrastructure and Transport
Type: National | **Partner involved:** MDAT
Short description: This event was attended by the Ministry of Infrastructure and Transport, the Mayor of Thessaloniki and the president of the Regional Association of Municipalities of Central Macedonia, with the aim of discussing the need of a unified system of urban transport and traffic infrastructure in the region. During the presentation of the MDAT (C. Kalogirou, Figure 39 and Figure 40), it was discussed the possibilities of the city to build a unified transportation system in the Thessaloniki metropolitan area, which was agreed to be implemented within the framework of the REMEDIO project, and the impacts of this plan to the city. Interventions performed in the pilot axis were also presented, during the discussion was raised the question of the location to design a new bus line, which will be examined in the REMEDIO project.
The program is available here: https://remedio.interreg-med.eu/fileadmin/user_upload/Sites/Urban_Transports/Projects/REMEDIO/EOAE_inv_-_AGENDA.pdf

The presentation of the MDAT can be dowloaded in the following link: https://remedio.interreg-med.eu/fileadmin/user_upload/Sites/Urban_Transports/Projects/REMEDIO/IMERIDA_EGNATIAS_PAROYSIASI_KALOGIROY__1_.ppt

Figure 39 – MDAT (C. Kalogirou) presentation during the event

Figure 40 - Public that attended to the Conference.

2.4.1.2.2. LEETCG02 - CAMP-SUMP "Let's Share the Knowledge on University Mobility"

Event: CAMP-SUMP "Let's Share the Knowledge on University Mobility"
Date: 28 July 2017 | **Venue:** Athens, Greece
Promotor: National Technical University of Athens **Type:** National | **Partner involved:** AUTH | **Individuals reached:** 50
Short description: In the framework of the CAMP-SUMP project, the National Technical University of Athens organised a knowledge diffusion event, in which the results of the project SWOT and GAP analysis for university mobility were presented. In addition, the participants of the event were divided in 3 working groups: 1) University students mobility planning and services, 2) Action plan for a sustainable University Mobility Plan, and 3) Roadmap and ICT instrument model for Sustainable University Mobility Plans to exchange experiences and ideas.
REMEDIO was represented by AUTH in the discussions of Working Group 2, aiming to assess the issues of possible synergies between REMEDIO and CAMP-SUMP.

Figure 41 – Dissemination poster of the event "Let's Share the Knowledge on University Mobility" in the framework of CAMP-SUMP project.

2.4.1.2.3. LEETCG03 - REQUA "Final Workshop"

Event: REQUA "Final Workshop"
Date: 18-19 September 2017| **Venue:** Thessaloniki, Greece
Promotor: AUTH **Type:** National | **Partner involved:** AUTH | **Individuals reached:** 50
Short description:
The Aristotle University of Thessaloniki - Laboratory of Atmospheric Physics, as coordinator of the EU FP7 project "Regional climate-air quality interactions" (REQUA), organised the final workshop of

the project. The main objective of the workshop was the dissemination of REQUA project results, the interaction of the scientific community with the policy-makers and business representatives and the identification of synergies with other projects.

During the workshop, there was a presentation of REMEDIO by AUTH, with more emphasis on the mobility solutions for Thessaloniki. The GHGs emitted by the road transport, especially under congested conditions addressed by REMEDIO, represent a thematic related to the climate change addressed by REQUA.

Figure 42 – Dissemination poster of the REQUA "Final Workshop".

2.4.1.2.4. LEETCG04 - European Mobility Week - Open Event and Public Discussion

Event: Open Event and Public Discussion - European Mobility Week 2017

Date: 21 September 17 | **Venue:** Thessaloniki, Greece

Promotor: MDAT **Type:** National | **Partner involved:** MDAT | **Individuals reached:** 80

Short description: Within the framework of the European Mobility Week, MDAT organized the first open event entitled "REDESIGNING… THE ROAD TOGETHER… AN INTEGRATED PARTNERSHIP & PARTNER PLANNING ACTION" (Figure 43). Several institutional actors in the city were invited to an open discussion entitled "PROBLEMS FOR IMPROVING PROSPECTS MOBILITY, TRANSPORT AND TRAFFIC", where the progress of REMEDIO project was presented. Based on the current results there was a discussion on the main issues, presented by different points of view by all the representatives. The success of this discussion motivated the scheduled of the next meeting with a common desire: to work closer to all stakeholders on the interventions and results of the project.

Figure 43 - First open event entitled "REDESIGNING… THE ROAD TOGETHER… AN INTEGRATED PARTNERSHIP & PARTNER PLANNING ACTION".

2.4.1.2.5. LEETCG05 - Workshop "Knowledge, Technology and Standards for Sustainable and Smart Cities"

Event: Workshop "Knowledge, Technology and Standards for Sustainable and Smart Cities"
Date: 15 December 17 | **Venue:** Thessaloniki, Greece
Promotor: AUTH and MDAT **Type:** National | **Partner involved:** AUTH, MDAT | **Individuals reached:** 100
Short description: The workshop on "Knowledge, Technology and Standards for Sustainable Smart Cities" was organized in the Town Hall of Thessaloniki by the Metropolitan Agency of Thessaloniki, the Aristotle University of Thessaloniki and the Greek Standardization Organization. In this workshop, REMEDIO Greek partners presented the project to the audience.
More information about the event at the following link (accessed on 31 December 18):
https://goo.gl/8HVqVM

2.4.1.2.6. LEETCG06 - INNOVASUMP - 2nd Local Stakeholders Group Meeting

Event: INNOVASUMP - 2nd Local Stakeholders Group Meeting
Date: 9 March 2018 | **Venue:** Thessaloniki, Greece
Promotor: Municipality of Kordelio-Evosmos | **Type:** National | **Partner involved:** MDAT | **Individuals reached:** 40
Short description: The Municipality of Kordelio-Evosmos (Greece) invited the local stakeholders to the "2nd Local Stakeholders Group Meeting" in order to inform them about the thematic INTERREGional Workshops of the INTERREG Europe project "Innovations in Sustainable Urban Mobility Plans for Low Carbon Urban Transport" (InnovaSUMP) and to exchange ideas and experiences.

REMEDIO was presented during the event by MDAT and emphasis was given on the strengthening of the capacity of cities to use low carbon transport systems and include them in their mobility plans by testing mobility solutions through an assessment tool and participatory governance schemes as those of REMEDIO. Common networking, exchange of knowledge and participation in relevant working groups has been agreed between REMEDIO and InnovaSUMP.

Figure 44 - INNOVASUMP "2nd Local Stakeholders Group Meeting".

2.4.1.2.7. LEETCG07 - Student Environmental Conference on Sustainable City

Event: Student Environmental Conference on Sustainable City
Date: 20 April 18 | **Venue:** Thessaloniki's City Hall (Thessaloniki, Greece)
Promotor: Environmental Education Centre of Eleftherios Kordelio and Vertiskos and Municipality of Thessaloniki
Type: National | **Partner involved:** AUTH and MDAT | **Individuals reached:** *ca.* 300
Short description: This event was implemented within the educational network entitled "Sustainable City, the city as a field of training for sustainability", and consisted in school students, together with their teachers and representatives of the City Hall or organizations of active citizens,

discussing issues related to their city, exchange views, ideas, collaborate, and suggest ideas and actions inspired by the perception of the active citizen.

In this 6th edition, representatives of the services of the Municipality of Thessaloniki (Department of Greening, Urban Resilience Office, Sustainable Mobility Directorate, Tourism Development Admiralty, E-Government Directorate), Metropolitan Development of Thessaloniki, as well as organizations, associations and initiatives of active citizens of the city such as Topi, the Panhellenic Association of Teachers for Environmental Education (Branch of Macedonia), the Neighbourhood of Alexandros Svolou, the Panhellenic Association of People with vision problems -Regional Association K. Macedonia, The Cycling Sports Association of Thessaloniki, the National Confederation of Persons with Disabilities (E.S.A.me.A), the Panhellenic Association of Paraplegic Annex Macedonia - Thrace, the Youthnest and Forestry Thessaloniki etc.

Figure 45 – Students in the City Hall, Thessaloniki

2.4.1.2.8. LEETCG08 - Training on Placemaking and The City at Eye Level: Case study - The implementation of the theory and tools at the Eastern Horizontal Axis of Thessaloniki

Event: Training on Placemaking and The City at Eye Level: Theory, Tools & Practices
Date: 24 May 18 | **Venue:** Thessaloniki, Greece
Promotor: MDAT | **Type:** National | **Partner involved:** ARPAV, AUTH, IST, MDAT | **Individuals reached:** 35
Short description: This event consisted in a discussion focused on key-learnings of the REMEDIO program in Thessaloniki and the other partner cities, and examine them through the lens of Placemaking and the City at Eye Level approach and methodology.

2.4.1.2.9. LEETCG09 - Cooperation Day

Event: Cooperation Day
Date: 17 July 18 | **Venue:** Thessaloniki, Greece
Promotor: MDAT | **Type:** National | **Partner involved:** MDAT | **Individuals reached:** 35
Short description: The event "Redesigning… The Road Together… An Integrated Partnership & Partner Planning Action" was organized under the REMEDIO project, within the framework of local interventions in Thessaloniki. The main aim of the event was to inform the local audience, including local authorities, stakeholders, experts and general public about the final solution that emerged through a participatory process with the intuit of decongesting one of the most crowded in Thessaloniki. This process will be implemented by the local authorities, being also presented the next steps until the signing of a memorandum of understanding between relevant authorities, stakeholders and other actors. The idea of transferring the methodology and knowledge of the REMEDIO project to another similar urban axis was one of the main topics of discussion. It was also underlined that the REMEDIO project in Thessaloniki was connected to the Thessaloniki SUMP, describing the process that was followed during the project and linking this methodology to that of SUMP.

The poster of dissemination, created for this event, can be found in section **2.7.2.1.3.2. IMPALMLG02 – Cooperation Day**.

Link: https://remedio.interreg-med.eu/news-events/events/detail/actualites/cooperation-day-in-thessaloniki/

Figure 46 – Cooperation Day in Thessaloniki, Greece.

2.4.1.2.10. LEETCG10 - Discovering the Center for Interdisciplinary Research and Innovation of AUTH, Thessaloniki

Event: Discovering the Center for Interdisciplinary Research and Innovation of AUTH
Date: 17 July 18 | **Venue:** Thessaloniki, Greece
Promotor: AUTH | **Type:** National | **Partner involved:** AUTH | **Individuals reached:** 50
Short description: not available

2.4.1.2.11. LEETCG11 - Urban Revitalization Based on Public Transport, the Axis of Egnatia

Event: Urban Revitalization Based on Public Transport, the Axis of Egnatia
Date: 06 December 18 | **Venue:** Thessaloniki City Hall room of City council, Thessaloniki, Greece
Promotor: Municipality of Thessaloniki | **Type:** Local | **Partner involved:** MDAT | **Individuals reached:** 50
Short description: This event, promoted under "CoLab – 100 Resilient Cities", had as main goals to give the opportunity to the participants to present one project or activity in five minutes. MDTA participated by presenting REMEDIO project and Thessaloniki case solution.

2.4.1.2.12. LEETCG12 - Two days event on Sustainable Mobility

Event: Two days event on Sustainable Mobility
Date: 1-2 April 19 | **Venue:** Thessaloniki, Greece
Promotor: Civinet CY-EL, ELTIS kai MDAT SA | **Type:** Local | **Partner involved:** MDAT | **Individuals reached:** 50
Short description:

This training event was promoted by CIVINET Cyprus-Greece (CY-EL) and Eltis gathered 50 participants in Thessaloniki, Greece, from 1-2 April for two days of intense learning and exchange.

The participants came from diverse backgrounds, including local authorities, the CIVITAS Political Advisory Committee, and a plethora of other mobility stakeholders. Together, they debated some of the most urgent topics in mobility. From REMEDIO team, Stella Zountsa (from MDAT) participated in the event.

Information about the event can be found in the following link:
https://civitas.eu/news/civinet-cy-el-and-eltis-training-hones-greek-and-cypriot-mobility-minds
And activities developed in the initiative can be seen in the following video:
www.youtube.com/watch?v=RS6X-UcbRMs&feature=youtu.be

Figure 47 – Poster of the event.

2.4.1.2.13. LEETCG13 - European Mobility Week - Redesigning the Road Together-Park(ing) Day #1

Event: European Mobility Week - Redesigning the Road Together-Park(ing) Day #1
Date: 21 September 19 | **Venue:** Thessaloniki, Greece
Promotor: MDTA | **Type:** Local | **Partner involved:** MDTA | **Individuals reached:** 50
Short description:

MDTA, within the framework of the European Mobility Week 2019 and under INTERREG MED REMEDIO project, organized an action inspired by the “Park(ing)Day”. The idea of the action was to interchange the meaning of the words ''parking'' and ''park''. During the action, participants were inspired to think of “how would the road look like if instead of parked cars, there would be a green park?”.

More info about the event in the following link:

https://locations.interreg-med.eu/news-events/news/detail/actualites/how-to-mitigate-the-impact-of-cruise-tourism/

2.4.1.2.14. LEETCG14 - Local Closing event of REMEDIO project organized by MDAT entitled “We Have Redesigned the Road Together Again”

Event: Local Closing event of REMEDIO project organized by MDAT entitled “We Have Redesigned the Road Together Again”
Date: 29 October 19 | **Venue:** Macedonia Pallas Hotel (Thessaloniki, Greece)
Promotor: MDTA | **Type:** Local | **Partner involved:** MDTA and AUTH| **Individuals reached:** 43

Short description:

The Local Closing event of REMEDIO project entitled “We Have Redesigned the Road Together Again and promoted by MDAT was held on 29th October 2019 at the Macedonia Pallas Hotel (Thessaloniki, Greece). During the event, plans and strategies that were developed during the implementation of the REMEDIO project were presented, as well, the local scenario as an integrated solution for the city of Thessaloniki.

The closing event presented the results of the interdisciplinary collaboration of stakeholders (including the Atmospheric Physics Laboratory of the Aristotle University of Thessaloniki, the Institute for Sustainable Mobility Transport and Networks of the National Research and Technology Research Center) for the Redesigining of a major urban axis in a way that will not divide the city but create a coherent linear neighborhood. Solutions for redistributing public space, as components of a repeatable application model to other urban axes, were introduced to promote sustainable mobility, upgrade the microclimate of neighborhoods, exploit open gardens and adopt innovative actions.

The meeting ended with a "Round" discussion where the representatives of MDAT SA, CERTH, AUTH, Municipality of Kalamaria, and Municipality of Thessaloniki agreed and commit themselves to promote the implementation of the Integrated Axis redesign project that emerged through participatory planning consultations under REMEDIO project. The steps towards achieving this vision require more precise identification of funding requirements for the implementation of the Axis redevelopment projects aimed at sustainable urban redesign and to solve the congestion of the Thessaloniki East Horizon traffic problem.

Among the participants, different entities were present: AUTH, egnatia odos S.A., ThePta, Oasth, MDAT, Municipality of Thessaloniki and Kalamaria, GR TIMES (local press), Life events (local press), experts, Ministry of Interiors (branch Macedonia-Thraki).

Figure 48 – Local Closing event of REMEDIO "We Have Redesigned the Road Together Again" held at Thessaloniki, Greece.

Figure 49 – Round table promoted at the local closing event of REMEDIO "We Have Redesigned the Road Together Again" held at Thessaloniki, Greece.

2.4.1.3. Croatia

2.4.1.3.1. LEETCC01 - European Mobility Week

Event: European Mobility Week
Date: 15 September 17 | **Venue:** Split, Croatia
Promotor: CS | **Type:** National | **Partner involved:** CS | **Individuals reached:** 30
Short description:
CS organized a local event for stakeholders during the European Mobility Week to present REMEDIO project. The participating stakeholders were: Split-Dalmatia County (as associated partner), Chamber of Commerce of Split, Faculty of Economics, Faculty of Civil Engineering and Promet ltd – municipal operator for public transport created by CS, and Port Authority. Members of CS team did the presentation about REMEDIO project, which is available at REMEDIO website in the following link:
https://remedio.interreg-med.eu/library/european-mobility-week-in-split-2017/

Figure 50 - Local event organized by City of Split in September 2017.

2.4.1.3.2. LEETCC02 - Open Days of EU Projects in Croatia

Event: Open Days of EU Projects in Croatia
Date: 8 May 2018 | **Venue:** City of Split's Administration building, Split, Croatia
Promotor: Ministry of Regional Development and EU Funds with the support of the European Commission | **Type:** National
Partner involved: CS | **Individuals reached:** 500
Short description:
"Open Days of EU Projects in Croatia" event, organized in the framework of the European Week, was held in Split from 6 to 13 May 2018. On 8 May, CS organized a local event for this initiative, namely an exhibition, where the REMEDIO project was presented to the general public with the aim of disseminating its main activities and to distribute promotional materials. During the day, more than 500 people visited the exhibition and had the opportunity to know national EU projects, including REMEDIO.

Figure 51 - Local exhibition Open Days of EU Projects in Croatia" organized by CS in May 2018, where REMEDIO was presented.

2.4.1.3.3. LEETCC03 - EU Project REMEDIO – Public Bike System in Split

Event: EU Project REMEDIO – Public Bike System in Split
Date: 28 June 2018 | **Venue:** City of Split's Administration building, Split, Croatia
Promotor: CS and external expert Driope ltd for WP4 | **Type:** National
Partner involved: CS | **Individuals reached:** 23
Short description:
CS, in collaboration with external expert Driope ltd for WP4, organized a meeting/workshop "EU PROJECT REMEDIO – PUBLIC BIKE SYSTEM IN SPLIT" with REMEDIO target groups' stakeholders under **4.2. Activity - Participatory governance for urban mobility solutions**. Target groups reached were: 1) Split - Dalmatia County as Associated Partner, 2) Chamber of Commerce in Split, 3) University of Split, 4) Split Parking ltd - Municipal utility company, 5) County Bicycle Alliance, and 6) Association for Nature Environment and Sustainable Development.

Figure 52 - Meeting/workshop "EU PROJECT REMEDIO – PUBLIC BIKE SYSTEM IN SPLIT".

2.4.1.3.4. LEETCC04 - Open Days of EU Funds

Event: Open Days of EU Funds

Date: 1 June 2019 | **Venue:** Prokurative Square – City of Split, Croatia

Promotor: EU Funds in General | **Type:** National

Partner involved: CS | **Individuals reached:** 500

Short description:

City of Split REMEDIO project team participated on the public event "Open days of EU funds" organised in Split, in June 2019, under a national level by the Ministry of Regional Development and EU Funds of Croatia where successful EU projects were presented to the general public in June. About 500 people acquainted themselves with the projects, including the REMEDIO. This event was used to further introduce the Public Bike Sharing System and MoU to the interested general public.
The REMEDIO's team members of the City of Split involved in this activity were Radojka Tomašević, Tomo Šundov, Tea Reić and Andrea Barić.
More information (in Croatian) available at the following links:

- http://www.split.hr/Default.aspx?art=10959&sec=2
- https://dalmatinskiportal.hr/vijesti/dani-otvorenih-vrata-eu-fondova-u-splitu-ova-izlozba-je-sjajan-putokaz-da-vidimo-dokle-smo-dosli-i-kuda-idemo-dalje-/46360

Figure 53 - Exhibition stand Open Days of EU Funds in Croatia with highlight of REMEDIO display.

2.4.1.3.5. LEETCC05 - Conference “Information Technology as a Step Closer to Greater Mobility”

Event: Conference “Information Technology as a Step Closer to Greater Mobility
Date: 5 July 2019 | **Venue:** Archdiocesan Seminary Hall, Zrinsko – Frankopanska street 19, Split, Croatia
Promotor: Split-Dalmatia County | **Type:** National
Partner involved: CS | **Individuals reached:** 27
Short description:
Split Dalmatia County organized the Conference “Information Technology as a Step Closer to Greater Mobility”. The panel discussion took place within the Split-Dalmatia County’s EU STEP-UP project "Sustainable Transport E-planner to Upgrade the IT-HR Mobility" of the INTERREG Italy-Croatia programme. The aim of the project is to promote mobility of passengers in the programme area through various info-mobility solutions.
Prior to the panel discussion, some of the projects underway in the field of mobility, including REMEDIO project was introduced by Tomo Šundov from CS, with a presentation entitled “EU project REMEDIO – Public Bike Sharing System in Split”. The panel discussion was focused on the topic of ITS and its potential development in the programme area.
This event had the participation of two REMEDIO team members from CS, Tomo Šundov and Hrvoje Matas.

Information about the event (in Croatian) can be found in the following link:
https://www.dalmacija.hr/programi-gospodarstva/eu-projekti/novosti/artmid/2894/articleid/18602/odrzana-konferencija-%E2%80%9Einformacijskom-tehnologijom-korak-blize-vecoj-mobilnosti%E2%80%9C#1

Figure 54 – Presentation of REMEDIO by Tomo Šundov.

2.4.1.4. Portugal

2.4.1.4.1. LEETCP01 – Smart Cities Tour 2018

Event: Smart Cities Tour 2018
Date: 21 March 18 | **Venue:** Seixal, Portugal
Promotor: National Association of Municipalities from Portugal | **Type:** National
Partner involved: CML | **Individuals reached:** 80
Short description: REMEDIO participated in Smart Cities Tour 2018 that consisted in a national roadshow on the subject smart cities with the participation of enterprises, municipalities and universities that work nationally and internationally in the subject. The REMEDIO Project and the implementation of the SUMP at the Loures' pilot area was disseminated at the event through the presentation of the preliminary results and actions by F. Noivo (CML).
Link: https://remedio.interreg-med.eu/news-events/news/detail/actualites/remedio-in-smart-cities-tour-2018/

Figure 55 – F. Noivo (CML) presenting REMEDIO at Smart Cities Tour 2018.

2.4.1.4.2. LEETCP02 – Loures InSS 2018 – Inovação, Sociedade e Sustentabilidade - REMEDIO Seminar

Event: REMEDIO Seminar at Loures InSS 2018
Date: 5 June 18 | **Venue:** Auditorium of Campus Tecnológico e Nuclear, Instituto Superior Técnico (Loures, Portugal)
Promotor: CML | **Type:** National | **Partner involved:** CML and IST | **Individuals reached:** *ca.* 80
Short description: The results from the two campaigns performed within the REMEDIO project were presented in a seminar by a team member from CML (F. Noivo, Figure 56), to a wide audience with experts in sustainability and mobility actions (about 15 specialists participated in this seminar).

Link: https://remedio.interreg-med.eu/news-events/events/detail/actualites/loures-inss-seminar-2018/

Figure 56 – F. Noivo (CML) presenting the results from REMEDIO campaign.

2.4.1.4.3. LEETCP03 – Ciência 2018

Event: Ciência 2018

Date: 2 July 18 | **Venue**: Centro de Congressos de Lisboa (Lisboa, Portugal) | **Promotor**: MCTES (Ministry of Science, Technology and Higher Education of Portuguese Government)

Partner involved: IST | **Individuals reached**: 300 | **Type**: National

Short description:

Ciência 2018 is the biggest science event at Portugal to promote dissemination of Portuguese research centers and the science conducted in the framework of national and international projects. A poster with some of the results of the case study of Loures was presented by a IST team member (N. Canha, Figure 57) regarding the air quality during the first environmental monitoring campaign conducted before the intervention by CML. The poster entitled "Organic and elemental carbon in atmospheric particles sampled at a traffic site located in Portugal" is available in the Annexes section (4.20. A20 – Ciência 2018 – Poster).

Figure 57 – N. Canha (IST) presenting the REMEDIO poster at Ciência 2018.

2.4.1.4.4. LEETCP04 – Final event of the MOTIVATE Project "Moving around a MED City”

Event: Final event of the MOTIVATE Project "Moving around a MED City”
Date: 30 Oct 19 | **Venue**: CIUL - Centro de Informação Urbana de Lisboa (Lisboa, Portugal) | **Promotor**: MOTIVATE Project
Partner involved: IST | **Individuals reached**: 13 | **Type**: National
Short description:

The final event of the Interreg MED MOTIVATE Project, entitled “Moving around a MED City”, was held at Lisbon with the aim of presenting the main challenges and results of the project in its five pilot cities, along with the sharing of experiences from other INTERREG MED projects, such as LOCATIONS and REMEDIO.

Nuno Canha from IST, member of REMEDIO team, presented the project highlighting the innovative solutions implemented in the pilot cities, with a presentation entitled: "REMEDIO project – innovative solutions for low carbon mobility".

Figure 58 – N. Canha (IST) presenting the REMEDIO at the final event of MOTIVATE project.

2.4.1.4.5. LEETCP05 – Ceremony of Municipalities of the Year Portugal 2019

Event: Municipalities of the Year Portugal 2019
Date: 15 November 19 | **Venue**: Arouca, Portugal | **Promotor**: University of Minho
Partner involved: CML | **Individuals reached**: 100 | **Type**: National
Short description:
Minho University promoted the national competition "Municipalities of the Year Portugal 2019" with the aim of recognize the good practices of the Portuguese municipalities. The main objectives of this contest are:

- To recognize and reward good practices in projects implemented by municipalities with significant impacts on towns, cities and territory, economy and society, which promote growth, inclusion and/or sustainability;
- To put on the agenda the theme of the integrated development of territories, focusing on the role and action of municipalities;
- To give visibility and to recognize, in different categories, different realities that include cities, but also low-density territories in different regions of the country.

The Municipality of Loures applied to this competition with the experience of the implementation of REMEDIO's project in Moscavide and it was selected as one of the final candidates of the metropolitan region of Lisbon (A.M.Lisbon). At the final event, a book with the description of all candidates and their good practices as distributed. REMEDIO project was described in this book as a good practice implemented in the Municipality of Loures.
More information available here:
https://www.umcidades.uminho.pt/pt/Concurso2019/Paginas/default.aspx
To download the Book "Concurso Municípios do Ano 2019 – Portugal", use the following link:
https://www.umcidades.uminho.pt/pt/Concurso2019/Documents/Brochura_municipios_2019.pdf

Figure 59 – Book "Concurso Municípios do Ano 2019 – Portugal" with two pages description of REMEDIO's implementation at Loures, as a good practice at Municipality of Loures.

Figure 60 – Detail of Book "Concurso Municípios do Ano 2019 – Portugal" with reference to Municipality of Loures and REMEDIO project.

2.4.1.4.6. LEETCP06 – Closing ceremony of REMEDIO project at Portugal with inauguration of street panel

Event: Closing ceremony of REMEDIO project at Portugal with inauguration of street panel
Date: 13 Jan 20 | **Venue**: Avenue of Moscavide (Loures, Portugal) | **Promotor**: CML and IST
Partner involved: CML and IST | **Individuals reached**: 80 | **Type**: National
Short description:
CML and IST conducted the final ceremony of REMEDIO project at Portugal with inauguration of the street panel at Avenue of Moscavide (pilot site at Portugal), with educational games about sustainability with school children. The street panel has information about REMEDIO project (with link to its website), information about air quality in the area (measured by air quality sensors installed in the area) with links to the Portuguese Environment Agency to assess the air quality levels (and with recommendations to the population whether the air quality status), direct link for the population to send messages to the municipality, and other relevant information, such as mobility (which public transports exist and their timetable) and about the agenda of the municipality. Around the street panel, new urban furniture (street banks) were installed, with electricity plugs to everyone to use. The main goal of the street panel is to empower the population with information and to create a direct link for the population to connect with the municipality, maximising a participative governance.
During the ceremony, education games regarding sustainability were performed with children from the local primary school.

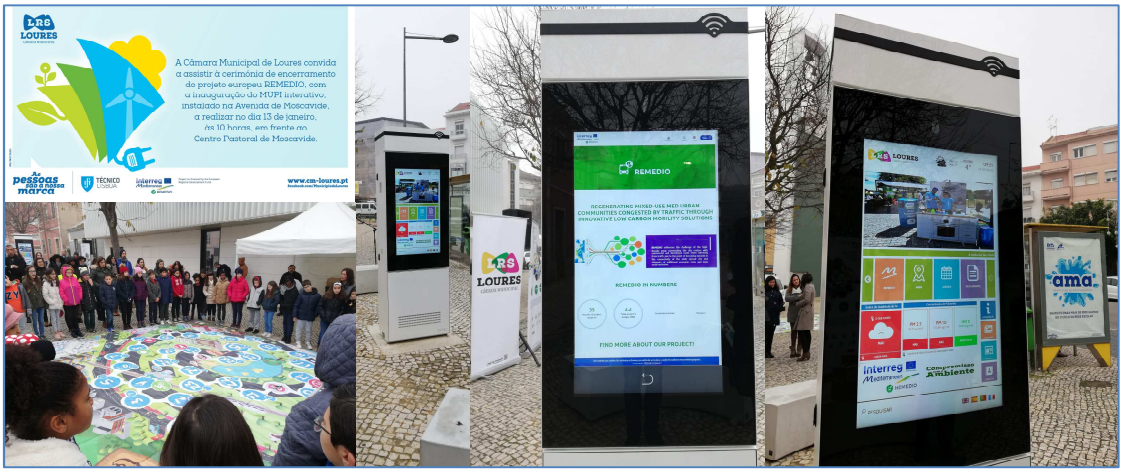


Figure 61 – Closing ceremony of REMEDIO project at Portugal with inauguration of street panel.

2.5. Activity 2.5 - Networking activities at transnational level

2.5.1. Deliverable 2.5.1. Collaborative network fostering REMEDIO results at transnational level

This sub-section is entitled “Collaborative network fostering REMEDIO results at transnational level”, being divided by participation in international conferences, collaboration with international networks and projects.

In straight link between WP4, REMEDIO Project developed networking activities with the follow networks CATMED, CIVITAS, CIVINET, DAFNI, CIVINET CY-EL, MedCities, 100RC, European Cyclists' Federation and projects REQUA, CAMS, CIPTEC, REFORM, NOVELOG, SUMPORT, Poly-SUMP, SMART_MR, EnerNETMob, Nanosen-AQM.

Table 3 presents a summary of the European seminars organized with invited speakers of CATMED community. Table 4 presents a summary of transnational conferences/events where REMEDIO project was presented by REMEDIO partners. Below a detailed description of each event is presented.

Table 3. Organization of European seminars with invited speakers of CATMED community

Event	VENUE	DATE	TITLE	Organizer
1st European Seminar with invited speakers of CATMED community	Seville, Spain	18 and 19 May 17	Non-motorised Transport and Transport Energy efficiency as challenges for road traffic congestion and air quality improvements in the Mediterranean Cities	USE
2nd European Seminar with invited speakers of CATMED community	Split, Croatia	23 November 17	Improved urban mobility systems for a high quality of life	AUTH
3rd European Seminar with invited speakers of CATMED community	Thessaloniki, Greece	22 May 18	Sustainable Urban Mobility: Confronting Air Pollution and Climate Change	AUTH

Table 4. Participation of REMEDIO partners in transnational conferences/events to disseminate REMEDIO project.

CONFERENCE	VENUE	DATE	TITLE OF WORK	PRESENTER
RICTA 2017	Barcelona, Spain	4 - 6 July 2017	Source apportionment in a street canyon: first approach within REMEDIO project	Oral | M. Almeida-Silva (IST)
EAC 2017	Zurich, Switzerland	27 August – 1 September 2017	Air quality in a street canyon: particles and traffic composition	Poster | M. Almeida-Silva (IST)
Workshop on urban Air Pollution Mitigation Tools	Zurich, Switzerland	30 August 2017	REMEDIO: Regenerating mixed-use MED urban communities congested by traffic Innovative low carbon mobility sOlutions	Oral | M. Almeida-Silva (IST)
ICUH 2017	Coimbra, Portugal	26 – 29 September 2017	Air quality in a street canyon: particles and traffic composition	Poster | Tiago Faria (IST)
CIALP 2018	Aveiro, Portugal	8 – 10 May 2018	Cidades mais sustentáveis – Estudo de caso de Moscavide, Portugal	Oral | F. Vogado (IST)
CIALP 2018	Aveiro, Portugal	8 – 10 May 2018	Concentração de partículas e elementos químicos em Moscavide, Portugal	Oral | F. Vogado (IST)
CSUM 2018	Skiathos Island, Greece	24 - 25 May 2018	Microsimulation modelling of the impacts of double-parking along an urban axis	Oral | K. Chrysostomou
COMECAP 2018	Alexandroupolis, Greece	15 – 17 October 2018	Integrated modelling tool for the analysis of traffic-congested roads in urban centers	Posters | A. Poupkou, D. Melas, S. Kontos (AUTH)
CirClE2019 + SMile 2019	Nicosia, Cyprus	28-29 March 19	A tool for environmental assessment of traffic mitigation actions for high congested roads in Mediterranean urban areas as in REMEDIO project	Oral | Anastasia Poupkou (AUTH)
ICCPA 2019	Vienna, Austria	3-6 April 19	Studies of carbonaceous particles at a traffic site - Moscavide/Lisbon, Portugal	Poster | J. Coutinho (IST)
CHANGING CITIES	Chania, Greece	24-29 June 19	Participatory redesign practices for accelerating integrated multi-modal and low carbon mobility solutions in urban axis	Oral | P. Tarani (MDTA)
RICTA2019	Lisbon, Portugal	9-11 July 19	Source apportionment of carbonaceous aerosols with high time resolution	Poster | J. Coutinho (IST)
EAC 2019	Gothenburg,	25-30	Assessment of Aerosol	Posters | T. Faria

	Sweden	August 19	Emission Sources in a Traffic Site Combining On-line and Off line Measurements | Source apportionment of carbonaceous aerosols with high time resolution	and S.M. Almeida
PANACEA	Herakleion, Greece	23-24 September 19	Environmental analisys in traffic-congested roads using an Integrated Modelling Tool	Poster | Melas
ICEH2019	Lisbon, Portugal	25-27 September 19	Assessment of Aerosol Emission Sources in a Traffic Site Combining On-line and Off line Measurements	Poster | T. Faria

2.5.2.1. CNTL01 – 1st European Seminar with invited speakers of CATMED community

Event: 1st European Seminar with invited speakers of CATMED community
Date: 18 and 19 May 17 | **Venue:** Seville, Spain
Promotor: USE | **Type:** International
Partner involved: All project partners | **Individuals reached:** 30
Short description: The topic of the first Thematic Seminar was "Non-motorised Transport and Transport Energy efficiency as challenges for road traffic congestion and air quality improvements in the Mediterranean Cities" with three invited key-note speakers representing the CATMED community and one invited speaker representing USE. The seminar was chaired by Charikleia Meleti and Anastasia Poupkou (AUTH). The presenters and the titles of their presentations were:

1. Salvatore Patti (ARPAV) - The REMEDIO project: testing a participatory governance approach for high congested roads in Mediterranean cities
2. Alfonso Palacios Carrasco (Project Manager of the Urban Environment Observatory – Málaga City Council) - Bringing together the Mediterranean identity and sustainable mobility
3. Francisco Cárdenas (Urban Ecology Agency of Barcelona) - A new model of mobility and public space in Barcelona, based on Superblocks
4. Barbara Poggio (Genoa Municipality) - CATMED Genoa: Green apple and shared solutions for air quality
5. José António Delgado (University of Seville) - Tecnoport, a project for freight logistics in the port of Seville

Link: https://remedio.interreg-med.eu/news-events/news/detail/actualites/non-motorised-transport-and-transport-energy-efficiency-as-challenges-for-road-traffic-congestion-an/

Figure 62 - European seminar with invited speakers of CATMED community in Seville, Spain.

2.5.2.2. CNTL02 – RICTA2017

Conference: RICTA2017 - 5th Iberian Meeting on Aerosol Science and Technology
Date: 4 - 6 July 17 | **Location**: Barcelona, Spain
Presenter: M. Almeida-Silva (IST) | **Type**: Oral | **Individuals reached:** 100
Title: Source apportionment in a street canyon: first approach within REMEDIO project.
Oral presentation can be found on the Annexes document (sub-section 4.8. A08 - RICTA 2017 – Oral presentation).

Figure 63 – Oral presentation at RICTA2017 by M. Almeida-Silva (IST).

2.5.2.3. CNTL03 – EAC2017

Conference: EAC2017 - European Aerosol Conference 2017
Date: 27 August – 1 September 17 | **Location**: Zürich, Switzerland
Presenter: M. Almeida-Silva (IST) | **Type**: Poster | **Individuals reached:** 250
Title: Air quality in a street canyon: particles and traffic composition

This poster was presented in the 2nd poster session dedicated to source apportionment studies and it can be found the Annexes section (sub-section 4.9. A09 – EAC2017 - Poster and abstract).

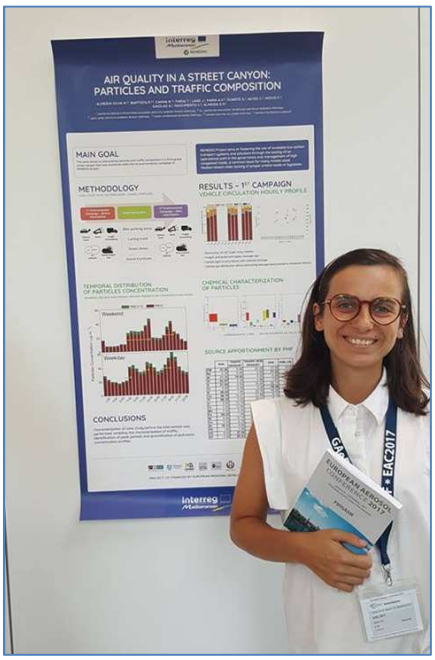


Figure 64 – Poster presentation at EAC2017 by M. Almeida-Silva (IST).

2.5.2.4. CNTL04 – Workshop on urban Air Pollution Mitigation Tools

Conference: Workshop on urban Air Pollution Mitigation Tools
Date: 30 August 2017 | **Location**: University of Zurich at Aerosol Conference 2017 (Zürich, Switzerland) | **Promotor:** LIFE Index-Air | **Individuals reached:** 40
Presenter: M. Almeida-Silva (IST) | **Type**: Oral
Title: REMEDIO: Regenerating mixed-use MED urban communities congested by traffic through Innovative low carbon mobility sOlutions
LIFE Index-Air promoted the Workshop on "Urban air pollution mitigation tools", which gathered the participation of several speakers involving several European projects about the theme, such as Interreg MED REMEDIO and LIFE ACEPT-AIR.
The oral presentation is available at the Annexes section (sub-section 4.10. A10 – Workshop on urban Air Pollution Mitigation Tools – Oral).

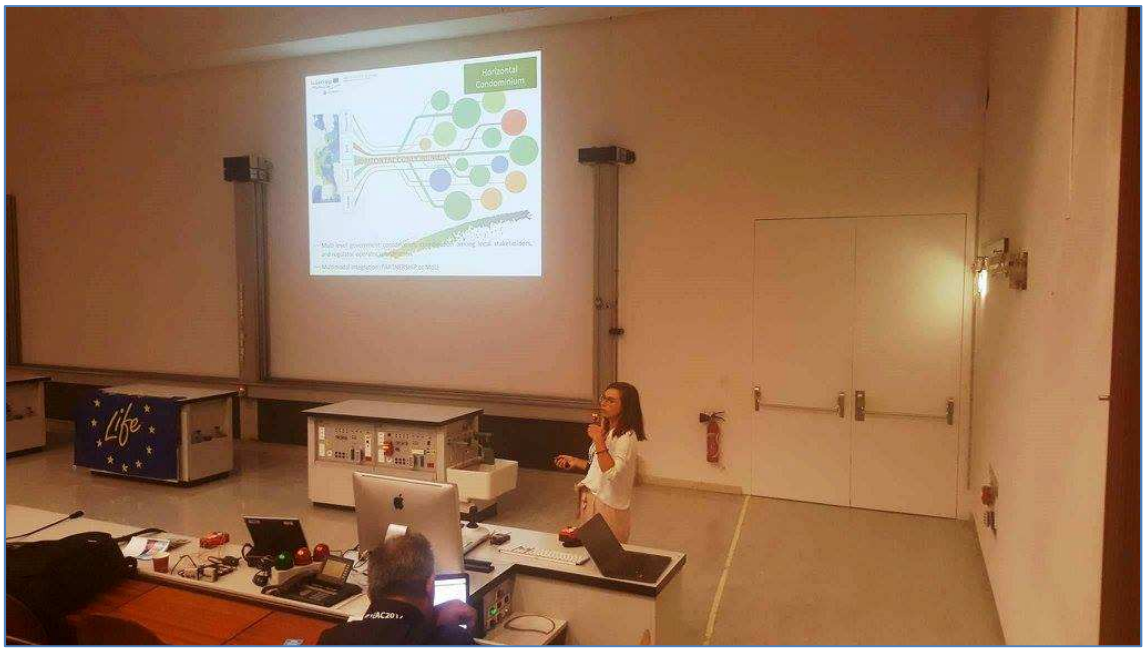


Figure 65 – Oral presentation at the Workshop on urban Air Pollution Mitigation Tools by M. Almeida-Silva (IST).

2.5.2.5. CNTL05 – ICUH2017

Conference: 14th International Conference on Urban Health (ICUH)
Date: 27 September 2017 | **Location**: Coimbra, Portugal | **Individuals reached:** 150
Presenter: T. Faria (IST) | **Type**: Poster
Title: Assessing of atmospheric pollutants dispersion impacts under REMEDIO Project

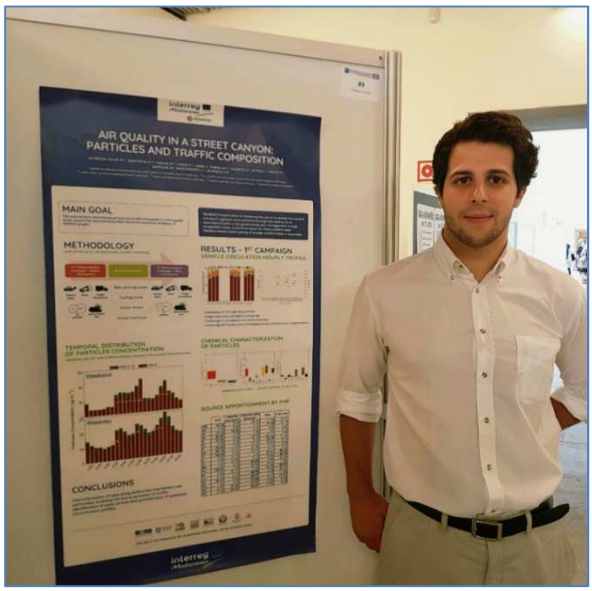


Figure 66 – Poster presentation at ICUH2017 by T. Faria (IST).

2.5.2.6. CNTL06 – 2nd European Seminar with invited speakers of CATMED community

Event: 2nd European Seminar with invited speakers of CATMED community
Date: 23 November 17 | **Venue:** Split, Croatia
Promotor: AUTH| **Type:** International
Partner involved: All project partners | **Individuals reached:** 30
Short description: This event was the 2nd seminar promoted by REMEDIO project, entitled "Improved urban mobility systems for a high quality of life" and held at Split, Croatia. The invited speakers included local/regional authorities, namely, CS, Dalmatia county, Regional Education Information Centre for Sustainable Development in South-East Europe, Agency for Sustainable Mediterranean Cities and Territories, CIVINET Slovenia-Croatia-South East Europe Network, University of Split and Centre for Research and Technology Hellas.
Link: https://remedio.interreg-med.eu/news-events/events/detail/actualites/2nd-remedio-seminar/

Figure 67 - European seminar with invited speakers of CATMED community in Split, Cratia.

2.5.2.7. CNTL07 – CIALP

Conference: Conferência Internacional de Ambiente em Língua Portuguesa | XX Encontro REALP | XI CNA
Date: 8-10 May 18 | **Location**: Aveiro, Portugal

Presenter: F. Vogado (IST) | **Type**: Oral | **Individuals reached:** 80
Title: Cidades mais sustentáveis – Estudo de caso de Moscavide, Portugal
In Annexes section, the oral presentation is available in sub-section **4.11. A11 – CIALP 1 – Oral** and the proceeding is available at sub-section **4.12. A12 – CIALP 1 – Proceeding**.
The full reference of the proceeding is the following:
M. Almeida-Silva, D. Lourenço, A.M. Teixeira, F. Noivo, A. Ramos, R. Cota, S.M. Almeida (2018) Cidades mais sustentáveis – estudo de caso de Moscavide, Portugal. Conferência Internacional

de Ambiente em Língua Portuguesa | XX Encontro REALP | XI CNA. Aveiro, Portugal, 8-10 Maio. Livro de Actas "Uso Sustentável dos Ecossistemas e Proteção da Biodiversidade", pp. 412-420, ISBN: 978-972-789-540-3.

Presenter: F. Vogado (IST) | **Type**: Oral | **Individuals reached:** 80
Title: Concentração de partículas e elementos químicos em Moscavide, Portugal
In Annexes section, the oral presentation is available in sub-section **4.13. A13 – CIALP 2 – Oral** and the proceeding is available at sub-section **4.14. A14 – CIALP 4 – Proceeding**.
The full reference of the proceeding is the following:
F. Vogado, M. Almeida-Silva, C. Alves, D. Diapouli, K. Eleftheriadis, S.M. Almeida (2018) Concentração de partículas e elementos químicos em Moscavide, Portugal. Conferência Internacional de Ambiente em Língua Portuguesa | XX Encontro REALP | XI CNA. Aveiro, Portugal, 8-10 Maio. Livro de Actas "Uso Sustentável dos Ecossistemas e Proteção da Biodiversidade", pp. 564-569, ISBN: 978-972-789-540-3.

2.5.2.8. CNTL08 – 3rd European Seminar with invited speakers of CATMED community

Event: 3rd European Seminar with invited speakers of CATMED community
Date: 22 May 18 | **Venue:** Thessaloniki, Greece
Promotor: AUTH | **Type:** International | **Partner involved:** All project partners | **Individuals reached:** 75
Short description: This event was the 3rd seminar promoted by REMEDIO project, entitled "Sustainable Urban Mobility: Confronting Air Pollution and Climate Change" and held at Thessaloniki, Greece. Invited speakers included local/regional authorities (MDAT), networks of cities (CIVINET CY-EL, MedCities, 100 Resilient Cities) and higher education institutions (AUTH) that addressed the following topics: 1) Traffic-related Pollutant Emissions and Air Pollution; 2) Traffic-related Carbon Footprint; and 3) Innovative Urban Mobility Infrastructures.

Link: https://remedio.interreg-med.eu/news-events/events/detail/actualites/3rd-remedio-seminar/

Figure 68 – European seminar with invited speakers of CATMED community in Thessaloniki, Greece.

2.5.2.9. CNTL09 – CSUM2018

Conference: 4th Conference on Sustainable Urban Mobility
Date: 24 - 25 May 2018| **Location**: The Skiathos Palace Hotel, Skiathos Island, Greece
Short description:
The University of Thessaly, Department of Civil Engineering, Traffic, Transportation and Logistics Laboratory – TTLog, organized the 4th Conference on Sustainable Urban Mobility – CSUM2018, which main topic was "Data analytics: Paving the way to sustainable urban mobility". Overall, the main aim of the CSUM is the dissemination of knowledge and the exchange of good practices among researchers and practitioners in the domain of urban transportation. An oral presentation by members of Hellenic Institute of Transport entitled "Microsimulation modelling of the impacts of double-parking along an urban axis" was done in the session dedicated to "Big data and transport modelling".
Full programme of CSUM2018 is available in the following link:
http://csum.civ.uth.gr/wp-content/uploads/2016/07/CSUM2018-Final-Progamme.pdf

Presenter: K. Chrysostomou (AUTH) | **Type**: Oral | **Individuals reached:** 100
Title: Microsimulation modelling of the impacts of double-parking along an urban axis
In Annexes section, the proceeding is available at sub-section **4.15. A15 – CSUM2018 – Proceeding**.
The full reference of the proceeding is the following:
K. Chrysostomou, A. Petrou, G. Aifadopoulou, M. Morfoulaki (2018) Microsimulation modelling of the impacts of double-parking along an urban axis. Data Analytics: Paving the Way to Sustainable Urban Mobility - Proceedings of 4th Conference on Sustainable Urban Mobility (CSUM2018), 24 - 25 May, Skiathos Island, Greece. Book Series: Advances in Intelligent Systems and Computing. Editors: E.G. Nathanail, I.D. Karakikes, Publisher: Springer International Publishing, pp. 164-171, ISBN: 978-3-030-02305-8.

2.5.2.10. CNTL10 – COMECAP2018

Conference: 14th International Conference on Meteorology, Climatology and Atmospheric Physics
Date: 15-17 October 18 | **Location**: Alexandroupolis, Greece
Short description: The COMECAP conference gathers the scientific community and stakeholders/end-users interested in methodologies and modeling tools relevant with the environment. REMEDIO project was presented by AUTH team members (A. Poupkou, D. Melas, S. Kontos) with two posters where the main goals and tools of the project were presented, along with some preliminary results of the environmental assessment of low carbon mobility solutions in the pilot area of Thessaloniki.
Book of Proceedings of COMECAP2018 is available in the following link:
http://comecap2018.gr/wp-content/uploads/2019/03/COMECAP-BOA-final-revised.pdf

Figure 69 – Poster presentations at COMECAP by AUTH team members.

Presenter: A. Poupkou, D. Melas, S. Kontos (AUTH) | **Type**: Poster | **Individuals reached:** 100
Title: Integrated modelling tool for the analysis of traffic-congested roads in urban centers
In Annexes section, the poster is available in sub-section **4.16. A16 – COMECAP2018 1 – Poster** and the proceeding is available at sub-section **4.17. A17 – COMECAP2018 1 – Proceeding**.
The full reference of the proceeding is the following:
E. López, F. Palomo, N. Liora, S. Kontos, M. Almedia-Silva, P. Baptista, F. Liguori, K. Lorenzet, R. Fernandez, C. Ortiz, A. Poupkou, C. Meleti, D. Melas, S. Patti, M.V. Faria, J. Ferreira, C. Lanera (2018) Integrated modelling tool for the analysis of traffic-congested roads in urban centers. COMECAP2018 - 14th International Conference on Meteorology, Climatology and Atmospheric Physics, 15-17 October, Alexandroupolis, Greece. Book of Proceedings, pp. 814-819, ISBN: 978-960-98220-4-6.

Presenter: A. Poupkou, D. Melas, S. Kontos (AUTH) | **Type**: Poster | **Individuals reached:** 100
Title: Environmental assessment of low carbon mobility solutions with the use of an Integrated Modeling Tool
In Annexes section, the poster is available in sub-section **4.18. A18 – COMECAP2018 2 – Poster** and the abstract is available at sub-section **4.19. A19 – COMECAP2018 2 – Abstract**.
The full reference of the abstract is the following:
A. Poupkou, S. Zounza, K. Chrysostomou, A. Kelessis, A. Yiannakou, N. Liora, S. Kontos, K. Rizos, S. Dimopoulos, C. Giannaros, P. Tzoumaka, G. Aifadopoulou, C. Kalogirou, C. Meleti, D. Melas (2018) Environmental assessment of low carbon mobility solutions with the use of an Integrated Modeling Tool. COMECAP2018 - 14th International Conference on Meteorology, Climatology and Atmospheric Physics, 15-17 October, Alexandroupolis, Greece. Book of Proceedings, pp. 835, ISBN: 978-960-98220-4-6.

2.5.2.11. CNTL11 – ICCPA2019

Conference: 12th International Conference on Carbonaceous Particles in the Atmosphere (ICCPA) 2019

Date: 3 – 6 April 19 | **Location**: Vienna, Austria

Presenter: J. Coutinho (IST) | **Type**: Poster | **Individuals reached:** 80

Title: Studies of carbonaceous particles at a traffic site - Moscavide/Lisbon, Portugal

Short description:

J. Coutinho (IST Member) participated in the poster session (entitled "Source characterization and source apportionment") of the 12th International Conference on Carbonaceous Particles in the Atmosphere that was held in Vienna, Austria. The poster presented was entitled "Studies of carbonaceous particles at a traffic site - Moscavide/Lisbon, Portugal", where the results regarding the carbonaceous particles obtained in the air quality assessment campaign conducted in the Moscavide avenue (Loures), under the framework of the REMEDIO project, were presented.

In Annexes section, the abstract and poster are available in sub-sections **3.21. A21 – ICCPA2019 – Abstract** and **3.22. A22 – ICCPA2019 – Poster**, respectively.

For more information (including full programme of the conference) is available in the following link:

https://iccpa2019.univie.ac.at/home/

Book of Proceedings of ICCPA2019 is available in the following link:

https://iccpa2019.univie.ac.at/fileadmin/user_upload/k_iccpa2019/2019/AbstractBook_ICCPA_2019_Website.pdf

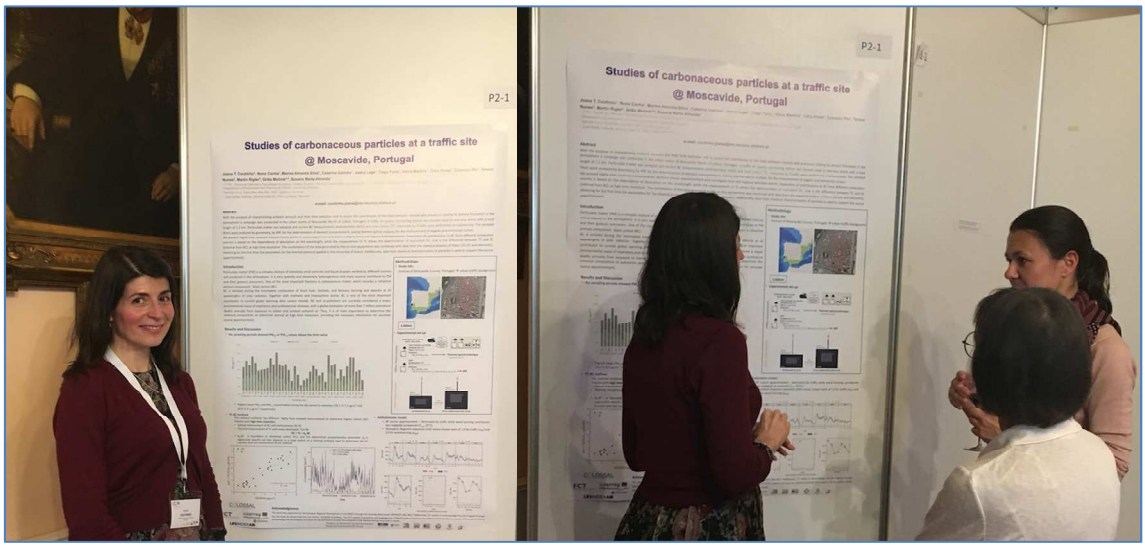


Figure 70 – Poster presentation at ICCPA2019 by IST member.

2.5.2.12. CNTL12 – COST Action CA16202 “inDust” meeting

Event: COST Action CA16202 “inDust” meeting
Date: 3 April 2019| **Location**: Belgrade, Serbia
Presenter: MDAT | Organizer: COST Action CA16202 “inDust” | **Type**: Oral | **Individuals reached:** 10
Description: The COST Action CA16202 “International Network to Encourage the Use of Monitoring and Forecasting Dust Products” (inDust) organized a meeting relevant with the Modeling Activities (WG2) of the Action. One of the this main objectives of inDust is the establishment of a network involving research institutions, service providers, and end users of information on airborne dust and air quality.
The REMEDIO IMT was presented by AUTH to the modelling experts of inDust in terms of programming, input data requirements and output information produced. The presentation provided an opportunity for visibility of REMEDIO technical developments and for enlargement of the MED Urban transport Community to include the inDust technical institutions coming from 29 countries of which 11 are Mediterranean. More information can be found in the website of COST ACTION CA16202 “inDust”: https://cost-indust.eu

Figure 71 – COST Action CA16202 “inDust” meeting.

2.5.2.13. CNTL13 – IV International Conference on “CHANGING CITIES: Spatial, Design, Landscape & Socio-economic Dimensions”

Conference: 4th International Conference on “CHANGING CITIES: Spatial, Design, Landscape & Socio-economic Dimensions”
Date: 24-29 June 2019| **Location**: Chania, Crete Island, Greece
Presenter: Paraskevi Tarani (MDAT) | **Type**: Oral | **Individuals reached:** 100
Title: Participatory redesign practices for accelerating integrated multi-modal and low carbon mobility solutions in urban axis
Short description:

The Thessaloniki case scenario under REMEDIO project has been presented during the fourth edition of the international conference "CHANGING CITIES: Spatial, Design, Landscape & Socio-economic Dimensions" by REMEDIO team member, Paraskevi Tarani (from MDAT), with an oral presentation entitled "Participatory redesign practices for accelerating integrated multi-modal and low carbon mobility solutions in urban axis" in the session "Sustainable Urban Planning & Development II". This work had as co-authors: A. Yiannakou, P. Tarani, S. Zountsa, C. Kalogirou, G. Aifadopoulou, K. Chrysostomou, A. Poupkou, C. Meleti and D. Melas.
More information about this conference can be found in the link below:
https://changingcities.prd.uth.gr
Final programme of the conference can be found here:
https://changingcities.prd.uth.gr/cc2019/images/program/FINAL_PROGRAM_CCIV_2019.pdf

2.5.2.14. CNTL14 – RICTA2019

Conference: 7th Iberian Meeting on Aerosol Science and Technology - RICTA 2019
Date: 9 – 11 July 19 | **Location**: Lisbon, Portugal
Presenter: J. Coutinho (IST) | **Type**: Poster | **Individuals reached:** 80
Title: Source apportionment of carbonaceous aerosols with high time resolution
Short description:
J. Coutinho (IST Member) participated in the poster session (entitled "Source characterization and source apportionment") of RICTA2019 that was held in Lisbon, Portugal. The poster presented was entitled "Source apportionment of carbonaceous aerosols with high time resolution", which presented the results of the source apportionment of carbonaceous aerosols monitored during the second air quality assessment campaign conducted in the Moscavide avenue (Loures), under the framework of the REMEDIO project.
In Annexes section, the poster is available in sub-section **3**, namely, **3.23. A23 – RICTA2019 – Poster**, respectively.

For more information about RICTA2019 can be found in the following link:
http://www.lifeindexair.net/ricta19/

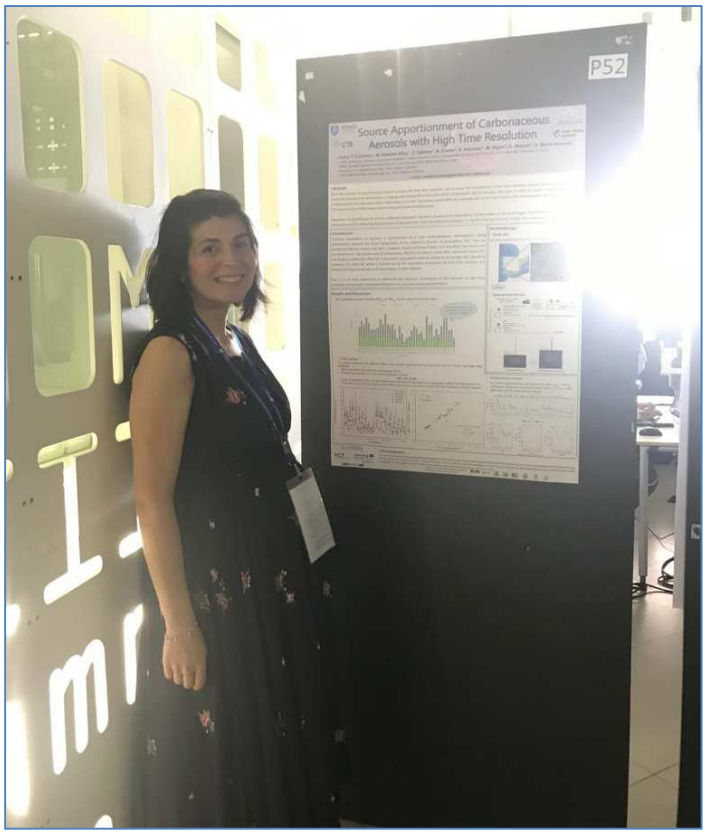


Figure 72 – Poster presentation at RICTA2019 by IST member.

2.5.2.15. CNTL15 – EAC2019

Conference: European Aerosol Conference – EAC 2019
Date: 25 – 30 August 19 | **Location**: Gothenburg, Sweden
Presenter: T. Faria and S.M. Almeida (IST) | **Type**: Poster | **Individuals reached:** 200
Short description:
European Aerosol Conference – EAC 2019 is the major European conference on aerosols and it took place in Sweden, from 25 to 30 of August 2019. Two members of IST team were present and presented two posters about results of the air sampling campaigns conducted in the pilot area of Loures (Portugal).
Title of Poster 1: Assessment of Aerosol Emission Sources in a Traffic Site Combining On-line and Off line Measurements
Title of Poster 2: Source apportionment of carbonaceous aerosols with high time resolution

In Annexes section, the abstracts and posters are available in sub-sections **3.24. A24 – EAC2019 – Poster 1, 3.25. A25 – EAC2019 – Poster 1 – Abstract, 3.26. A26 – EAC2019 – Poster 2** and **3.27. A27 – EAC2019 – Poster 2 – Abstract,** and **3.24. A24 – ICEH2019 – Poster**, respectively.

For more information about EAC2019 is available in the following link:

https://eac2019.se/

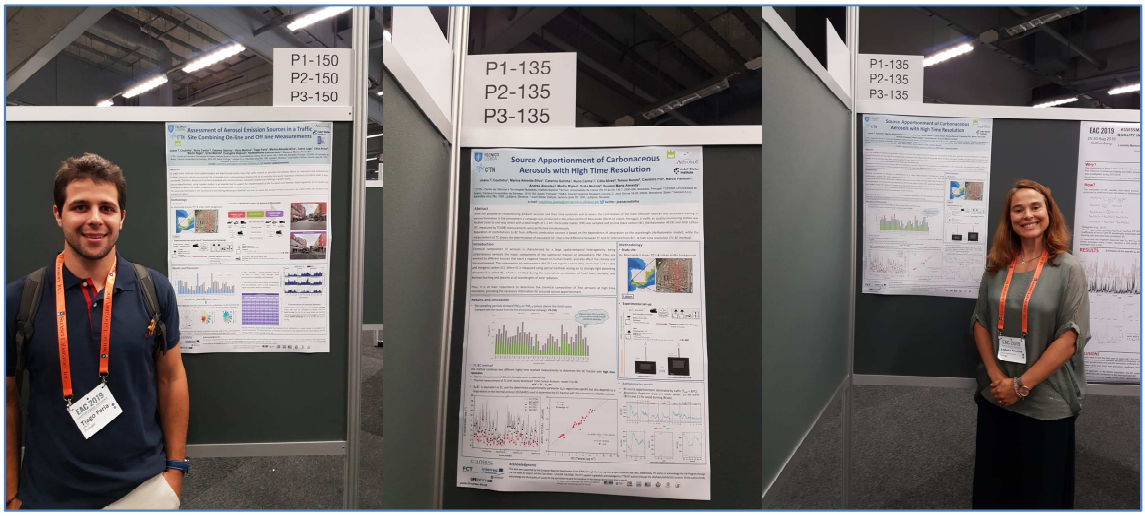


Figure 73 – Poster presentations at EAC2019 by IST members.

2.5.2.16. CNTL16 – Final event of the LOCATIONS project

Event: Final event of the LOCATIONS project
Date: 19 September 19 | **Venue:** Malaga, Spain
Promotor: LOCATIONS project | **Type:** Local | **Partner involved:** AUTH | **Individuals reached:** 20
Short description:

REMEDIO was represented in the event by AUTH contributing to the transfer of REMEDIO results while considering the complementarities between REMEDIO and LOCATIONS projects objectives, in addition to the common geographical area of both projects, i.e. Thessaloniki, acting as pilot city within REMEDIO and as a replicating city within LOCATIONS project.
More information about the event in the following links:
https://locations.interreg-med.eu/news-events/news/detail/actualites/sustainable-mobility-in-med-tourist-destinations/

2.5.2.17. CNTL17 – PANACEA Scientific Conference

Conference: Scientific Conference of Project PANACEA
Date: 23 – 24 September 19 | **Location**: Herakleion, Greece
Presenter: Prof. Melas | **Type**: Poster | **Individuals reached:** 50
Title: Environmental analisys in traffic-congested roads using an Integrated Modelling Tool
Short description:
Prof. Melas presented the project REMEDIO in the scientific conference of the project PANACEA that took place in Herakleion (Greece) on 23th and 24th September 2019. The

conference was organized by the University of Crete in the framework of the project PANACEA cofounded by EU and Greek funds.

The project PANACEA addresses the need for monitoring of atmospheric composition, climate change and related natural hazards in South Europe (with more emphasis on Eastern Mediterranean) and for providing tailored services to crucial economy sectors that are affected by air pollution and climate change, such as public health, agriculture/food security, tourism, shipping and energy/renewables.

This conference was the opportunity to Prof. Melas to present a poster entitled "Environmental analisys in traffic-congested roads using an Integrated Modelling Tool", which focused on the developments and results of REMEDIO, with more emphasis on the modeling activities of the project.

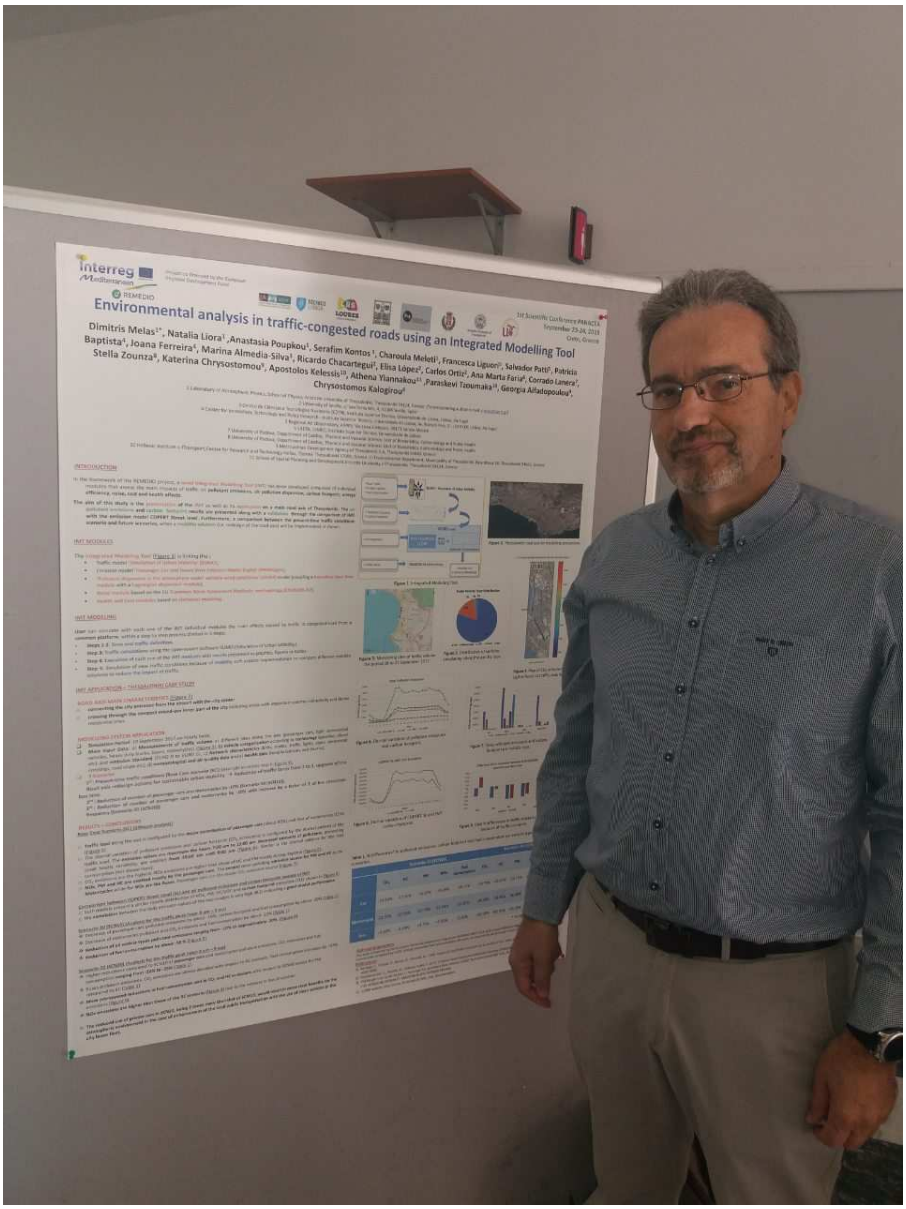


Figure 74 – Poster presentation at PANACEA scientific conference by Prof. Melas.

In Annexes section, the poster is available in sub-sections **3.28. A28 – PANACEA – Poster.**

2.5.2.18. CNTL18 – ICEH2019

Conference: 4th International Congress on Environmental Health – ICEH2019
Date: 25 – 27 September 19 | **Location**: Lisbon, Portugal
Presenter: T. Faria (IST) | **Type**: Poster | **Individuals reached:** 50
Title: Assessment of Aerosol Emission Sources in a Traffic Site Combining On-line and Off line Measurements
Short description:
T. Faria (IST Member) participated in ICEH2019 with a poster about the REMEDIO project, focusing on the air quality assessment conducted at Loures' pilot site.

In Annexes section, the poster and abstract are available in sub-sections **3.28. A28 – ICEH2019 – Poster** and **3.29. A29 – ICEH2019 – Abstract**, respectively.

For more information about ICEH2019 is available in the following link:
https://iceh2019.estesl.ipl.pt/

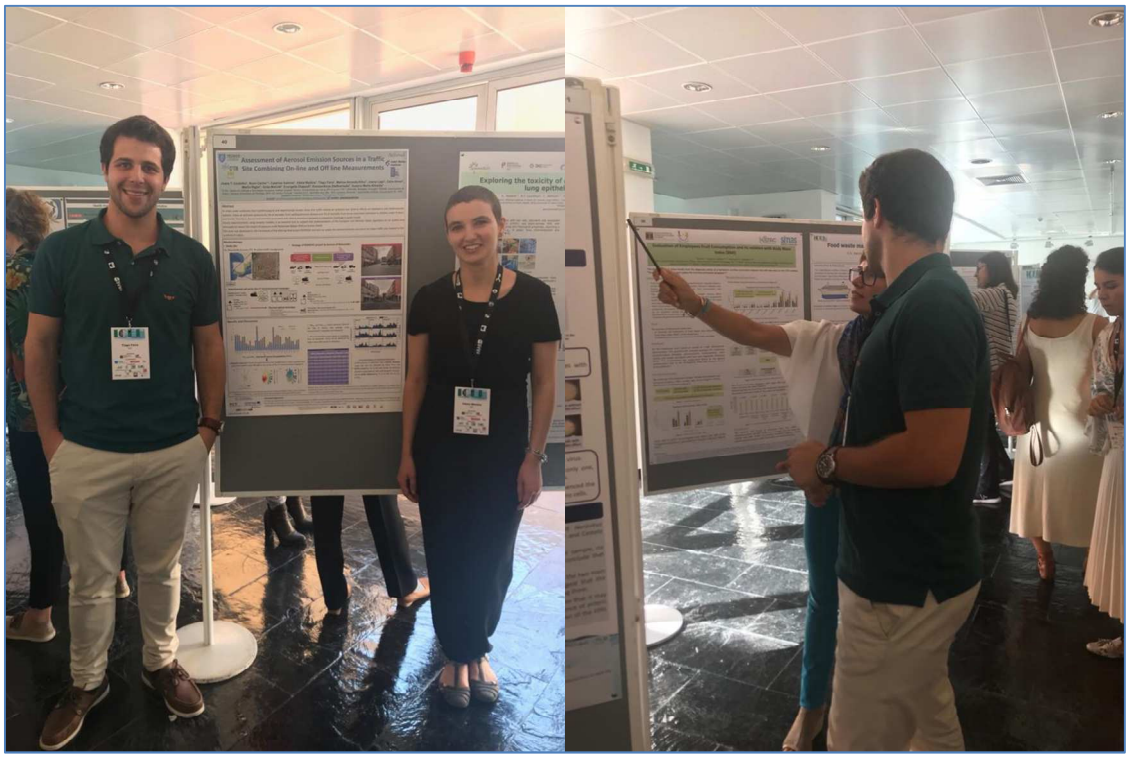


Figure 75 – Poster presentation at ICEH2019 by IST members.

2.5.2.19. CTNL19 - Final conference of STEPPING project

Event: Final conference of STEPPING project

Date: 25 October 19 | **Venue:** Athens, Greece
Promotor: STEPPING project | **Type:** Local | **Partner involved:** AUTH | **Individuals reached:** 40
Short description:
REMEDIO was represented in the event by AUTH contributing to discussions about the necessity of joint efforts to improve energy efficiency in the MED urban areas considering all aspects of activities in urban scale being complementary, as the sector of mobility addressed within REMEDIO and that of public buildings addressed by STEPPING project.
More info about the event in the following link:
https://stepping.interreg-med.eu/news-events/news/detail/actualites/stepping-final-conference-successfully-implemented/

2.5.2.20. CTNL20 – Meeting of SUPRA project with cities representatives

Event: Meeting of SUPRA project with cities representatives
Date: 15 October 19 | **Venue:** Headquarter of Split-Dalmatian County, Croatia
Promotor: SUPRA project | **Type:** Local | **Partner involved:** CS | **Individuals reached:** 20
Short description:
REMEDIO was presented to the participants of the meeting by the representatives of the City of Split, as an example regarding the implementation of the publick bike sharing system at Split.

More info about the event in the following link:

https://www.italy-croatia.eu/web/sutra/-/split-dalmatian-county-launches-cross-border-sustainable-transport-project-sutra-

Figure 76 – Presentation of REMEDIO by representatives of the City of Split.

2.6. Activity 2.6 - Educational activities and environmental awareness empower

2.6.1. Deliverable 2.6.1. Tailored educational & empower events

In this sub-chapter are listed the tailored educational and empower events developed and/or participated by REMEDIO partners.

2.6.1.1. Croatia

2.6.1.1.1. TEEVC01 - European Mobility Week

Event: European Mobility Week 2017
Date: 15 September 17 | **Venue:** Split, Croatia
Promotor: CS | **Type:** National | **Partner involved:** CS | **Individuals reached:** 500
Short description: For the EMW 2017, REMEDIO project was present for several specialists in the field by a team member from CS (A. Maretic, Figure 77).

Figure 77 - European Mobility Week in Croatia (2017)

2.6.1.2. Greece

2.6.1.2.1. TEEVG01 - European Mobility Week - Greece

During the European Mobility Week (EMW), MDAT organized the event “REDESIGNING… THE ROAD TOGETHER… AN INTEGRATED PARTNERSHIP & PARTNER PLANNING ACTION”. This event can be divided in two main activities related to the REMEDIO project: Mobility and Dissemination.

2.6.1.2.1.1. TEEVG01A - Mobility Action

Event: Mobility Action - European Mobility Week 2017
Date: 21 September 17 | **Venue:** Thessaloniki, Greece
Promotor: MDAT **Type:** National | **Partner involved:** MDAT | **Individuals reached:** 200
Short description: The proposed pilot area for the REMEDIO project is one of the axes that brings traffic to the city centre, so for this Mobility Action a part of this axis has been selected, where the problem of the illegal parked cars is more extensive and the vast majority Bus lines are passing by. The campaign aims at informing the public and raise awareness of the alternative ways of mobility they have, such as public transportation, car sharing, cycling and walking, before deciding to use their private cars. In case they choose to use the private car, the campaign aims to make them aware not to park illegally or not to double parking. Another goal of the campaign is to inform citizens that, when they use their cars they overburden environmentally the axis with car emissions and noise.

Figure 78 - Mobility Action developed by MTDA in 2017

The campaign was implemented with volunteers, mostly students from the University, and the target audience were the residents of the axis, people working on this part of the city or moving through it to get to the city centre (Figure 78).

2.6.1.2.1.2. TEEVG01B – Dissemination Activities

Event: Dissemination Activities - European Mobility Week 2017
Date: 22 September 17 | **Venue:** Thessaloniki, Greece
Promotor: MDAT **Type:** National | **Partner involved:** MDAT | **Individuals reached:** 550
Short description: For this action MDAT participated in the stands located in the city centre (Figure 79), informing the general public about the REMEDIO project and the local interventions made under this European project. Leaflets about the campaign "REDESIGNING… THE ROAD TOGETHER… we stop only where we do not disturb others" were available, as well as information on mobility alternatives, except for private cars. If they chose to use their private car, they would be informed about the problems they cause and, above all, raise awareness of not parking illegally or double parking their cars in the axis, since it causes high mobility problems, as well as environmental problems. On the same day, the MDAT staff informed the public about the questionnaire available on-line to record proposals and issues based on the point of view of the general public.

Figure 79 - Stands for the European Mobility Week in Thessaloniki, 2017

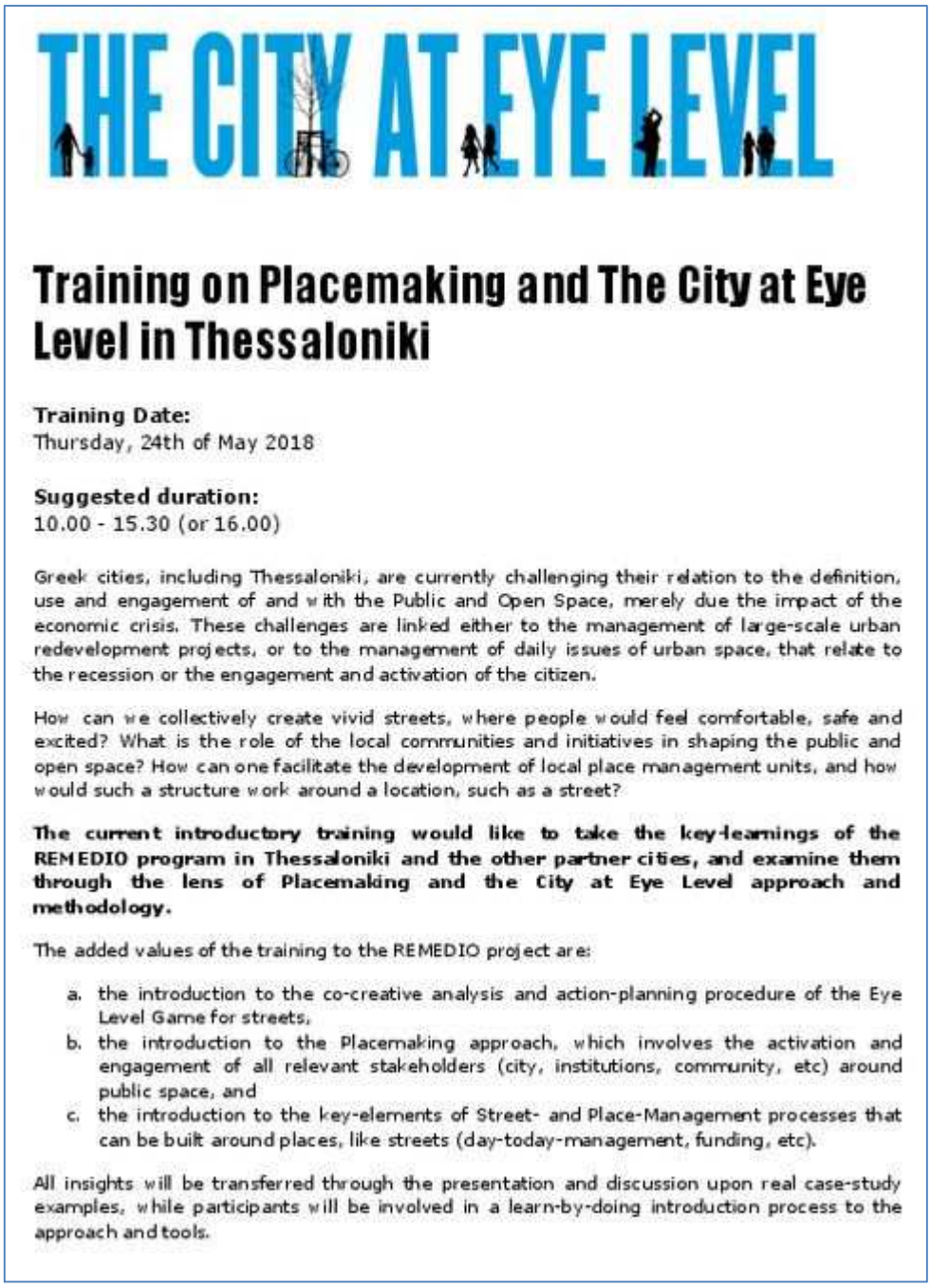
2.6.1.2.2. TEEVG02- Student Environmental Conference on Sustainable City

Event: Student Environmental Conference on Sustainable City
Date: 20 April 18 | **Venue:** Thessaloniki's City Hall (Thessaloniki, Greece)
Promotor: Environmental Education Centre of Eleftherios Kordelio and Vertiskos and Municipality of Thessaloniki
Type: National | **Partner involved:** AUTH and MDAT | **Individuals reached:** *ca.* 300
Short description: This event was implemented within the educational network entitled "Sustainable City, the city as a field of training for sustainability", and consisted in school students, together with their teachers and representatives of the City Hall or organizations of active citizens, discussing issues related to their city, exchange views, ideas, collaborate, and suggest ideas and actions inspired by the perception of the active citizen. MDAT, in cooperation with AUTH, participated in the discussion "If I could change the road ... / We re-designing, the road together!", where several activities were developed by students (Figure 80).

Figure 80 - Activities developed by students in City Hall, Thessaloniki

2.6.1.2.3. TEEVG03 - Training on Placemaking and The City at Eye Level: Theory, Tools & Practices

Event: Training on Placemaking and The City at Eye Level: Theory, Tools & Practices
Date: 24 May 18 | **Venue:** Thessaloniki, Greece
Promotor: MDAT | **Type:** International | **Partner involved:** all partners | **Individuals reached:** 35
Short description: This event consisted in an introductory training would like to take the key-learnings of the REMEDIO program in Thessaloniki and the other partner cities, and examine them through the lens of Placemaking and the City at Eye Level approach and methodology. The added values of the training to the REMEDIO project are shown in Figure 81.



THE CITY AT EYE LEVEL

Training on Placemaking and The City at Eye Level in Thessaloniki

Training Date:
Thursday, 24th of May 2018

Suggested duration:
10.00 - 15.30 (or 16.00)

Greek cities, including Thessaloniki, are currently challenging their relation to the definition, use and engagement of and with the Public and Open Space, merely due the impact of the economic crisis. These challenges are linked either to the management of large-scale urban redevelopment projects, or to the management of daily issues of urban space, that relate to the recession or the engagement and activation of the citizen.

How can we collectively create vivid streets, where people would feel comfortable, safe and excited? What is the role of the local communities and initiatives in shaping the public and open space? How can one facilitate the development of local place management units, and how would such a structure work around a location, such as a street?

The current introductory training would like to take the key-learnings of the REMEDIO program in Thessaloniki and the other partner cities, and examine them through the lens of Placemaking and the City at Eye Level approach and methodology.

The added values of the training to the REMEDIO project are:

a. the introduction to the co-creative analysis and action-planning procedure of the Eye Level Game for streets,
b. the introduction to the Placemaking approach, which involves the activation and engagement of all relevant stakeholders (city, institutions, community, etc) around public space, and
c. the introduction to the key-elements of Street- and Place-Management processes that can be built around places, like streets (day-today-management, funding, etc).

All insights will be transferred through the presentation and discussion upon real case-study examples, while participants will be involved in a learn-by-doing introduction process to the approach and tools.

Figure 81 - Presentation of the even "The City at Eye Level".

2.6.1.2.4. TEEVG04 - Final participatory workshop with Thessaloniki Authorized bodies

Event: Final participatory workshop with Thessaloniki Authorized bodies
Date: 25 January 19 | **Venue:** Thessaloniki, Greece
Promotor: MDTA | **Type:** Local | **Partner involved:** MDAT | **Individuals reached:** 25
Short description:

The final workshop with Thessaloniki Authorized Bodies took place on January 2019, with the participation of the two relevant Municipalities and also representatives from THEPTA and the Organization of Urban Transportation of Thessaloniki has been invited, where all participants commonly agreed about the importance of this Redesigning for the city of Thessaloniki. REMEDIO project was represented by Stella Zountsa and Tsakiropoulou Anthi from MDAT team.

Information about the event can be found in the local news (available in the link below and only in Greek):

https://parallaximag.gr/thessaloniki/etsi-tha-mporouse-na-allaksei-kykloforiaka-anatolika-poli

2.6.1.2.5. TEEVG05 - Co-operation assembly among city groups for the Redesign of the Axis

Event: Co-operation assembly among city groups for the Redesign of the Axis (second participatory workshop for users)
Date: 12 March 19 | **Venue:** Thessaloniki, Greece
Promotor: MDAT | **Type:** Local | **Partner involved:** MDAT | **Individuals reached:** 30
Short description:

MDAT organized the "2nd participatory workshop for users" of the Eastern Horizontal Axis that took place during this period with an invitation for an assembly of city groups for the Redesign of the Axis.

Information about the event can be found in local news (in Greek) available in the following link: https://www.makthes.gr/epanaschediazetai-o-odikos-axonas-apo-ton-foinika-eos-tin-plateia-chanth-205406

Figure 82 – Co-operation assembly among city groups for the Redesign of the Axis.

2.6.1.2.6. TEEVG06 - 7th Student Environmental Conference on Sustainable City

Event: 7th Student Environmental Conference on Sustainable City
Date: April 19 | **Venue:** Thessaloniki, Greece
Promotor: Environmental Education Center of Eleftherios Kordelio and Vertiskos and Municipality of Thessaloniki | **Type:** Local | **Partner involved:** MDAT | **Individuals reached:** 150
Short description: Stella Zountsa, from MDAT team and member of REMEDIO team, was present at the event to introduce the participants about the concept of REMEDIO project and its implementation in Thessaloniki.

2.6.1.3. Italy

2.6.1.3.1. TEEVI01 - Educational Activities and Environmental Awareness

Event: Educational activities and Environmental Awareness in Treviso
Date: February-May 18 | **Venue:** Treviso, Italy
Promotor: ARPAV and ISIDE | **Type:** National | **Partner involved:** ARPAV | **Individuals reached:** *ca.* 500
Short description: For these educational activities, ARPAV cooperated with the ISIDE network (http://www.reteisideambiente.it), in order to promote energy savings and environmental awareness among school students in the neighbourhood of the pilot road in Treviso. The main activities consisted in guided tours in the neighbourhood of the pilot area, experiential workshops for the youngest and lessons with ARPAV technicians and specialist in air and acoustic pollution.

2.6.1.3.2. TEEVI02 - Final event of the REMEDIO Educational Path

Event: Final event of the Educational Path
Date: 2 October 18 | **Venue:** Artemio Centre, Treviso, Italy
Promotor: ARPAV, ISIDE Network and Treviso Province | **Type:** National | **Partner involved:** ARPAV | **Individuals reached:** 320
Short description: The students of Treviso and Villorba schools presented their vision of urban mobility in Strada Ovest – Viale della Repubblica at this event that was the final event of the REMEDIO Educational Path. The participating schools were eleven, from kindergarten and primary to first and second grade high schools. At this event were present 300 students with their teachers, ISIDE Network trainers, local authorities and ARPAV staff.
More information about the event available at:
https://remedio.interreg-med.eu/news-events/news/detail/actualites/remedio-interreg-med-project-final-event-of-the-educational-path/
Link to the educational project page:
http://www.arpa.veneto.it/servizi-ambientali/educazione-per-la-sostenibilita/educazione-ambientale/remedio/remedio-interreg-med-azioni-di-educazione-ambientale-nelle-scuole-di-strada-ovest-treviso-e-villorba

Link to the photo album of the event:
https://www.facebook.com/pg/arpaveneto/photos/?tab=album&album_id=10157221589657952

Figure 83 - Final event of the REMEDIO Educational Path at Treviso, Italy.

2.6.1.4. Portugal

2.6.1.4.1. TEEVP01 - Sustentabilis

Event: Sustentabilis
Date: 25-28 May 17 | **Venue:** Palácio do Contador-Mor (Lisbon, Portugal)
Promotor: Junta de Freguesia dos Olivais | **Type:** National | **Partner involved:** IST | **Individuals reached:** 200
Short description: In association with other international projects (Interreg Sudoe ClimACT and LIFE Index-Air), the REMEDIO project participated in the Sustentabilis, an event organized by the Olivais Parish Council to celebrate the International Day for Biological Diversity (Figure 84). Several educational activities related to environment, sustainability and mobility were developed during these days to the students and inhabitants of this Parish, as seen in Figure 85.
The Secretary of State of Environment and Secretary of State of Spatial Planning and Nature Conservation, as well as the President of the Olivais Parish Council, visited this fair. The program can be found here: http://www.jf-olivais.pt/wp-content/uploads/2017/08/Programa-Sustentabilis-Geral.pdf

Figure 84 - Flyer of Sustentabilis 2017

Figure 85 - IST team performing an educational environmental activity with school children

2.6.1.4.2. TEEVP02 - Loures InSS

Event: Loures InSS 2017

Date: 2-5 June 17 | **Venue:** Parque Adão Barata (Loures, Portugal)

Promotor: CML and IST **Type:** National | **Partner involved:** CML and IST | **Individuals reached:** 1500

Short description: Loures InSS was a fair of Innovation, Society and Sustainability, CML and IST were responsible for two different stands where each partner presented its work (Figure 86 and Figure 87).

In the IST stand, were represented three European projects, ClimACT, LIFE-Index-Air and REMEDIO, that were visited by more than 500 students and also inhabitants of Loures in a total of 1500 visitors The Secretary of State of Environment and the Mayor of Loures also visited the stand, showing great interest in all the works carried out by IST team members.

The CML stand offered the possibility to see the roll-up of REMEDIO, which was also visited by approximately the same number of people. Additionally, all participants were invited to fill out a questionnaire about their needs, considering the project topics: mobility, environment and sustainability.

Figure 86 - Loures InSS 2017 agenda

Figure 87 - IST and CML stands in Loures InSS 2017

2.6.1.4.3. TEEVP03 - European Mobility Week

Event: European Mobility Week 2017
Date: 16 September 17 | **Venue:** Loures, Portugal
Promotor: CML and IST **Type:** National | **Partner involved:** CML and IST | **Individuals reached:** 600
Short description: During this day, REMEDIO's Portuguese partners organised an awareness campaign in Moscavide (one of the four pilot-areas of the project). Two stands were placed in Moscavide: one related to the REMEDIO project, where the partners placed the official poster, distributed flyers, questionnaires and invite the children to play a game about sustainability; the other stand belonged to the company BeElectric (https://beelectric.pt/), which gave citizens the opportunity to test their electric bicycle (Figure 88).

Figure 88 - Stands from European Mobility Week in Loures, Portugal (2017)

2.6.1.4.4. TEEVP04 - "Change the car for a bicycle… electric"

Event: "Change the car for a bicycle… electric"
Date: 22 May 18 | **Venue:** ESTeSL (Lisbon, Portugal)
Promotor: ESTeSL and Cenas a Pedal | **Type:** National | **Partner involved:** IST | **Individuals reached:** 15
Short description: During this event the school community had the opportunity to learn about the benefit of changing the car by a bicycle (electric or not) in a brief seminar hosted by the promotors. Following the clarification of some doubts concerning this change, all the participants were invited to take a tour with electric bicycles made available by Cenas a Pedal (Figure 89).

Figure 89 - Participants riding an electric bike.

2.6.1.4.5. TEEVP05 - Loures InSS 2018 – Inovação, Sociedade e Sustentabilidade

Loures InSS 2018 – Inovação, Sociedade e Sustentabilidade has the intuit of celebrate the Environment Day. This event had around 5000 people among specialists, politicians, general public, others. Two different activities were carried out during this Fair.

2.6.1.4.5.1. TEEVP05A - Dissemination actions

Event: Dissemination actions at Loures InSS 2018
Date: 2-3 June 18 | **Venue:** Parque Urbano de Santa Iria de Azóia (Loures, Portugal)
Promotor: CML | **Type:** National | **Partner involved:** CML and IST | **Individuals reached:** *ca.* 5000
Short description: This event had the goal of celebrating the Environment Day. REMEDIO project was represented in the IST stand, where several educational activities were carried out during the fair (Figure 90 and Figure 91).

Figure 90 - Loures InSS facililties.

Figure 91 - Stand of Municipality of Loures in Loures InSS.

2.6.1.4.5.2. TEEVP05B - Educational activities

Event: Educational activities at Loures InSS 2018

Date: 4 June 18 | **Venue:** Parque Urbano de Santa Iria de Azóia (Loures, Portugal)

Promotor: CML | **Type:** National | **Partner involved:** CML and IST | **Individuals reached:** *ca.* 100

Short description: In the 4th of June several schools from CML were invited to realize educational activities and games focused in good environmental practices (Figure 92).

Figure 92 - Educational activities developed by IST in Loures InSS.

2.6.1.4.6. TEEVP06 – Seminar and Role Play at IST

Event: Seminar and Role Play at IST
Date: 23 November 18 | **Venue:** Instituto Superior Técnico – Alameda, Lisboa (Portugal)
Promotor: IST | **Type:** Local | **Partner involved:** IST | **Individuals reached:** 20 students + 1 teacher
Short description: A seminar was given to the 4th year students of the MSc Environmental Engineering of Instituto Superior Técnico about sustainable mobility and its impact on air quality and, afterwards, the students were challenged to perform a role-play. This role-play focused on a debate regarding sustainable mobility in cities, where the students played roles as policy makers, citizens, industry, environmental agencies and NGO's to discuss the theme.

Figure 93. Role-play with IST students (Portugal) focusing on the issue of sustainable mobility.

2.6.1.4.7. TEEVP07 – Seminar and Educational Games at the Week of Science and Technology 2018

Event: Seminar and Educational Games at the Week of Science and Technology 2018
Date: 28 November 18 | **Venue:** Escola EB1 n.º 4 da Póvoa de Santa Iria (Loures, Portugal)
Promotor: IST | **Type:** Local | **Partner involved:** IST | **Individuals reached:** 258 students + 11 teachers
Short description: Within the Week of Science and Technology 2018, IST team members were at Primary School EB1 n.º 4 of Póvoa de Santa Iria (Loures, Portugal) where a seminar about sustainable mobility and its impact in our daily life was conducted to an audience of 258 students and 11 teachers, followed by set of educational games about environment, mobility and citizen empowerment to all the children (eg., role play game entitled "It's me that is the Mayor of the city!".

Figure 94 - Seminar and educational games in the Week of Science and Technology 2018 in Loures (Portugal).

2.6.1.4.8. TEEVP08 – Seminar and Role Play at ESTeSL

Event: Seminar and Role Play

Date: 18 December 18 | **Venue:** Escola Superior de Tecnologia da Saúde de Lisboa (ESTeSL - Lisbon School of Health Technology, Lisboa (Portugal)
Promotor: IST | **Type:** Local | **Partner involved:** IST | **Individuals reached:** 30 students + 1 teacher
Short description: A seminar was given to the 3th year students of the BSc in Environmental Health of ESTeSL about sustainable mobility in cities and its impact on the air quality. The seminar was composed by presentations by Tiago Faria, Inês Lopes and Carolina Correia, all members of IST team. Afterwards, a role-play with the students was done, which focused on a debate regarding sustainable mobility in cities, where the students played roles as policy makers, citizens, industry, environmental agencies and NGO's to discuss the theme.

2.6.1.4.9. TEEVP09 - Loures InSS 2019

Event: Loures InSS 2019
Date: 8 June 2019 | **Venue:** Parque Adão Barata (Loures, Portugal)
Promotor: CML **Type:** National | **Partner involved:** CML and IST | **Individuals reached:** 80
Short description:
Members of REMEDIO team from Municipality of Loures and Instituto Superior Técnico participated in the 2019 edition of Loures InSS – Fair of Innovation, Society and Sustainability, that was held last 8th of June in Parque Adão Barata (Loures, Portugal). This event was promoted by the Municipality of Loures and was the celebration of the World Environment Day.
REMEDIO team organized educational games and distributed promotional materials of the project to children regarding sustainable mobility in order to disseminate good practices and increase their awareness toward the topic during the morning of 8th June, which was dedicated to families and Loures' inhabitants.

Figure 95 – REMEDIO activitities at Loures InSS 2019.

2.6.1.5. Spain

2.6.1.5.1. TEEVS01 - 15ª Feria de la Ciencia

Event: 15ª Feria de la Ciencia
Date: 11-13 May 17 | **Venue:** FIBES - Palacio de Congresos y Exposiciones Sevilla (Seville, Spain)
Promotor: Sociedad Andaluza para la Divulgación de la Ciencia and Fundación Descubre
Type: International | **Partner involved:** USE | **Individuals reached:** 20000
Short description: The "Feria de la Ciencia" (Science Fair) is an event focused on the meeting and communication of educational centres, research centres, universities, museums, companies and other scientific institutions whose objectives include the dissemination of science and technology. The USE partners participated with a poster of REMEDIO (Figure 96).

Figure 96 - USE team in Science Fair 2017 in Seville

2.6.1.5.2. TEEVS02 - Transition to a low carbon economy in schools in Seville

Event: Jornada sobre economía baja en carbono en escuelas
Date: 20 March 18 | **Venue:** Instituto de Educación Secundaria Chaves Nogales (Seville, Spain)
Promotor: USE and ClimACT | **Type:** National | **Partner involved:** USE | **Individuals reached:** 40
Short description: Secondary school students received an awareness campaign from researchers from USE, where they had the opportunity to learn about low-carbon economics, such as renewable energy and recycling materials (Figure 97).

Figure 97 - Workshops with students in Seville, Spain.

2.6.1.5.3. TEEVS03 - IV Congreso "Jóvenes con Investigadores"

Event: IV Congreso "Jóvenes con Investigadores" 2018
Date: 24 April 18 | **Venue:** Aula Magna de la Facultad de Química de la Universidad de Sevilla (Seville, Spain)
Promotor: Sociedad Andaluza para la Divulgación de la Ciencia
Type: International | **Partner involved:** USE | **Individuals reached:** *ca.* 400
Short description: Several high school students applied to work in several universities and research centers, being involved in scientific projects that they chose, and supervised by professors and researchers of the University/Institute, with the intention of being involved in the chosen projects and being introduced to the world of Research. The ones that chose the projects of the USE worked in sustainability in the school: effect of green spaces and transport. They analysed the road transport around the school, since schools are one of the main sources of traffic in urban areas. This project assesses the conditions of transport in a congested area of a main road, analysing the fuel consumption and the emissions of vehicles that circulate along the road studied. The purpose of these analyses is to propose actions to reduce the environmental and health risks associated with traffic results, following the European guidelines for a sustainable future scenario.

Link to the program (last accessed December 2018): https://drive.google.com/file/d/1299BpSuD-b8Ac3EH9uHK6a6WHtTAHC-x/view

The results were presented at a regional congress on the 24th of April 24 2018 with the poster shown in Figure 98.

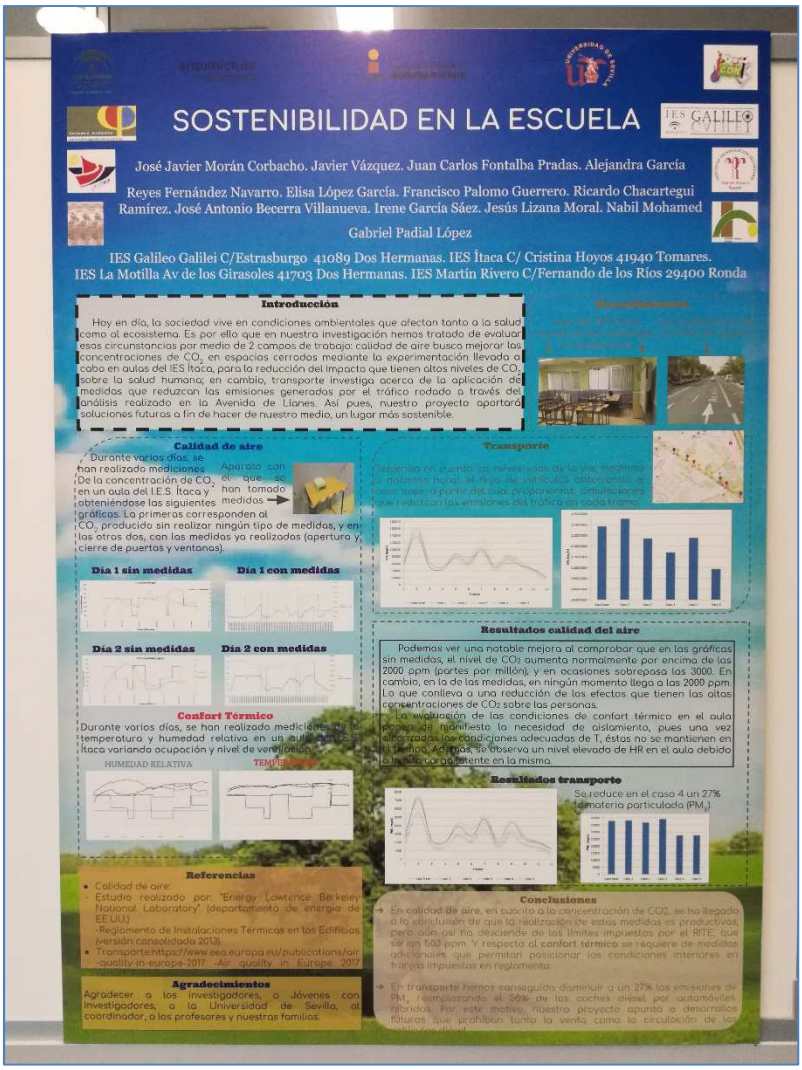


Figure 98 – Poster presented with the achievements obtained at "Jóvenes con Investigadores".

2.6.1.5.4. TEEVS04 - I Feria de Las Ciencias 2018

Event: 16ª Feria de la Ciencia

Date: 3-5 May 18 | **Venue:** FIBES - Palacio de Congresos y Exposiciones Sevilla (Seville, Spain)

Promotor: Sociedad Andaluza para la Divulgación de la Ciencia and Fundación Descubre

Type: International | **Partner involved:** USE | **Individuals reached:** *ca.* 24000

Short description: Similar to the previous edition, the "Feria de la Ciencia" (Science Fair) was focused on the meeting and communication of educational centres, research centres, universities, museums, companies and other scientific institutions whose objectives include the dissemination of science and technology. The USE partners participated with several roll-ups of REMEDIO (Figure 99).

Figure 99- Feria de la Ciencia in Seville, Spain.

2.7. Activity 2.7 – REMEDIO Communication activities to general public activities and environmental awareness empower

2.7.1. Deliverable 2.7.1. Informative materials on pilot activities in local mother language

This deliverable compile all informative materials regarding pilot activities that were created under REMEDIO project in each mother language (section 2.7.1.1.) and also local/national media outputs (section 2.7.1.2.).

2.7.1.1. Informative materials on pilot activities

2.7.1.1.1. International

2.7.1.1.1.1. IMPALMLI01 – Video "What is Interreg MED REMEDIO?"

Material: Video "What is Interreg MED REMEDIO?"
Date: May 19 | **Type**: Dissemination materials – Video (English)
Promotor: IST | **Type:** International | **Partner involved:** all partners
Short description:
A short video using a story telling approach was created to easily explain the concept of REMEDIO project and its goals. This video was submitted to the Interreg SLAM Competition and it was disseminated in the social platforms of REMEDIO project, namely, Facebook and Youtube.
The video can be seen in the following Youtube link:
https://www.youtube.com/watch?v=zU1soWAMfxE&t=28s

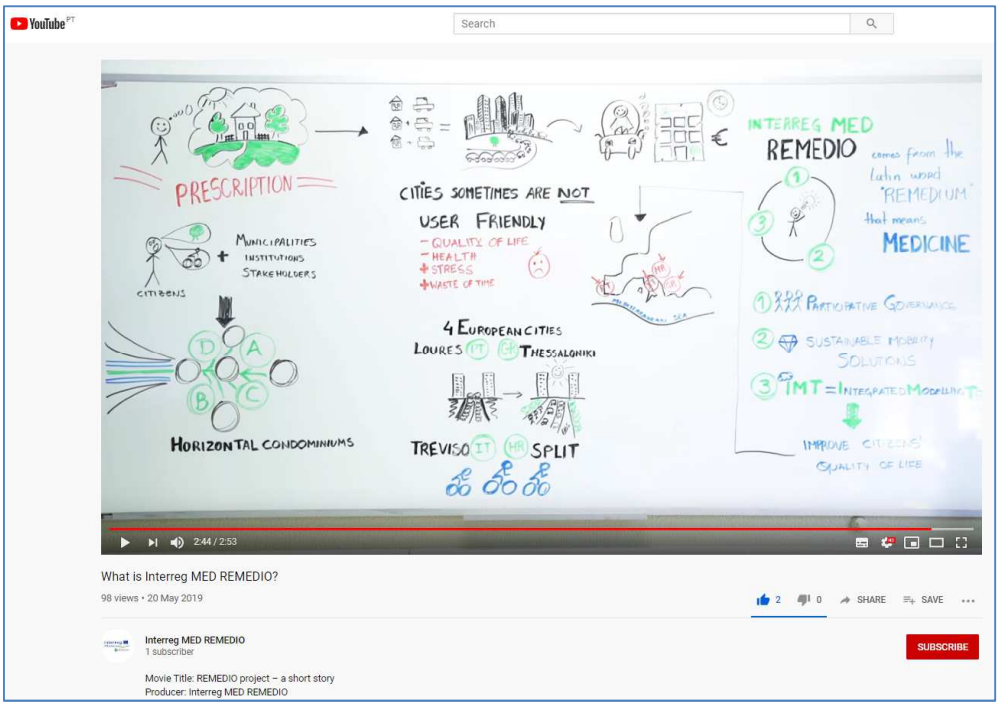


Figure 70 – Video of REMEDIO project using a story telling approach.

2.7.1.1.2. Croatia

2.7.1.1.2.1. IMPALC01 – T-shirt "REMEDIO - PUBLIC BIKE SYSTEM"

Material: T-shirt "REMEDIO - PUBLIC BIKE SYSTEM"
Date: July 19 | **Type**: Dissemination materials – T-shirts
Promotor: CS | **Type:** National | **Partner involved:** CS
Short description:
Under the communication activities, City of Split produced 60 promotional t-shirts with the moto “REMEDIO - PUBLIC BIKE SYSTEM” to offer to all participants of the opening day of the Public Bike System in Split in July 2019.

Figure 100 – T-shirts “REMEDIO - Public Bike System” produced for the opening day of the Public Bike System in Split.

2.7.1.1.3. Greece

2.7.1.1.3.1. IMPALMLG01 – Student Environmental Conference on Sustainable City

Event: Student Environmental Conference on Sustainable City
Date: 20 April 18 | **Location**: City Hall, Thessaloniki, Greece
Type: Dissemination materials – Poster (Greek)
Short description: The Environmental Education Center of Eleftherios Kordelio and Vertiskos, in cooperation with the Municipality of Thessaloniki (Directorate of Urban Environmental Management - Department of Environmental Actions), implemented 6th Student Environmental Conference on Sustainable City, within its educational network "Sustainable City, the city as a field of training for sustainability" that coordinates. The following poster about REMEDIO was produced to be exhibited in the event:

Figure 101 - Poster developed by the organizer for the Student Environmental Conference on Sustainable City

2.7.1.1.3.2. IMPALMLG02 – Cooperation Day

Event: Cooperation Day
Date: 17 July 18 | **Location**: Thessaloniki, Greece | **Promotor:** MDAT
Type: Dissemination materials – Poster (Greek)
Short description: The poster below was created to disseminate the event “Cooperation Day”.

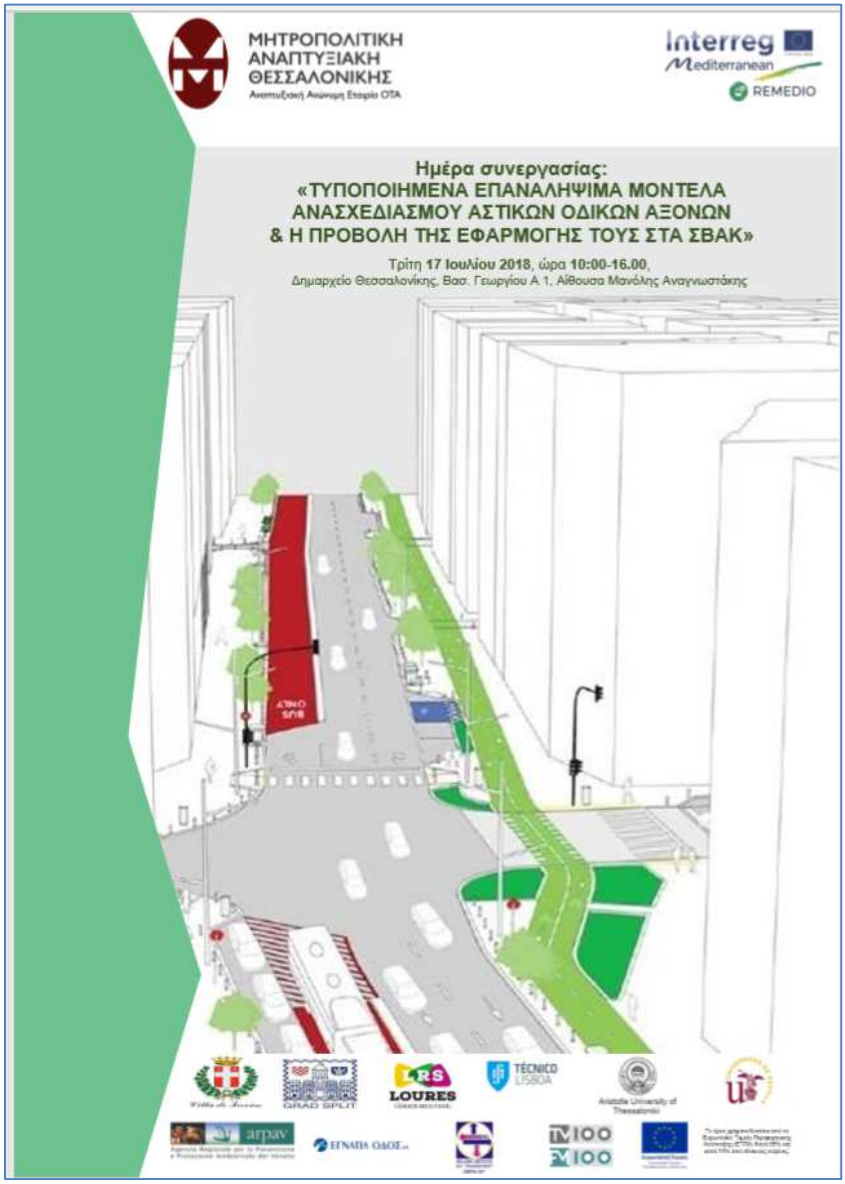


Figure 102 - Poster developed for the "Cooperation Day" in Thessaloniki in July 2018

2.7.1.1.4. Italy

2.7.1.1.4.1. IMPALMLI01 – Italian national portal "GELSO"

Date: 2018 | **Type**: Data sheet about REMEDIO (italian)
Short description:

Data sheet describing REMEDIO for the Italian national portal "GELSO" collecting best practise on local environmental sustainability. More information can be found in the following links:

http://www.sinanet.isprambiente.it/gelso/banca-dati/ispra-arpa-appa/arpa-veneto/remedio-riqualificazione-di-comunita-urbane-congestionate-dal-traffico-attraverso-soluzioni-per-la-mobilita-a-basse-emissioni-di-carbonio

http://www.sinanet.isprambiente.it/gelso

2.7.1.1.4.2. IMPALMLI02 – Book chapter about REMEDIO

Date: 2018 | **Type**: Book chapter about REMEDIO (italian)
Short description:
Chapter describing REMEDIO project as a best practise for annex titled "Innovative methods and tools for the quality of the urban environment" of the "XIV Annual Report on Urban Quality of Life", 2018 edition, pp 38-40.
Original title: "Strumenti e metodi innovative per la qualità dell'ambiente urbano", allegato al XIV Rapporto Qualità dell'ambiente urbano - Edizione 2018, edit by the National Environmental Network of Public Agencies in charge of Environmental control and prevention in Italy (SNPA and SINANET). Documents available in the following links:
http://www.isprambiente.gov.it/it/pubblicazioni/stato-dellambiente/xiv-rapporto-qualita-dell2019ambiente-urbano-edizione-2018
http://www.isprambiente.gov.it/files2018/pubblicazioni/stato-ambiente/FOCUSStrumentiemetodi.pdf

2.7.1.1.4.3. IMPALMLI03 – Promotional campaign for the Association "I love Strada Ovest"

Date: September– November 2019 | **Type**: Various
Short description:

A promotional campaign has been realized from late August to November 2019 to promote and to present the new Association "I love Strada Ovest in Classe A" to the general public. This association was created within the framework of the REMEDIO project.

Within this promotional campaign, the following outputs were created:

2.7.1.1.4.3.1. Logo and image of the association

The logo was created using as inspiration the classical logo of "I love NY" that was created the graphic designer Milton Glaser (1976) for New York city. The logo for the association used the red heart but including a stylized road and the object of the love is "Strada Ovest in Classe A". The logo is presented in Figure 103 .
"Strada Ovest in Classe A" stands for "West Road in A Class" and means a project and a commitment toward a renewal of the road and its many private and commercial buildings in order to maximize energy consumption.

Figure 103 - The logo of the Association "I love Strada Ovest in Classe A".

In the image of the leaflet, the Horizontal Condominium concept has been materialized in an image focusing on the people (community) living in the Horizontal Condominium in order to address the participative governance approach proposed by the Association. In the leaflet, a very stylized representation of the road was included as well, as can be seen on Figure 104.

Figure 104 - The image of the Association "I love Strada Ovest in Classe A".

2.7.1.1.4.3.2. Website and newsletters

The website (https://ilovestradaovest.it/) of the association was created in late August 2019 in order to promote its goals and activities. From 1st September to 31st October 2019, two newsletters were created and disseminated in order to present the association, local opportunities and events that implement the main goals of the association.

In Figure 105 is possible to see a short presentation of the association in the section "Who we are" available at the website.

Figure 105. The "Who we are session" of the website Ilovestradaovest.it.

2.7.1.1.4.3.3. Social media account and discussion group

As it can be seen in Figure 106*, a Facebook* webpage was created in order to spread news about local initiatives of the association or events in the area with interests in line with the main goals of the association.

Within the Facebook account, a discussion group was created to collect suggestions and comments from citizens. The discussion group will go on working under the moderation of the Municipality of Treviso staff, namely from its environmental and traffic departments.

The facebook page of the association is available in the following link:

www.facebook.com/ILoveStradaOvest/

https://www.facebook.com/ILoveStradaOvest/

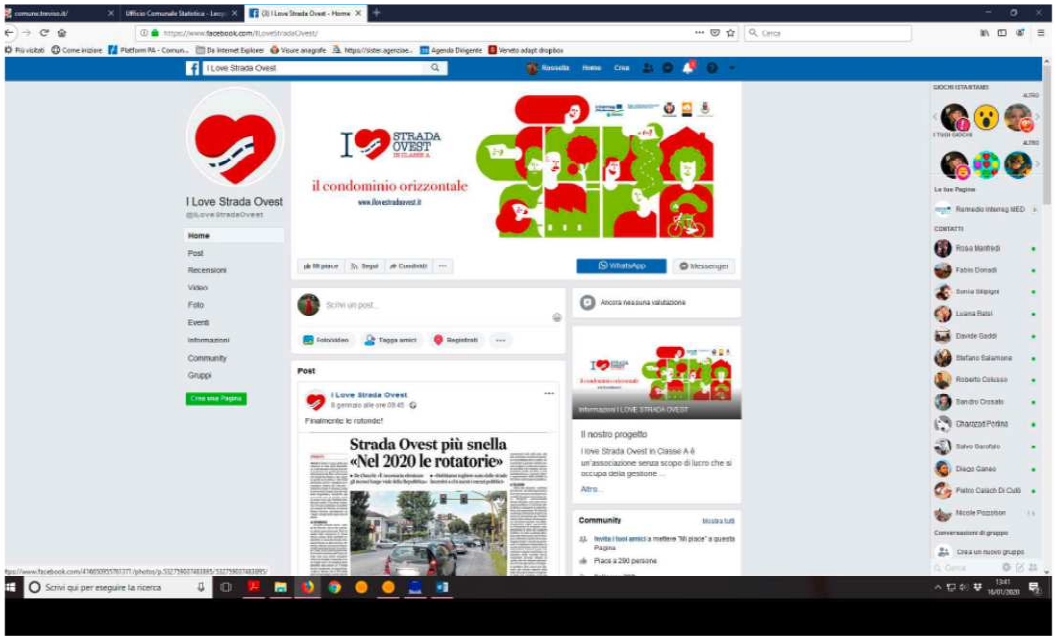


Figure 106. The Facebook account of the Association.

2.7.1.1.4.3.4. Video interviews with founding members

Four founding members of the Association "I love Strada Ovest in Classe A" have been recording testimonials regarding the importance of the citizens supporting and subscribing the association in order to work for a better low carbon future of the West Road. Their interviews were published on the association website and Facebook account, with invitations to other citizens and business operators living along the road to do the same, as in a sort of word-of-mouth game. The interviews are at the following links:

https://www.youtube.com/watch?v=Dn8BncKjAzI
https://www.youtube.com/watch?v=oIj2IEo0NfE
https://www.youtube.com/watch?v=gcObbUM0IZw

https://www.youtube.com/watch?v=9Fnzd-oJHuQ

2.7.1.1.4.3.5. Mascot and window stickers

A mascot was created to impersonate the horizontal apartment building in the figure of Wilma, the concierge woman who is a bit of a hangman and who is eager to put the various tenants in contact.

Wilma was done in an almost full-scale cardboard version and was positioned in front of the civic numbers of those who joined the word of mouth game, as can be seen in Figure 107.

Window stickers for the shops along the West Road were also created.

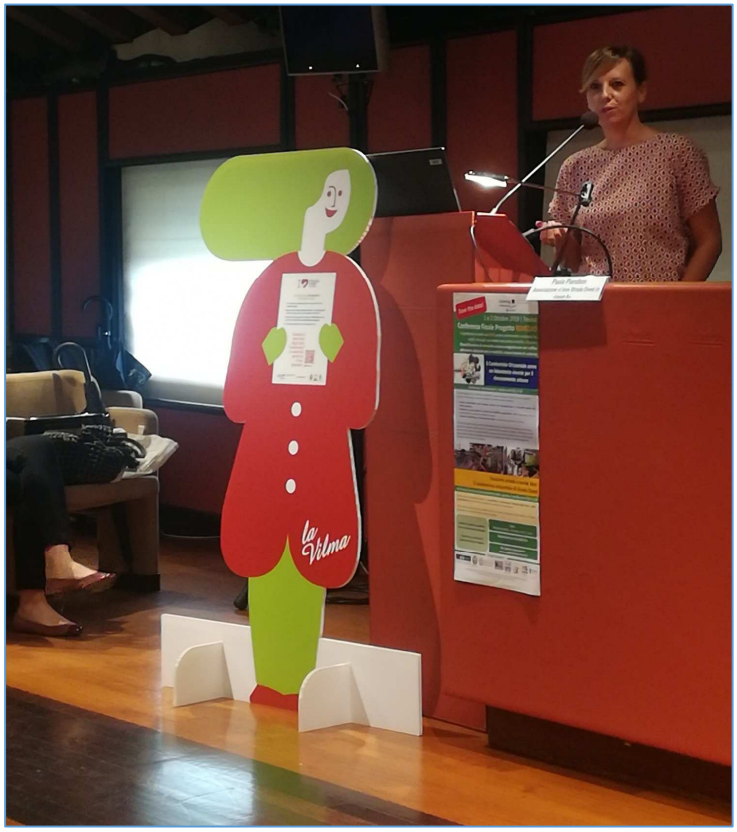


Figure 107. The cardboard of Wilma, the doorkeeper of the Horizontal Condominium.

2.7.1.1.4.3.6. Event within the 2019 [e]Design Festival

In the 2019 edition of the [e]Design festival (Figure 108), Paolo Pierobon was invited to present a testimonial speech regarding the Horizontal Condominium initiative in Treviso, on 20th of October 2019. Around 50 people attended the event.

Figure 108. [e]Design festival poster.

2.7.1.1.5. Portugal

2.7.1.1.5.1. IMPALMLP01 – Poster about air quality campaign

Event: Air quality monitoring campaign at pilot area of Loures
Date: November 16 – May 2018 | **Location**: Avenue of Moscavide, Loures, Portugal
Type: Dissemination materials – Poster (Portuguese)
Short description: A poster was developed by IST to be showed at the air quality monitoring site at Avenue of Moscavide (Loures' pilot area) to inform the population about the project and the goals of the monitoring.

Figure 109 - Poster for the air quality campaigns at Loures' pilot area.

2.7.1.1.5.2. IMPALMLP02 – Flyer for awareness campaigns

Event: Awareness events
Date: May 2018 | **Location**: Portugal | **Type**: Dissemination materials – Flyer (Portuguese)
Short description: A flyer about REMEDIO project was developed by IST and CML to be disseminate in all awareness events.

Figure 110 - Flyer for awareness events (in Portuguese).

2.7.1.1.5.3. IMPALMLP03 – Educational and Awareness video from Loures

Event: Educational and Awareness video from Loures
Date: June 2018 | **Location**: Portugal | **Type**: Dissemination materials – Video (Portuguese)
Short description: In collaboration with the students of the Environmental Health Degree from the ESTeSL, IST developed one video about the interventions in the pilot area of Moscavide. This video was launched at 11 June 2018 and was entitled “Um REMEDIO para os problemas de mobilidade”.
The video is available in the following link:
www.youtube.com/watch?v=5EqJPrOnncE

Figure 111 - Educational and Awareness video entitled “Um REMEDIO para os problemas de mobilidade”.

2.7.1.2. REMEDIO in Media

2.7.1.2.1. Croatia

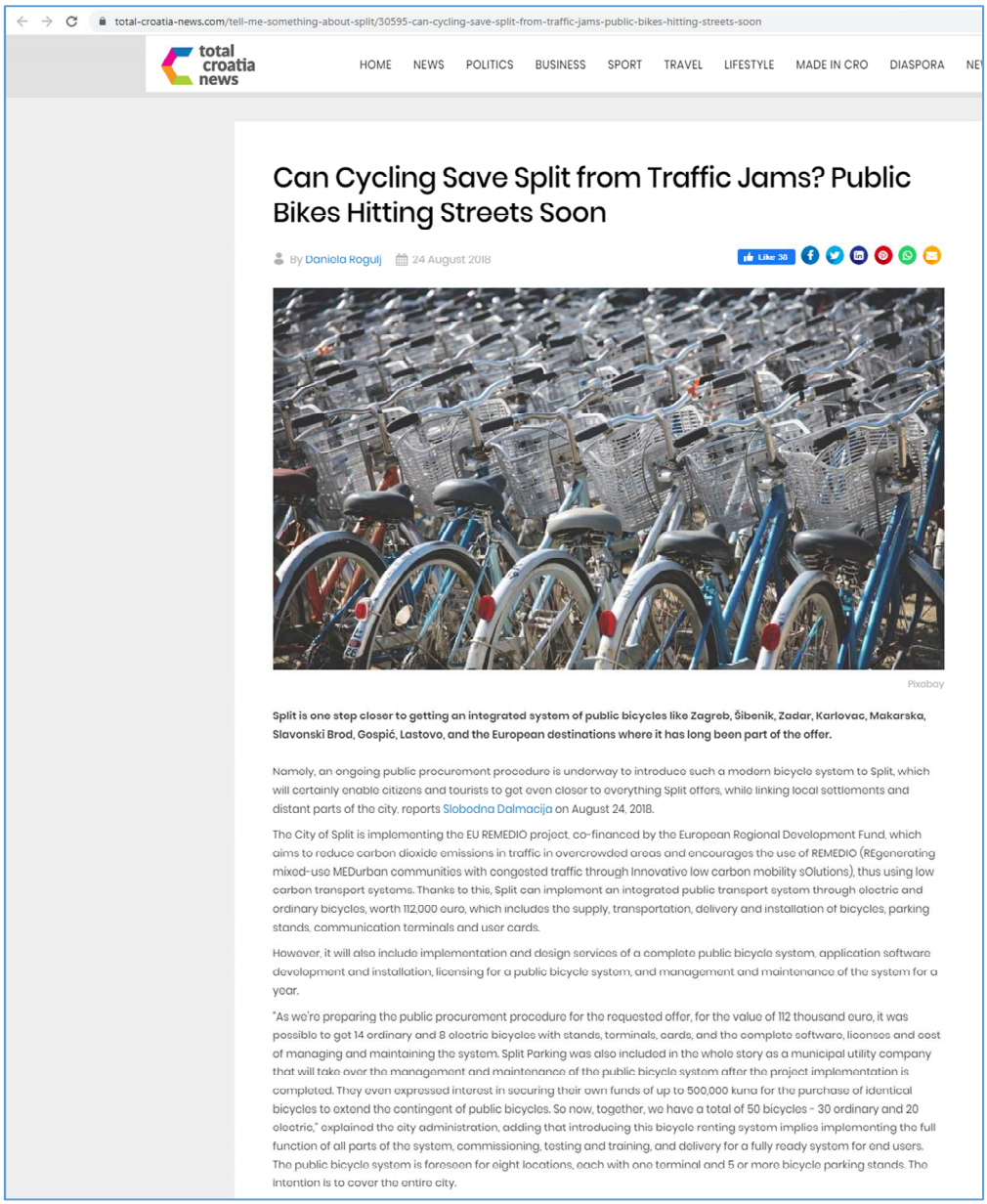
2.7.1.2.1.1. RiMC01 – Article in national news portal “Total Croatia News” - I

Date: 24 March 18 | **Type**: Article (English)

Short description:

Article about the proposed action of REMEDIO’s project to implement a public bike system in the city of Split was published in the Portal “Total Croatia News”. The article had the following title: “Can Cycling Save Split from Traffic Jams? Public Bikes Hitting Streets Soon”.

Link: https://www.total-croatia-news.com/tell-me-something-about-split/30595-can-cycling-save-split-from-traffic-jams-public-bikes-hitting-streets-soon



total-croatia-news.com/tell-me-something-about-split/30595-can-cycling-save-split-from-traffic-jams-public-bikes-hitting-streets-soon

total croatia news

HOME NEWS POLITICS BUSINESS SPORT TRAVEL LIFESTYLE MADE IN CRO DIASPORA

Can Cycling Save Split from Traffic Jams? Public Bikes Hitting Streets Soon

By Daniela Rogulj 24 August 2018

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Split is one step closer to getting an integrated system of public bicycles like Zagreb, Šibenik, Zadar, Karlovac, Makarska, Slavonski Brod, Gospić, Lastovo, and the European destinations where it has long been part of the offer.

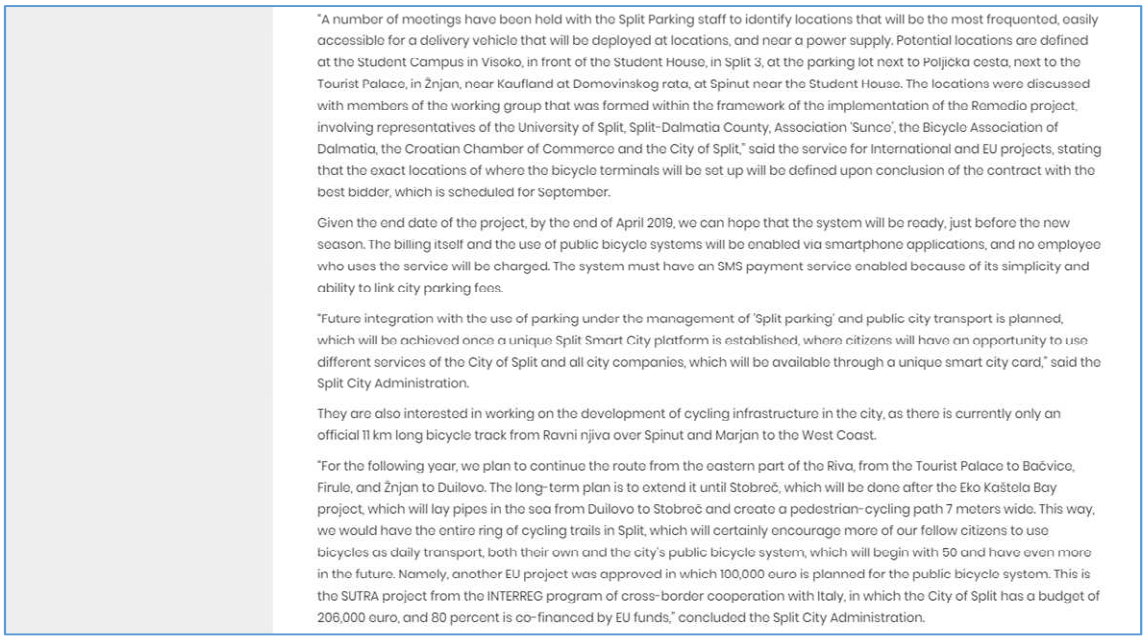
Namely, an ongoing public procurement procedure is underway to introduce such a modern bicycle system to Split, which will certainly enable citizens and tourists to get even closer to everything Split offers, while linking local settlements and distant parts of the city, reports Slobodna Dalmacija on August 24, 2018.

The City of Split is implementing the EU REMEDIO project, co-financed by the European Regional Development Fund, which aims to reduce carbon dioxide emissions in traffic in overcrowded areas and encourages the use of REMEDIO (REgenerating mixed-use MEDurban communities with congested traffic through Innovative low carbon mobility sOlutions), thus using low carbon transport systems. Thanks to this, Split can implement an integrated public transport system through electric and ordinary bicycles, worth 112,000 euro, which includes the supply, transportation, delivery and installation of bicycles, parking stands, communication terminals and user cards.

However, it will also include implementation and design services of a complete public bicycle system, application software development and installation, licensing for a public bicycle system, and management and maintenance of the system for a year.

"As we're preparing the public procurement procedure for the requested offer, for the value of 112 thousand euro, it was possible to get 14 ordinary and 8 electric bicycles with stands, terminals, cards, and the complete software, licenses and cost of managing and maintaining the system. Split Parking was also included in the whole story as a municipal utility company that will take over the management and maintenance of the public bicycle system after the project implementation is completed. They even expressed interest in securing their own funds of up to 500,000 kuna for the purchase of identical bicycles to extend the contingent of public bicycles. So now, together, we have a total of 50 bicycles - 30 ordinary and 20 electric," explained the city administration, adding that introducing this bicycle renting system implies implementing the full function of all parts of the system, commissioning, testing and training, and delivery for a fully ready system for end users. The public bicycle system is foreseen for eight locations, each with one terminal and 5 or more bicycle parking stands. The intention is to cover the entire city.

Figure 112- Article in “Total Croatia News” news portal – I-a



"A number of meetings have been held with the Split Parking staff to identify locations that will be the most frequented, easily accessible for a delivery vehicle that will be deployed at locations, and near a power supply. Potential locations are defined at the Student Campus in Visoko, in front of the Student House, in Split 3, at the parking lot next to Poljička cesta, next to the Tourist Palace, in Žnjan, near Kaufland at Domovinskog rata, at Spinut near the Student House. The locations were discussed with members of the working group that was formed within the framework of the implementation of the Remedio project, involving representatives of the University of Split, Split-Dalmatia County, Association 'Sunce', the Bicycle Association of Dalmatia, the Croatian Chamber of Commerce and the City of Split," said the service for International and EU projects, stating that the exact locations of where the bicycle terminals will be set up will be defined upon conclusion of the contract with the best bidder, which is scheduled for September.

Given the end date of the project, by the end of April 2019, we can hope that the system will be ready, just before the new season. The billing itself and the use of public bicycle systems will be enabled via smartphone applications, and no employee who uses the service will be charged. The system must have an SMS payment service enabled because of its simplicity and ability to link city parking fees.

"Future integration with the use of parking under the management of 'Split parking' and public city transport is planned, which will be achieved once a unique Split Smart City platform is established, where citizens will have an opportunity to use different services of the City of Split and all city companies, which will be available through a unique smart city card," said the Split City Administration.

They are also interested in working on the development of cycling infrastructure in the city, as there is currently only an official 11 km long bicycle track from Ravni njiva over Spinut and Marjan to the West Coast.

"For the following year, we plan to continue the route from the eastern part of the Riva, from the Tourist Palace to Bačvice, Firule, and Žnjan to Duilovo. The long-term plan is to extend it until Stobreč, which will be done after the Eko Kaštela Bay project, which will lay pipes in the sea from Duilovo to Stobreč and create a pedestrian-cycling path 7 meters wide. This way, we would have the entire ring of cycling trails in Split, which will certainly encourage more of our fellow citizens to use bicycles as daily transport, both their own and the city's public bicycle system, which will begin with 50 and have even more in the future. Namely, another EU project was approved in which 100,000 euro is planned for the public bicycle system. This is the SUTRA project from the INTERREG program of cross-border cooperation with Italy, in which the City of Split has a budget of 206,000 euro, and 80 percent is co-financed by EU funds," concluded the Split City Administration.

Figure 113- Article in "Total Croatia News" news portal – I-b

2.7.1.2.1.2. RiMC02 – Article in regional newspaper and news portal

Date: November 18 | **Type**: Article (Croatian)
Short description: Article in regional newspaper and news portal with national significance "Slobodna Dalmacija". The article announced the implementation of bike-sharing system in the City of Split within the framework of REMEDIO project.
Link: https://slobodnadalmacija.hr/dalmacija/split/clanak/id/573926/ala-sta-cemo-se-besplatno-vozat-split-dobiva-javne-bicikle-30-obicnih-i-20-elektricnih

Figure 114- Article in "Slobodna Dalmacija" news portal

2.7.1.2.1.3. RiMC03 – Article in regional newspaper and news portal

Date: 27 March 19 | **Type**: Article (Croatian)
Short description:
Article about the implementation of the public bike system in city of Split, under the "REMEDIO" project, was published in regional newspaper and news portal with national significance “Slobodna Dalmacija” in March.
Link: http://sd.live.sistemi.hr/dalmacija/split/clanak/id/595842/sustav-javnih-bicikala-konacno-ce-zazivjeti-i-u-splitu-evo-na-kojim-sve-lokacijama-ce-biti-dostupne-graanima

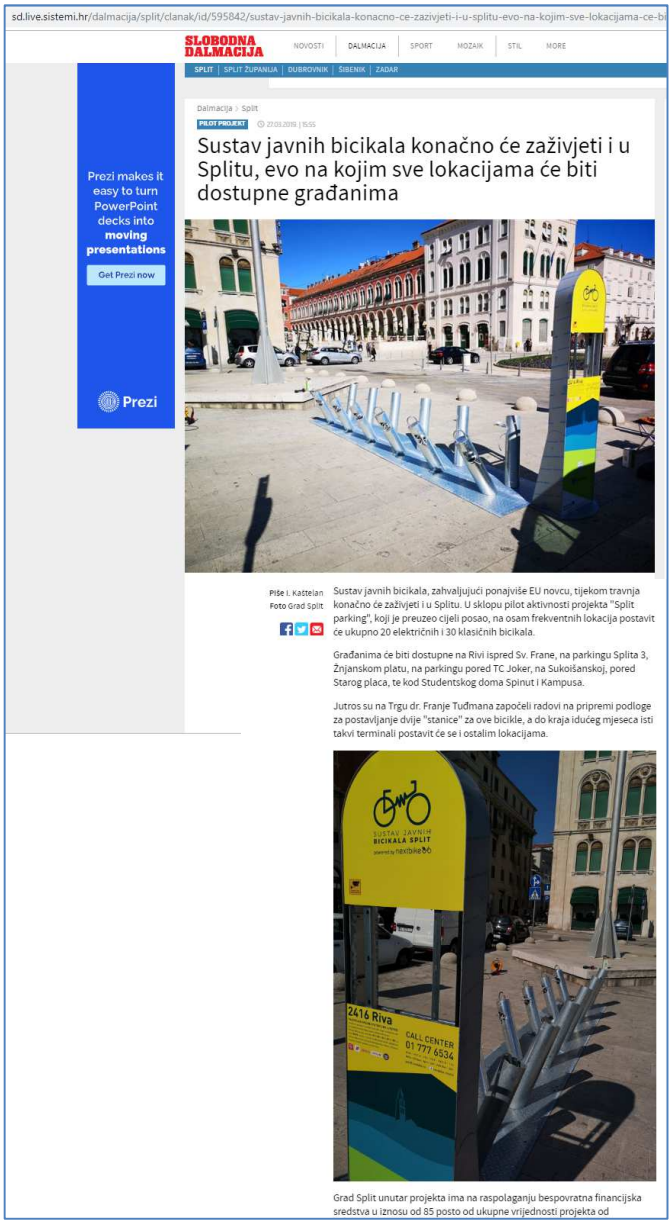


Figure 115 - Article in “Slobodna Dalmacija” news portal

2.7.1.2.1.4. RiMC04 – Article in national news portal “Total Croatia News” - II

Date: 27 March 19 | **Type**: Article (English)
Short description:
Article about the implementation of the public bike system in the city of Split, under the "REMEDIO" project, was published in the Portal “Total Croatia News”. The article had the following title: “Work Begins on Setting Up New Public Bicycle System in Split”.
Link: https://www.total-croatia-news.com/lifestyle/34931-public-bicycle-split

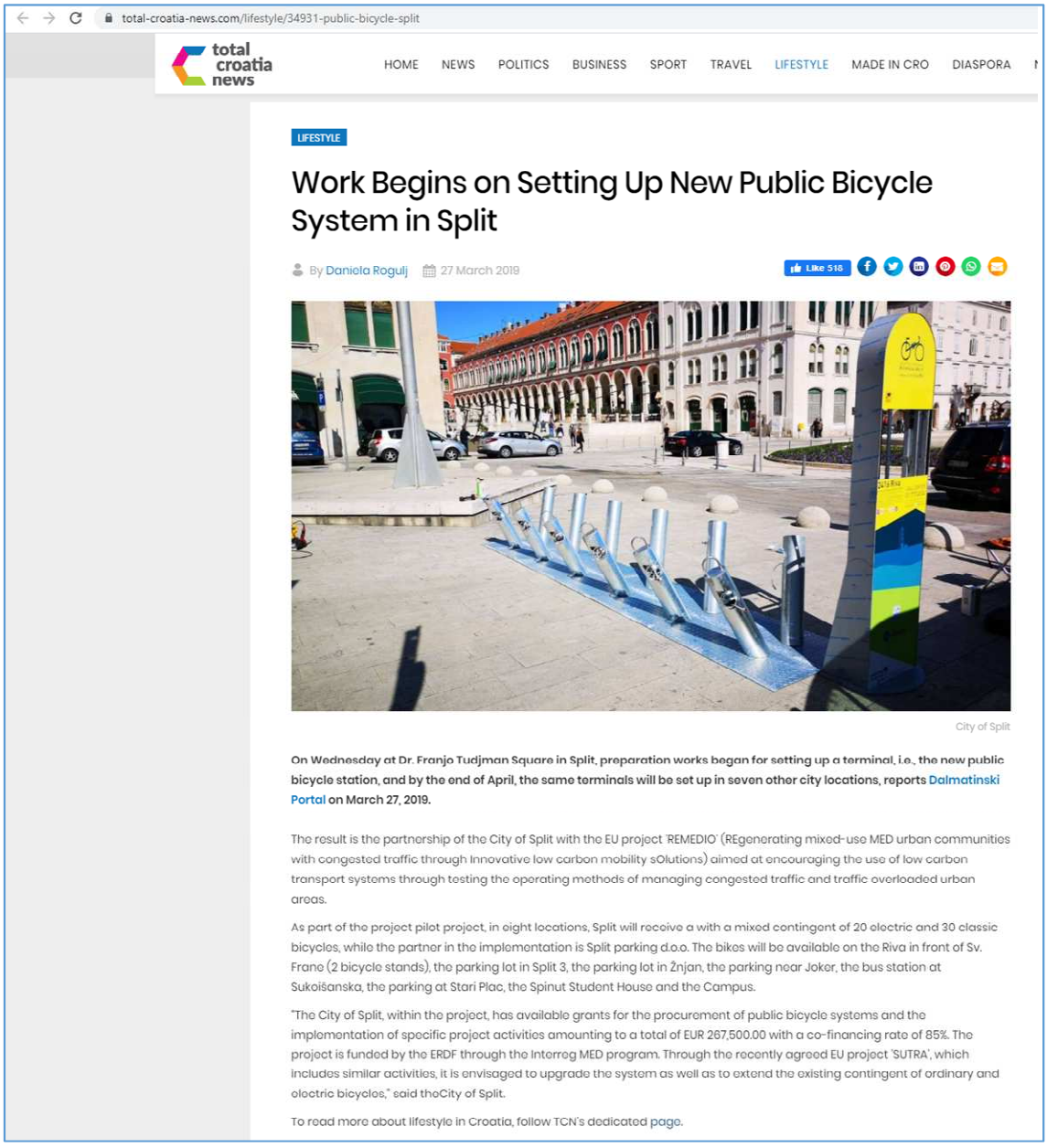


Figure 116- Article in “Total Croatia News” news portal - II

2.7.1.2.1.5. RiMC05 – Article in national news portal “Total Croatia News” - III

Date: 11 July 19 | **Type**: Article (English)
Short description:
Article about the opening of the public bike system in the city of Split, under the "REMEDIO" project, was published in the Portal “Total Croatia News”. The article had the following title: “It's Finally Here: Public Bicycles Now Available in Split!”.
Link: https://www.total-croatia-news.com/travel/37090-split

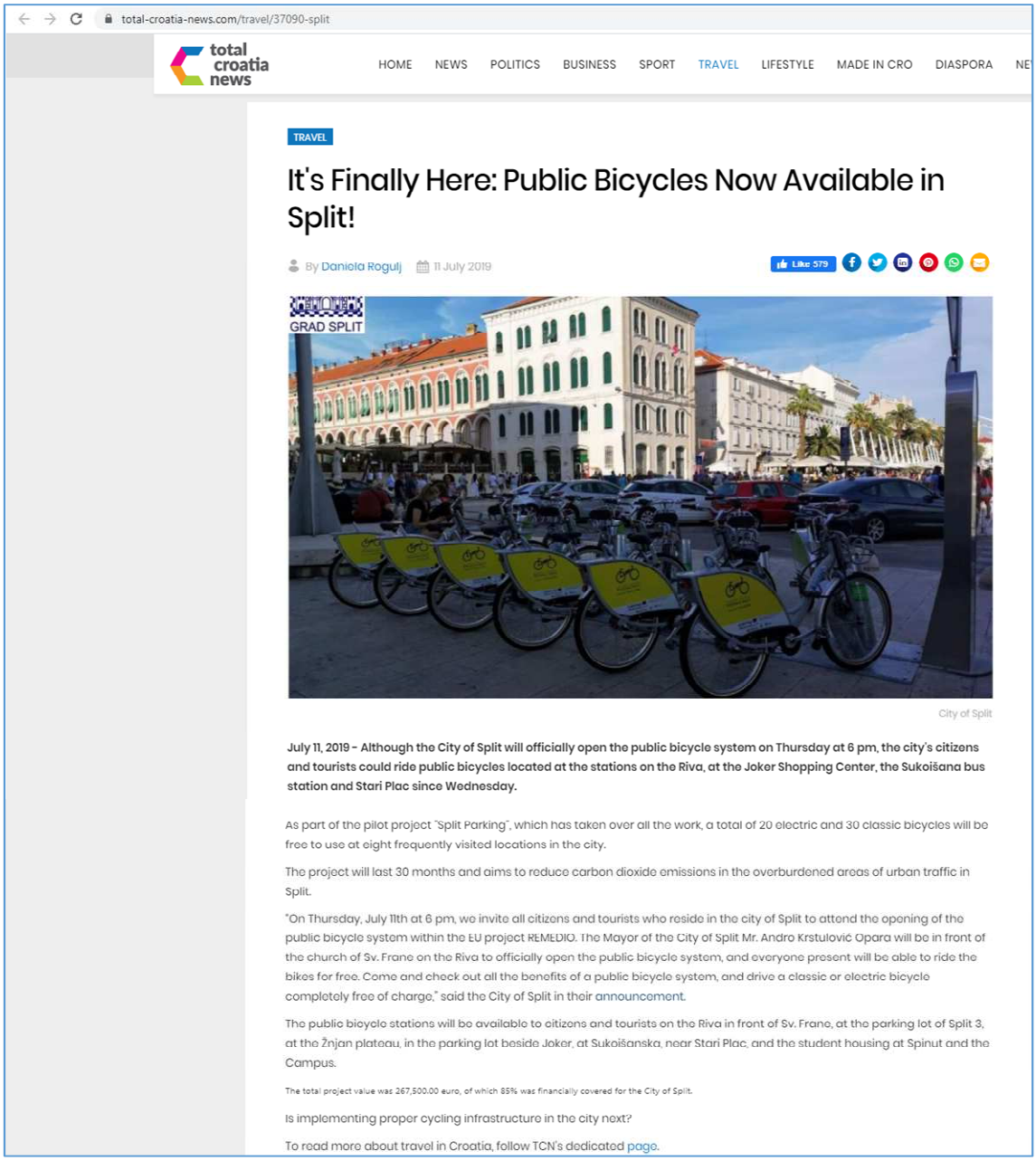


Figure 117 - Article in “Total Croatia News” news portal - III

2.7.1.2.1.6. RiMC06 – Article in the “dalmatinski Portal”

Date: July 19 | **Type**: Article (Croatian)
Short description:
Article about the opening of the public bike system in the city of Split, under the "REMEDIO" project, was published in the Portal “dalmatinski Portal”. The article had the following title: “VELIKI DAN ZA SPLIT Pušten u rad prvi sustav javnih električnih bicikala!”.
Link: https://dalmatinskiportal.hr/vijesti/veliki-dan-za-split-pusten-u-rad-prvi-sustav-javnih-elektricnih-bicikala/48285

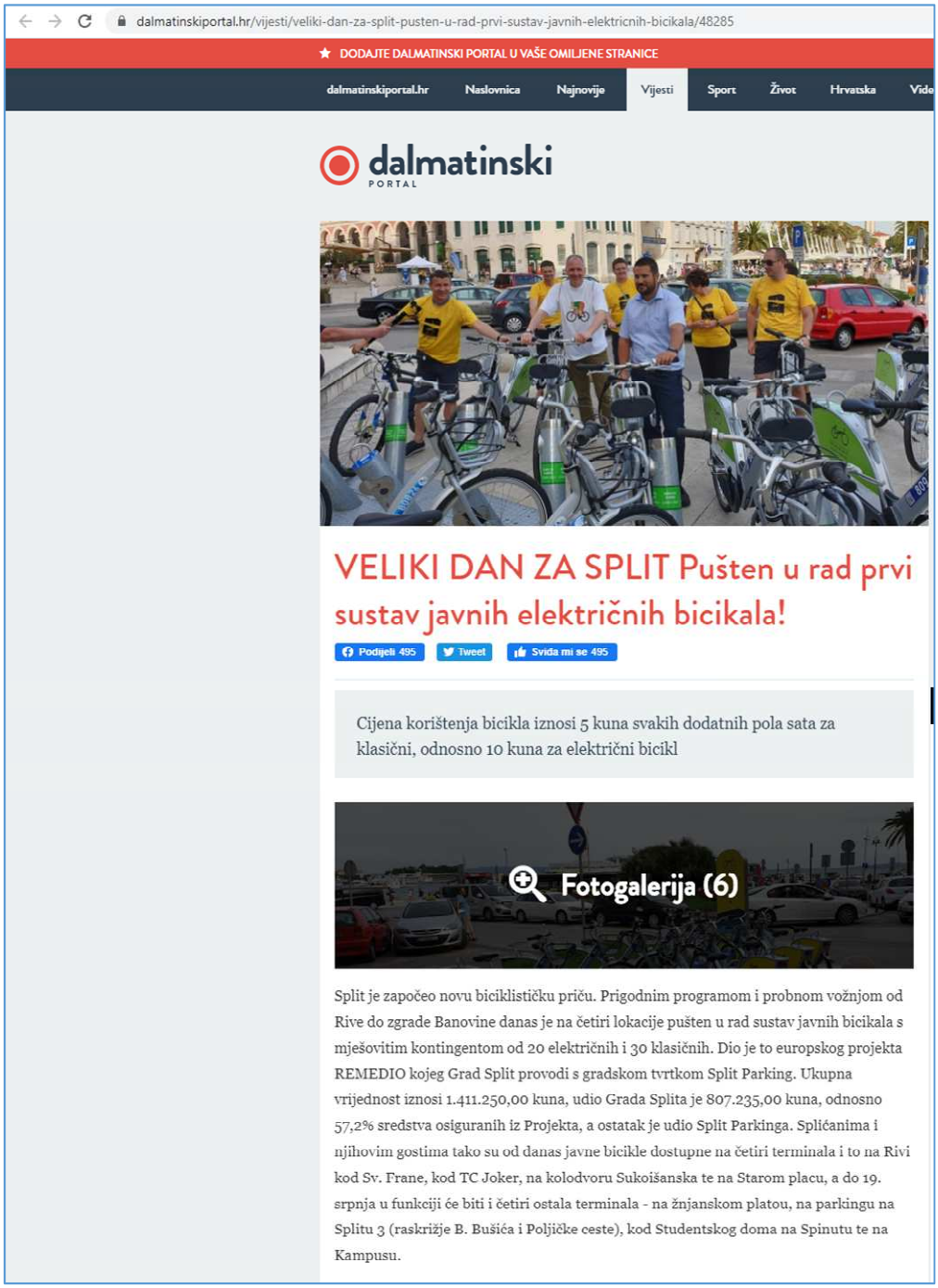


Figure 118 - Article in the “dalmatinski Portal” – a.

Gradonačelnik **Andro Krstulović Opara** rekao je kako Split definitivno započinje novu biciklističku priču.

- Imamo nove bicikle, klasične i električne. Vjerujem da će naši građani usvojiti bicikle kao način zdravijeg života, a nove biciklističke staze realizirat ćemo u suradnji s biciklističkim klubovima kroz slične europske projekte - rekao je gradonačelnik Krstulović Opara.

Dodao je kako je ovo dio nove priče sustavnog rješavanja pitanja prometa u gradu.

- Novi autobusi koji uskoro stižu, gradski metro, buduća željeznica između splitske zračne i trajektne luke, gradnja novih garaža, sve je to dio novog multimodalnog principa funkcioniranja prometa u Splitu.

Marko Bartulić, direktor Split parkinga, najavio je i novi kontingent vrijednosti 700 tisuća kuna koji stiže kroz narednih mjesec i pol dana.

- To su četiri nove postaje i 25 bicikli, a sljedeće godine u planu je još desetak terminala - cilj je u svakom kotaru imati bar po jedan stalak koji će omogućiti građanima najjeftiniji oblik prijevoza unutar grada – zaključio je Bartulić.

Operater sustava je Nextbike, a direktor **Ante Gustin** rekao je kako je Split 20. grad u Hrvatskoj koji je implementirao njihov sustav te se zahvalio Gradu i Split Parkingu na suradnji. Rekao je kako u Hrvatskoj imaju više od 800 javnih bicikli te da dosad nisu zabilježili ni krađe niti veća oštećenja, upravo radi registracije korisnika i čipova na svakoj bicikli.

Grad Split jedan je od partnera na EU projektu 'REMEDIO', iz programa INTERREG MEDITERAN, koji je usmjeren na poticanje korištenja nisko-ugljičnih prometnih sustava, s ciljem smanjenja zagušenosti prometnica i emisije CO_2 u prometu, što je česti problem velikog broja mediteranskih gradova kojima nedostaju primjerena prometna rješenja, pa tako i grada Splita, a sve kroz testiranje modela integriranog sustava niskougljičnog prijevoza. Kroz projekt 'REMEDIO' osigurana su EU sredstva za prvu godinu rada Sustava. U tom razdoblju za korisnike je osigurano 30 min dnevno besplatnog korištenja Sustava, uz obveznu registraciju, odnosno aktivaciju korisničkog računa. Aktivacija računa korisnika je potrebna u smislu sigurnosti te osiguranja dostupnosti Sustava većem broju korisnika pri tome maksimalno reducirajući eventualne zlouporabe.

niskougljičnog prijevoza. Kroz projekt 'REMEDIO' osigurana su EU sredstva za prvu godinu rada Sustava. U tom razdoblju za korisnike je osigurano 30 min dnevno besplatnog korištenja Sustava, uz obveznu registraciju, odnosno aktivaciju korisničkog računa. Aktivacija računa korisnika je potrebna u smislu sigurnosti te osiguranja dostupnosti Sustava većem broju korisnika pri tome maksimalno reducirajući eventualne zlouporabe.

Sama registracija je besplatna, a aktivacija računa košta 5 kuna te vrijedi za cijeli Nextbike sustav bilo gdje u svijetu, dok navedeni iznos ujedno ostaje raspoloživ na računu korisnika za sve dodatne vožnje. Cijena korištenja bicikla iznosi 5 kuna svakih dodatnih pola sata za klasični, odnosno 10 kuna za električni bicikl. Cijena sezonske pretplate iznosi 200 kuna, vrijedi godinu dana i uključuje neograničeni broj besplatnih vožnji u trajanju od 30 minuta po biciklu, dok za dodatne vožnje vrijedi isti način kao i kod 'pay as you go' opcije u prvom slučaju. Odabrani dobavljač, nakon provedene javne nabave je upravo hrvatska tvrtka Sustav javnih bicikala d.o.o. iz Zagreba koja je licencirani partner globalnog Nextbike sustava javnih bicikala, a koji je zastupljen u više od 250 gradova diljem svijeta.

N.M. | 11. 07. 2019. | 21:46h

Figure 119 - Article in the "dalmatinski Portal" – b.

2.7.1.2.1.7. RiMC07 – Article in national news portal “Total Croatia News” - IV

Date: 14 October 19 | **Type**: Article (English)

Short description:

Article about the success rate of the implementation of the public bike system in the city of Split among users for the first two months after the opening, under the "REMEDIO" project, was published in the Portal “Total Croatia News”. The article had the following title: “New Transport Trend in Split: Public Bicycle Rentals Jumped 200% in September”.

Link: https://www.total-croatia-news.com/lifestyle/39017-split

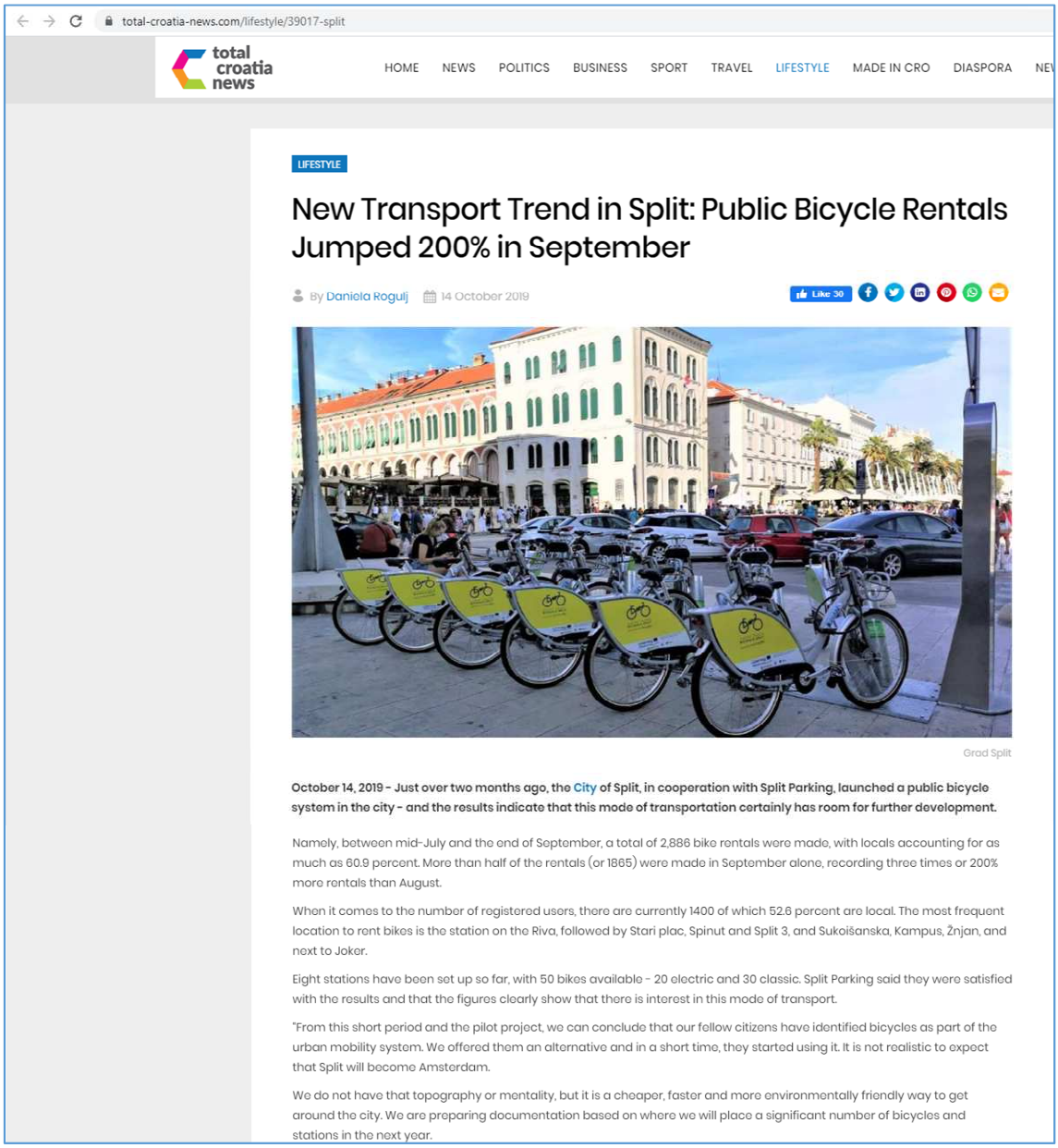


Figure 120- Article in “Total Croatia News” news portal – IV-a

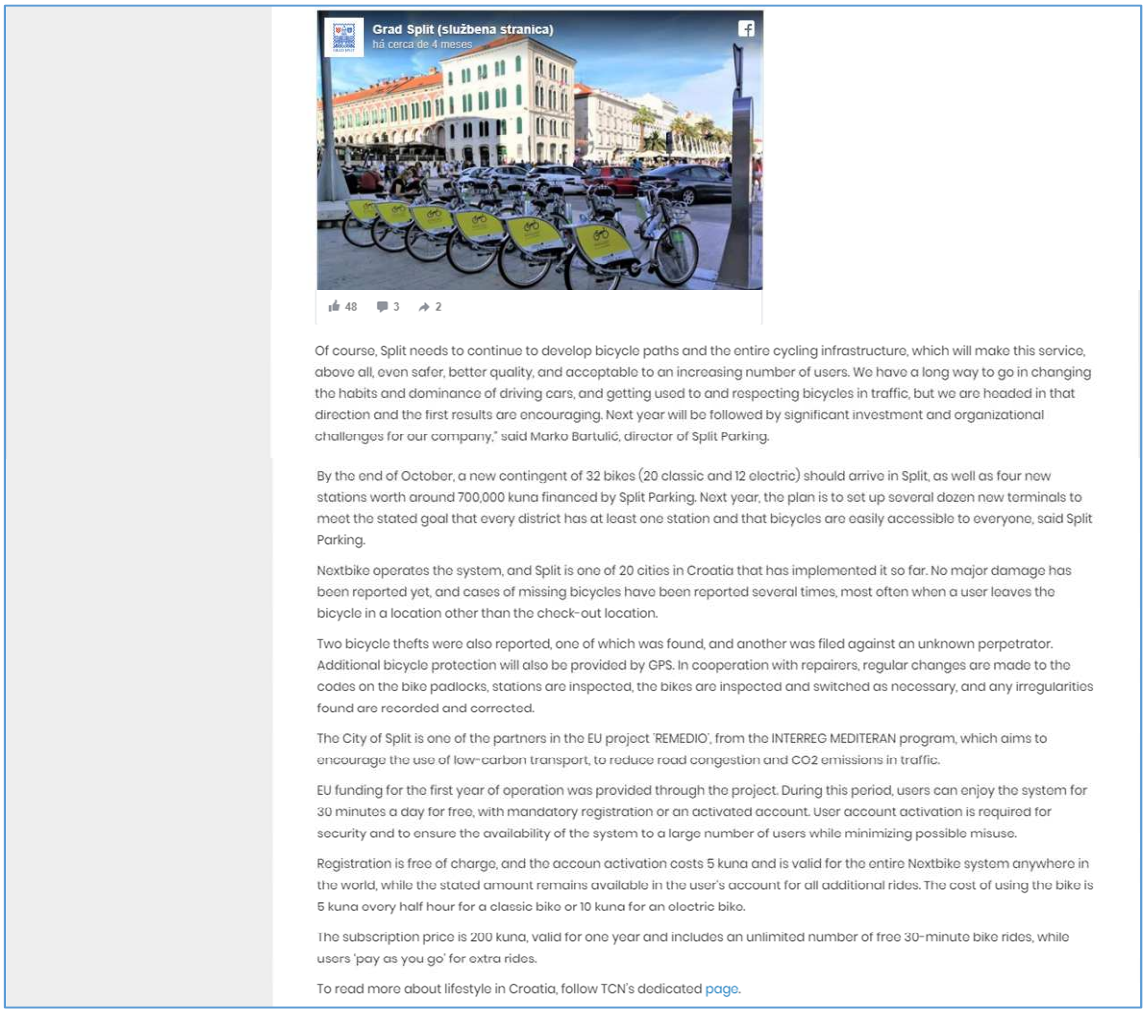


Figure 121 - Article in "Total Croatia News" news portal – IV-b

2.7.1.2.2. Greece

2.7.1.2.2.1. RiMG01 – Article in website of City of Thessaloniki

Date: 3 May 17 | **Type**: Article (Greek)

Short description: Article regarding the signature of the Programming Agreement for the implementation of the REMEDIO project between MDAT, Egnatia Odos SA, the Institute for Sustainable Mobility and Transport Networks of CERTH and the Municipal Information and Show Society (DEPTH).

Link: https://thessaloniki.gr/ypografiprogramsymvevropaikouergouremedio/

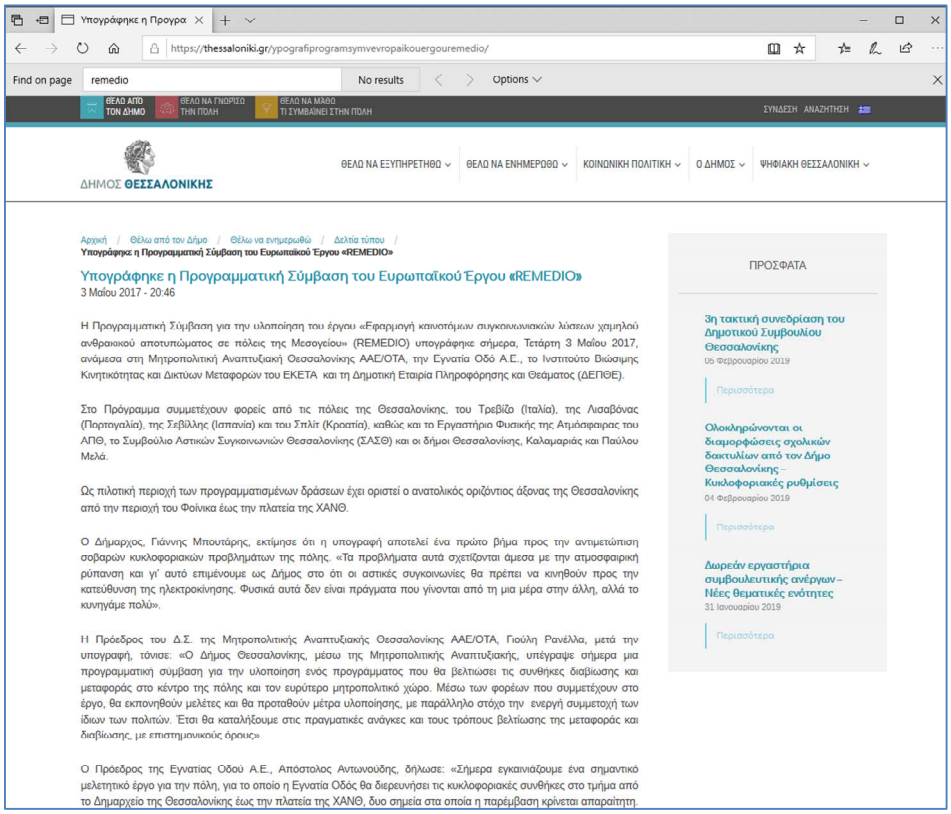


Figure 122- Article in "Slobodna Dalmacija" news portal

2.7.1.2.2.2. RiMG02 – Article in portal “VORIA”

Date: 26 May 17 | **Type**: Article (Greek)
Short description: Article regarding the participation of MDTA par in the local event entitled "Urban Transport in Thessaloniki" that has been held at the "Nikolaos Germanos" conference centre, in the framework of HELEXPO – TIF.
Link: www.voria.gr/article/imerida-gia-ton-oasth-diorganoni-tin-paraskevi-i-egnatia-odos

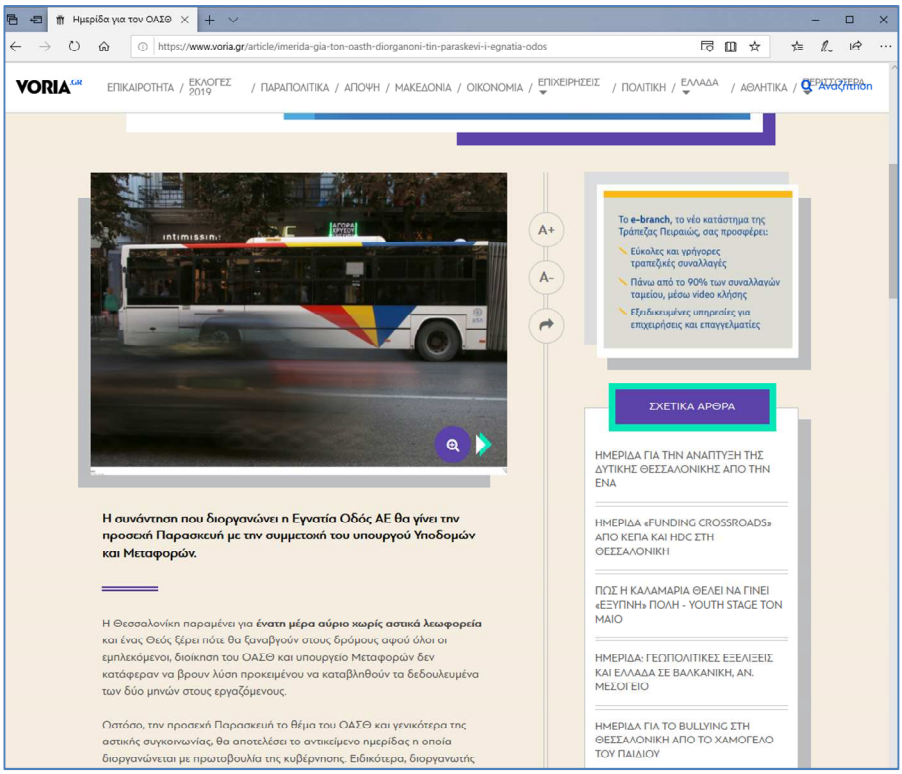


Figure 123- Article in “VORIA” online portal.

2.7.1.2.2.3. RiMG03 – Article in portal “THESS NEWS”

Date: 26 May 17 | **Type**: Article (Greek)
Short description: Article of “THESS NEWS” regarding the participation of MDTA par in the local event entitled "Urban Transport in Thessaloniki" that has been held at the "Nikolaos Germanos" conference centre, in the framework of HELEXPO – TIF.
Link: www.thessnews.gr/article/36644/imerida-gia-ton-oasth-sti-thessaloniki-deite-analytika-to-programma

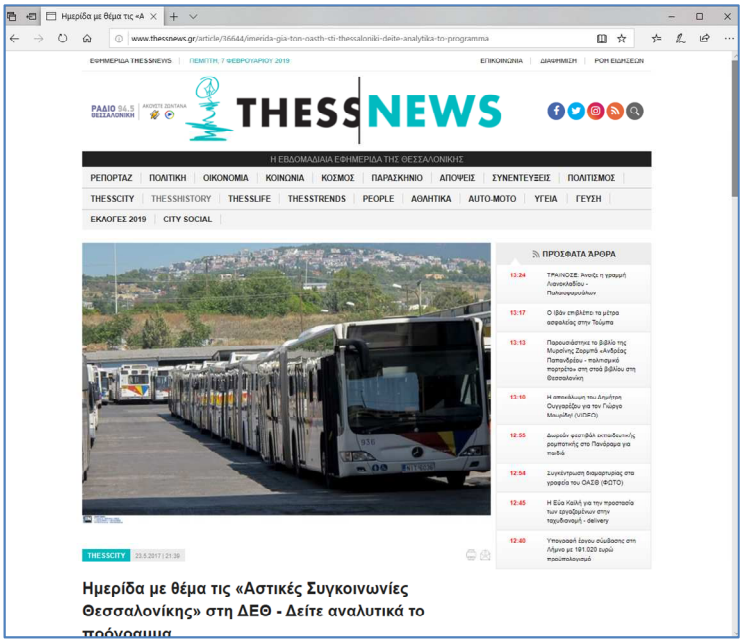


Figure 124- Article in “THESS NEWS” online portal.

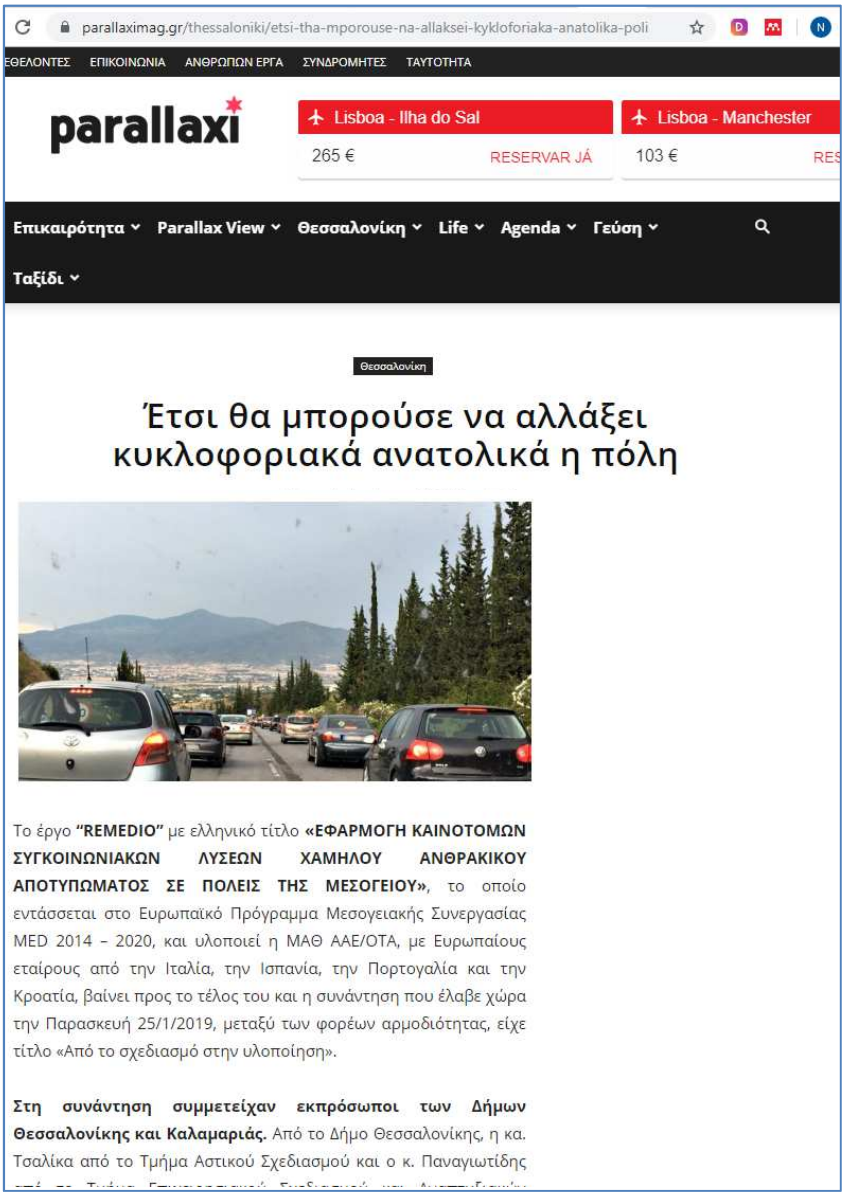
EXTRA articles found in greek – it is necessary that Greek partners do a summary of the article (as above) to create the datasheet of the info for each one:

http://www.thestival.gr/society/economy/item/394904-thessaloniki-leoforeiolorida-2is-genias-anakataskeui-kai-prasinismos-tis-eparxiakis-odou-2

https://www.typosthes.gr/thessaloniki/160279_leoforeiolorida-neas-genias-tha-beltiosei-tin-kykloforia-sti-thessaloniki

2.7.1.2.2.4. RiMG04 – Article in portal “Parallaximag”

Date: 29 January 19 | **Type**: Article (Greek)
Short description: Article of portal “Parallaximag” about the final participatory workshop with Thessaloniki Authorized bodies promoted by MDAT in 25th January 2019.
Link: https://parallaximag.gr/thessaloniki/etsi-tha-mporouse-na-allaksei-kykloforiaka-anatolika-poli



2.7.1.2.2.5. RiMG05 – Article in portal “www.makthes.gr”

Date: 12 March 19 | **Type**: Article (Greek)
Short description: Article of portal “www.makthes.gr” about the “Co-operation assembly among city groups for the Redesign of the Axis” held at Thessaloniki, Greece, organized by MDAT.
Link: https://www.makthes.gr/epanaschediazetai-o-odikos-axonas-apo-ton-foinika-eos-tin-plateia-chanth-205406

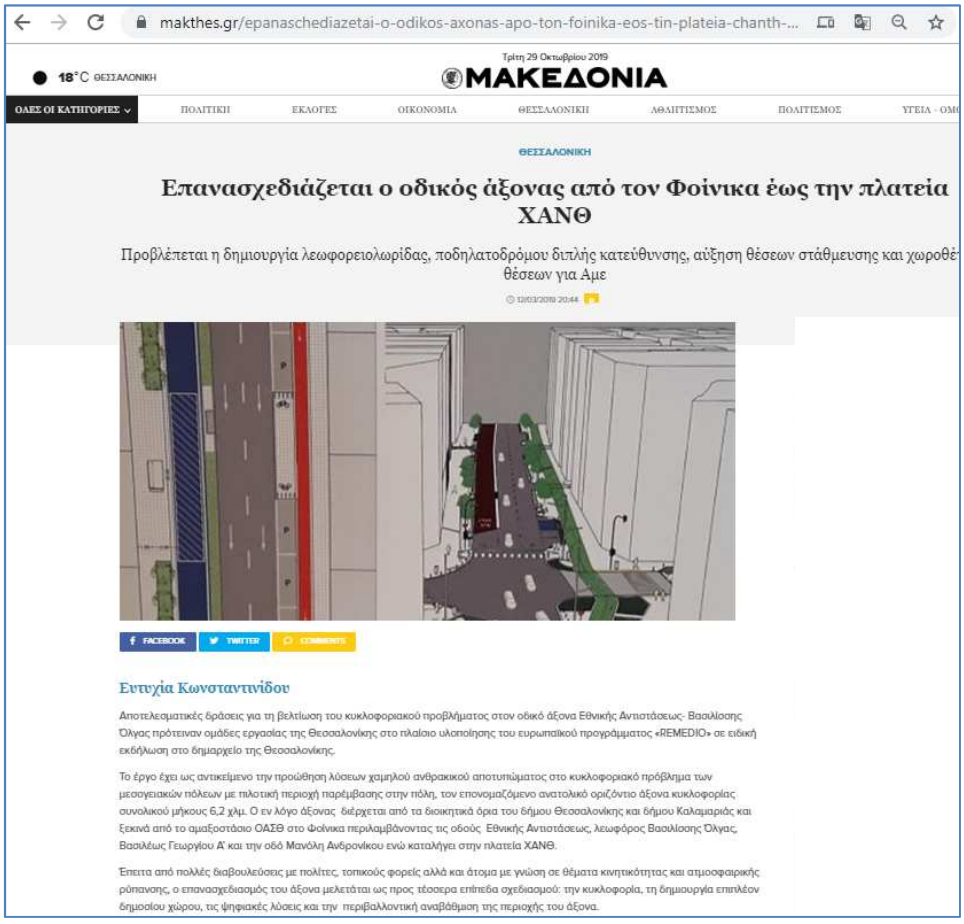


Figure 125. Article in the website of the Road Safety Observatory of the National Technical University of Athens.

2.7.1.2.2.6. RiMG06 – Article "REMEDIO – Living Lab for Urban Renewals Conference, Treviso, 2019"

Date: 17 October 2019 | **Type**: Article (English)

Short description: Article entitled "REMEDIO – Living Lab for Urban Renewals Conference, Treviso, 2019" at the website of the Road Safety Observatory of the National Technical University of Athens, regarding the Final Conference of REMEDIO at Treviso, Italy.

Link: https://www.nrso.ntua.gr/remedio-living-lab-for-urban-renewals-conference-treviso-2019/

Figure 126. Article in the website of the Road Safety Observatory of the National Technical University of Athens.

2.7.1.2.3. Italy

2.7.1.2.3.1. RiMI01 – Il Popolo Veneto

Date: 22 June 17 | **Type**: News (Italian)
Short description: An article was published in the Italian newspaper “Il Popolo Veneto”, referring to the workshop organized by the Municipality of Treviso about the REMEDIO project.
Link: www.ilpopoloveneto.it/notizie/nordest/veneto/treviso/2017/06/22/44463-settimana-europea-dellenergia-treviso-workshop-sul-progetto-remedio

Figure 127- Article about REMEDIO in “Il Popolo Veneto”.

2.7.1.2.3.2. RiMI02 – GEOS News

Date: 22 June 17 | **Type**: News (Italian)
Short description: An article focusing in to the workshop organized by the Municipality of Treviso on the REMEDIO project.
Link: https://it.geosnews.com/p/it/veneto/tv/treviso/settimana-europea-dell-energia-al-via-il-workshop-sul-progetto-remedio_16268015

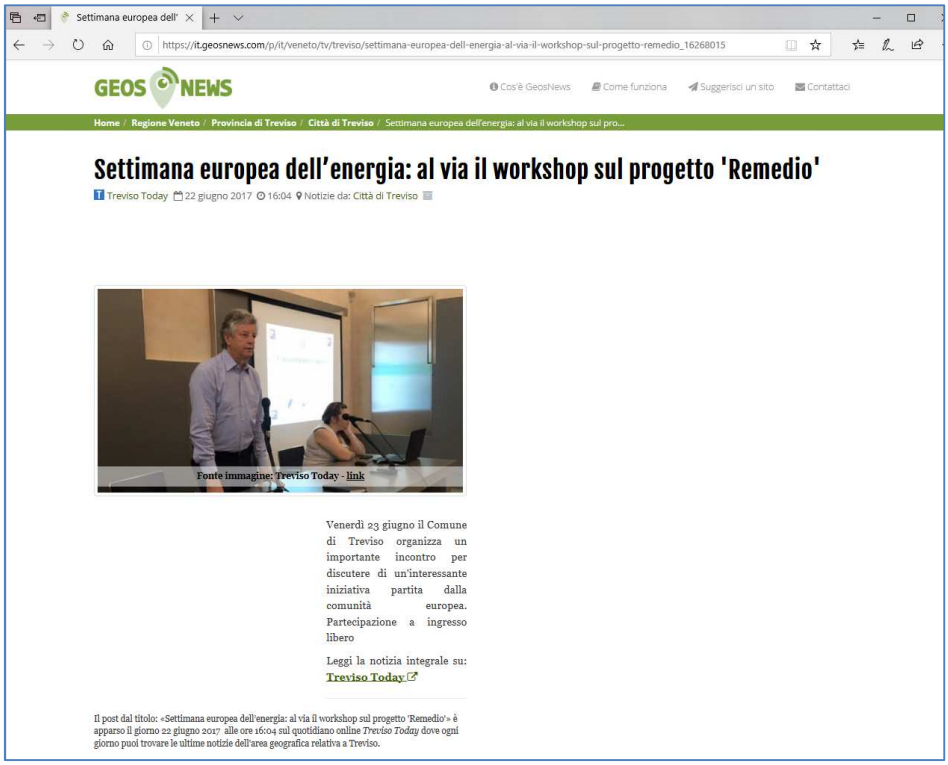


Figure 128- Article about REMEDIO in "GEOS News".

2.7.1.2.3.3. RiMI03 – TREVISO TODAY

Date: 17 May 18 | **Type**: News (Italian)
Short description: Article about the beginning of the work for the new stations of the bicycle sharing network at Strada Ovest, Treviso.
Link: www.trevisotoday.it/green/bike-sharing-strada-ovest-treviso-17-maggio-2018.html

Figure 129- Article about REMEDIO in "TREVISO TODAY".

2.7.1.2.3.4. RiMI04 – Newspaper “Il Corriere Veneto” (paper version)

Date: 18 May 18 | **Type**: News (Italian)
Short description: An article was published in the newspaper of Treviso, "Il Corriere Veneto" (in paper version) about the construction phase of 9 bicycle sharing stations, that would be available in September for the inhabitants and tourists of Treviso. The article described the working area that gathers one of the busiest roads in the city, with 5.5 km long, overlooked by several professional, commercial and industrial activities. The idea is to bring them together in an association that can create a single entity to dialogue with institutions, encourage virtuous behaviour, reduce consumption and transform this horizontal condominium into a model path to energy sustainability. The main idea described was the need to transform this horizontal condominium into a model path of energy sustainability, along with the purpose to create a non-profit association that would gather companies to turn this busy road into an efficient and A class road.

Treviso

Strada Ovest si trasforma Rotatorie, bus e bike sharing

Passano 20 mila auto al giorno. La giunta: stop agli ingorghi

Giro d'Italia: i divieti

Figure 130- Article (in paper version) published in the newspaper “Il Corriere Veneto”.

2.7.1.2.3.5. RiMI05 – Newspaper “Il Corriere Veneto” (online)

Date: 18 May 18 | **Type**: News (Italian)
Short description: Online version of the article describe above in sub-section **3.8.2.3.4. RiMI04 – Newspaper “Il Corriere Veneto” (paper version)**.
Link: https://corrieredelveneto.corriere.it/treviso/cronaca/18_maggio_18/treviso-10-aorecorriereveneto-web-veneto-c63f0b40-5a79-11e8-bd7c-42e46128d8ed.shtml

Figure 131- Article (in online version) published in the newspaper “Il Corriere Veneto”.

2.7.1.2.3.6. RiMI06 – Newspaper “Il Gazzettino” (paper version)

Date: 18 May 18 | **Type**: News (Italian)
Short description: An article entitled “La strada Ovest diventa green: partono i lavori del bike sharing” was published in the newspaper "Il Gazzettino” (both paper and online version) about the construction phase that started on 17 May 2018 with the installation of 9 bicycle-sharing stations along the west road. The described initiative is part of the program of REMEDIO project, entirely funded by the EC.
Link:
https://ilgazzettino.it/pay/treviso_pay/la_strada_ovest_diventa_green_partono_i_lavori_del_bike_sharing-3739757.html


Treviso

La strada Ovest diventa green: partono i lavori del bike sharing

Figure 132- Article (in paper version) published in the newspaper “Il Gazzettino”.

2.7.1.2.3.7. RiMI07 – Newspaper “La Tribuna” (in paper)

Date: 18 May 18 | **Type**: News (Italian)
Short description: An article entitled “Cresce il bike sharing in Strada Ovest altre nove postazioni” was published in the newspaper of Treviso, "La Tribuna”, about the construction phase that began on 17 May 2018 with the installation of nine bicycle stations that will become points of interchange for the car-bike traffic to reach the historic centre. Moreover, the existing bike sharing system will be strengthened, becoming the third city in Europe to diffuse the bicycle sharing system, making the West road greener, less polluted and more energy efficient.

20 | Treviso

Cresce il bike sharing In Strada Ovest altre nove postazioni

Prosegue l'intervento finanziato dall'Unione europea
Franchin: «Siamo da esempio anche per gli altri Paesi»

Figure 133- Article (in paper version) published in the newspaper “La Tribuna”.

2.7.1.2.3.8. RiMI08 – Newspaper “La Tribuna” (online)

Date: 18 May 18 | **Type**: News (Italian)
Short description: Online version of the article describe above in sub-section **3.8.2.3.7. RiMI01 – Newspaper “La Tribuna” (in paper)**.
Link: https://tribunatreviso.gelocal.it/treviso/cronaca/2018/05/18/news/a-treviso-cresce-il-bike-sharing-in-strada-ovest-altre-nove-postazioni-1.16850671

Figure 134- Article (online version) published in the newspaper "La Tribuna".

https://www.trasportinfo.com/2018/11/28/tvbike-9-nuove-stazioni-bike-sharing-treviso/

2.7.1.2.3.9. RiMI09 – SNPA newsletter I

Date: 12 September 18 | **Type**: News (Italian)
Short description: Articles in the SNPA newsletter edit by the Italian National Environmental Network of Public Agencies in charge of Environmental control and prevention in Italy, presenting REMEDIO and PREPAIR projects, European co-financed initiatives dealing with sustainable urban mobility and air pollution in the Veneto area.
Link: https://www.snpambiente.it/2018/09/12/azioni-in-veneto-per-la-mobilita-sostenibile-i-progetti-remedio-e-prepair/

Figure 135- Article I in SNPA newsletter.

2.7.1.2.3.10. RiMI10 – Educational paths of the REMEDIO

Date: 02 October 18 | **Type**: News (Italian)
Short description: ARPAV news about the Educational paths of the REMEDIO project in Italy.
Link: http://www.arpa.veneto.it/servizi-ambientali/educazione-per-la-sostenibilita/educazione-ambientale/remedio/remedio-interreg-med-azioni-di-educazione-ambientale-nelle-scuole-di-strada-ovest-treviso-e-villorba

Figure 136- Educational paths of the REMEDIO at ARPAV website.

2.7.1.2.3.11. RiMI11 – ARPAV website – Final Event

Date: 10 October 18 | **Type**: News (Italian)
Short description: News on the ARPAV website describing the final event in Treviso for the education path carried out in the framework of REMEDIO.
Link: http://www.arpa.veneto.it/notizie/in-primo-piano/mobilita-sostenibile-con-remedio-gli-studenti-di-strada-ovest-presentano-le-loro-idee-alla-citta

2.7.1.2.3.12. RiMI12 – SNPA newsletter II

Date: 10 October 18 | **Type**: News (Italian)
Short description: Article in the SNPA newsletter edit by the Italian National Environmental Network of Public Agencies in charge of Environmental control and prevention in Italy, presenting the event in Treviso for the education path carried out in the framework of REMEDIO.
Link: https://www.snpambiente.it/2018/10/10/con-remedio-e-arpa-veneto-a-treviso-gli-studenti-presentano-le-loro-idee-di-mobilita-sostenibile/

Figure 137- Article II in SNPA newsletter.

2.7.1.2.3.13. RiMI13 – ARPAV website - Award

Date: 8 November 18 | **Type**: News (Italian)
Short description: News on the ARPAV website announcing that REMEDIO is a winner, among others initiatives, of the award for Italian best practise for urban environment.
Link: http://www.arpa.veneto.it/notizie/in-primo-piano/le-buone-pratiche-di-ecosistema-urbano-arpav-tra-le-amministrazioni-premiate-da-legambiente

2.7.1.2.3.14. RiMI14 – SNPA newsletter III

Date: 21 November 18 | **Type**: News (Italian)
Short description: Article in the SNPA newsletter edit by the Italian National Environmental Network of Public Agencies in charge of Environmental control and prevention in Italy, presenting the opening celebration of the Treviso bike sharing network for West Road pilot area.
Link: https://www.snpambiente.it/2018/11/21/con-remedio-a-treviso-la-strada-ovest-diventa-green/

Figure 138- Article III in SNPA newsletter.

2.7.1.2.3.15. RiMI15 – Transport Info

Date: 21 November 18 | **Type**: News (Italian)

Short description: Article entitled "TVBike: attive 9 nuove stazione del Bike sharing di Treviso"in Transport Info website.

Link: www.trasportinfo.com/2018/11/28/tvbike-9-nuove-stazioni-bike-sharing-treviso/

Figure 139- Article in Transport Info website about REMEDIO.

2.7.1.2.3.16. RiMI16 – Article “Mobilità Sostenibile nel Mediterraneo, Un Manuale” (ECOSCIENZA)

Date: December 2019 | **Type**: Article (Italian)

Short description: Article entitled “Mobilità Sostenibile nel Mediterraneo, Un Manuale” regarding the publication “A handbook on sustainable mobility in the MED area” where REMEDIO participated by presenting its good practices. This article was published in the national magazine “ECOSCIENZA” (in its 6th edition of 2019) that is edited by “Arpae Agenzia regionale prevenzione, ambiente ed energia dell’Emilia-Romagna”.

Link:

https://www.arpae.it/cms3/documenti/_cerca_doc/ecoscienza/ecoscienza2019_6/Ecoscienza2019_6.pdf

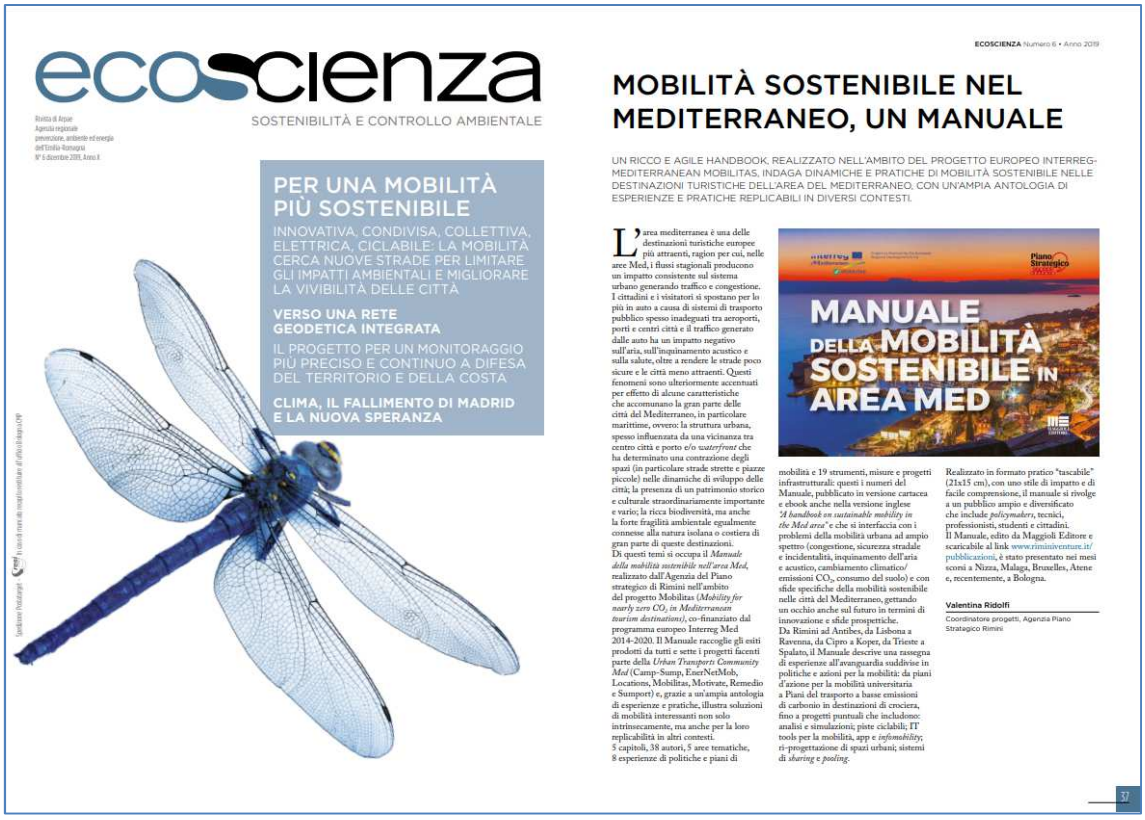


Figure 140. Article in the ECOSCIENZA magazine.

2.7.1.2.4. Portugal

2.7.1.2.4.1. RiMP01 – Article “Projeto REMEDIO reúne em Loures”

Date: 19 December 16 | **Type**: Article (Portuguese)
Short description: Article entitled “Projeto REMEDIO reúne em Loures” published by the institutional website of CML regarding the Kick-off Meeting of REMEDIO project.
Link: www.cm-loures.pt/Conteudo.aspx?DisplayId=2552

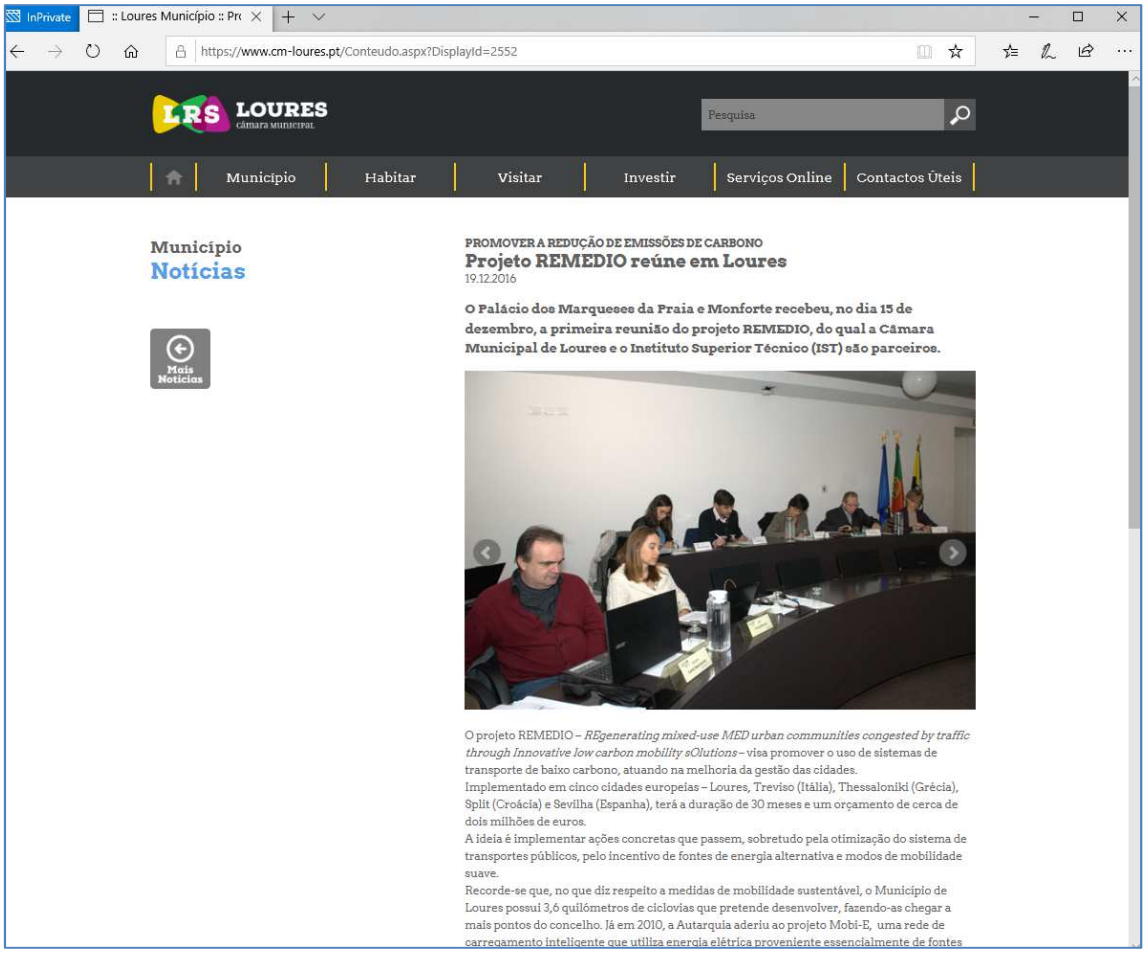


Figure 141- Article in CML institutional website regarding the Kick-off Meeting of REMEDIO.

2.7.1.2.4.2. RiMP02 – Article "Semana Europeia da Mobilidade"

Date: 16 September 17 | **Type**: Article (Portuguese)

Short description: CML announced in its Agenda the participation in the European Mobility Week, inviting all citizens to participate.

Link: www.cm-loures.pt/Conteudo.aspx?DisplayId=3485

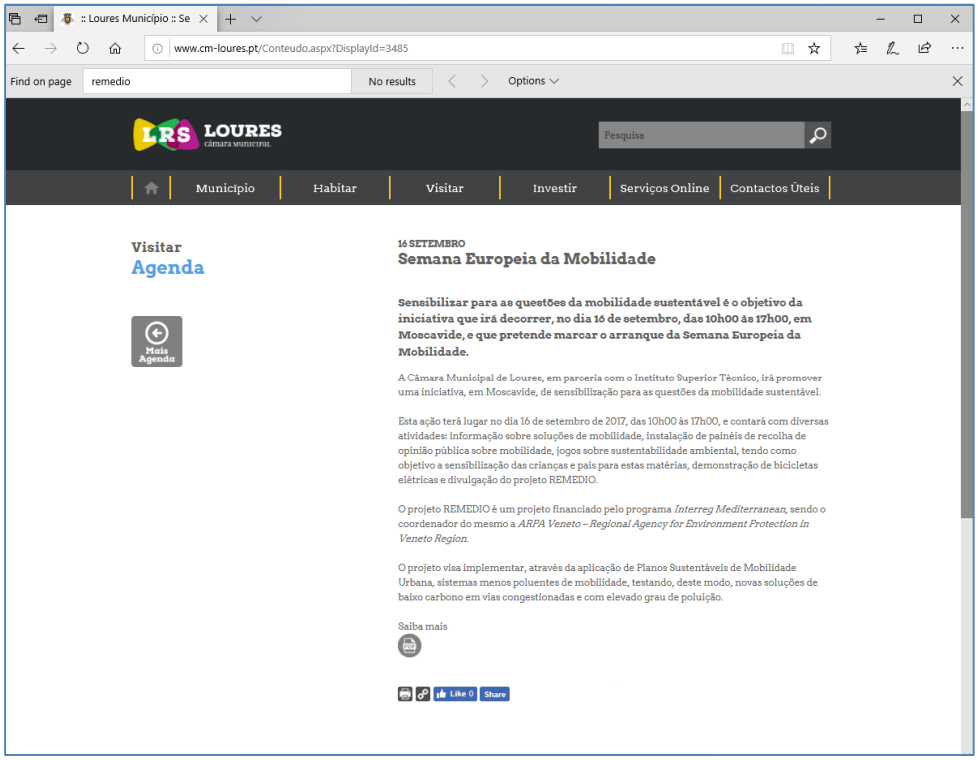


Figure 142 - Article in CML institutional website regarding the European Mobility Week.

2.7.1.2.4.3. RiMP03 – Article "Município sensibiliza para a mobilidade sustentável"

Date: 16 September 17 | **Type**: Article (Portuguese)

Short description: CML published on its institutional website an article regarding its participation in the European Mobility Week, in partnership with IST.

Link: www.cm-loures.pt/Conteudo.aspx?DisplayId=3500

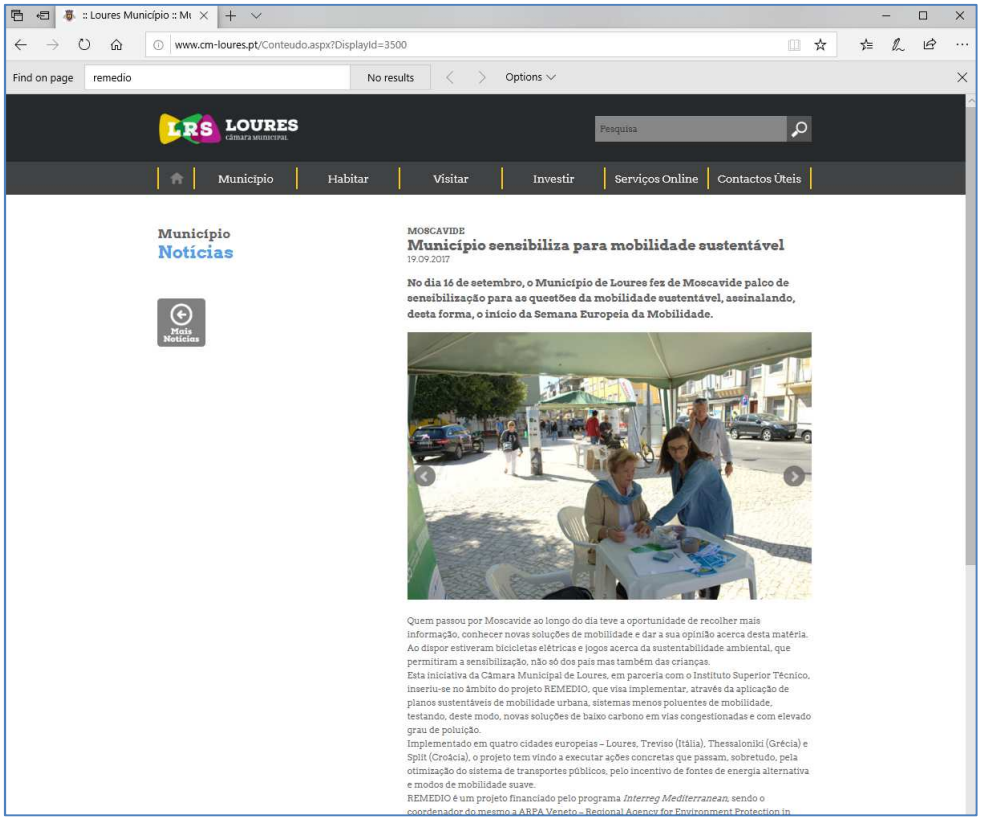


Figure 143 - Article in CML institutional website regarding the participation in the European Mobility Week and the activities developed.

2.7.1.2.4.4. RiMP04 – Article "Mobilidade Sustentável"

Date: September 17 | **Type**: Article (Portuguese)

Short description: Article in the local newspaper "mp | Moscavide Portela", in its edition of September 2017 about the event promoted by CML and IST regarding the European Mobility Week, in partnership with IST.

Link: http://www.mp-moscavide-portela.pt/_conteudos/Edicoes/PDFs/2017_9.pdf

ATUALIDADE

Mobilidade sustentável

No dia 16 de setembro, o Município de Loures fez de Moscavide palco de sensibilização para as questões da mobilidade sustentável, assinalando, desta forma, o início da Semana Europeia da Mobilidade.

Quem passou por Moscavide ao longo do dia teve a oportunidade de recolher mais informação, conhecer novas soluções de mobilidade e dar a sua opinião acerca desta matéria. Ao dispor estiveram bicicletas elétricas e jogos acerca da sustentabilidade ambiental, que permitiram a sensibilização, não só dos pais mas também das crianças.

Esta iniciativa da Câmara Municipal de Loures, em parceria com o Instituto Superior Técnico, inseriu-se no âmbito do projeto REMEDIO, que visa implementar, através da aplicação de planos sustentáveis de mobilidade urbana, sistemas menos poluentes de mobilidade, testando, deste modo, novas soluções de baixo carbono em vias congestionadas e com elevado grau de poluição.

Implementado em quatro cidades europeias - Loures, Treviso (Itália), Thessaloniki (Grécia) e Split (Croácia), o projeto tem vindo a executar ações concretas que passam, sobretudo, pela otimização do sistema de transportes públicos, pelo incentivo de fontes de energia alternativa e modos de mobilidade suave.

REMEDIO é um projeto financiado pelo programa Interreg Mediterranean, sendo o coordenador do mesmo a ARPA Veneto - Regional Agency for Environment Protection in Veneto Region.

Figure 144 - Article "Mobilidade Sustentável" in the local newspaper "mp | Moscavide Portela".

2.7.1.2.4.5. RiMP05 – Article “Projeto REMEDIO promove mobilidade sustentável”

Date: 27 November 17 | **Type**: Article (Portuguese)

Short description: CML published on its institutional website an article referring its participation in the European Seminar entitled “Improved urban mobility systems for a high quality of life” and on the third Consortium Meeting of REMEDIO in Split, Croatia.

Link: www.cm-loures.pt/Conteudo.aspx?DisplayId=3690

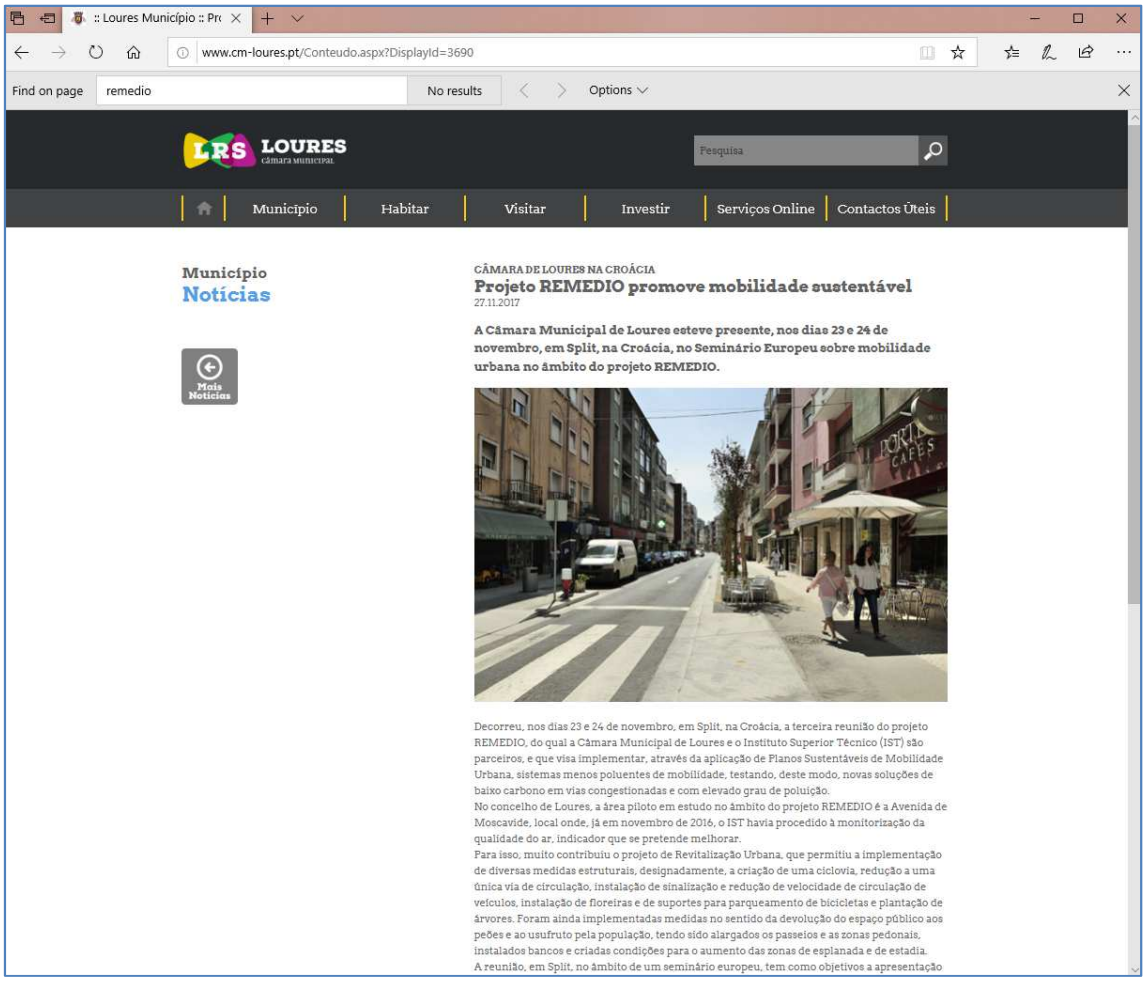


Figure 145 - Article in CML institutional website regarding its participation in the European Seminar “Improved urban mobility systems for a high quality of life” and on the third Consortium Meeting of REMEDIO in Split, Croatia.

2.7.1.2.4.6. RiMP06 – Article “Um “REMEDIO” para os problemas de mobilidade” in the website “Jovens Repórteres para o Ambiente”

Date: 27 May 2018 | **Type**: Article (Portuguese)
Short description: Article entitled “Um “REMEDIO” para os problemas de mobilidade” in the website “Jovens Repórteres para o Ambiente” focused on the REMEDIO pilot activity in Loures.
Link: https://jra.abae.pt/plataforma/video/um-remedio-para-os-problemas-de-mobilidade/

Figure 146 – Article “Um “REMEDIO” para os problemas de mobilidade” in the website “Jovens Repórteres para o Ambiente”.

2.7.1.2.4.7. RiMP07 – Article "LOURES INSS - Ambiente em Família no Parque Adão Barata"

Date: 12 June 2019 | **Type**: Article (Portuguese)

Short description: Article entitled "LOURES INSS - Ambiente em Família no Parque Adão Barata" in news section of the website of Municipality of Loures describing the event that had the participation of REMEDIO. This event was held on 8 June 2019.

Link: https://www.cm-loures.pt/Conteudo.aspx?DisplayId=6355

Figure 147 – Article "LOURES INSS - Ambiente em Família no Parque Adão Barata".

2.7.1.2.4.8. RiMP08 – Article "Projecto REMEDIO promove regeneração do espaço público"

Date: 13 January 2020 | **Type**: Article (Portuguese)

Short description: Article entitled "Projecto REMEDIO promove regeneração do espaço público" in news portal "Magazine Imobiliário" regarding the Closing Event of REMEDIO at Portugal with inauguration of the street panel at Loures, Portugal.

Link: http://www.magazineimobiliario.com/ambiente/projecto-remedio-promove-regeneracao-do-espaco-publico/

Figure 148 – Article "Projecto REMEDIO promove regeneração do espaço público".

2.7.1.2.4.9. RiMP08 – Article "Projeto REMEDIO comprova melhoria da qualidade do ar em Moscavide"

Date: 17 January 2020 | **Type**: Article (Portuguese)
Short description: Article entitled "Projeto REMEDIO comprova melhoria da qualidade do ar em Moscavide" in news section of the website of Municipality of Loures describing the Closing Event of REMEDIO at Portugal with inauguration of the street panel at Loures, Portugal, held on 13 January 2020.
Link: https://www.cm-loures.pt/Conteudo.aspx?DisplayId=6881

Figure 149 – Article "Projeto REMEDIO comprova melhoria da qualidade do ar em Moscavide" in CML's website.

2.7.1.2.4.10. RiMP09 – Article “Avenida de Moscavide é a artéria piloto de uma “smart city””

Date: 17 January 2020 | **Type**: Article (Portuguese)

Short description: Article entitled “Avenida de Moscavide é a artéria piloto de uma “smart city”” in the news section of TV EUROPA.

Link: https://www.tveuropa.pt/noticias/avenida-de-moscavide-e-a-arteria-piloto-de-uma-smart-city

Figure 150 – Article “Projeto REMEDIO comprova melhoria da qualidade do ar em Moscavide”

2.7.1.2.5. Spain

2.7.1.2.5.1. RiMS01 – Article in regional newspaper and news portal

Date: 18 May 17 | **Type**: Article (Spanish)
Short description: USE published on its institutional website an article referring the organization of the second Consortium Meeting in Seville, Spain.
Link: http://investigacion.us.es/noticias/2649

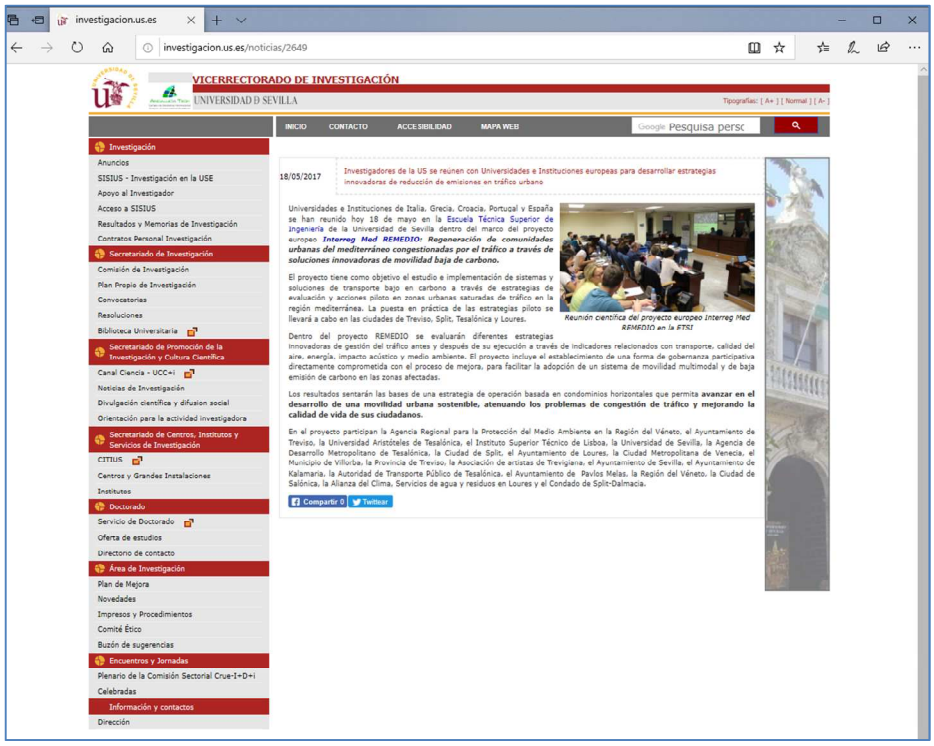
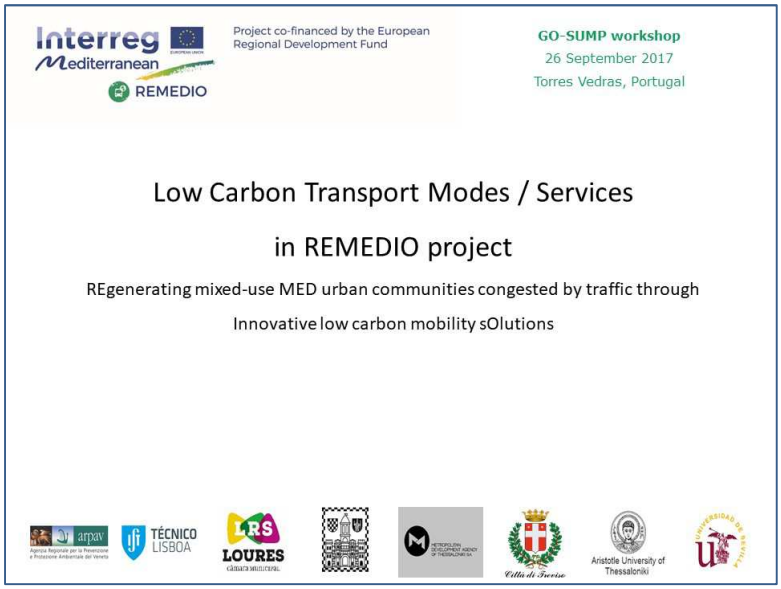


Figure 151 – Article in the USE institutional website.

3. ANNEXES

3.1. A01 - GO-SUMP Workshop



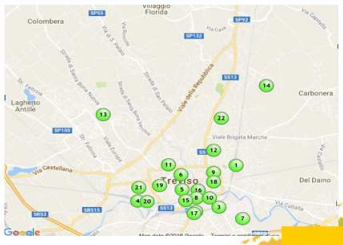
Interreg Mediterranean REMEDIO

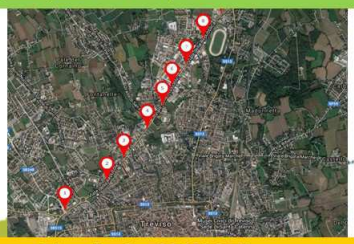
Project co-financed by the European Regional Development Fund

TREVISO Bike Sharing

Bike sharing today:
22 stations
120 bikes
Users: citizens
Located:
mainly in the historical city center

Bike sharing project in REMEDIO:
9 stations
50 bikes
Users: citizens
Location: along the West Road – pilot area
Status: positions of stations and numbers of bikes identified, soon opening public procurement for implemtation





Thanks to REMEDIO
Treviso = 20 bikes/ 10'000 inhabitants

Interreg Mediterranean REMEDIO

Project co-financed by the European Regional Development Fund

Split mixed e-bike Sharing

Split is facing highly congested urban roads in summer season, but also during the year, especially in some specific spots in the wider old city centre.

Status: Public procurement soon to be open.
The optimal configuration of the network
(number of stations, bikes, positions, typology) are to be identified by the expertise of an analyst

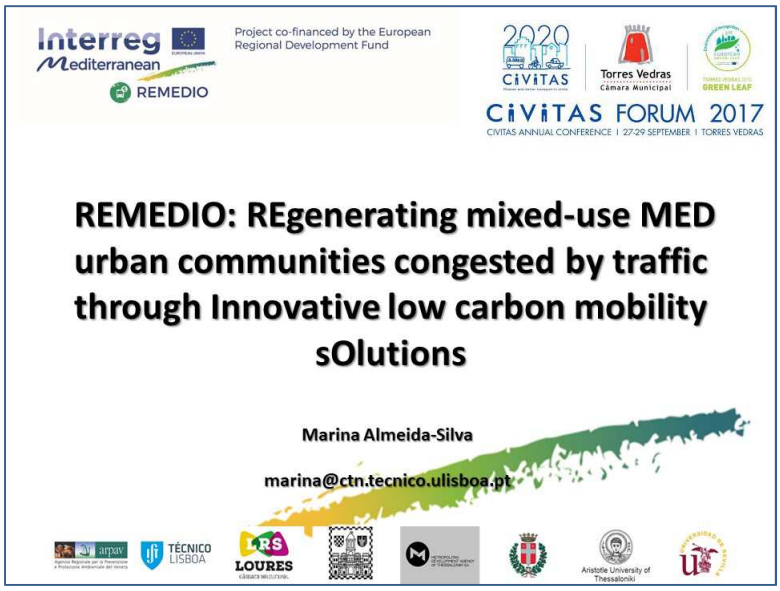

Interreg
Mediterranean
REMEDIO
Project co-financed by the European Regional Development Fund
GO-SUMP workshop
26 September 2017
Torres Vedras, Portugal
Loures
158 km²
205'000
inhabitants
Urban renowal for improvement of pedestrian and cycling vocation in Moscavide area, in Loures (HR)
arpav
TÉCNICO LISBOA
LOURES
Aristotle University of Thessaloniki

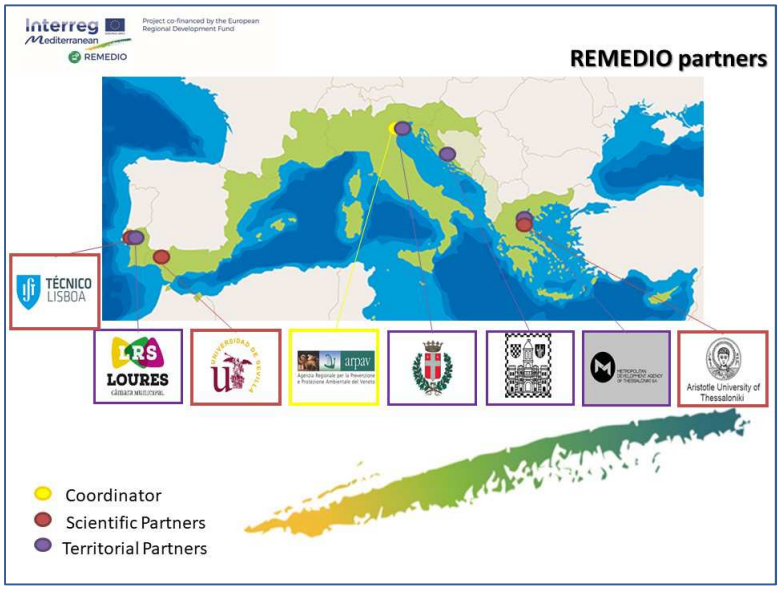

Interreg
Mediterranean
REMEDIO
Project co-financed by the European Regional Development Fund
GO-SUMP workshop
26 September 2017
Loures urban renowal
Interventions: enlargement of sidewalks, cycle paths, bike parking; one lane traffic; velocity limit 30 km/h
Status: Most of the structural works already concluded
Before the interventions
Expected results
arpav
TÉCNICO LISBOA
LOURES
Aristotle University of Thessaloniki


Interreg
Mediterranean
REMEDIO
Project co-financed by the European Regional Development Fund
GO-SUMP workshop
26 September 2017
Torres Vedras, Portugal
Thessaloniki
1,455 km²
1,110,312
inhabitants
2nd generation bus lane in Thessaloniki (EL)
arpav
TÉCNICO LISBOA
LOURES
Città di Treviso
Aristotle University of Thessaloniki


Interreg
Mediterranean
REMEDIO
Project co-financed by the European
Thessaloniki
2nd generation Bus Lane
Road axis today:
o Bad function of bus lines
o Illegally parked cars
Users: Residents and Commuters
Located: East horizontal axis of Thessaloniki
Ethn. Antistaseos-Vas. Olgas-Vas. George-Man. Andronikou
6.36km
2nd generation Bus Lane within REMEDIO
Status: Under assessment for preparation
Users: Residents and Commuters
✓ Modulo proposals for the environmental upgrade of the road axis with a 2nd generation bus lane
✓ Consultation with the local stakeholders - Selection of the best scenarios
✓ Simulation of the selected scenarios and impact assessment

3.2. A02 - CIVITAS Forum 2017





REMEDIO project

REMEDIO works in high density areas characterized by congested roads.

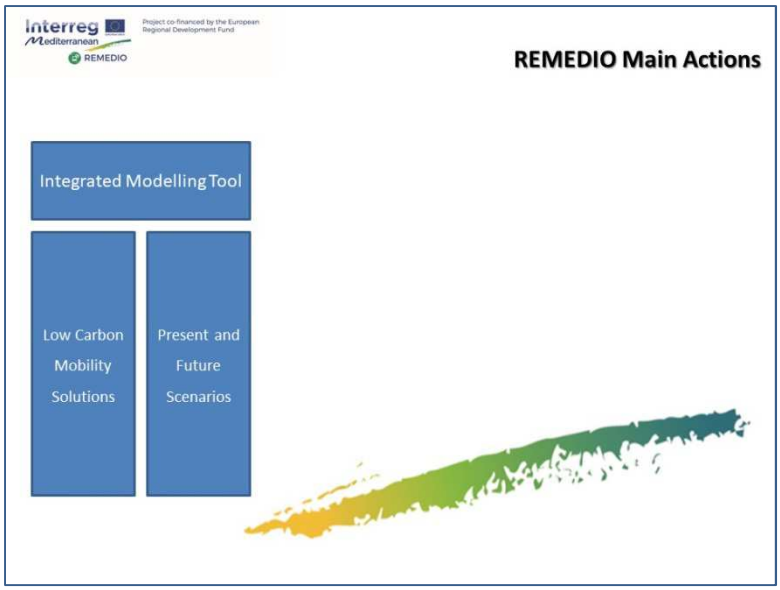
For such congested roads, REMEDIO **proposes to transform them into** "**horizontal condominiums**", forms of **participatory governance** that actively engage institutions, stakeholders and citizens and with which **the Municipality can directly interact to improve multi-modal and low carbon mobility, freight logistic and environmental quality**.

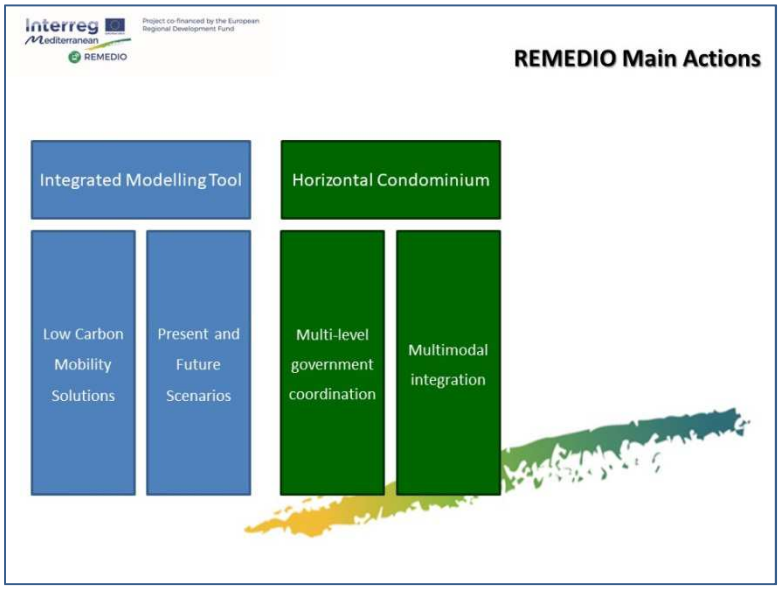
REMEDIO specific objectives

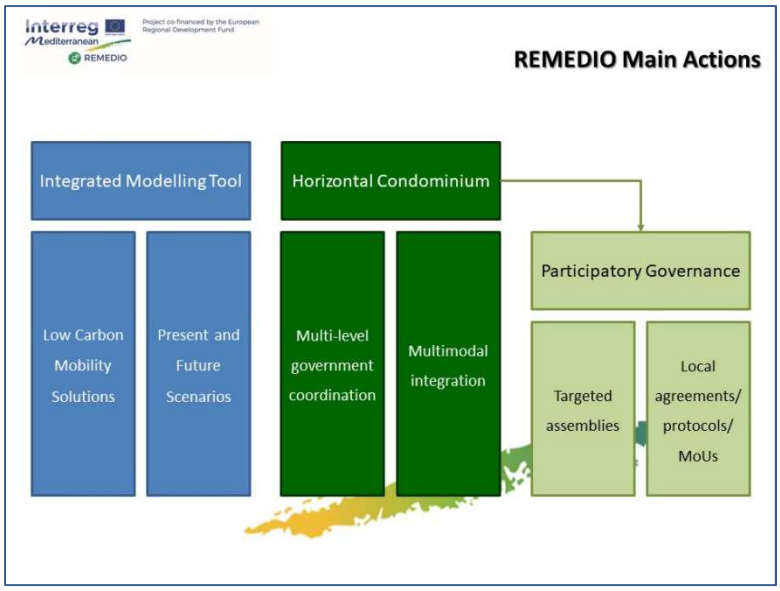
1. **Improvement of the environmental and mobility performance in traffic hot spots**, through the adoption of low-carbon mobility scenarios

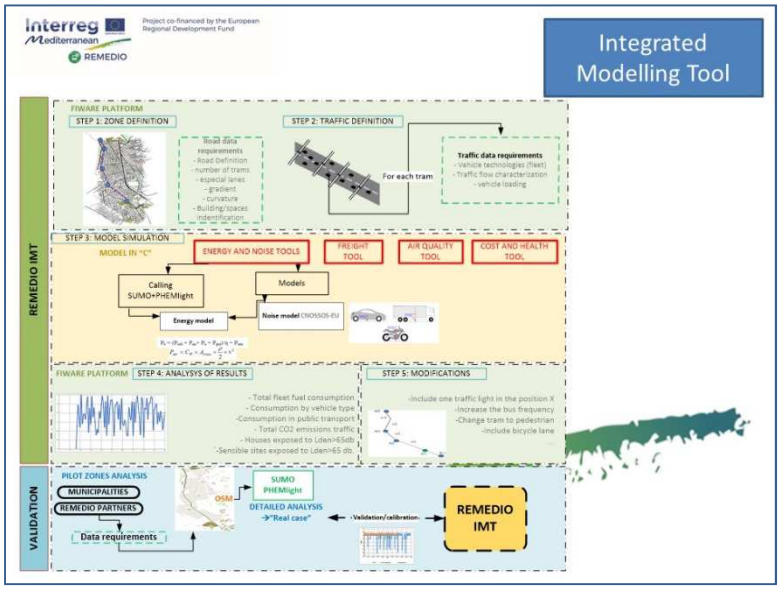
2. Development **low-carbon mobility plans** focused on **urban hot spots** characterized by traffic congestion in MED cities

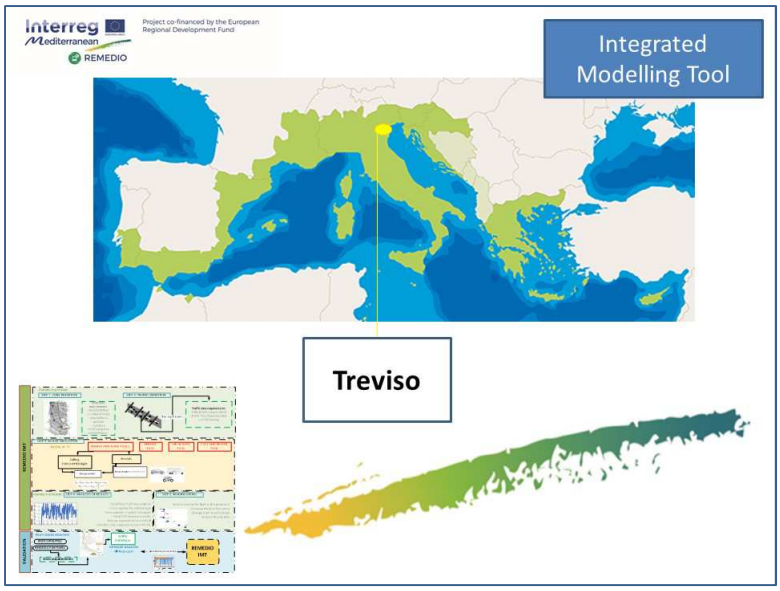
3. Create innovative models of **participatory governance** to foster the implementation process of low-carbon mobility plans


REMEDIO Main Actions
Integrated Modelling Tool
Low Carbon Mobility Solutions
Present and Future Scenarios

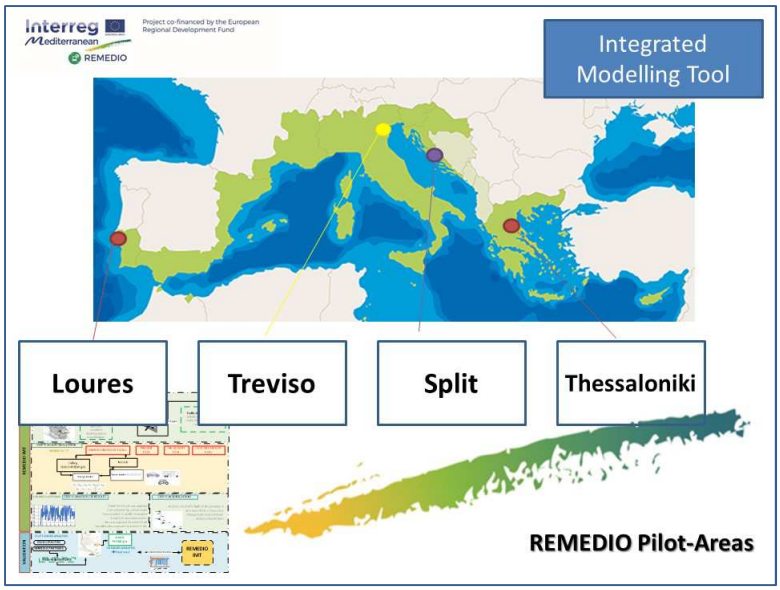

REMEDIO Main Actions
Integrated Modelling Tool
Horizontal Condominium
Low Carbon Mobility Solutions
Present and Future Scenarios
Multi-level government coordination
Multimodal integration

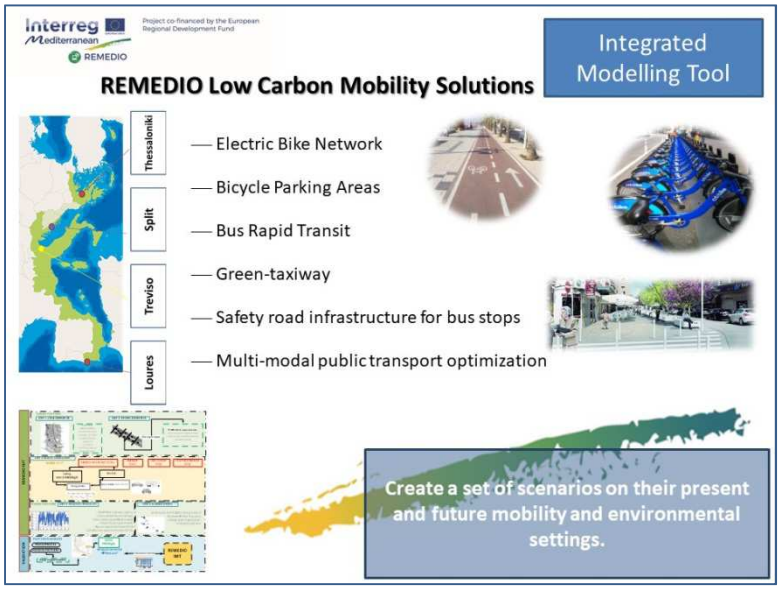

REMEDIO Main Actions
Integrated Modelling Tool
Horizontal Condominium
Participatory Governance
Low Carbon Mobility Solutions
Present and Future Scenarios
Multi-level government coordination
Multimodal integration
Targeted assemblies
Local agreements/ protocols/ MoUs


Integrated Modelling Tool
REMEDIO IMT
VALIDATION
STEP 1: ZONE DEFINITION
STEP 2: TRAFFIC DEFINITION
STEP 3: MODEL SIMULATION
ENERGY AND NOISE TOOLS
FREIGHT TOOL
AIR QUALITY TOOL
COST AND HEALTH TOOL
STEP 4: ANALYSYS OF RESULTS
STEP 5: MODIFICATIONS
PILOT ZONES ANALYSIS
MUNICIPALITIES
REMEDIO PARTNERS
Data requirements
SUMO PHEMlight
DETAILED ANALYSIS
REMEDIO IMT


Integrated
Modelling Tool
Treviso


Integrated
Modelling Tool
TREVISO Bike Sharing
Bike sharing project in REMEDIO:
9 stations
50 bikes
Users: citizens
Location: along the West Road – pilot area
Status: positions of stations and numbers of bikes identified, soon opening public procurement for implementation
Treviso
Bike sharing today:
22 stations
120 bikes
Users: citizens
Located: mainly in the historical city center
Thanks to REMEDIO
Treviso = 20 bikes/ 10'000 inhabitants


Integrated Modelling Tool
Loures
Treviso
Split
Thessaloniki
REMEDIO Pilot-Areas


REMEDIO Low Carbon Mobility Solutions
Integrated Modelling Tool
Thessaloniki
Split
Treviso
Loures
Electric Bike Network
Bicycle Parking Areas
Bus Rapid Transit
Green-taxiway
Safety road infrastructure for bus stops
Multi-modal public transport optimization
Create a set of scenarios on their present and future mobility and environmental settings.

Project co-financed by the European Regional Development Fund

Split mixed e-bike Sharing

Split is facing highly congested urban roads in summer season, but also during the year, especially in some specific spots in the wider old city centre.

Status: Public procurement soon to be open.
The optimal configuration of the network
(number of stations, bikes, positions, typology) are to be identified by the expertise of an analyst

Project co-financed by the European Regional Development Fund

Loures urban renowal

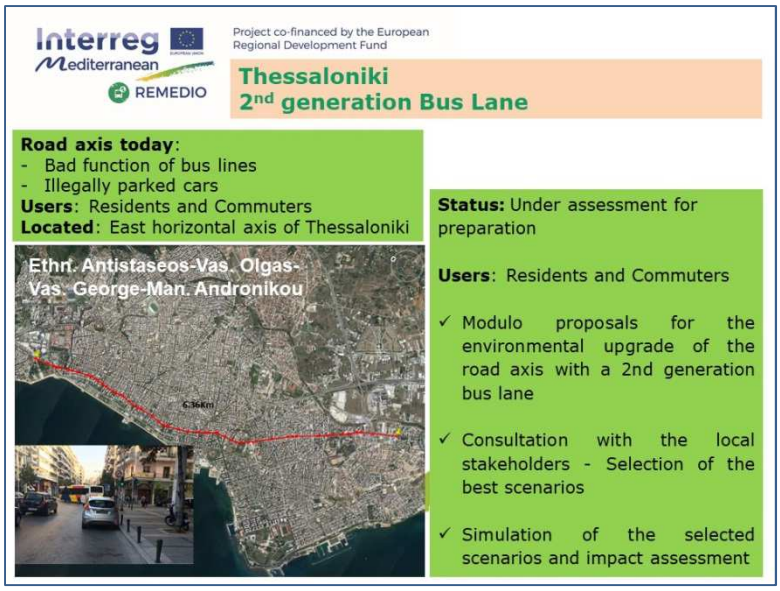
Before the interventions

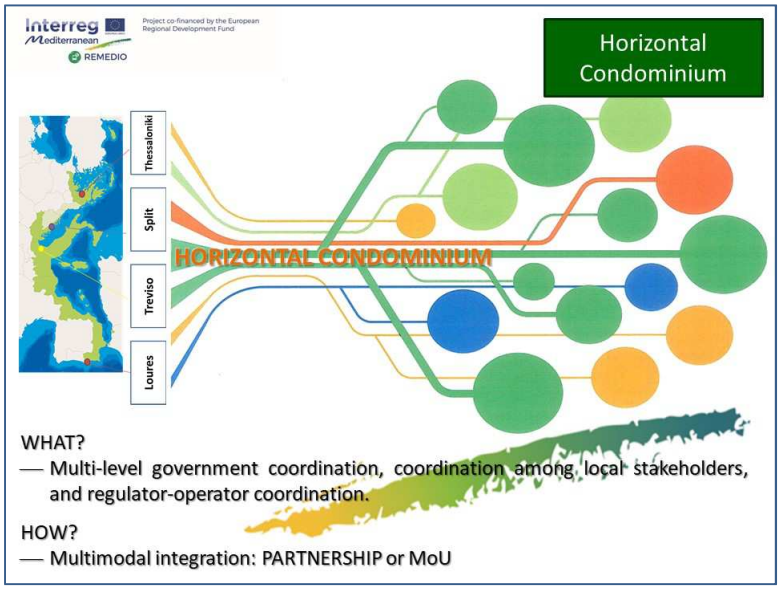
During the interventions

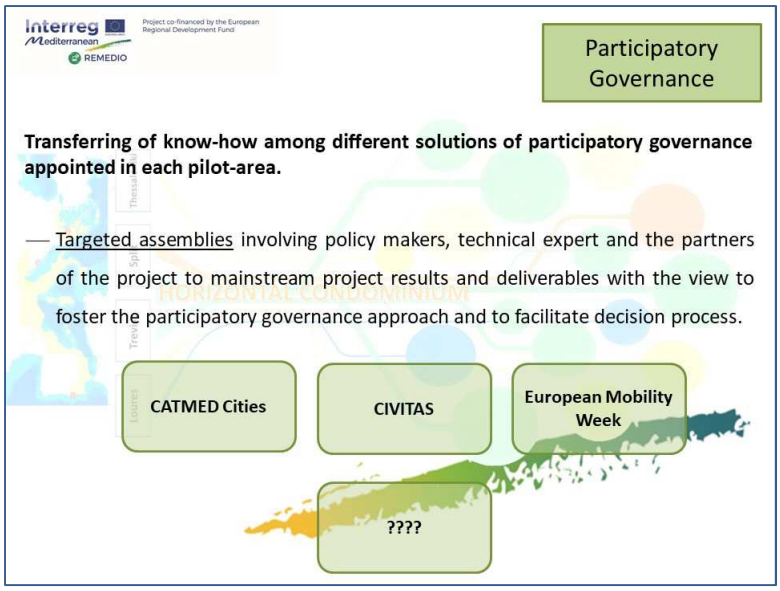
Interventions:
- enlargement of sidewalks
- cycle paths
- bike parking
- one lane traffic
- velocity limit 30 km/h

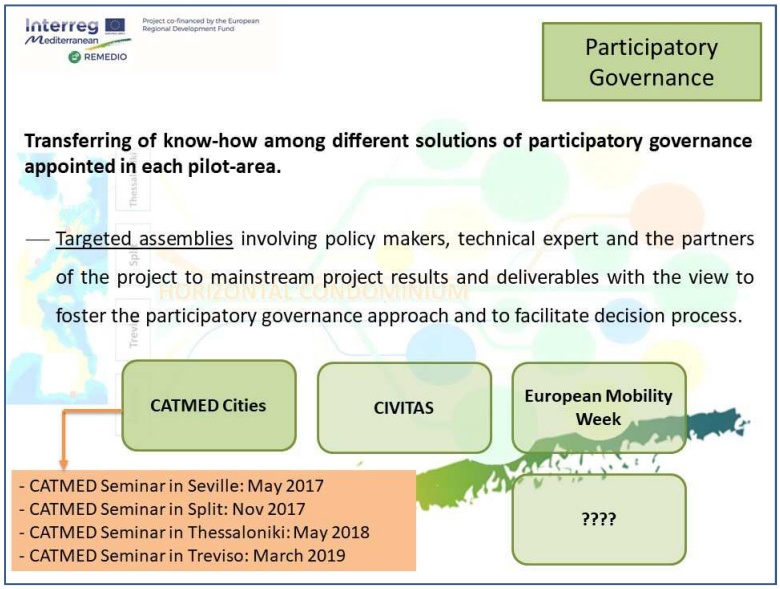
Status:
- Most of the structural works already concluded

Expected results


Interreg
Mediterranean
REMEDIO
Project co-financed by the European Regional Development Fund
Thessaloniki
2nd generation Bus Lane
Road axis today:
- Bad function of bus lines
- Illegally parked cars
Users: Residents and Commuters
Located: East horizontal axis of Thessaloniki
Ethn. Antistaseos-Vas. Olgas-Vas. George-Man. Andronikou
Status: Under assessment for preparation
Users: Residents and Commuters
✓ Modulo proposals for the environmental upgrade of the road axis with a 2nd generation bus lane
✓ Consultation with the local stakeholders - Selection of the best scenarios
✓ Simulation of the selected scenarios and impact assessment


Interreg
Mediterranean
REMEDIO
Horizontal Condominium
Thessaloniki
Split
Treviso
Loures
HORIZONTAL CONDOMINIUM
WHAT?
— Multi-level government coordination, coordination among local stakeholders, and regulator-operator coordination.
HOW?
— Multimodal integration: PARTNERSHIP or MoU


Participatory Governance
Transferring of know-how among different solutions of participatory governance appointed in each pilot-area.
— Targeted assemblies involving policy makers, technical expert and the partners of the project to mainstream project results and deliverables with the view to foster the participatory governance approach and to facilitate decision process.
CATMED Cities
CIVITAS
European Mobility Week
????


Participatory Governance
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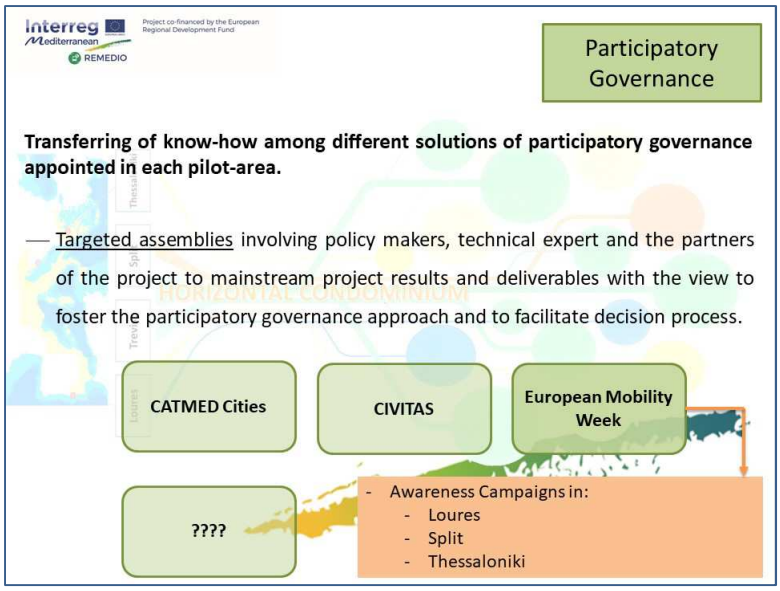
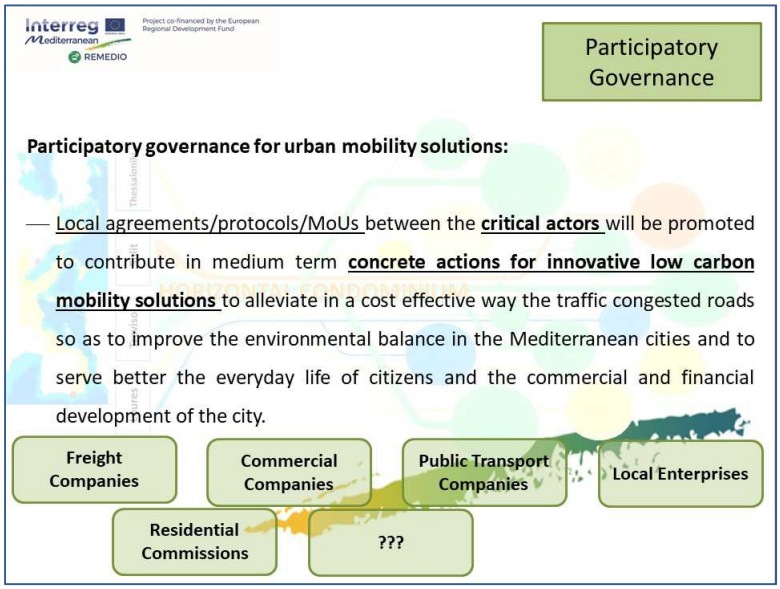
— Targeted assemblies involving policy makers, technical expert and the partners of the project to mainstream project results and deliverables with the view to foster the participatory governance approach and to facilitate decision process.
CATMED Cities
CIVITAS
European Mobility Week
- CATMED Seminar in Seville: May 2017
- CATMED Seminar in Split: Nov 2017
- CATMED Seminar in Thessaloniki: May 2018
- CATMED Seminar in Treviso: March 2019
????


Participatory Governance
Transferring of know-how among different solutions of participatory governance appointed in each pilot-area.
Targeted assemblies involving policy makers, technical expert and the partners of the project to mainstream project results and deliverables with the view to foster the participatory governance approach and to facilitate decision process.
CATMED Cities
CIVITAS
European Mobility Week
????
- Awareness Campaigns in:
- Loures
- Split
- Thessaloniki


Participatory Governance
Participatory governance for urban mobility solutions:
Local agreements/protocols/MoUs between the critical actors will be promoted to contribute in medium term concrete actions for innovative low carbon mobility solutions to alleviate in a cost effective way the traffic congested roads so as to improve the environmental balance in the Mediterranean cities and to serve better the everyday life of citizens and the commercial and financial development of the city.
Freight Companies
Commercial Companies
Public Transport Companies
Local Enterprises
Residential Commissions
???


Interreg Mediterranean
Project co-financed by the European Regional Development Fund
REMEDIO
Agenzia Regionale per la Prevenzione e Protezione Ambientale del Veneto
Instituto Superior Técnico
Universidade de Sevilla
Aristotle University of Thessaloniki
Municipality of Treviso
Metropolitan Development Agency of Thessaloniki, S.A.
City of Split
Municipality of Loures


Interreg Mediterranean
REMEDIO
CiViTAS FORUM 2017
Thank you
/remediomed
remedio.interreg-med.eu/
remedio-med@ctn.tecnico.ulisboa.pt
Project co-financed by the European Regional Development Fund

3.3. A03 - Community Building Workshop: Participatory Planning & Processes

Project co-financed by the European Regional Development Fund

Community Building Workshops
17th April 2018
UNIMED
Rome, Italy

Session 2: Participatory Planning & Processes

Sub-Session: Urban Transports' participatory process and citizens involvement by surveys

Marina Almeida-Silva, Fernando Noivo, Ana Maretic, Francesca Liguori

Project co-financed by the European Regional Development Fund

REMEDIO specific objectives

1. **Improvement of the environmental and mobility performance in traffic hot spots**, through the adoption of low-carbon mobility scenarios.

2. Development **low-carbon mobility plans** focused on **urban hot spots** characterized by traffic congestion in MED cities

3. Create innovative models of **participatory governance** to foster the implementation process of low-carbon mobility plans

REMEDIO specific objectives

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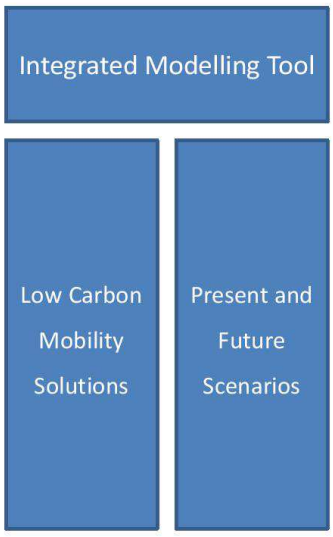
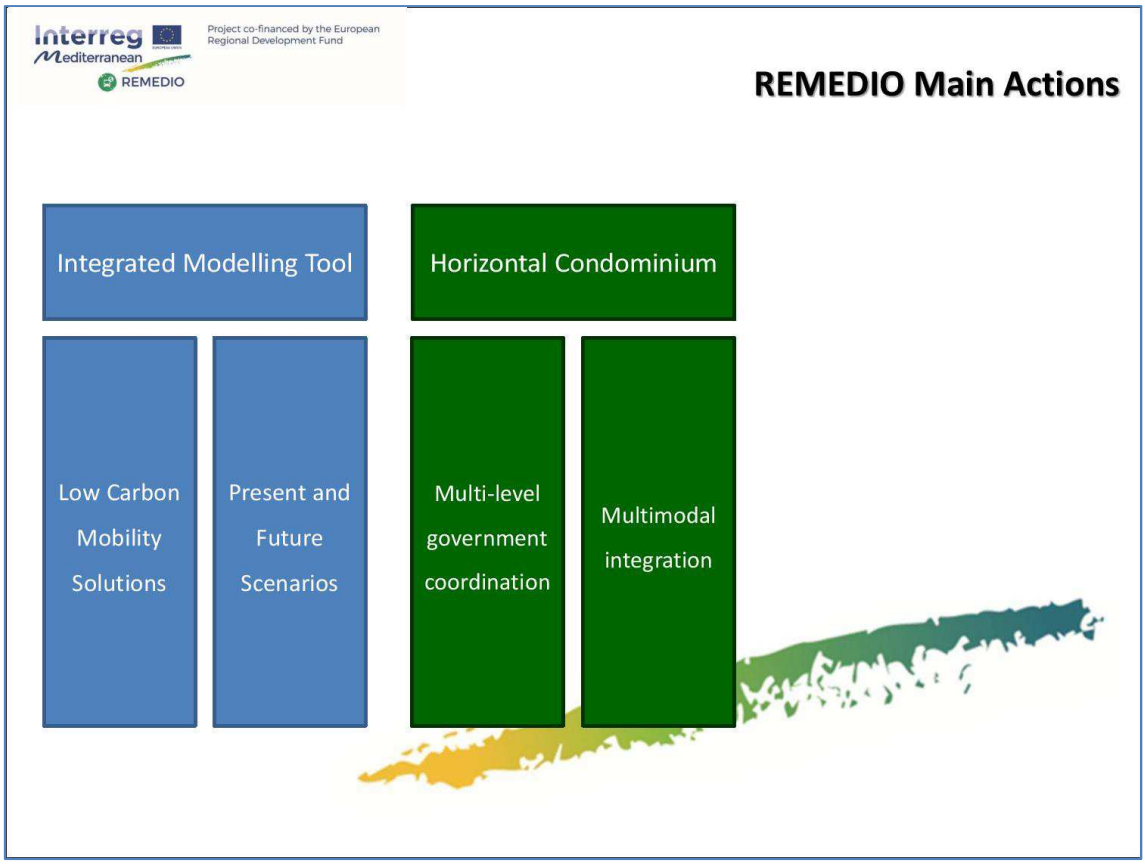
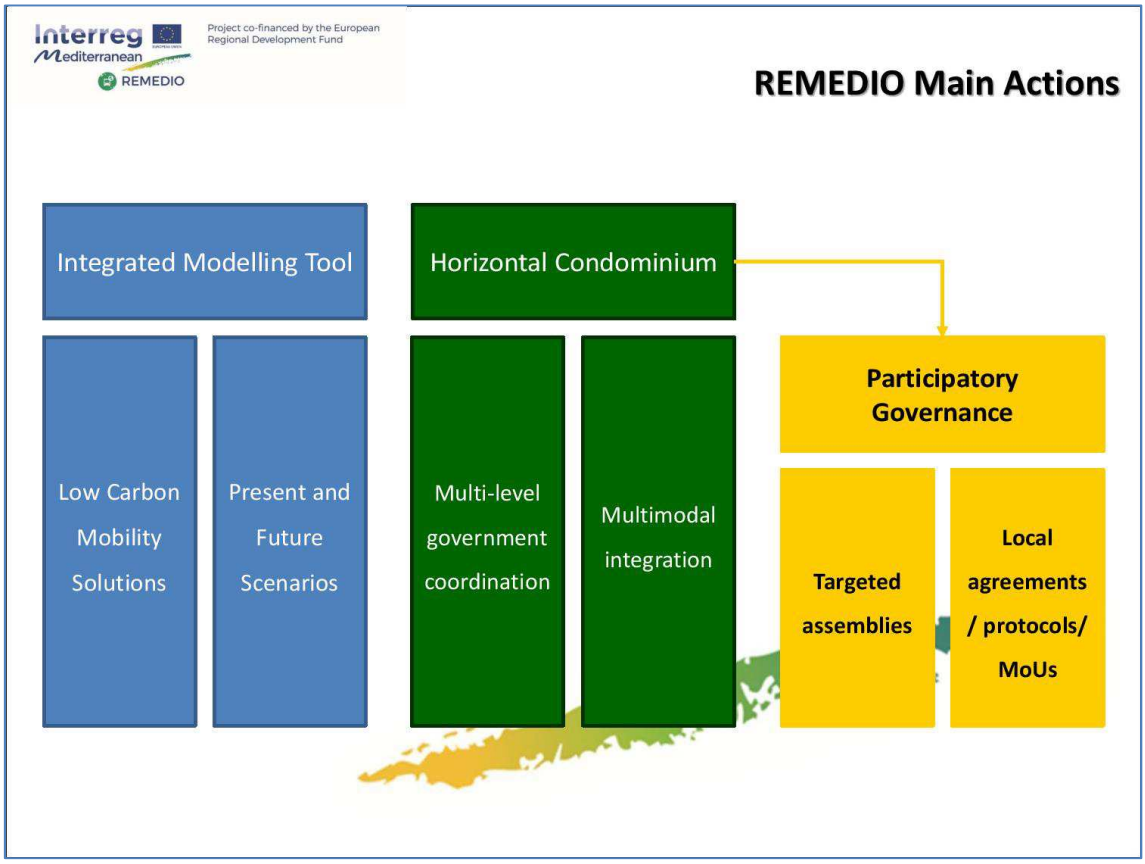
3. Create innovative models of **participatory governance** to foster the implementation process of low-carbon mobility plans

REMEDIO Main Actions




Interreg Mediterranean
REMEDIO
Project co-financed by the European Regional Development Fund
REMEDIO Main Actions
Integrated Modelling Tool
Horizontal Condominium
Low Carbon Mobility Solutions
Present and Future Scenarios
Multi-level government coordination
Multimodal integration


Interreg Mediterranean
REMEDIO
Project co-financed by the European Regional Development Fund
REMEDIO Main Actions
Integrated Modelling Tool
Horizontal Condominium
Low Carbon Mobility Solutions
Present and Future Scenarios
Multi-level government coordination
Multimodal integration
Participatory Governance
Targeted assemblies
Local agreements / protocols/ MoUs

Project co-financed by the European Regional Development Fund

REMEDIO: Participatory Planning & Processes

Treviso

MoU

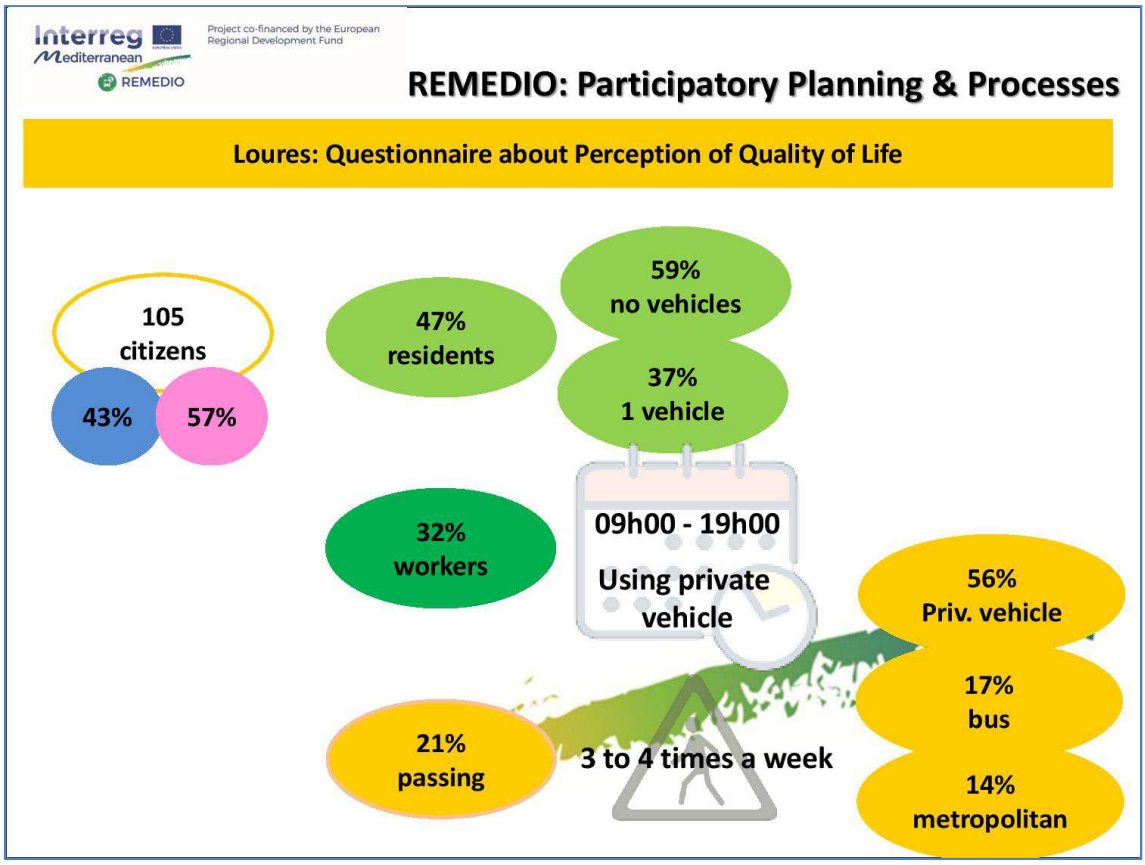
Project co-financed by the European Regional Development Fund

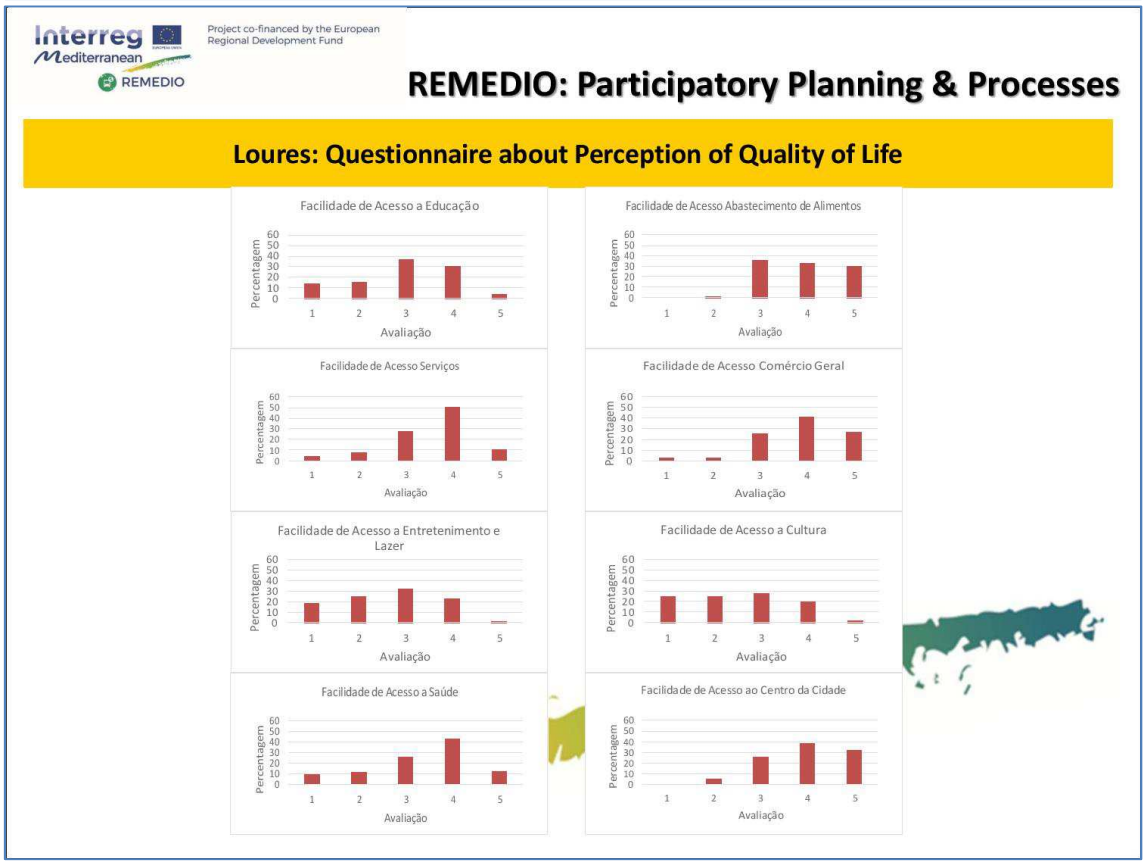
REMEDIO: Participatory Planning & Processes

Loures

MoU?

Other initiatives?


Project co-financed by the European Regional Development Fund
REMEDIO: Participatory Planning & Processes
Loures: Questionnaire about Perception of Quality of Life
105 citizens
43%
57%
47% residents
59% no vehicles
37% 1 vehicle
32% workers
09h00 - 19h00
Using private vehicle
56% Priv. vehicle
17% bus
14% metropolitan
21% passing
3 to 4 times a week


Project co-financed by the European Regional Development Fund
REMEDIO: Participatory Planning & Processes
Loures: Questionnaire about Perception of Quality of Life
Facilidade de Acesso a Educação
Facilidade de Acesso Abastecimento de Alimentos
Facilidade de Acesso Serviços
Facilidade de Acesso Comércio Geral
Facilidade de Acesso a Entretenimento e Lazer
Facilidade de Acesso a Cultura
Facilidade de Acesso a Saúde
Facilidade de Acesso ao Centro da Cidade
Percentagem
Avaliação

Project co-financed by the European Regional Development Fund

REMEDIO: Participatory Planning & Processes

Loures: Questionnaire about Perception of Quality of Life

Project co-financed by the European Regional Development Fund

REMEDIO: Participatory Planning & Processes

Split

MoU?

Questionnaires?

Other initiatives?

Project co-financed by the European Regional Development Fund

REMEDIO: Participatory Planning & Processes

Thessaloniki

MoU?

Questionnaires? **Mail you received with presentation regarding the questionnaires**

Participatory Workshop: Organization of the 1st participatory workshop with local authorities and other stakeholders and experts on 18 December 2017, Thessaloniki, City Hall, 19 participants. The proposals have been presented during the event and discussed with the local stakeholders. The next step is to set up an electronic consultation to qualify the solutions with the broader acceptance that will be then studied in more detail and simulated in order to assess their impacts.

Project co-financed by the European Regional Development Fund

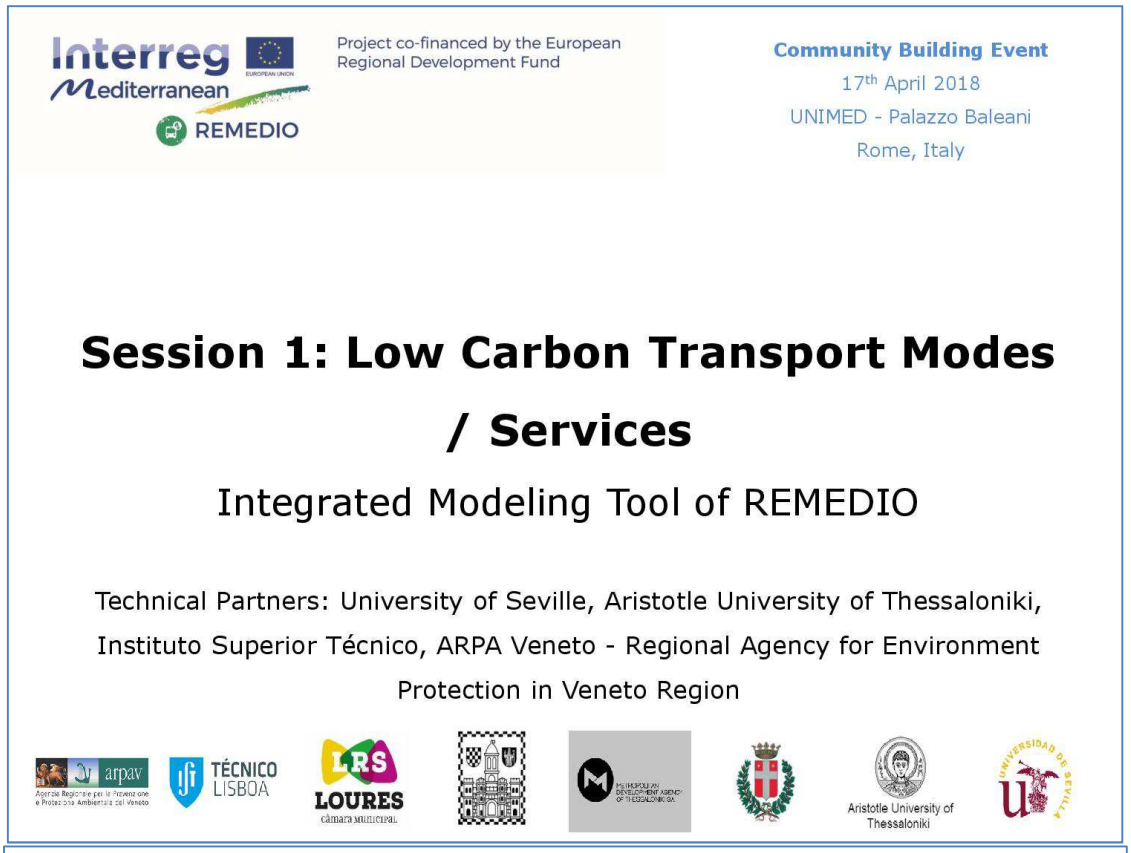
Community Building Workshops
17th April 2018
UNIMED
Rome, Italy

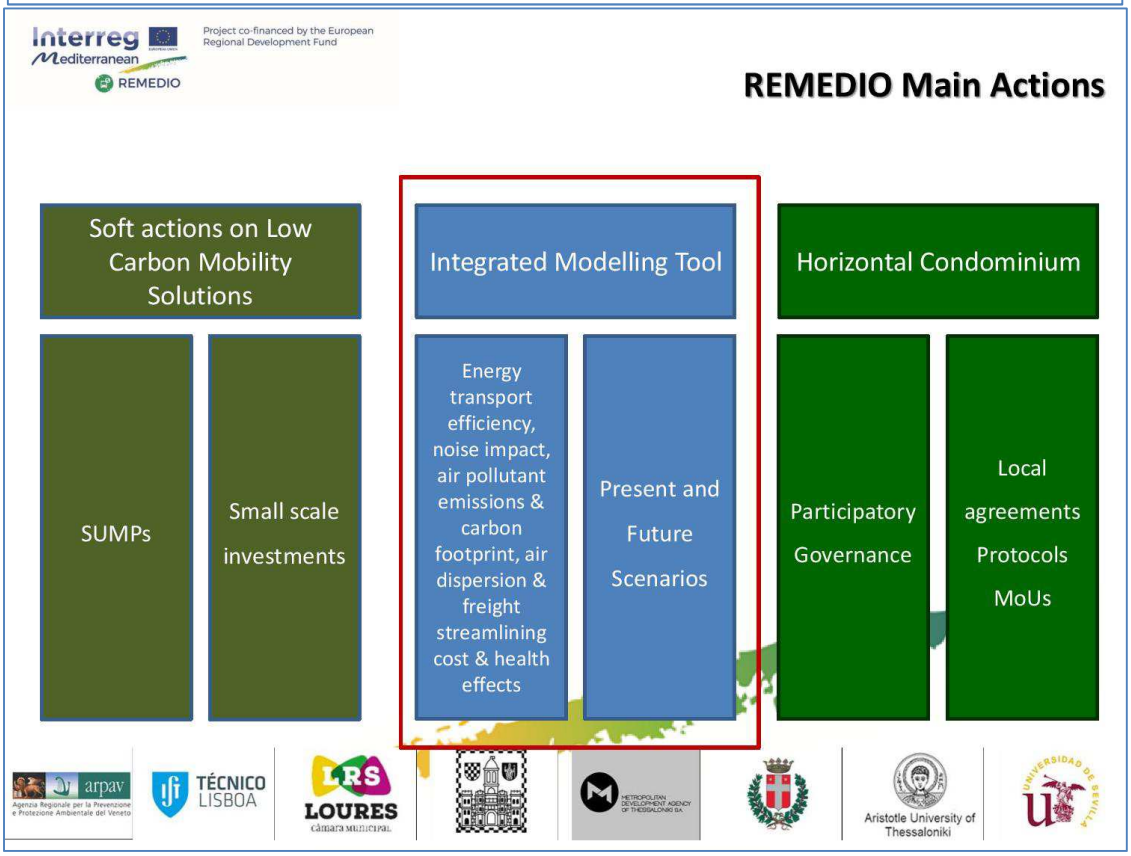
Session 2: Participatory Planning & Processes

Sub-Session: Urban Transports' participatory process and citizens involvement by surveys

Marina Almeida-Silva, Fernando Noivo, Ana Maretic, Francesca Liguori

3.4. A04 - Community Building Workshop: LCT Modes



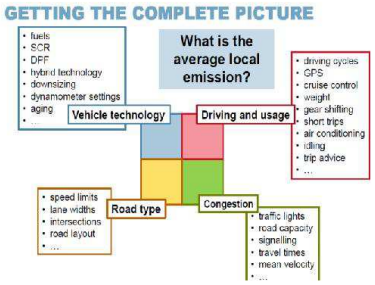


Project co-financed by the European Regional Development Fund

Integrated Modelling Tool (IMT)

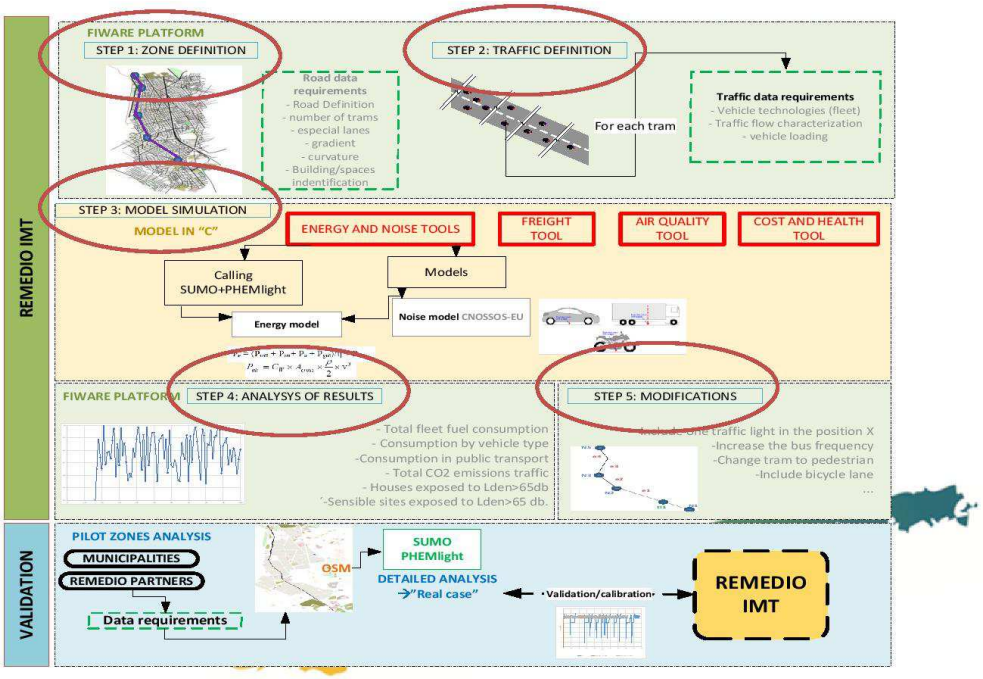
Customized modelling tool to evaluate the transport, energy and environmental-related performance of low-carbon actions to be implemented.

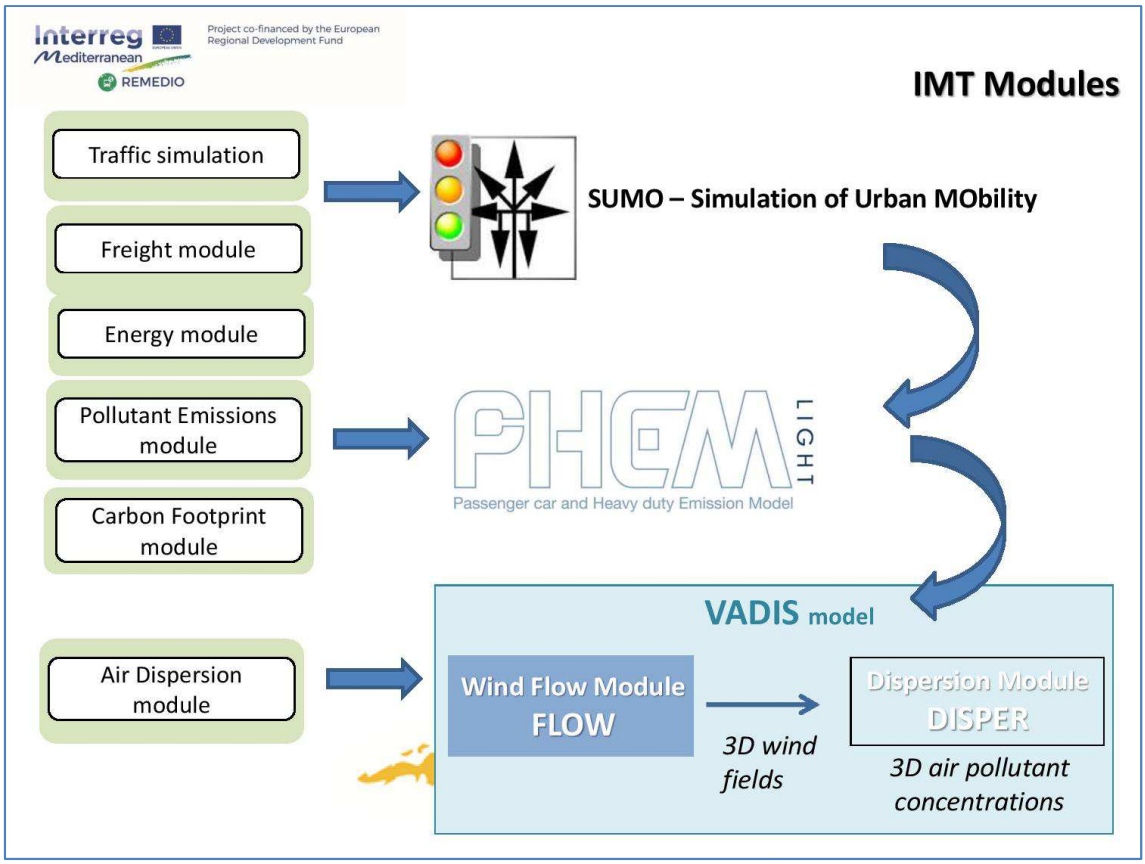
- At local street level
- Includes models for tailpipe emissions, carbon footprint, dispersion, energy, noise, freight, cost and health
- Validated in selected roads participant regions (Treviso)
- Structure based on FIWARE platform

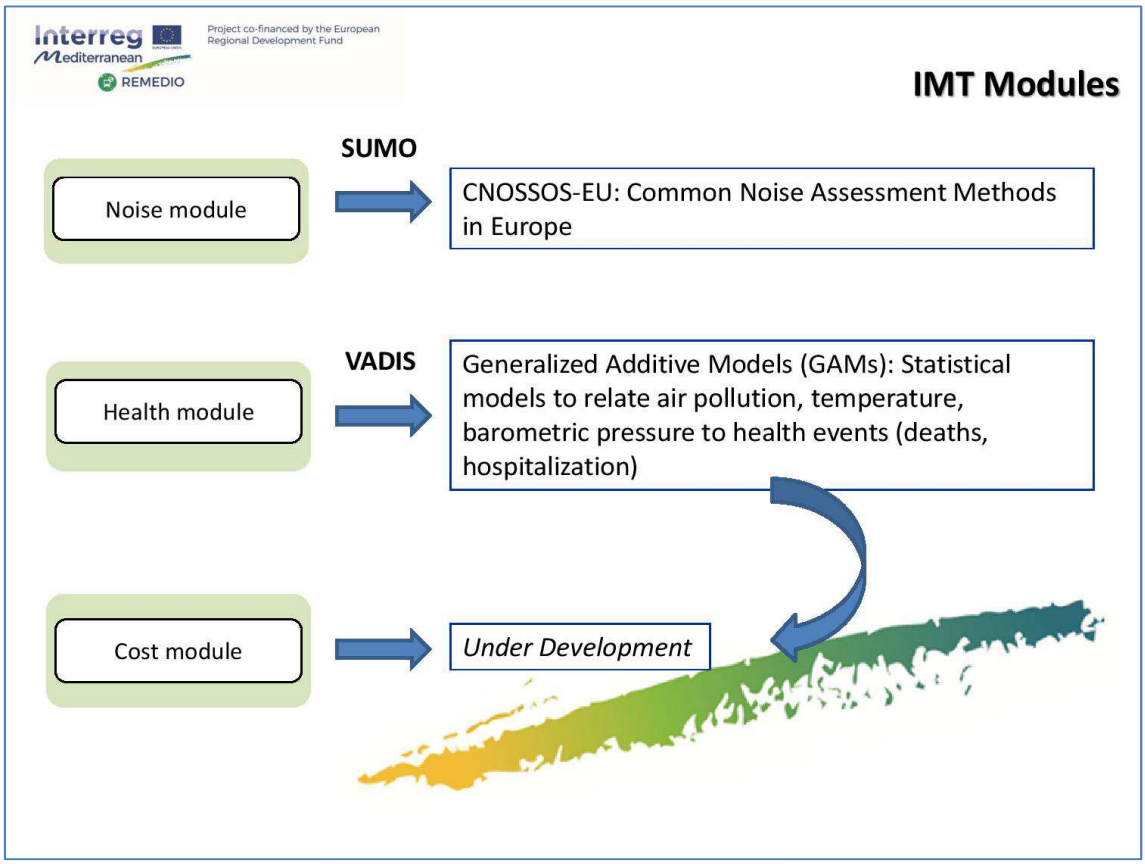


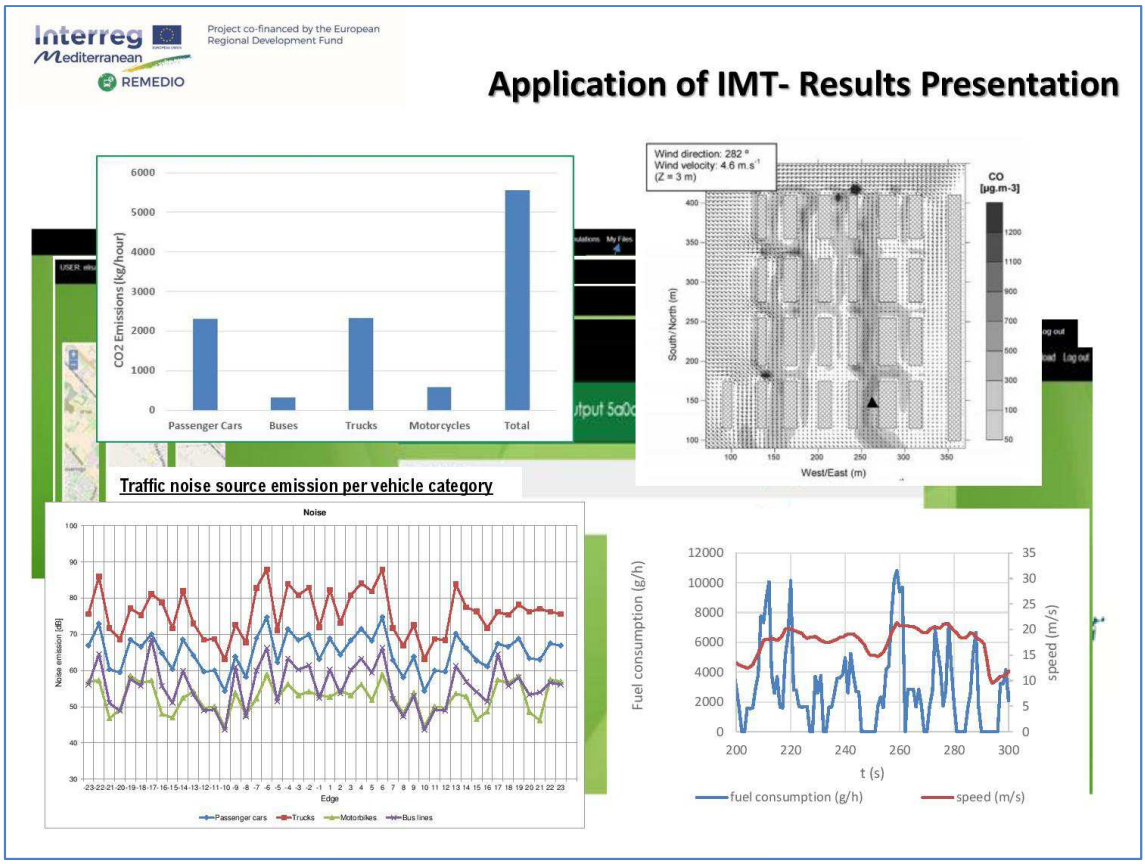
Project co-financed by the European Regional Development Fund

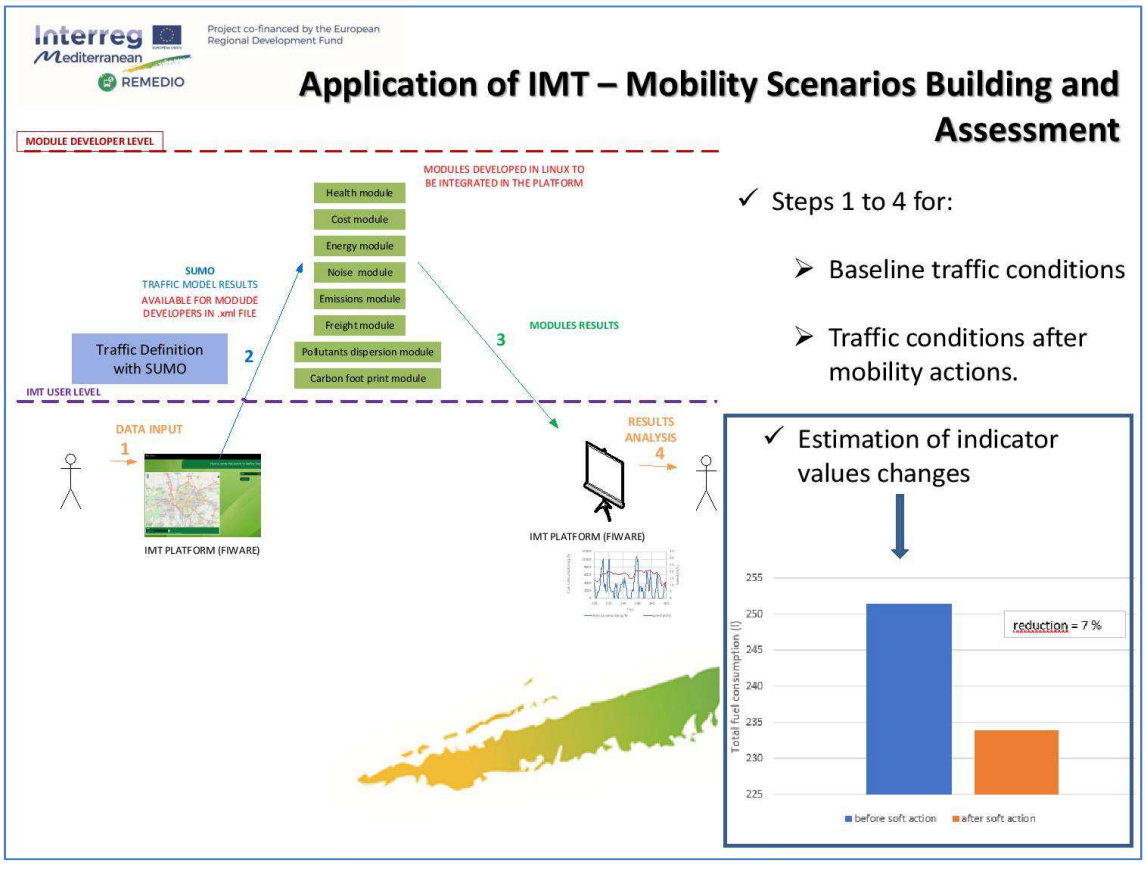
Conceptual Modelling Approach




Interreg Mediterranean
Project co-financed by the European Regional Development Fund
REMEDIO
IMT Modules
Traffic simulation
Freight module
Energy module
Pollutant Emissions module
Carbon Footprint module
Air Dispersion module
SUMO – Simulation of Urban MObility
PHEM LIGHT
Passenger car and Heavy duty Emission Model
VADIS model
Wind Flow Module FLOW
3D wind fields
Dispersion Module DISPER
3D air pollutant concentrations


Interreg Mediterranean
Project co-financed by the European Regional Development Fund
REMEDIO
IMT Modules
Noise module
SUMO
CNOSSOS-EU: Common Noise Assessment Methods in Europe
Health module
VADIS
Generalized Additive Models (GAMs): Statistical models to relate air pollution, temperature, barometric pressure to health events (deaths, hospitalization)
Cost module
Under Development


Project co-financed by the European Regional Development Fund
REMEDIO
Application of IMT- Results Presentation
CO2 Emissions [kg/hour]
Passenger Cars
Buses
Trucks
Motorcycles
Total
Wind direction: 282 °
Wind velocity: 4.6 m.s-1
(Z = 3 m)
CO [µg.m-3]
South/North (m)
West/East (m)
Traffic noise source emission per vehicle category
Noise
Noise emission [dB]
Edge
Passenger cars
Trucks
Motorbikes
Bus lines
Fuel consumption (g/h)
speed (m/s)
t (s)
fuel consumption (g/h)
speed (m/s)


Project co-financed by the European Regional Development Fund
REMEDIO
Application of IMT – Mobility Scenarios Building and Assessment
MODULE DEVELOPER LEVEL
MODULES DEVELOPED IN LINUX TO BE INTEGRATED IN THE PLATFORM
Health module
Cost module
Energy module
Noise module
Emissions module
Freight module
Pollutants dispersion module
Carbon foot print module
SUMO
TRAFFIC MODEL RESULTS
AVAILABLE FOR MODUDE
DEVELOPERS IN .xml FILE
Traffic Definition with SUMO
2
3
MODULES RESULTS
IMT USER LEVEL
DATA INPUT
1
IMT PLATFORM (FIWARE)
RESULTS ANALYSIS
4
IMT PLATFORM (FIWARE)
✓ Steps 1 to 4 for:
➢ Baseline traffic conditions
➢ Traffic conditions after mobility actions.
✓ Estimation of indicator values changes
Total fuel consumption (l)
reduction = 7 %
before soft action
after soft action


Interreg
Mediterranean
REMEDIO
Project co-financed by the European Regional Development Fund
By all REMEDIO partners
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Municipality of Loures
City of Split
Metropolitan Development Agency of Thessaloniki S.A
Municipality of Treviso
Aristotle University of Thessaloniki
University of Seville
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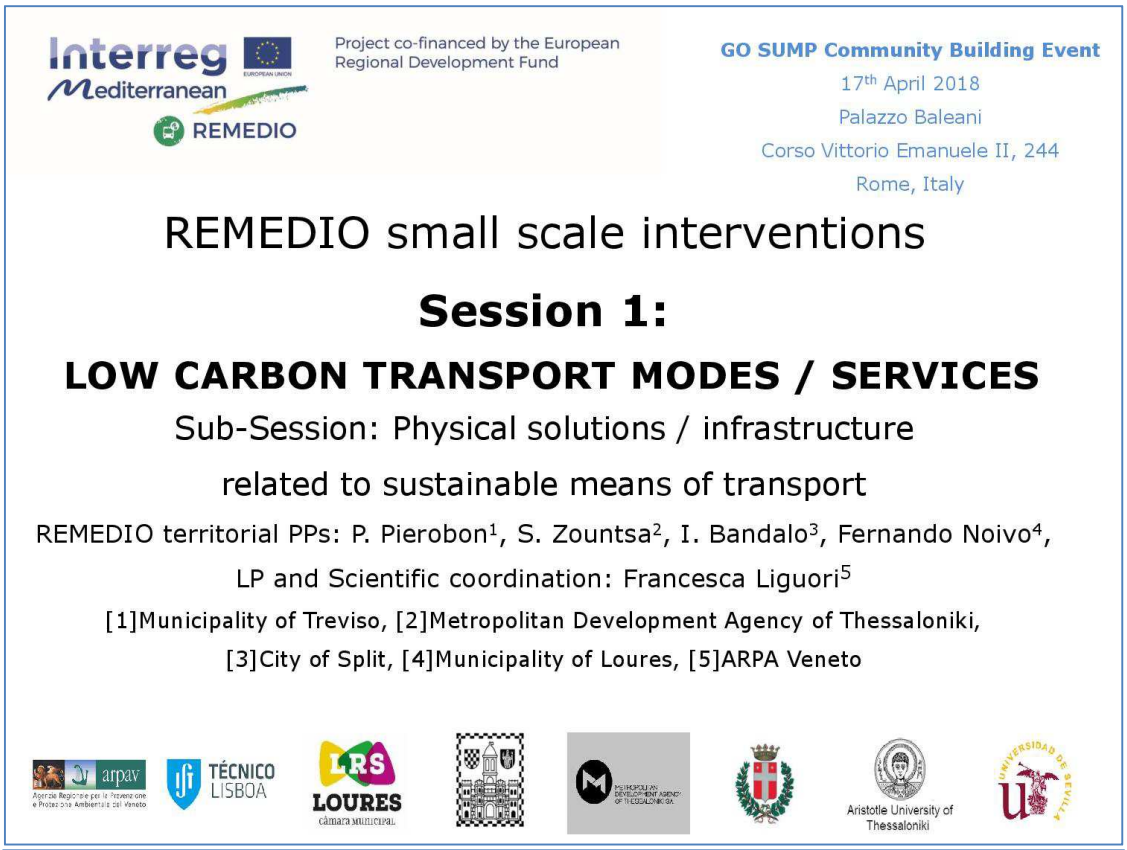
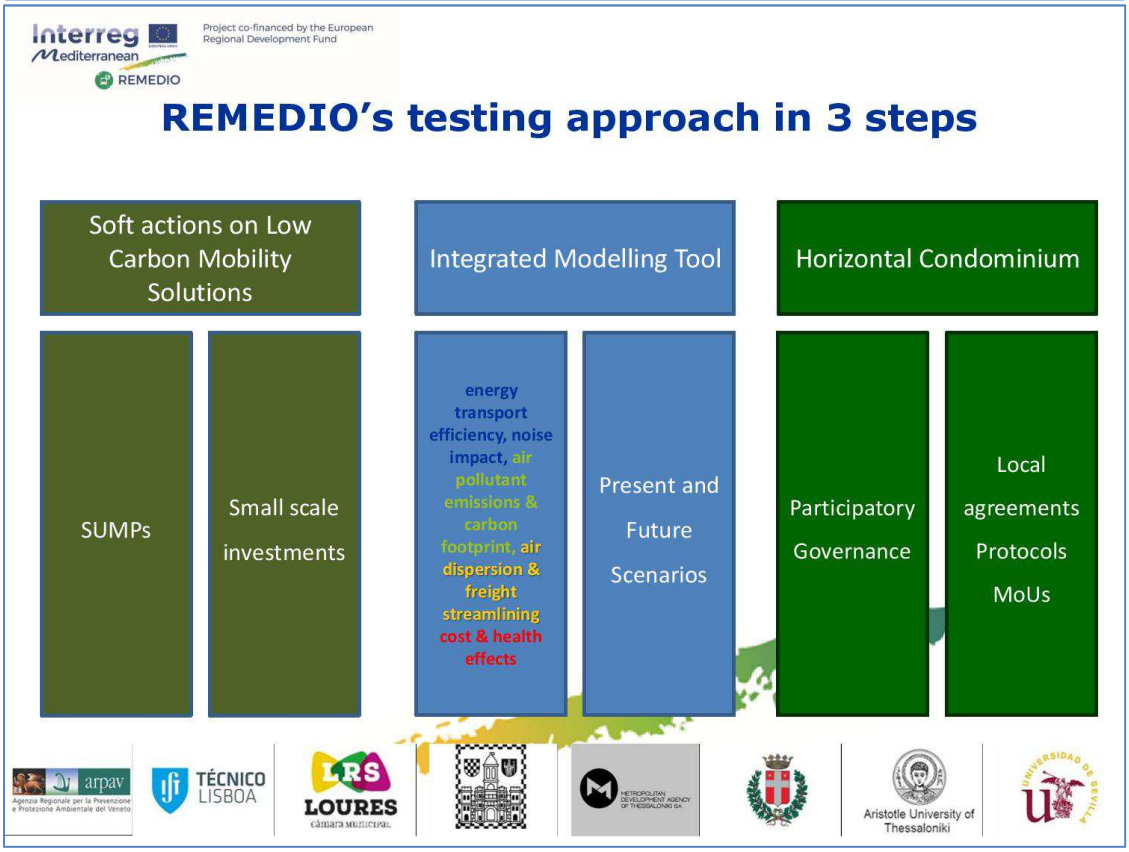
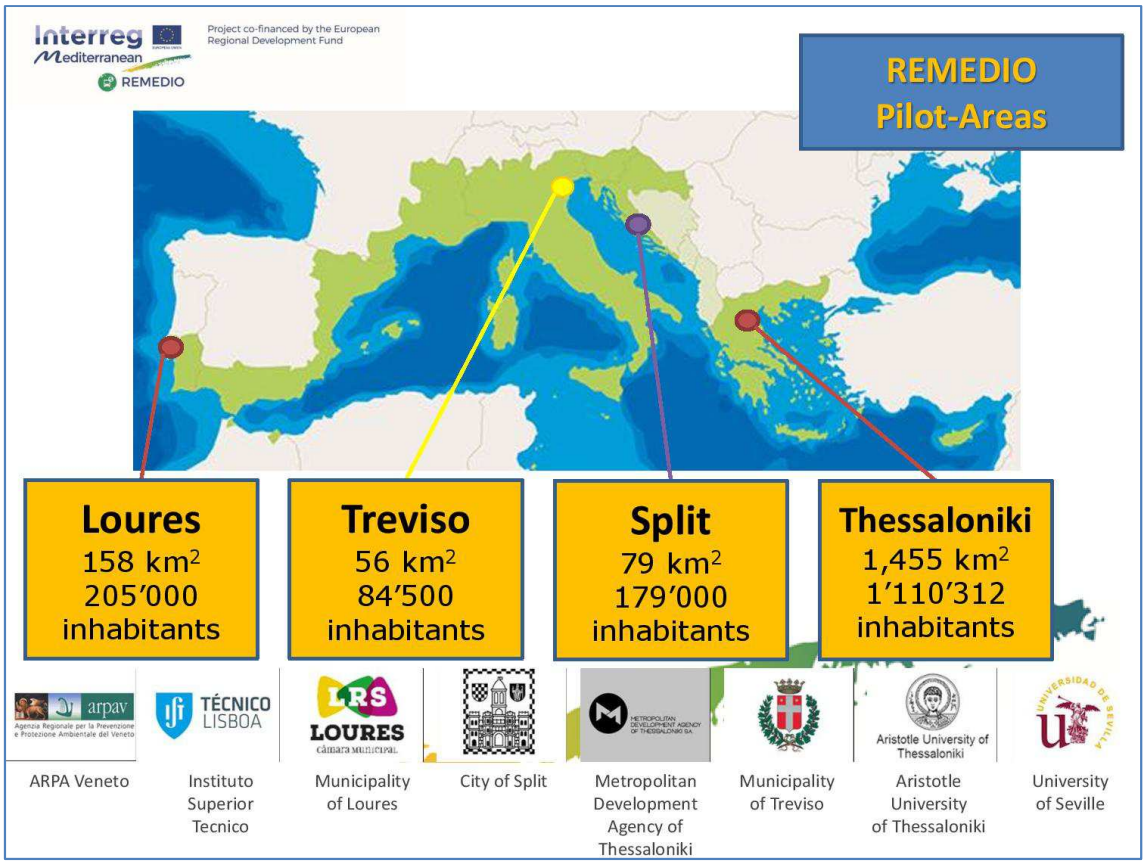
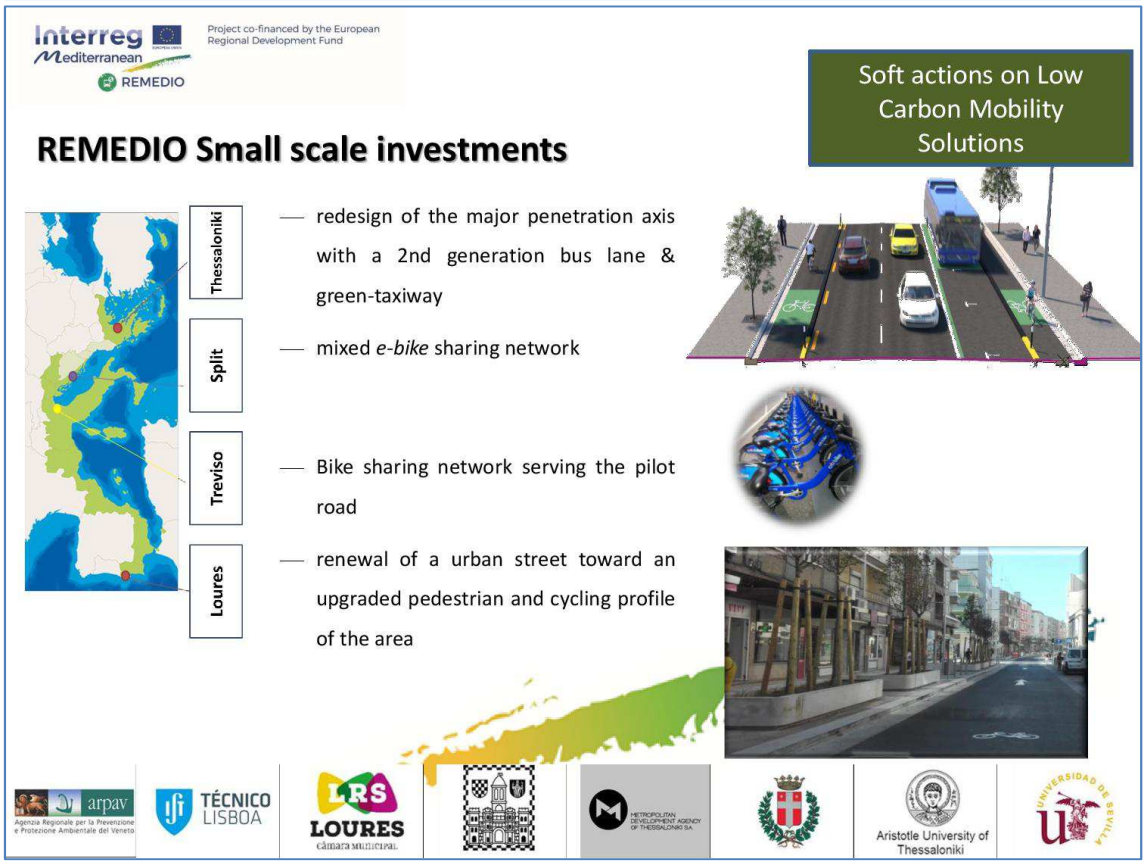
3.5. A05 - Community Building Workshop: ICT






Interreg Mediterranean
REMEDIO
Project co-financed by the European Regional Development Fund
REMEDIO Pilot-Areas
Loures
158 km2
205'000 inhabitants
Treviso
56 km2
84'500 inhabitants
Split
79 km2
179'000 inhabitants
Thessaloniki
1,455 km2
1'110'312 inhabitants
ARPA Veneto
Instituto Superior Tecnico
Municipality of Loures
City of Split
Metropolitan Development Agency of Thessaloniki
Municipality of Treviso
Aristotle University of Thessaloniki
University of Seville


Interreg Mediterranean
REMEDIO
Project co-financed by the European Regional Development Fund
REMEDIO Small scale investments
Soft actions on Low Carbon Mobility Solutions
Thessaloniki
Split
Treviso
Loures
redesign of the major penetration axis with a 2nd generation bus lane & green-taxiway
mixed e-bike sharing network
Bike sharing network serving the pilot road
renewal of a urban street toward an upgraded pedestrian and cycling profile of the area

Project co-financed by the European Regional Development Fund

Loures
Moscavide Area

Renewal of Moscavide street with upgrading of the pedestrian and cycling profile of the street




Project co-financed by the European Regional Development Fund

Split
City center and its surroundigs

Eexecutive design of the mixed electric and traditional bike sharing service well advanced




Project co-financed by the European Regional Development Fund

REMEDIO

Treviso
West Road

Bike sharing project in REMEDIO:
9 stations
50 bikes
Users: citizens
Location: along the West Road – pilot area
Status: supply for the installation assigned

Bike sharing today:
22 stations
120 bikes
Users: citizens
Located: mainly in the historical city center

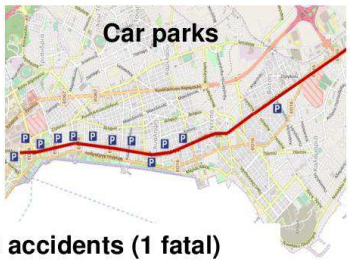
Thanks to REMEDIO
Treviso = 20 bikes/ 10'000 inhabitants

Project co-financed by the European Regional Development Fund

REMEDIO

Thessaloniki
Ethn. Antistaseos – Vas. Olgas- Vas. Georgiou- Man. Andronikou

The road axis characteristics



Intensive illegal and double parking

60 traffic accidents (1 fatal) recorded on average every year

Year	Total	Fatal	inv. pedestrian(s)	Injured		
				Dead	Heavily	Wounded
2010	54	2	14	2	2	61
2011	66	2	23	3	4	75
2012	60	0	18	0	2	63
2013	52	1	12	1	1	61
2014	57	1	16	1	0	67
2015	62	1	12	1	1	69
2016	60	1	13	1	3	78

arpav · TÉCNICO LISBOA · LRS LOURES · GRAD SPLIT · Città di Treviso · Aristotle University of Thessaloniki


Interreg
Mediterranean
REMEDIO
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By all REMEDIO partners
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Municipality of Treviso
Aristotle University of Thessaloniki
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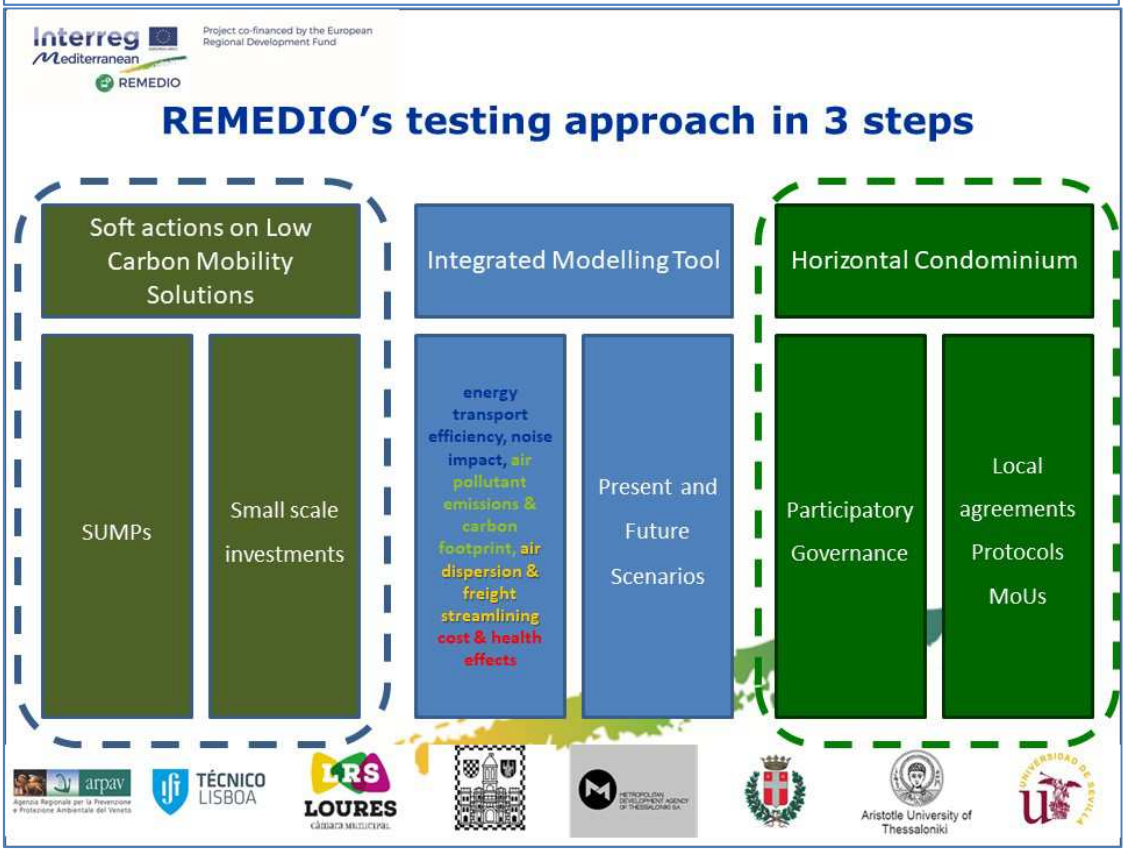
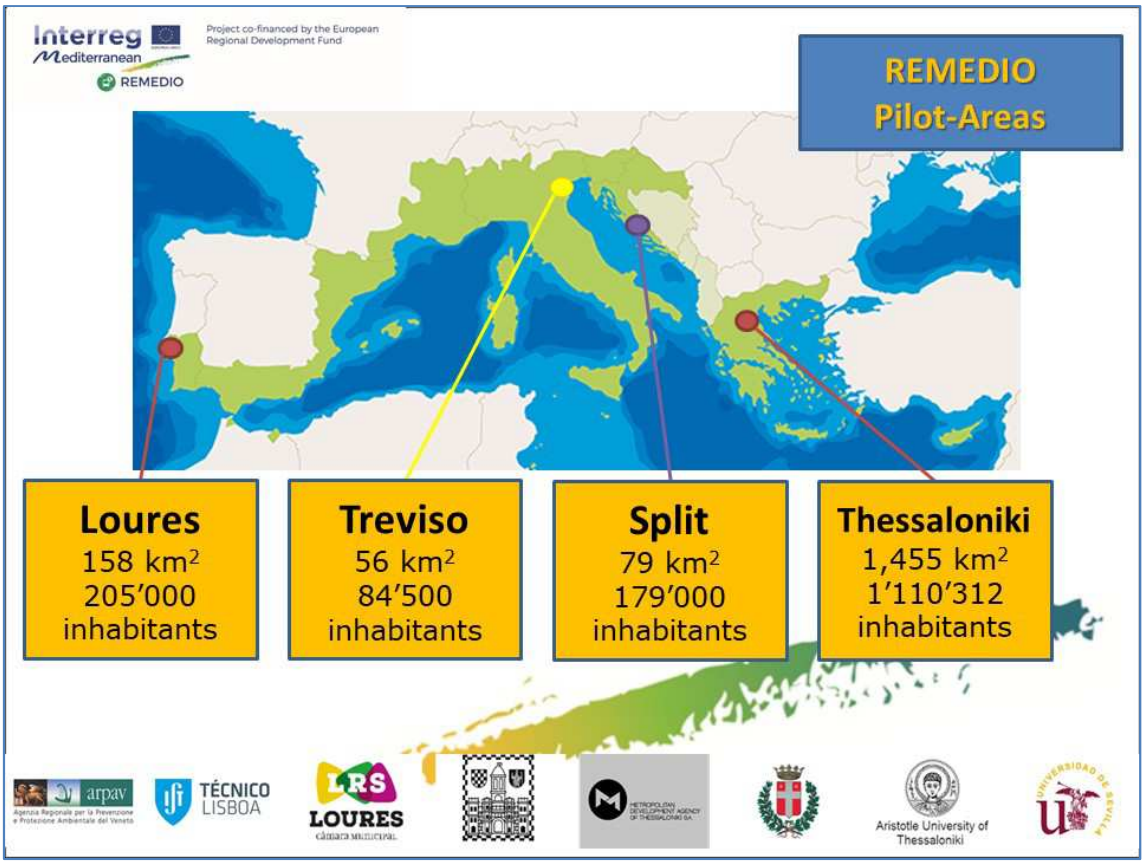
3.6. A06 - 5th European Conference on Sustainable Urban Mobility Plans




Interreg
Mediterranean
REMEDIO
Project co-financed by the European Regional Development Fund
REMEDIO Pilot-Areas
Loures
158 km²
205'000 inhabitants
Treviso
56 km²
84'500 inhabitants
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79 km²
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1,455 km²
1'110'312 inhabitants
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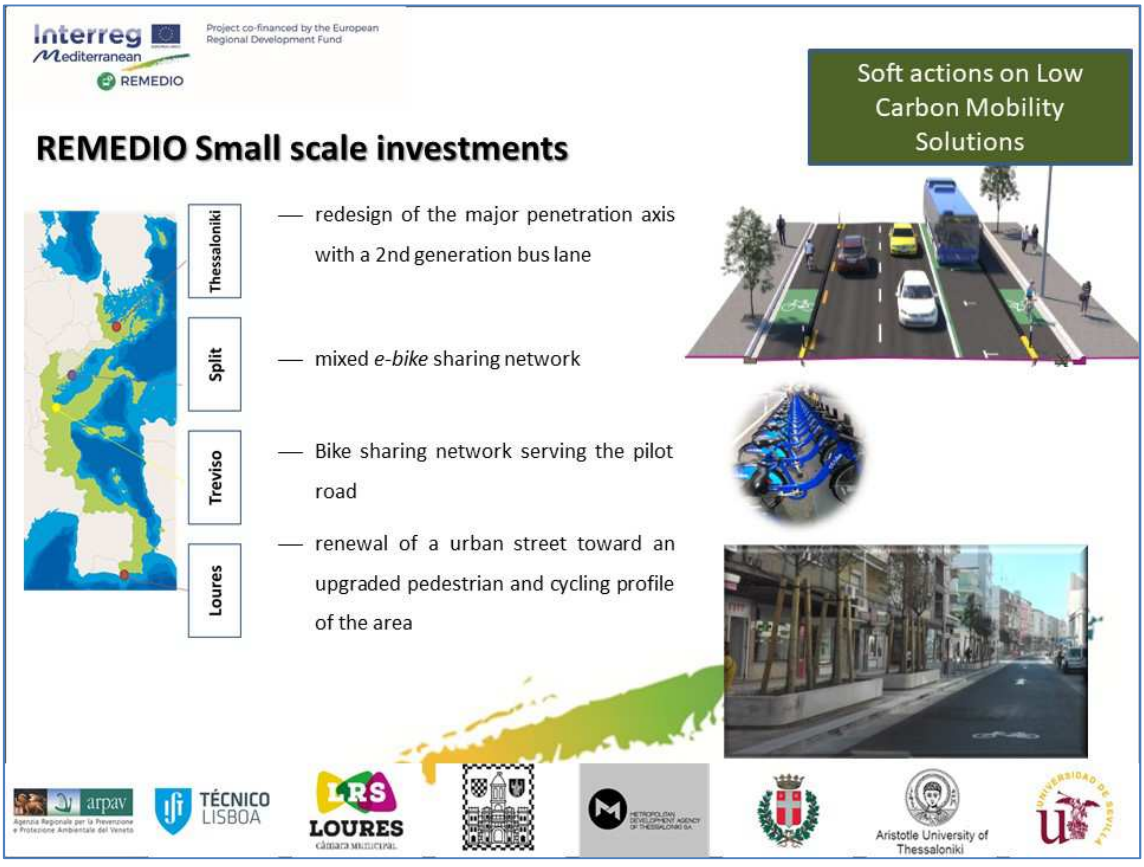
LOURES
Aristotle University of Thessaloniki


Interreg
Mediterranean
REMEDIO
Project co-financed by the European Regional Development Fund
REMEDIO Small scale investments
Soft actions on Low Carbon Mobility Solutions
Thessaloniki
Split
Treviso
Loures
— redesign of the major penetration axis with a 2nd generation bus lane
— mixed e-bike sharing network
— Bike sharing network serving the pilot road
— renewal of a urban street toward an upgraded pedestrian and cycling profile of the area
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LOURES
Aristotle University of Thessaloniki

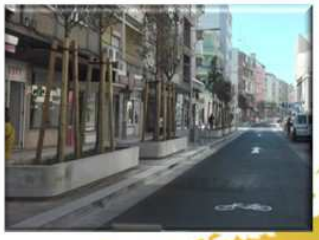
Interreg Mediterranean REMEDIO

Project co-financed by the European Regional Development Fund

Loures
Moscavide Area

Renewal of Moscavide street with upgrading of the pedestrian and cycling profile of the street






arpav · TÉCNICO LISBOA · LRS LOURES Câmara Municipal · Metropolitan Development Agency of Thessaloniki SA · Aristotle University of Thessaloniki

Interreg Mediterranean REMEDIO

Project co-financed by the European Regional Development Fund

Split
City center and its surroundigs

Executive design of the mixed electric and traditional bike sharing service well advanced




Project co-financed by the European Regional Development Fund

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West Road

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50 bikes
Users: citizens
Location: along the West Road – pilot area
Status: supply for the installation assigned

Bike sharing today:
22 stations
120 bikes
Users: citizens
Located: mainly in the historical city center

Thanks to REMEDIO
Treviso = 20 bikes/ 10'000 inhabitants

Project co-financed by the European Regional Development Fund

Thessaloniki
Ethn. Antistaseos – Vas. Olgas- Vas. Georgiou- Man. Andronikou

The road axis characteristics

Intensive illegal and double parking

60 traffic accidents (1 fatal) recorded on average every year

Year	Total	Fatal	inv. pedestrian(s)	Injured		
				Dead	Heavily	Wounded
2010	54	2	14	2	2	61
2011	66	2	23	3	4	75
2012	60	0	18	0	2	63
2013	52	1	12	1	1	61
2014	57	1	10	1	0	67
2015	62	1	12	1	1	69
2016	60	1	13	1	3	78

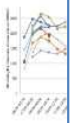
Interreg Mediterranean REMEDIO

Project co-financed by the European Regional Development Fund

Analysis of current traffic situation along the axis

A. Microsimulation model set up with detailed information about the axis

- Road sections and intersections (i.e. geometry, direction, slope, number, width and use of lanes, capacity, max allowed speed, on street parking, pedestrians' crossings, traffic control, etc.),
- Public Transport (i.e. bus stops, bus lines, routes, timetables, etc.)
- Vehicle types and characteristics
- Traffic demand and composition with trip O-D data from the available macrosimulation model of the Metropolitan area of Thessaloniki



B. Calibration of the model

with **traffic data,** that were available for the city, and **traffic counts**, that took place in the framework of the SUMP of the municipality of Thessaloniki development, and more, that took place specifically for the needs of REMEDIO.

arpav · TÉCNICO LISBOA · LOURES Câmara Municipal · Aristotle University of Thessaloniki

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Process for the elaboration of a proposal for the upgrade of the axis

based on the principles of Sustainable Urban Mobility Planning, followed a **high-participatory approach**:

✓**OPEN PUBLIC DISCUSSION** for the development of a vision for the axis,

"An Urban Operational Axis for all ..."

✓**PARTICIPATORY WORKSHOP WITH STAKEHOLDERS OF THE CITY** for the identification the upgrade objectives and the preparation of preliminary proposals for its redesign, in

✓**ONLINE PUBLIC CONSULTATION** to record the opinions and comments of stakeholders on the alternative proposals for the axis redesign

✓**WORKSHOP WITH RELEVANT EXPERTS** (academics and practitioners) of the city for the definition of the final proposal

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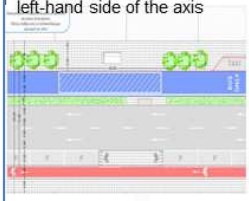
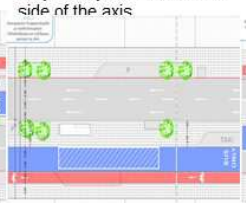
Preliminary proposals for the redesign of the axis

Type 1 proposals
(a) with a separated Bus Lane and a Bicycleway on the right-hand side of the axis

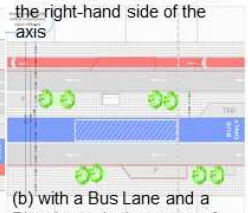
(b) with a separated Bus Lane on the right-hand side and a Bicycleway on the left-hand side of the axis



Type 2 proposal with a separated Bus Lane and a Bicycleway on the left-hand side of the axis

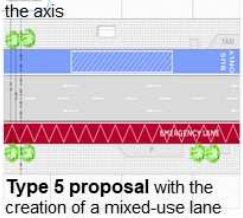


Type 3 proposals
•with a Bus Lane in the centre and a Bicycleway on the right-hand side of the axis



(b) with a Bus Lane and a Bicycleway in the centre of the axis

Type 4 proposal with a multi-purpose emergency lane on the left-hand side of the axis



Type 5 proposal with the creation of a mixed-use lane on the left-hand side of the axis

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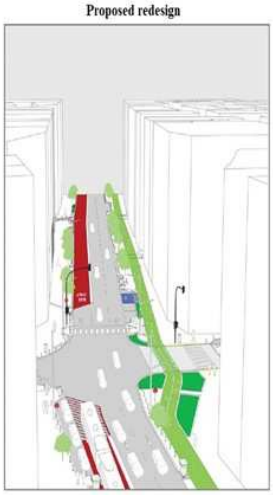
Presentation of final proposal for the upgrade of the axis

A proposal for the redesign of the axis, that

- ✓ increases the visibility and separation of the bus lane
- ✓ introduces a 2-way, bicycle path of 2,5 meters width
- ✓ serves taxis, waste collection and loading and unloading needs along the axis
- ✓ increases parking spaces (and introduces parking spaces for the disabled)
- ✓ extends the existing pavement and reduces the length of pedestrian crossings by up to 30%

Proposed redesign



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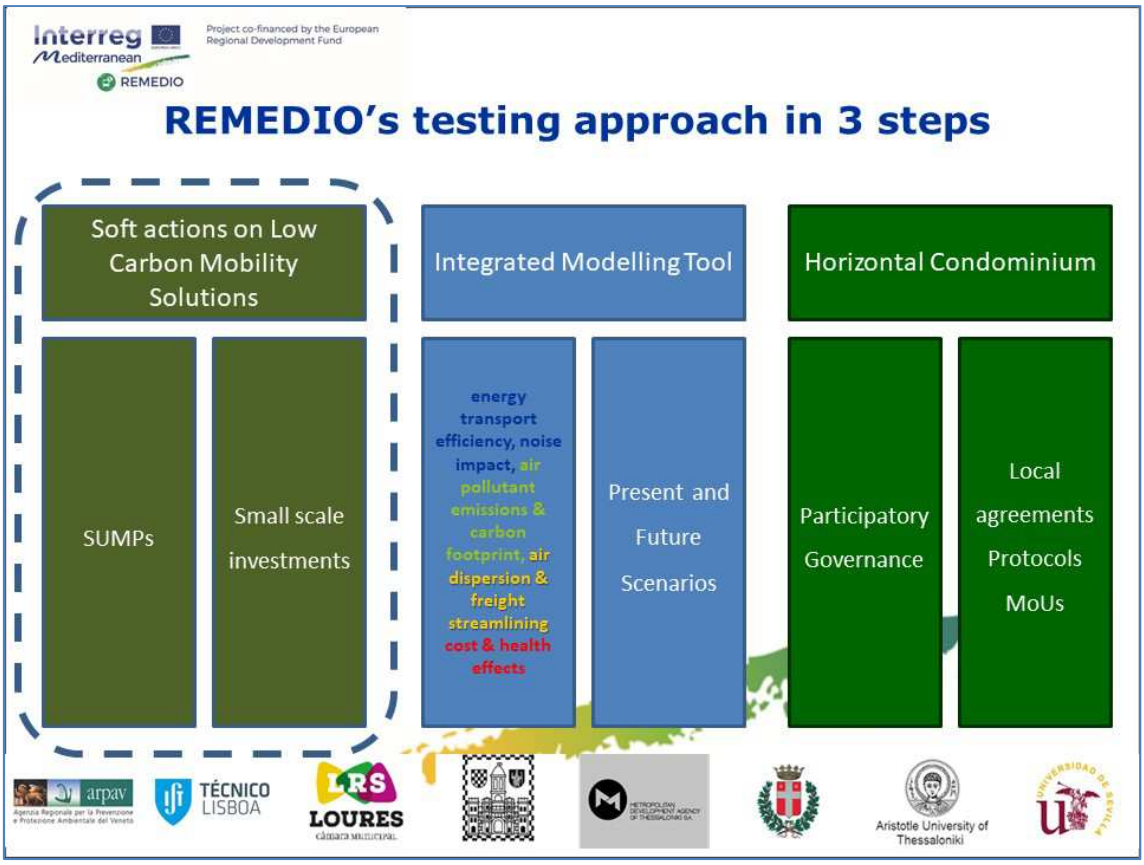
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REMEDIO's testing approach in 3 steps
Soft actions on Low Carbon Mobility Solutions
SUMPs
Small scale investments
Integrated Modelling Tool
energy transport efficiency, noise impact, air pollutant emissions & carbon footprint, air dispersion & freight streamlining cost & health effects
Present and Future Scenarios
Horizontal Condominium
Participatory Governance
Local agreements Protocols MoUs
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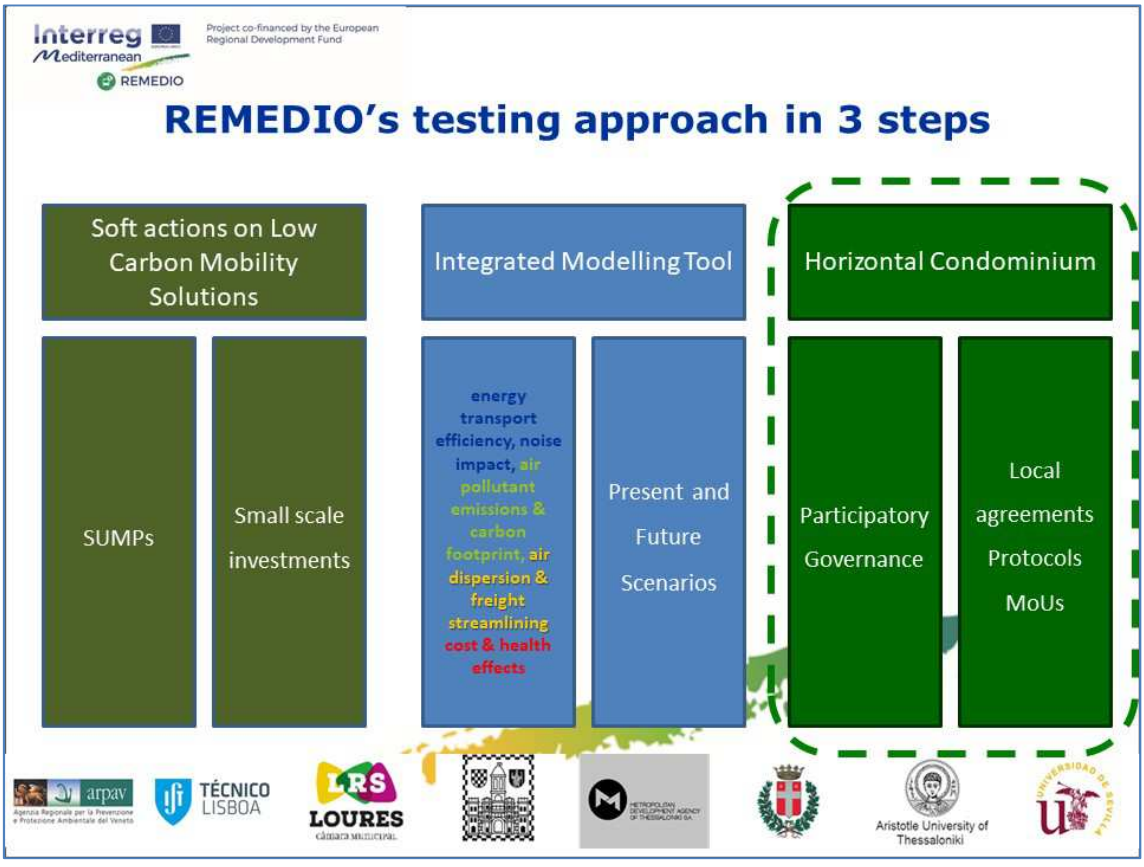
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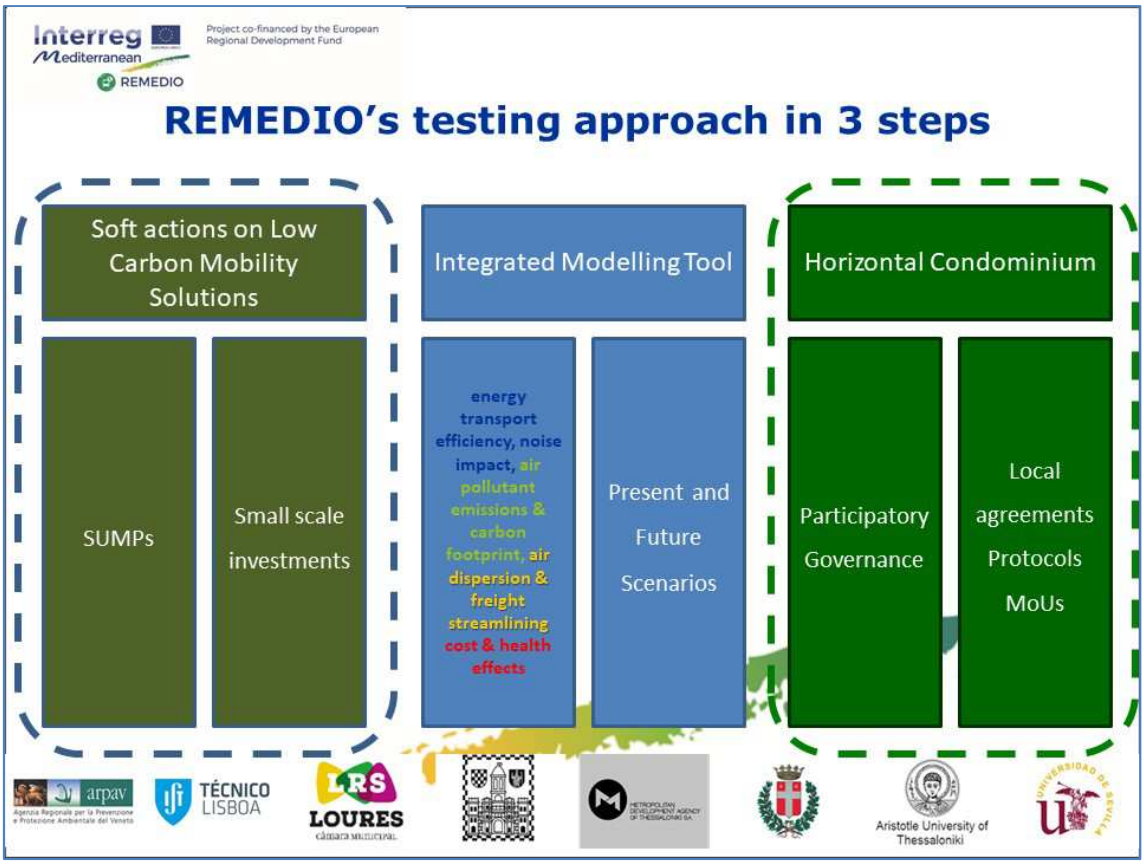
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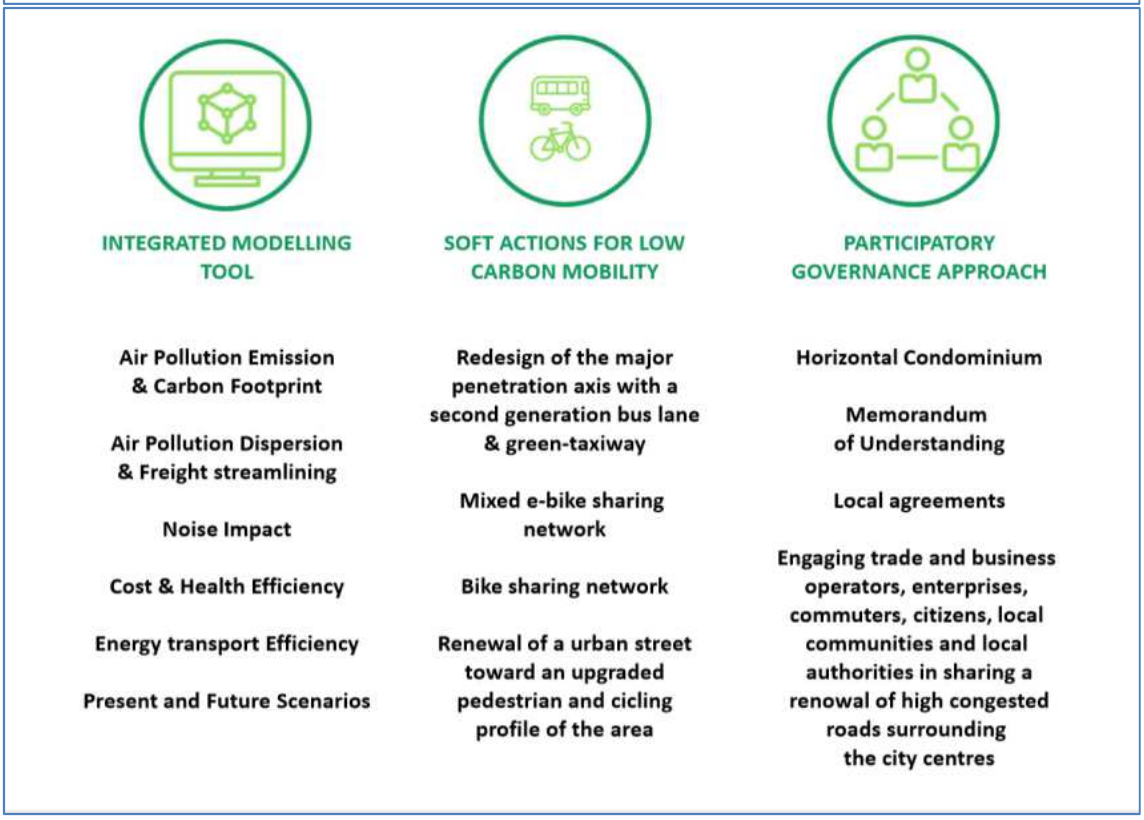
3.7. A07 - 5th European Conference on Sustainable Urban Mobility Plans - Flyer



3.8. A08 - RICTA 2017 – Oral presentation

Project co-financed by the European Regional Development Fund

Source apportionment in a street canyon: first approach within REMEDIO project

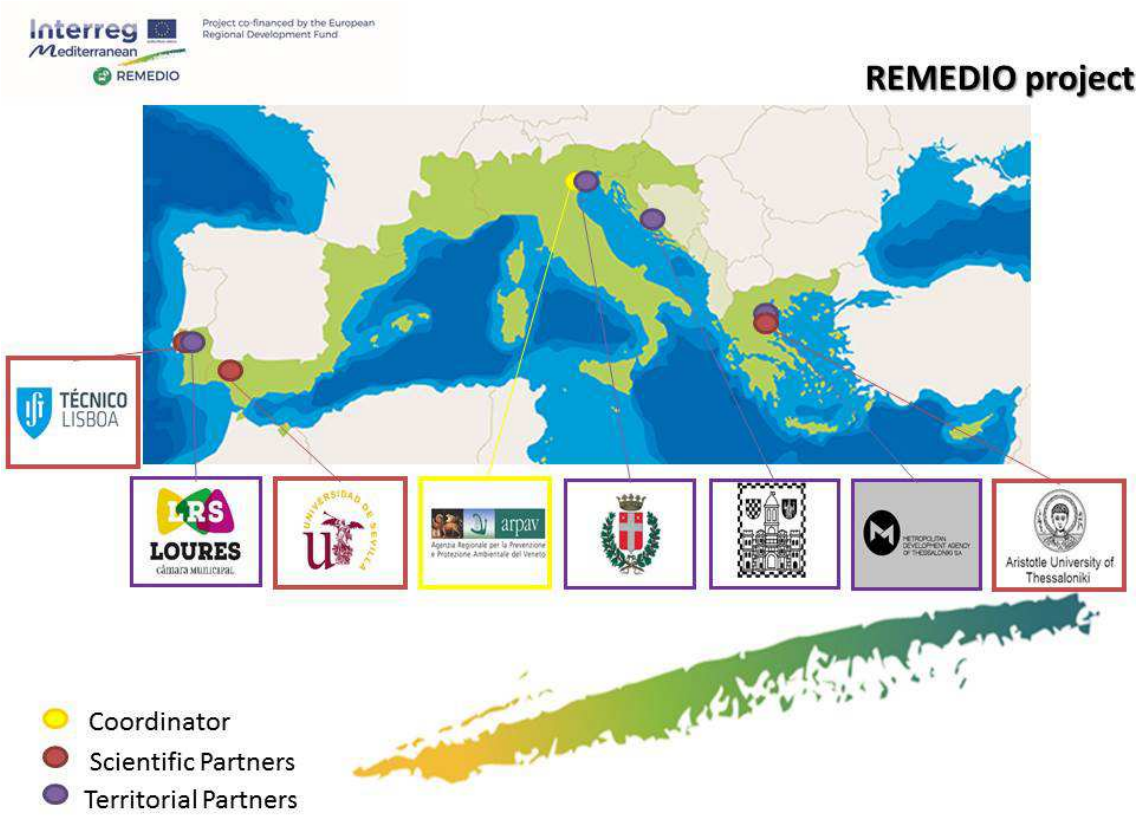
Almeida-Silva M.[1]*, Almeida S.M.[1], Manousakas M.I.[2], Diapouli E.[2], Eleftheriadis K.[2], Alves C.[3], Canha N.[1,3], Faria T.[1]

marina@ctn.tecnico.ulisboa.pt

REMEDIO project

REMEDIO stands for **REgenerating mixed-use MED urban communities congested by traffic through Innovative low carbon mobility sOlutions.**

The project aims **at fostering the use of available low carbon transport systems and solutions** through the testing of an operational path in the governance and management of high congested roads, a common issue for many middle-sized Mediterranean cities lacking of proper orbital roads or bypasses.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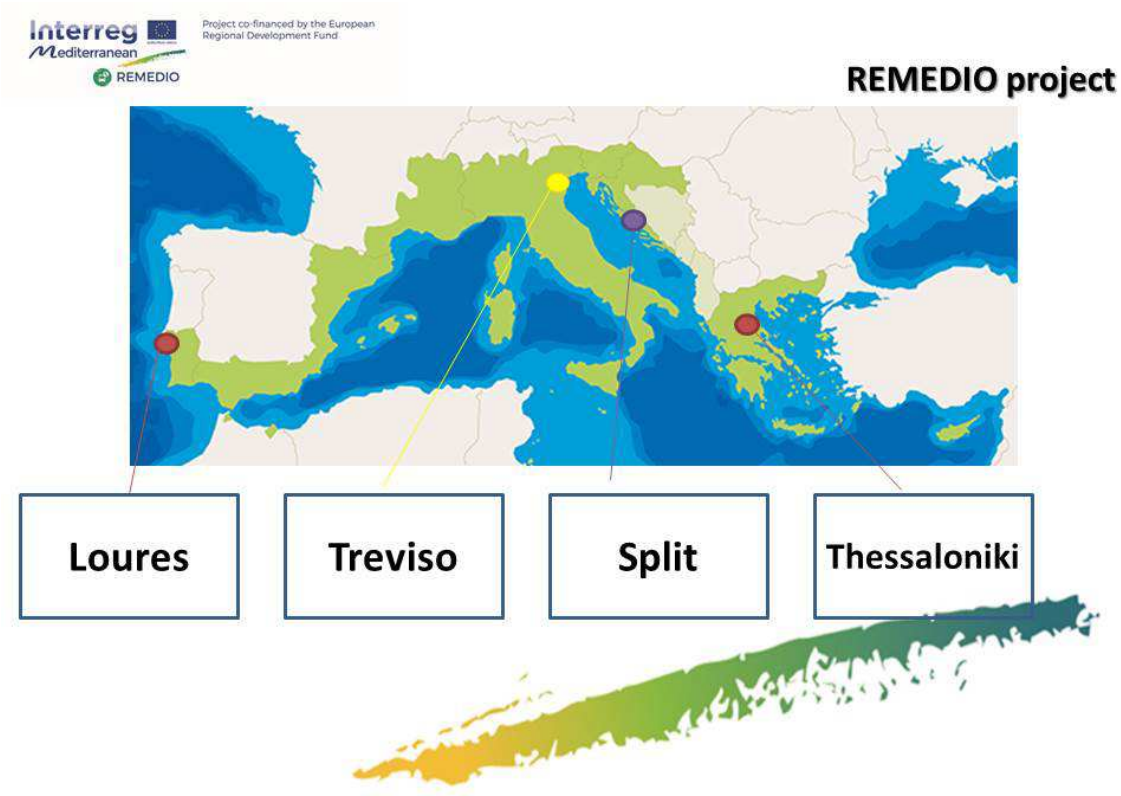
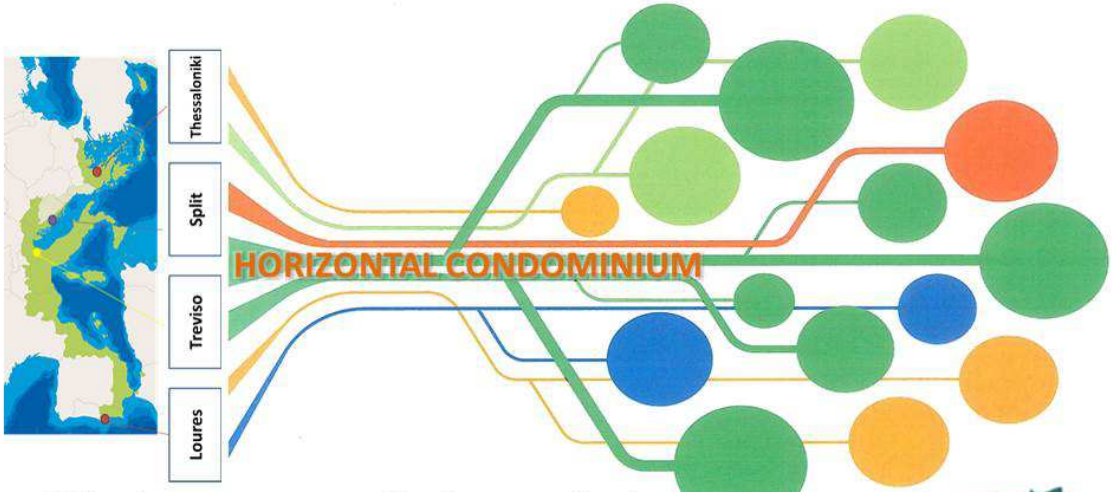
Coordinator
Scientific Partners
Territorial Partners


Interreg
Mediterranean
REMEDIO
Project co-financed by the European Regional Development Fund
REMEDIO project
Loures
Treviso
Split
Thessaloniki



Multi-level government coordination, coordination among local stakeholders, and regulator-operator coordination.

Multimodal integration: PARTNERSHIP or MoU

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REMEDIO project

Loures

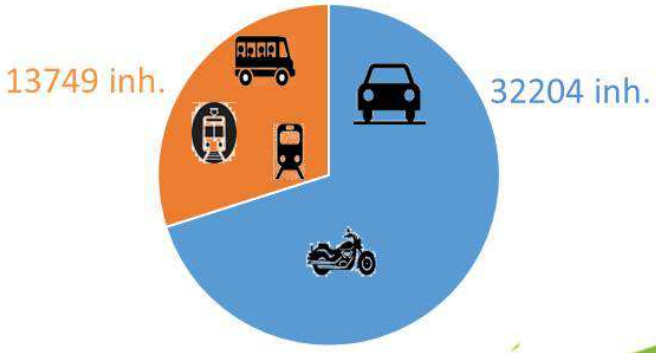
Project co-financed by the European Regional Development Fund

Loures

Pendular Movements

Internal **Loures - Loures**

Total: 45.953 inh.



Public transport services

Individual transport

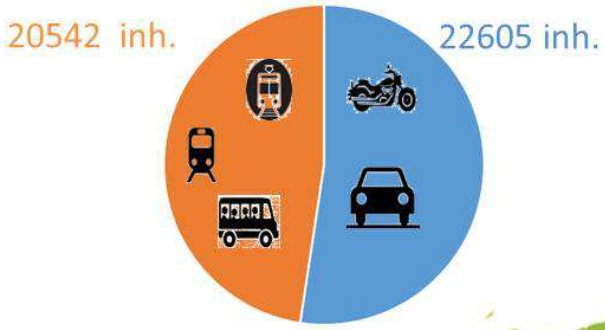
Project co-financed by the European Regional Development Fund

Loures

Pendular Movements

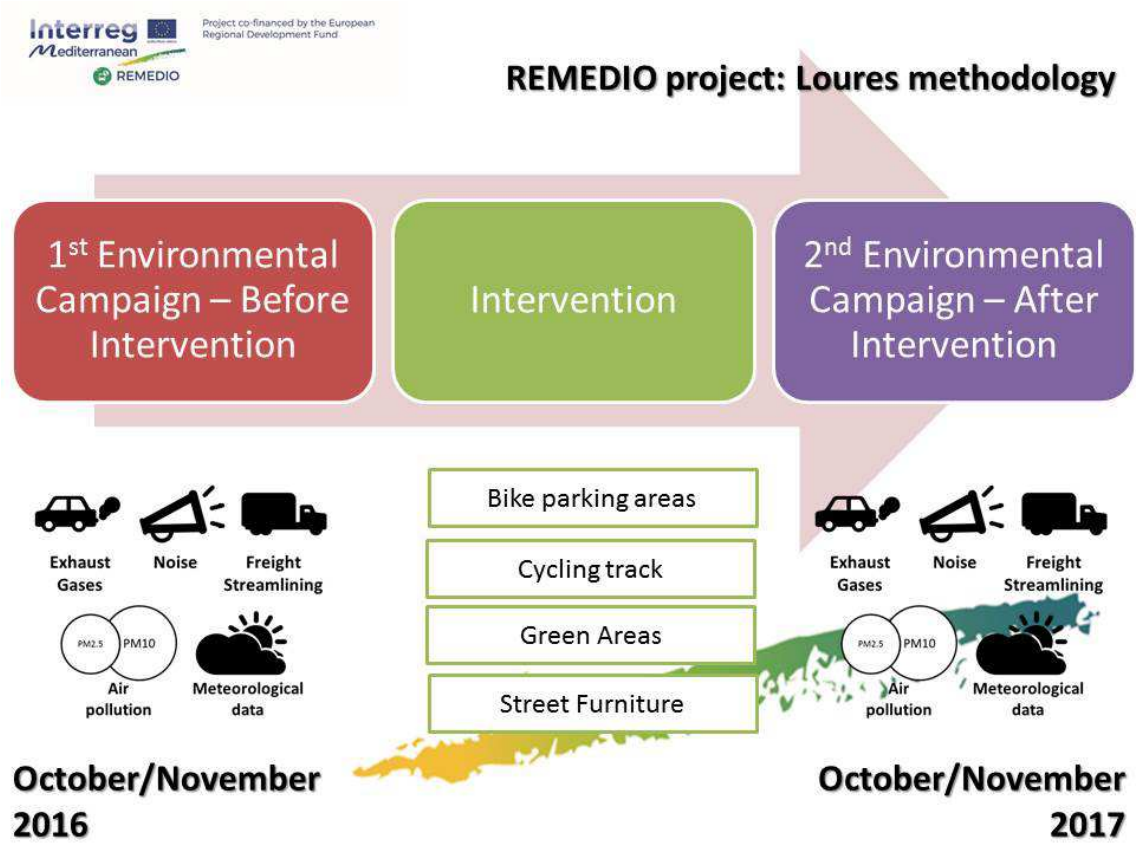
External **Loures - Lisboa**

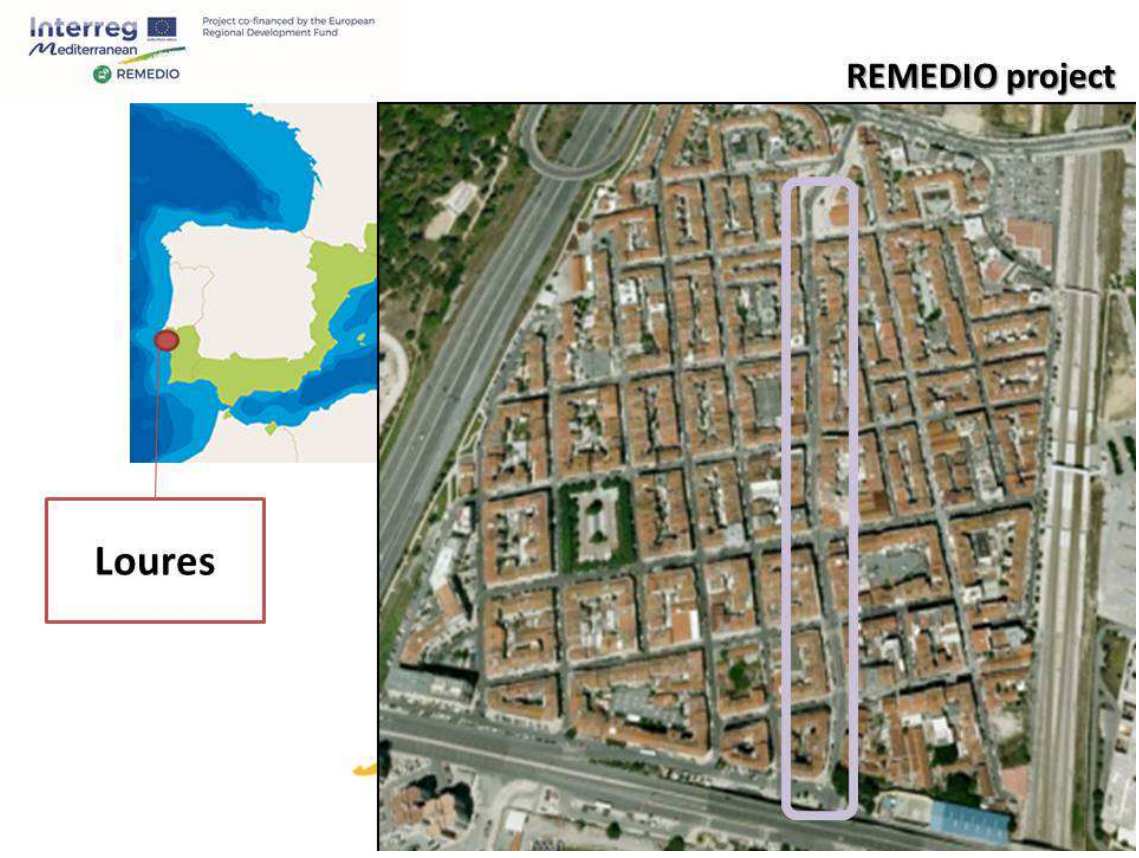
Total: 43.147 inh.



Public transport services

Individual transport


REMEDIO project: Loures methodology
1st Environmental Campaign – Before Intervention
Intervention
2nd Environmental Campaign – After Intervention
Exhaust Gases
Noise
Freight Streamlining
PM2.5
PM10
Air pollution
Meteorological data
Bike parking areas
Cycling track
Green Areas
Street Furniture
Exhaust Gases
Noise
Freight Streamlining
PM2.5
PM10
Air pollution
Meteorological data
October/November 2016
October/November 2017


REMEDIO project
Loures

Project co-financed by the European Regional Development Fund

Environmental Campaign Sampling Station

Project co-financed by the European Regional Development Fund

REMEDIO project: Pilot-Area

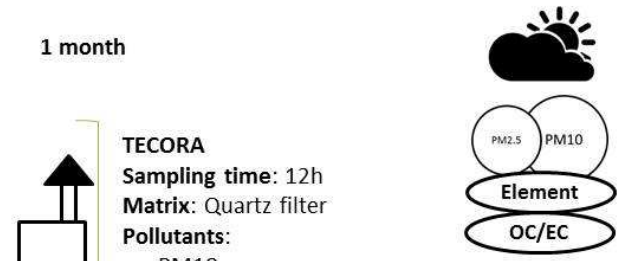
Loures

Before

After

REMEDIO project: Environmental Campaign

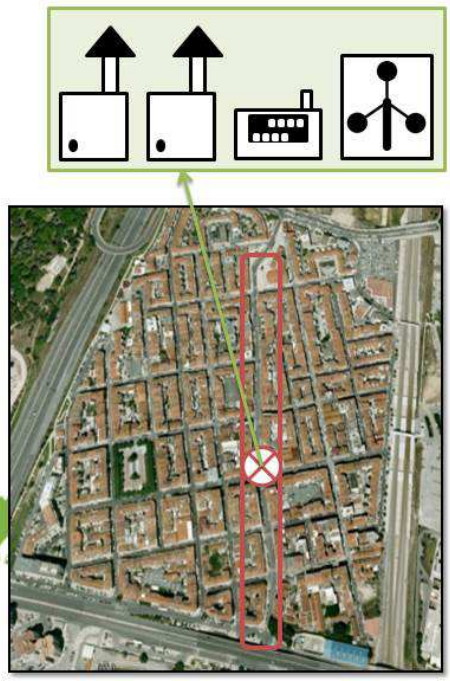
1 month



TECORA
Sampling time: 12h
Matrix: Quartz filter
Pollutants:
- PM10 mass
  - OC/EC

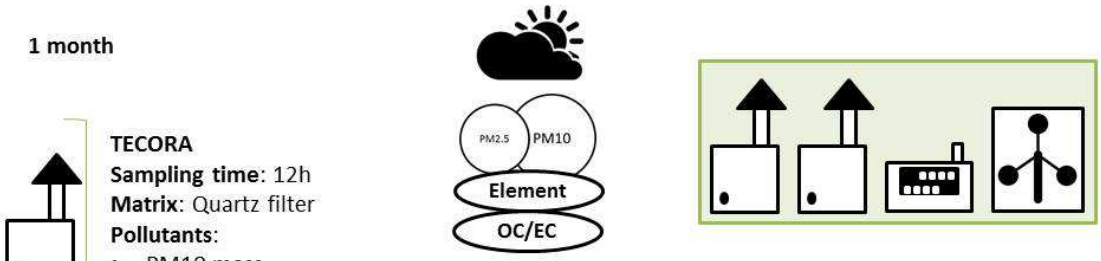
GENT
Sampling time: 12h
Matrix: Polycarbonate filters
Pollutants:
- PM10 and PM2.5 mass
  - Na, Al, Si, S, Cl, K, Ca, Ti, V, Cr, Mn, Fe, Ni, Cu, Zn, Sr, Pb

Measuring time: continuous
24h (integrated time – 1 min)
PM10, PM5, PM2.5, PM1



REMEDIO project: Environmental Campaign

1 month



TECORA
Sampling time: 12h
Matrix: Quartz filter
Pollutants:
- PM10 mass
  - OC/EC

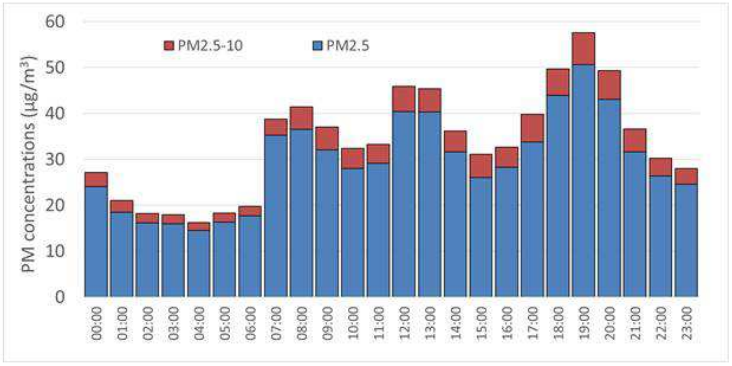
GENT
Sampling time: 12h
Matrix: Polycarbonate filters
Pollutants:
- PM10 and PM2.5 mass
  - Na, Al, Si, S, Cl, K, Ca, Ti, V, Cr, Mn, Fe, Ni, Cu, Zn, Sr, Pb

Thermal optical technique
XRF

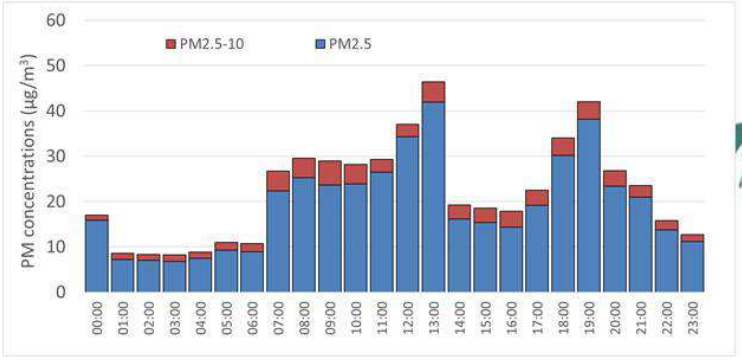
Measuring time: continuous
24h (integrated time – 1 min)
PM10, PM5, PM2.5, PM1

REMEDIO project: Concentrations

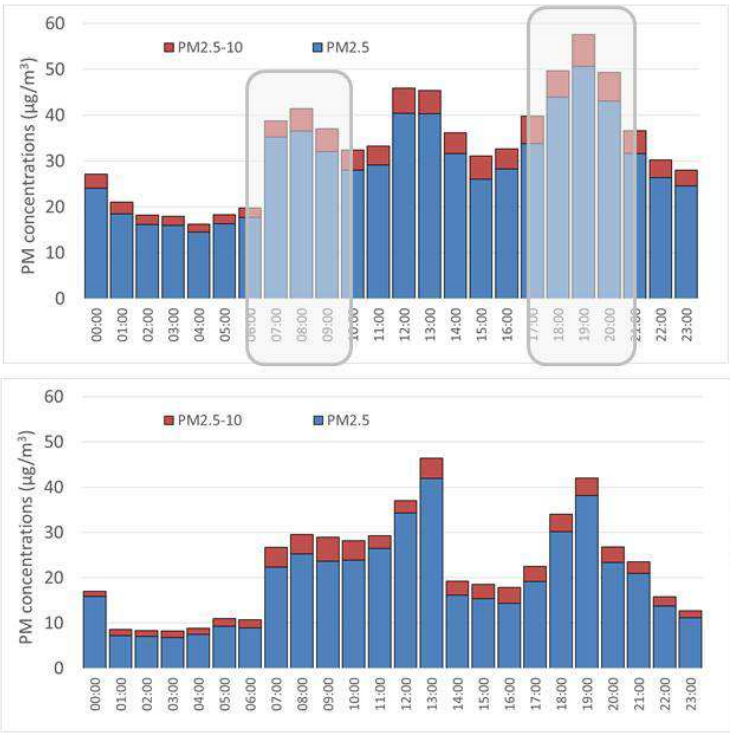
Weekdays



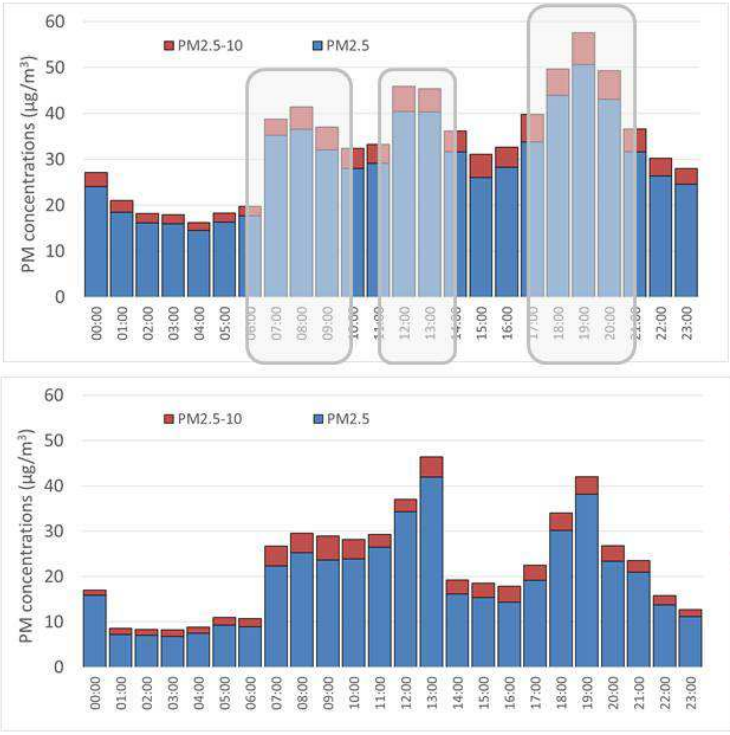
Weekend



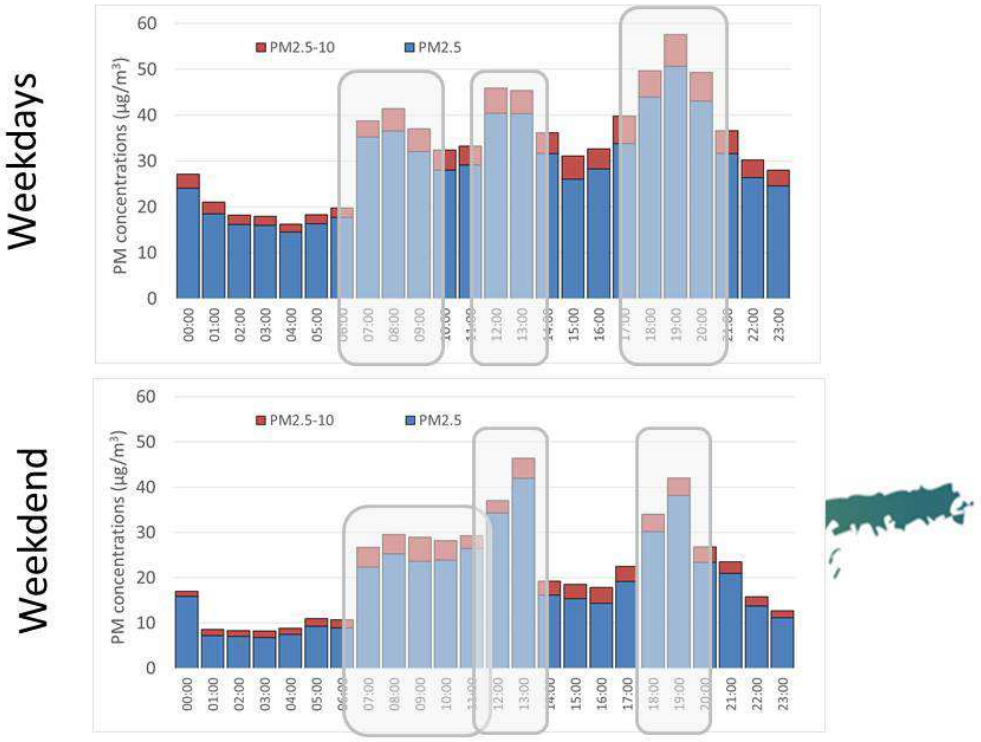
REMEDIO project: Concentrations



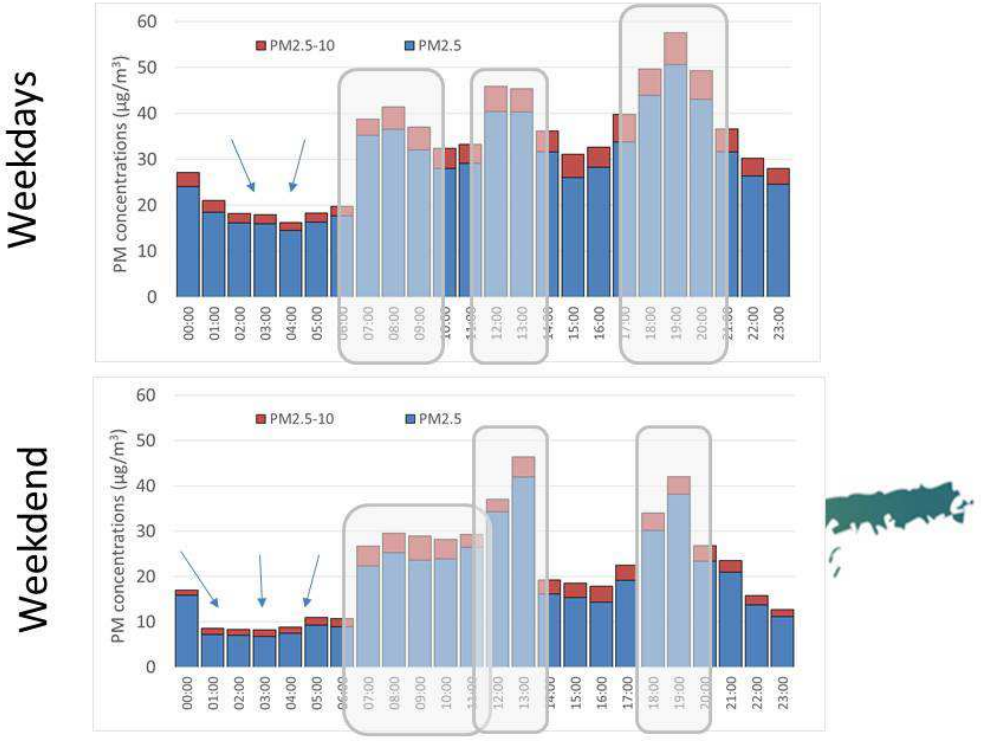
REMEDIO project: Concentrations

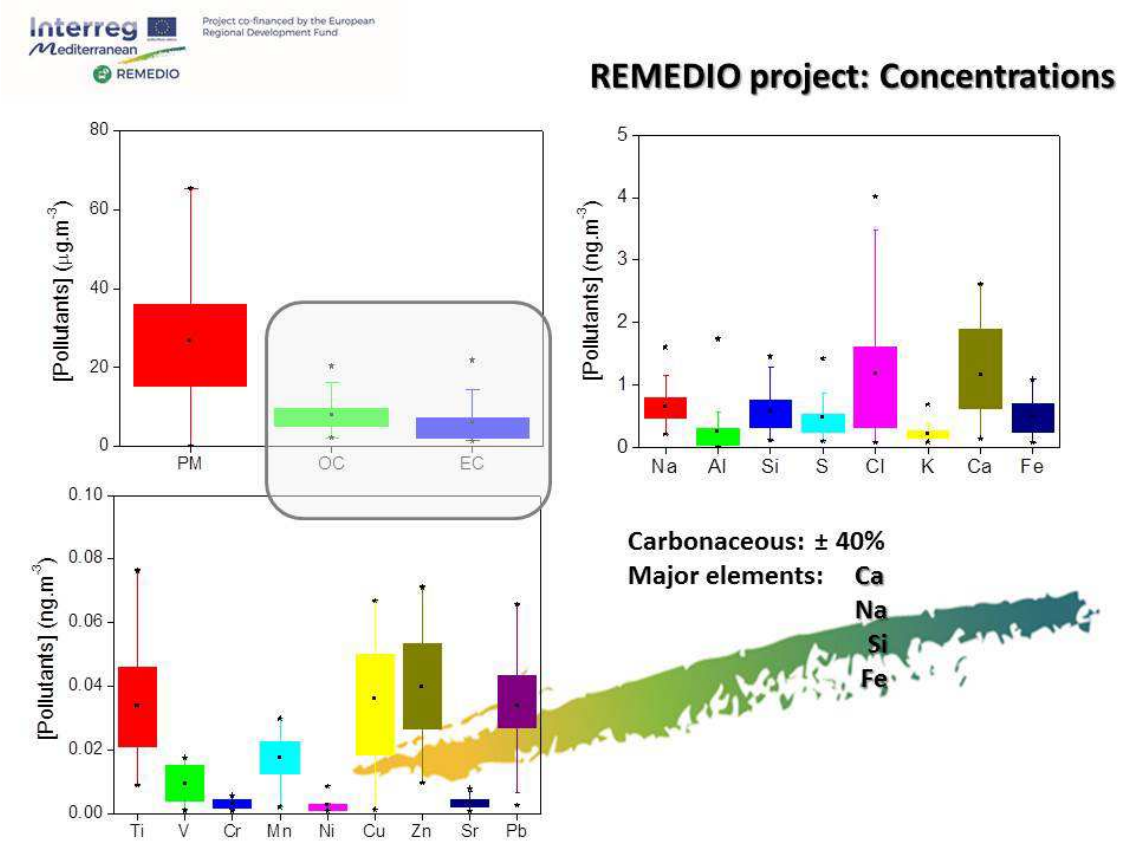


REMEDIO project: Concentrations



REMEDIO project: Concentrations

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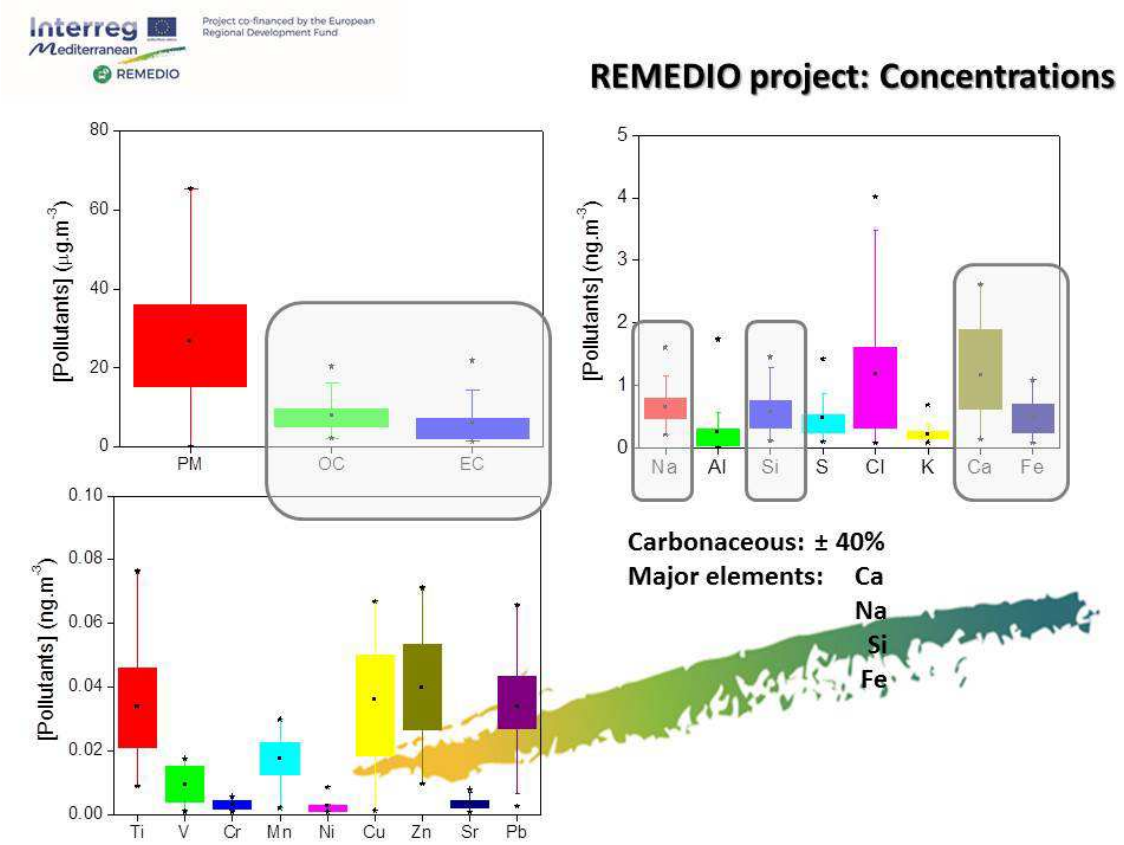
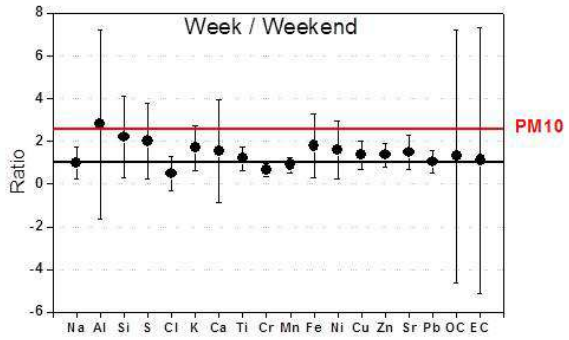
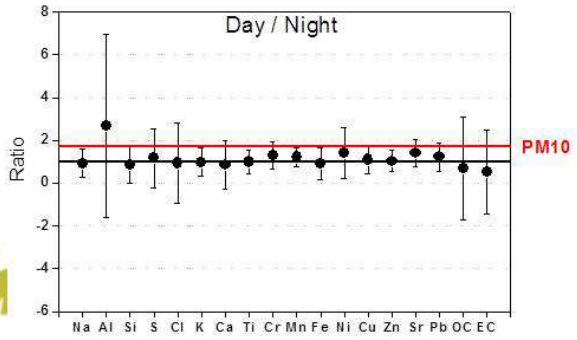
REMEDIO
REMEDIO project: Concentrations
[Pollutants] (µg.m-3)
PM
OC
EC
[Pollutants] (ng.m-3)
Na Al Si S Cl K Ca Fe
Ti V Cr Mn Ni Cu Zn Sr Pb
Carbonaceous: ± 40%
Major elements: Ca
Na
Si
Fe


Interreg Mediterranean
Project co-financed by the European Regional Development Fund
REMEDIO
REMEDIO project: Concentrations
[Pollutants] (µg.m-3)
PM
OC
EC
[Pollutants] (ng.m-3)
Na Al Si S Cl K Ca Fe
Ti V Cr Mn Ni Cu Zn Sr Pb
Carbonaceous: ± 40%
Major elements: Ca
Na
Si
Fe

REMEDIO project: Ratio





REMEDIO project: Source Apportionment

1st approach

	SOIL	TRAFFIC EXHAUST	TRAFFIC NON-EXHAUST	SEA	FUEL-OIL
PM	**35.58**	9.98	25.09	17.35	12.01
Na	2.30	5.68	0.00	**77.32**	14.70
Al	25.08	**74.92**	0.00	0.00	0.00
Si	**83.07**	3.38	4.96	1.83	6.76
S	**51.03**	0.00	18.93	22.13	7.90
Cl	5.95	0.08	8.26	**74.38**	11.33
K	**49.42**	1.80	22.76	16.82	9.19
Ca	**58.76**	10.27	21.86	9.12	0.00
Ti	**66.25**	0.00	20.41	4.17	9.16
V	0.00	13.79	1.34	20.63	**64.24**
Cr	1.93	12.86	0.31	18.50	**66.40**
Mn	3.44	2.30	**64.69**	2.89	26.68
Fe	**54.23**	7.49	20.84	9.46	7.98
Ni	0.84	14.10	5.95	24.08	**55.04**
Cu	5.30	0.79	**66.90**	0.78	26.23
Zn	**39.33**	0.00	**45.97**	2.76	11.95
Pb	1.60	1.29	**73.65**	0.81	22.65
OC	6.55	**37.99**	**33.07**	12.85	9.55
EC	0.00	**57.51**	**30.87**	11.62	0.00

REMEDIO project: Source Apportionment

Si, S, K, Ca, Ti, Fe — Na, Cl — 1st approach

	SOIL	TRAFFIC EXHAUST	TRAFFIC NON-EXHAUST	SEA	FUEL-OIL
PM	**35.58**	9.98	25.09	17.35	12.01
Na	2.30	5.68	0.00	**77.32**	14.70
Al	25.08	**74.92**	0.00	0.00	0.00
Si	**83.07**	3.38	4.96	1.83	6.76
S	**51.03**	0.00	18.93	22.13	7.90
Cl	5.95	0.08	8.26	**74.38**	11.33
K	**49.42**	1.80	22.76	16.82	9.19
Ca	**58.76**	10.27	21.86	9.12	0.00
Ti	**66.25**	0.00	20.41	4.17	9.16
V	0.00	13.79	1.34	20.63	**64.24**
Cr	1.93	12.86	0.31	18.50	**66.40**
Mn	3.44	2.30	**64.69**	2.89	26.68
Fe	**54.23**	7.49	20.84	9.46	7.98
Ni	0.84	14.10	5.95	24.08	**55.04**
Cu	5.30	0.79	**66.90**	0.78	26.23
Zn	**39.33**	0.00	**45.97**	2.76	11.95
Pb	1.60	1.29	**73.65**	0.81	22.65
OC	6.55	**37.99**	**33.07**	12.85	9.55
EC	0.00	**57.51**	**30.87**	11.62	0.00

REMEDIO project: Source Apportionment

1st approach — V, Cr, Ni

	SOIL	TRAFFIC EXHAUST	TRAFFIC NON-EXHAUST	SEA	FUEL-OIL
PM	**35.58**	9.98	25.09	17.35	12.01
Na	2.30	5.68	0.00	**77.32**	14.70
Al	25.08	**74.92**	0.00	0.00	0.00
Si	**83.07**	3.38	4.96	1.83	6.76
S	**51.03**	0.00	18.93	22.13	7.90
Cl	5.95	0.08	8.26	**74.38**	11.33
K	**49.42**	1.80	22.76	16.82	9.19
Ca	**58.76**	10.27	21.86	9.12	0.00
Ti	**66.25**	0.00	20.41	4.17	9.16
V	0.00	13.79	1.34	20.63	**64.24**
Cr	1.93	12.86	0.31	18.50	**66.40**
Mn	3.44	2.30	**64.69**	2.89	26.68
Fe	**54.23**	7.49	20.84	9.46	7.98
Ni	0.84	14.10	5.95	24.08	**55.04**
Cu	5.30	0.79	**66.90**	0.78	26.23
Zn	**39.33**	0.00	**45.97**	2.76	11.95
Pb	1.60	1.29	**73.65**	0.81	22.65
OC	6.55	**37.99**	**33.07**	12.85	9.55
EC	0.00	**57.51**	**30.87**	11.62	0.00

REMEDIO project: Source Apportionment

1st approach

Al, EC

Mn, Cu, Zn, Pb

	SOIL	TRAFFIC EXHAUST	TRAFFIC NON-EXHAUST	SEA	FUEL-OIL
PM	**35.53**	9.98	25.09	17.35	12.01
Na	2.30	5.68	0.00	**77.32**	14.70
Al	25.08	**74.92**	0.00	0.00	0.00
Si	**83.07**	3.38	4.96	1.83	6.76
S	**51.08**	0.00	18.93	22.13	7.90
Cl	5.96	0.08	8.26	**74.38**	11.33
K	**49.42**	1.80	22.76	16.82	9.19
Ca	**58.76**	10.27	21.86	9.12	0.00
Ti	**66.25**	0.00	20.41	4.17	9.16
V	0.00	13.79	1.34	20.63	**64.24**
Cr	1.98	12.86	0.31	18.50	**66.40**
Mn	3.44	2.30	**64.69**	2.89	26.68
Fe	**54.23**	7.49	20.84	9.46	7.98
Ni	0.84	14.10	5.95	24.08	**55.04**
Cu	5.30	0.79	**66.90**	0.78	26.23
Zn	**39.38**	0.00	**45.97**	2.76	11.95
Pb	1.60	1.29	**73.65**	0.81	22.65
OC	6.55	**37.99**	**33.07**	12.85	9.55
EC	0.00	**57.51**	**30.87**	11.62	0.00

Conclusions

This works presents a **first approach** within a biggest methodology.

REMEDIO Project will develop a tool to evaluate the transport, energy and environmental-related performance of low-carbon actions in 4 different MED regions.

REMEDIO project is co-financed by the European Regional Development Fund

Conclusions

This works presents a **first approach** within a biggest methodology.

REMEDIO Project will develop a tool to evaluate the transport, energy and environmental-related performance of low-carbon actions in 4 different MED regions.

Communication
Dissemination
Population Awareness and Participation
Participatory Governance

Project co-financed by the European Regional Development Fund

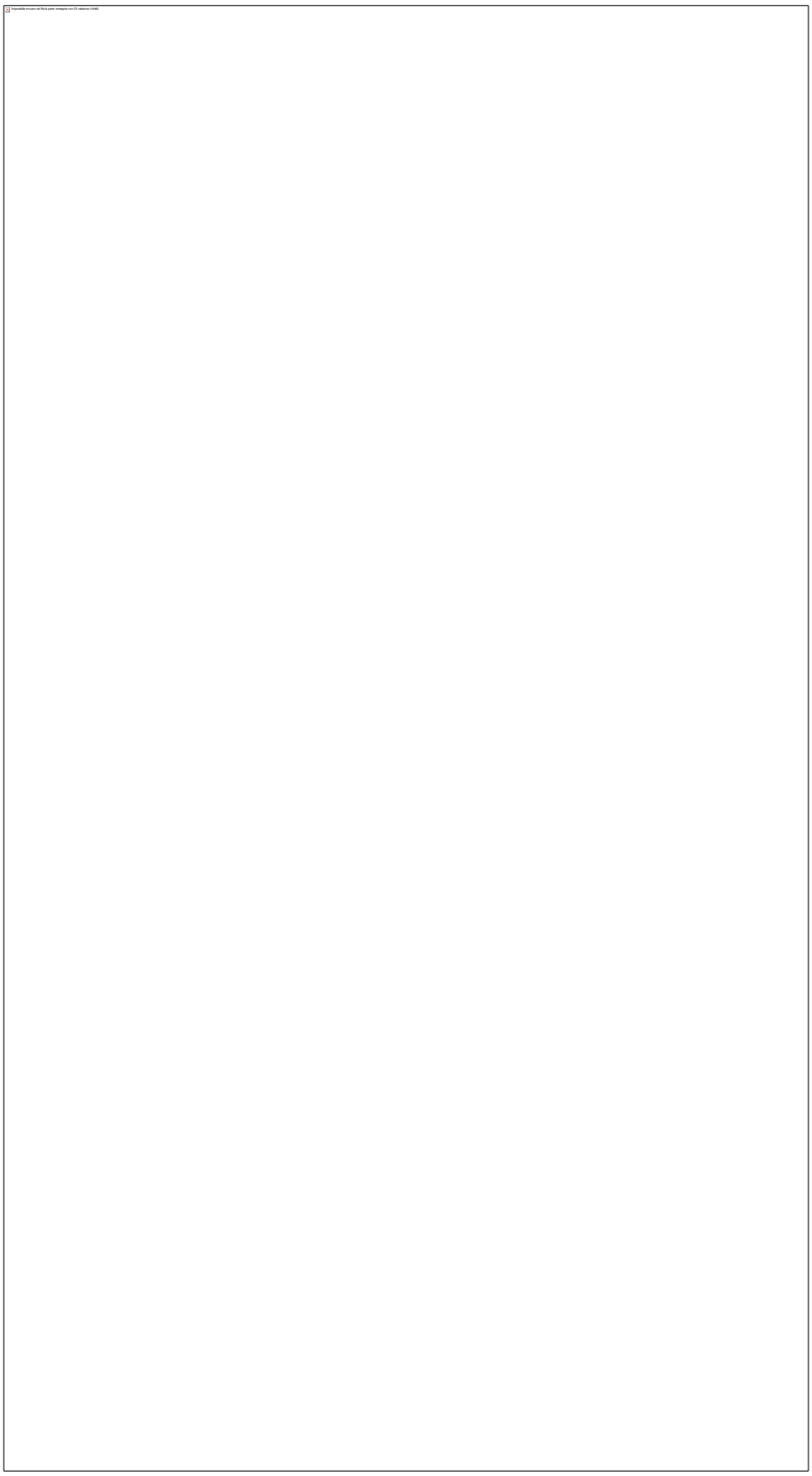
Thank you

Almeida-Silva M.[1*], Almeida S.M.[1], Manousakas M.I.[2], Diapouli E.[2], Eleftheriadis K.[2], Alves C.[3], Canha N.[1,3], Faria T.[1]

marina@ctn.tecnico.ulisboa.pt

REMEDIO project is co-financed by the European Regional Development Fund

3.9. A09 – EAC2017 – Poster and abstract



Cite abstract as Author(s) (2017), Title, European Aerosol Conference 2017, Zurich, Abstract T215N49f

Air quality in a street canyon: particles and traffic composition

M. Almeida-Silva[1*], P. Baptista[2], N. Canha[1], T. Faria[1], J. Lage[1], A.V. Faria[3], G. Duarte[2], C. Alves[4], S.M. Almeida[1]

[1]Centro de Ciências e Tecnologias Nucleares, Instituto Superior Técnico, Universidade de Lisboa, E.N. 10 ao km 139,7, 2695-066 Bobadela LRS, Portugal
[2] IN+, Center for Innovation, Technology and Policy Research - Instituto Superior Técnico, Universidade de Lisboa, Av. Rovisco Pais, 1 - 1049-001 Lisboa, Portugal
[3]LAETA, IDMEC, Instituto Superior Técnico, Universidade de Lisboa, Av. Rovisco Pais, 1 - 1049-001 Lisboa, Portugal
* Presenting author email: marina@ctn.tecnico.ulisboa.pt

Combustion of fossil fuel in internal combustion engine vehicles is a major source of aerosol particles in a city. High pollution levels have been often observed in urban street canyons due to the increased traffic emissions and reduced natural ventilation (Voigtlander, et al., 2006).

Consequently, there is an increasing trend around the world with tightening emission control and larger scale of transport policy intervention in urban cities to control the traffic pollutants and reduce public health risks, such as the implementation of low emission zones and of congestion charging etc.

In this study, particles concentration, particles composition and traffic density were characterized in a characteristic street canyon in Portugal. The street canyon has a demographic density of 12 969 inh/km^2, with 90% of residential population, 2 lanes for vehicles with a total extension of 1.2 km with 1 intersection with traffic lights (see Figure 1).

Figure 1. [A] Aerial view, [B] local view of the street canyon and [C] traffic intersections.

Sampling and measurement campaigns occurred in November 2016 using the following methodology:

1) PM10 and PM2.5 were sampled from 7 A.M. to 9 P.M. and 9 P.M. to 7 A.M allowing the characterization of both periods of the day – rush-hour and non-rush-hour traffic, respectively.

2) For source apportionment analysis, using PMF, particles were analysed by a Thermal Optical technique for Organic Carbon (OC) and Elemental Carbon (EC) determination and by X-ray fluorescence (XRF) for element characterization.

3) PM10, PM4, PM2.5 and PM1 were measured continuously over the study period, as well as the meteorological conditions.

4) Traffic volumes were assessed by several volunteers for one representative working day, in the periods 7:30 to 9:30 A.M., 1:15 to 3:15 P.M. and 5:30 to 7:30 P.M., in order to obtain the peak and off-peak variations.

5) Simultaneously, a random sampling was performed to characterize the traffic composition, considering both vehicle type and vehicle age.

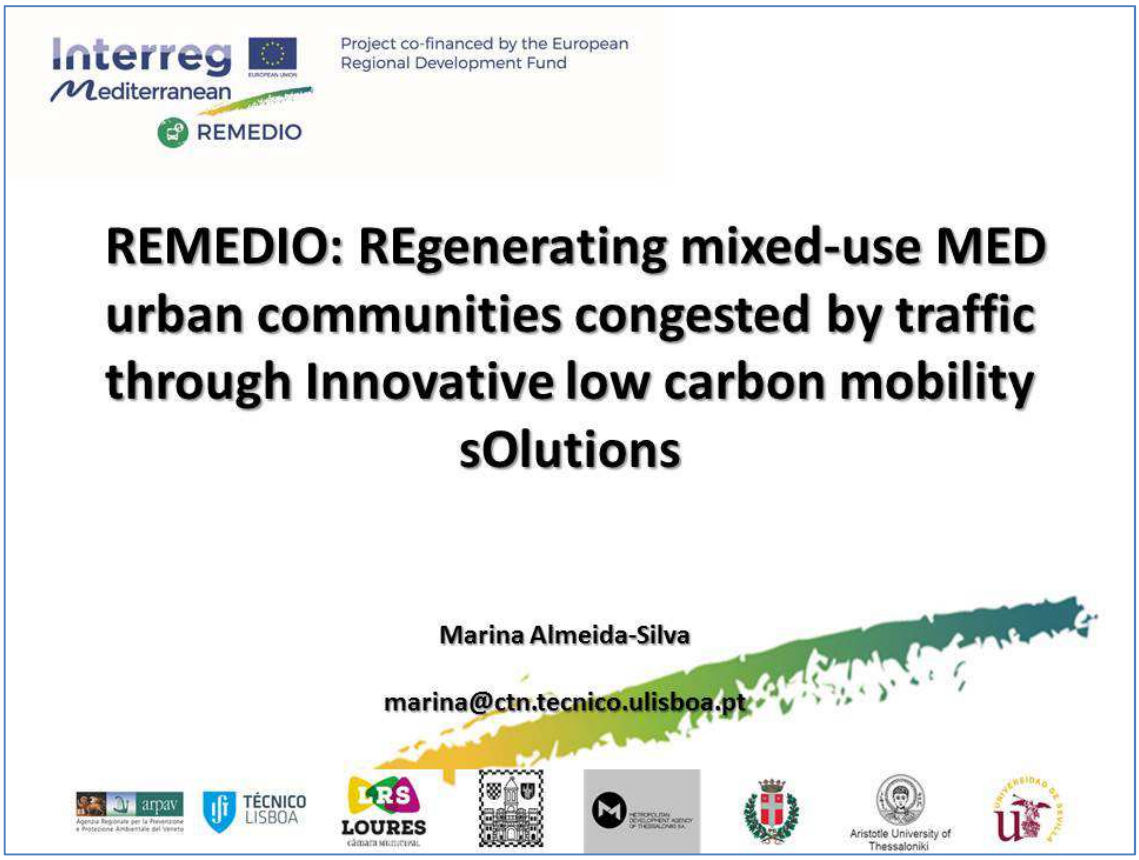
6) Furthermore, a vehicle equipped with a GPS, an OBD reader and a gas analyser passed by the street at least once per 15 min. This allowed characterizing vehicle dynamics variables such as average speed, idling time, etc.

These campaigns allowed characterizing the traffic and air quality status of the area and are part of a project named REMEDIO: Regenerating mixed-use MED urban communities congested by traffic through Innovative low carbon mobility sOlutions, part of Interreg MED Program and co-funded by ERDF.

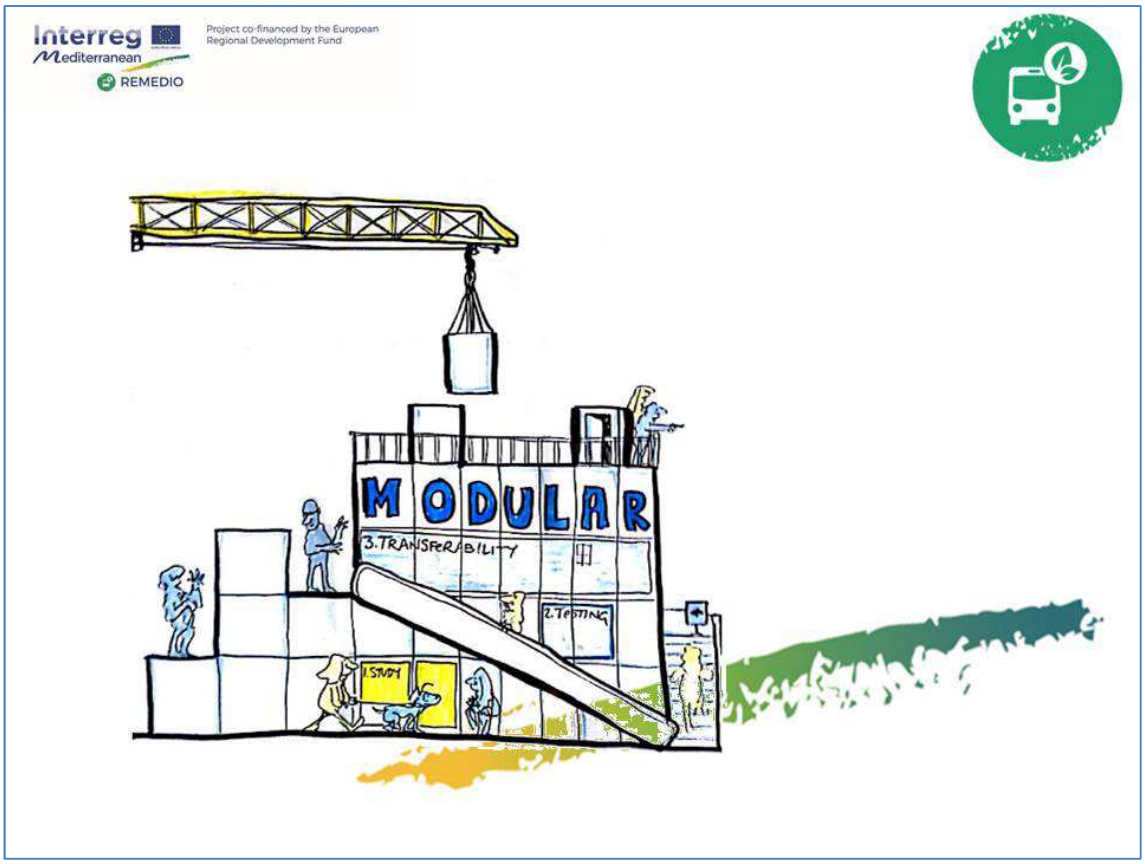
This work was supported by the European Regional Development Fund (ERDF) through the Interreg Med project REMEDIO (Ref. 862). C2TN/IST authors gratefully acknowledge the FCT support through the UID/Multi/04349/2013 project. This work was also supported by FCT, through IDMEC, under LAETA, project UID/EMS/50022/2013, as well as from the IN+ Strategic Project UID/EEA/50009/2013.

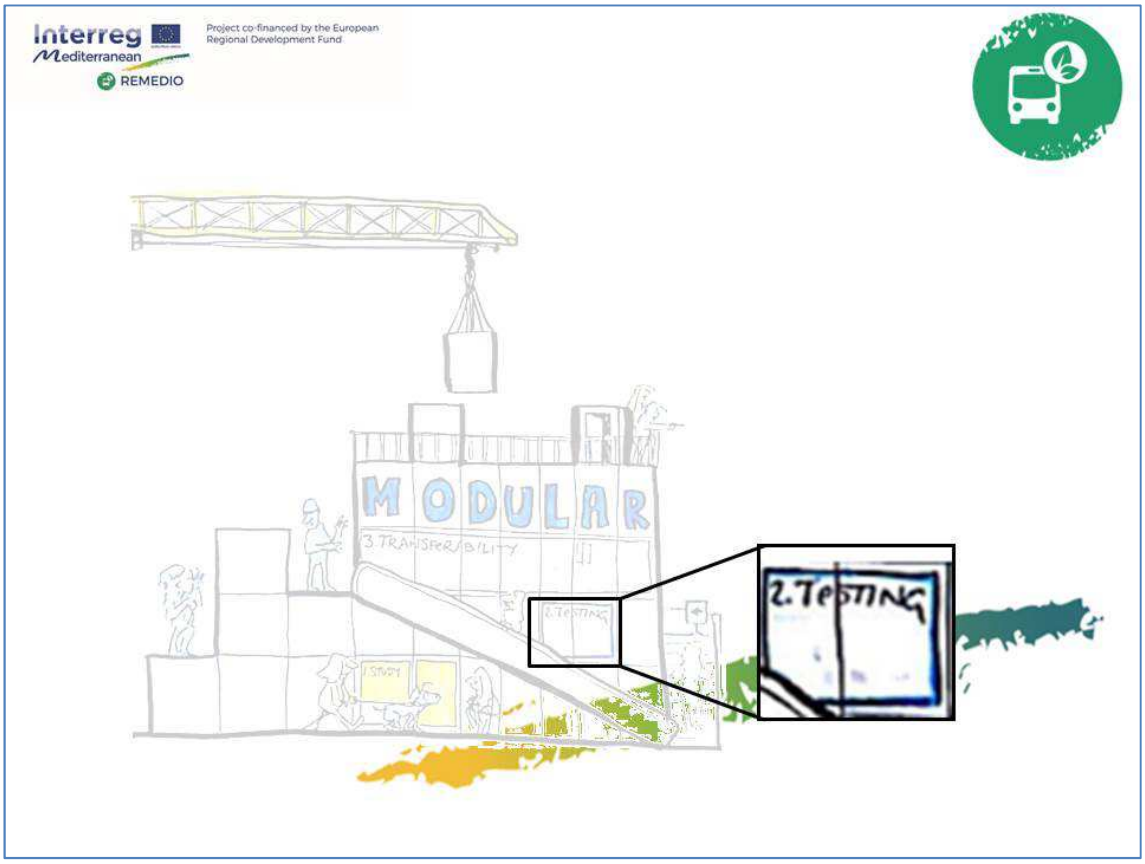
Voigtlander, C J., Tuch, T., Birmili, W. and Wiedensohler, A. (2006) *Atmos. Chem. Phys.*, 6, 4275–4286.

3.10. A10 – Workshop on urban Air Pollution Mitigation Tools – Oral

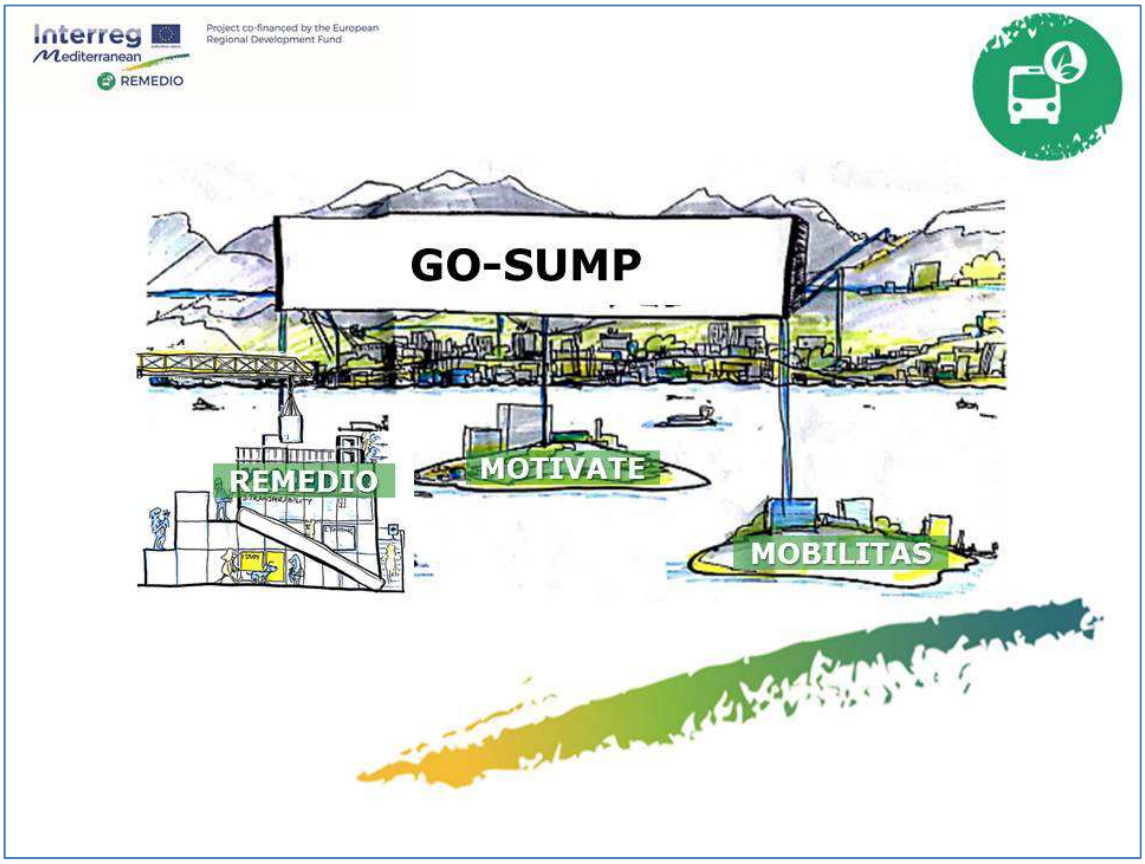


REMEDIO project is co-financed by the European Regional Development Fund


Interreg
Mediterranean
REMEDIO
Project co-financed by the European Regional Development Fund
MODULAR
3.TRANSFERABILITY
2.TESTING
1.STUDY


Interreg
Mediterranean
REMEDIO
Project co-financed by the European Regional Development Fund
MODULAR
3.TRANSFERABILITY
2.TESTING


Interreg
Mediterranean
REMEDIO
Project co-financed by the European Regional Development Fund
HORIZONTAL
MODULAR

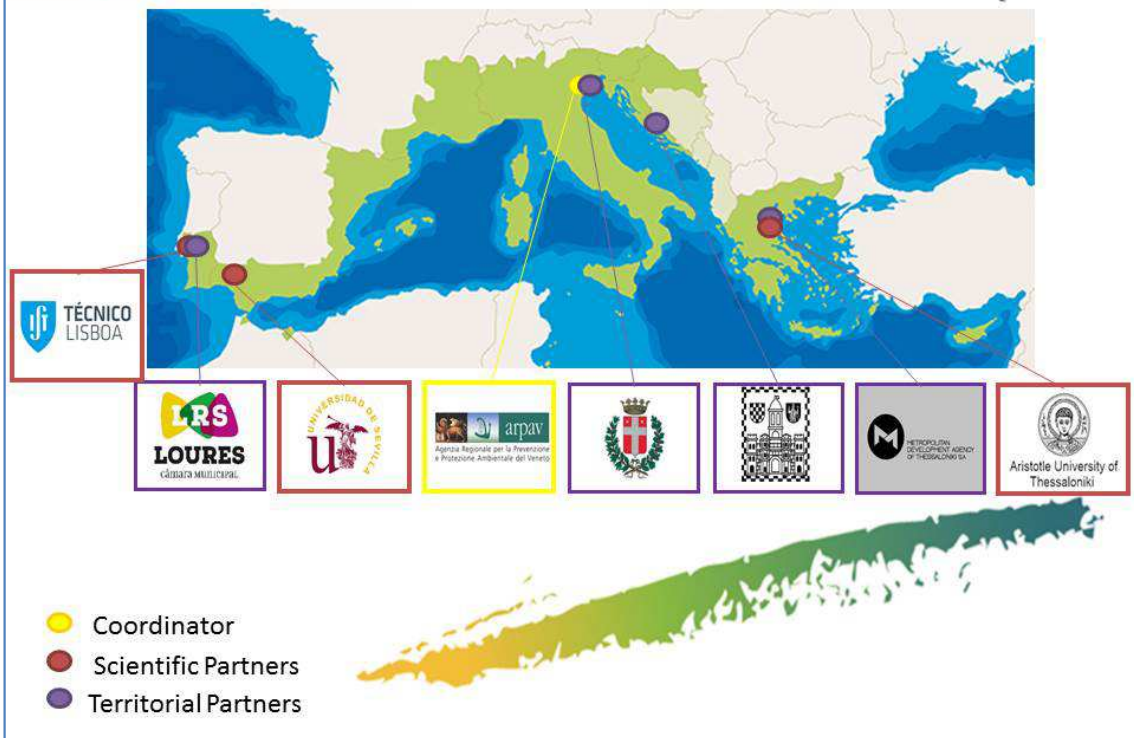

Interreg
Mediterranean
REMEDIO
Project co-financed by the European Regional Development Fund
GO-SUMP
REMEDIO
MOTIVATE
MOBILITAS

REMEDIO project

REMEDIO stands for **REgenerating mixed-use MED urban communities congested by traffic through Innovative low carbon mobility sOlutions.**

The project aims **at fostering the use of available low carbon transport systems and solutions** through the testing of an operational path in the governance and management of high congested roads, a common issue for many middle-sized Mediterranean cities lacking of proper orbital roads or bypasses.

REMEDIO partners



REMEDIO project

REMEDIO works in high density areas characterized by congested roads.

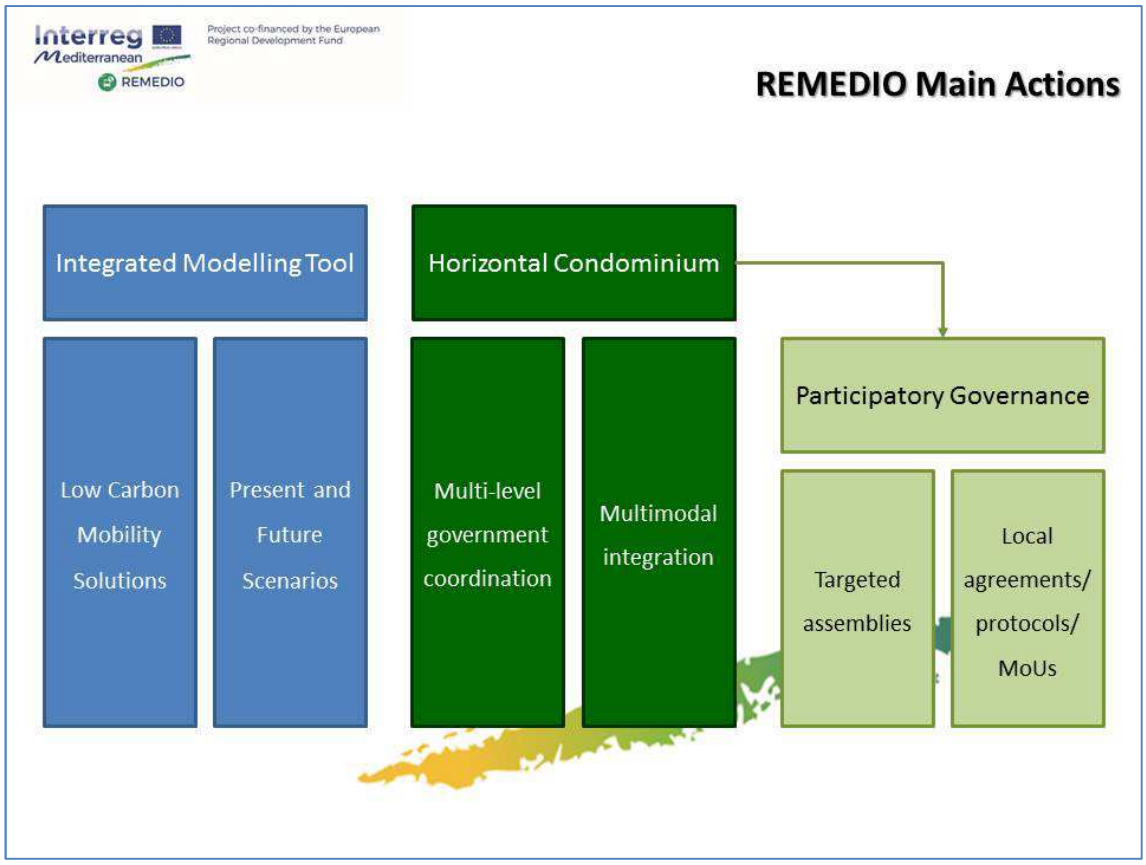
For such congested roads, REMEDIO proposes to transform them into "**horizontal condominiums**", forms of participatory governance that actively engage institutions, stakeholders and citizens and with which the Municipality can directly interact to improve multi-modal and low carbon mobility, freight logistic and environmental quality.

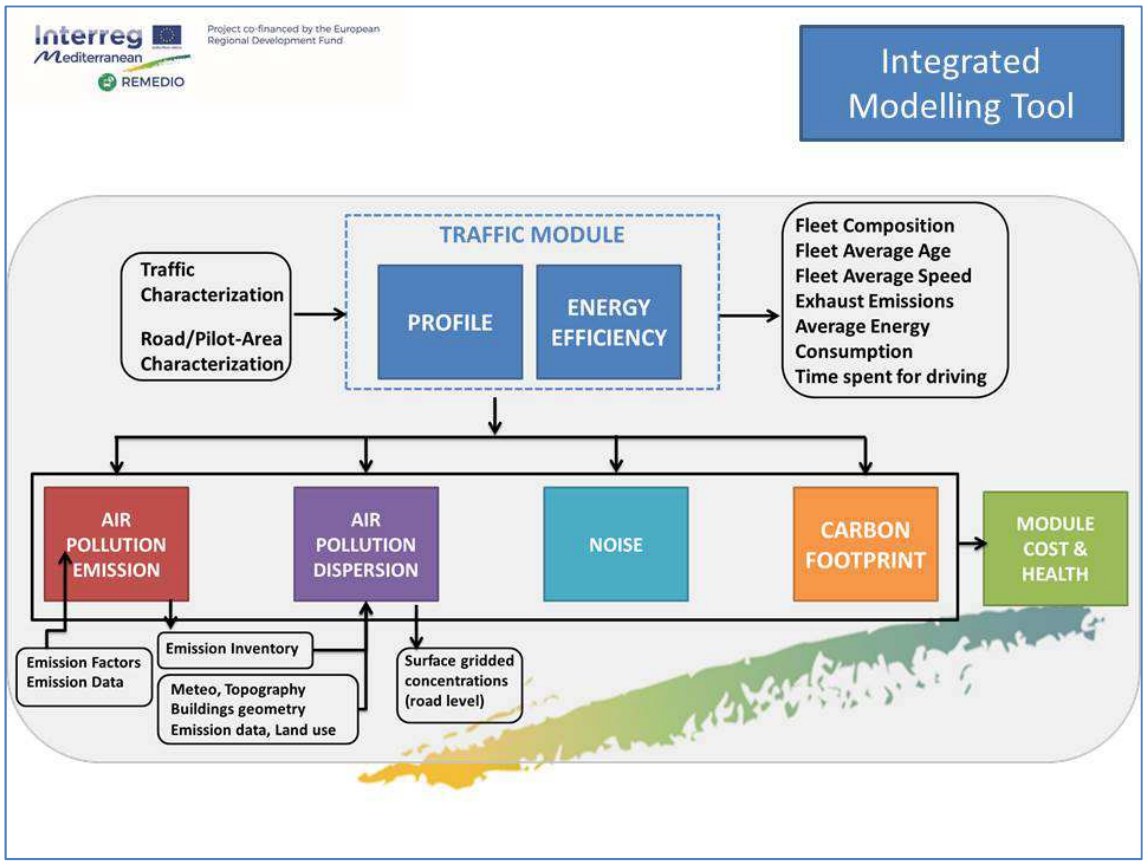
REMEDIO specific objectives

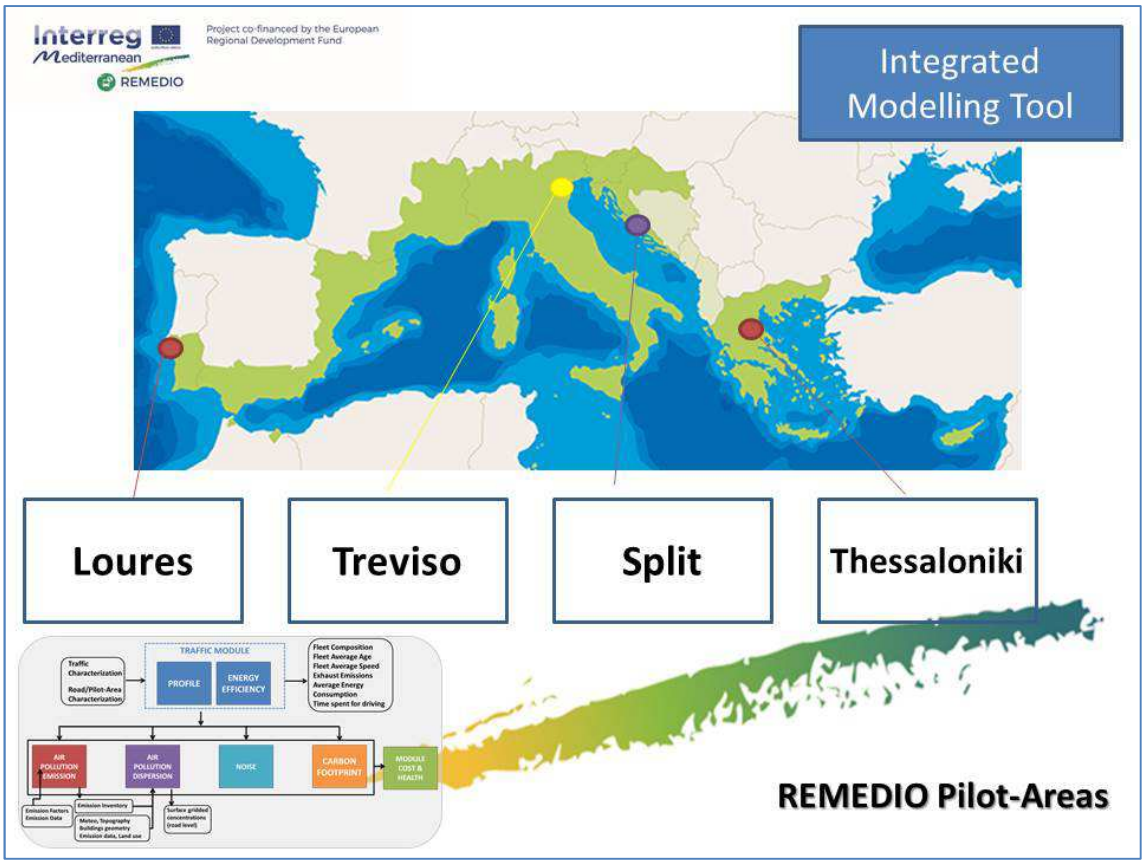
1. **Improvement of the environmental and mobility performance in traffic hot spots**, through the adoption of low-carbon mobility scenarios

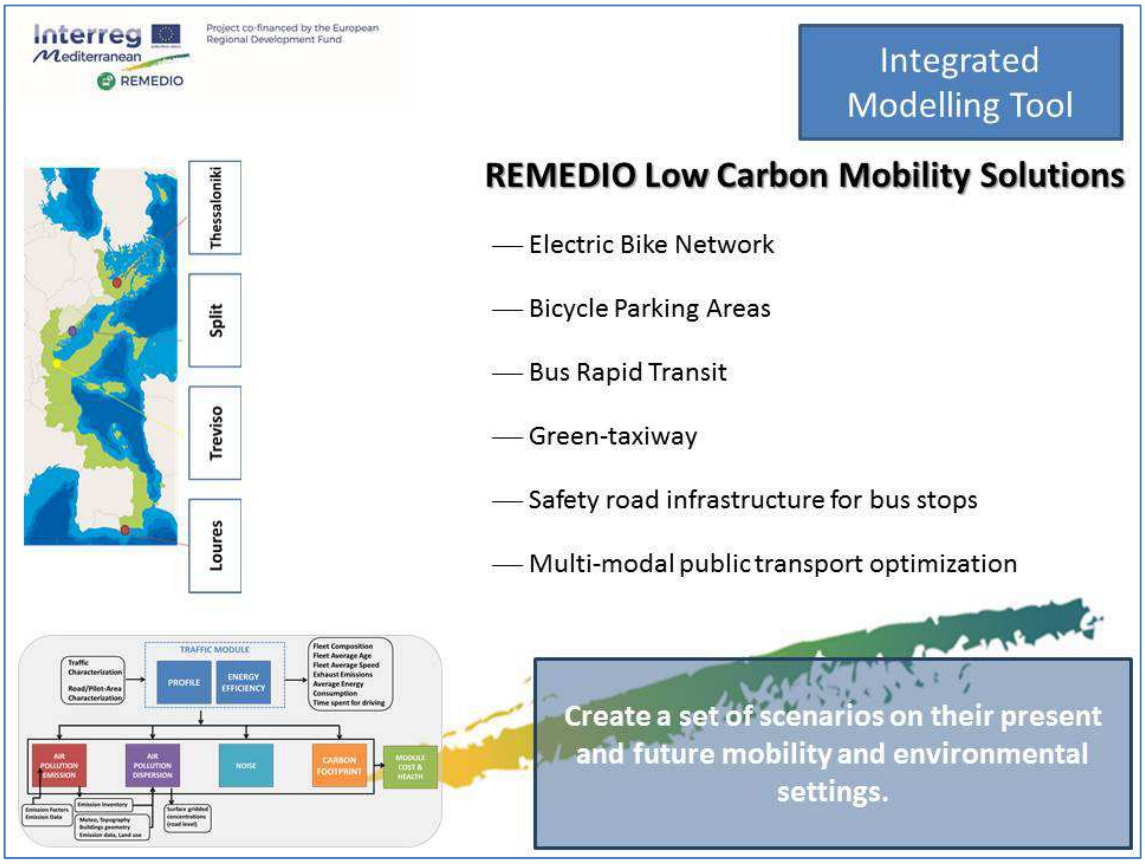
2. Development **low-carbon mobility plans** focused on **urban hot spots** characterized by traffic congestion in MED cities

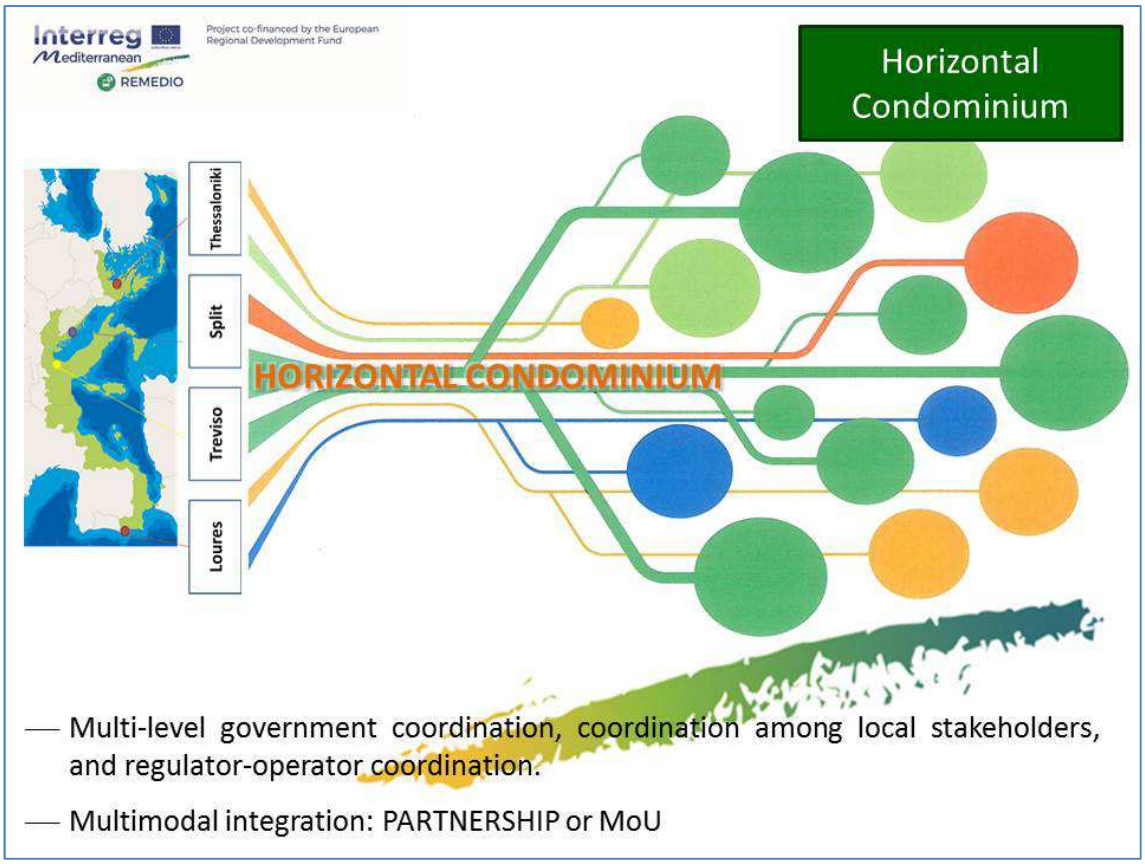
3. Create innovative models of **participatory governance** to foster the implementation process of low-carbon mobility plans

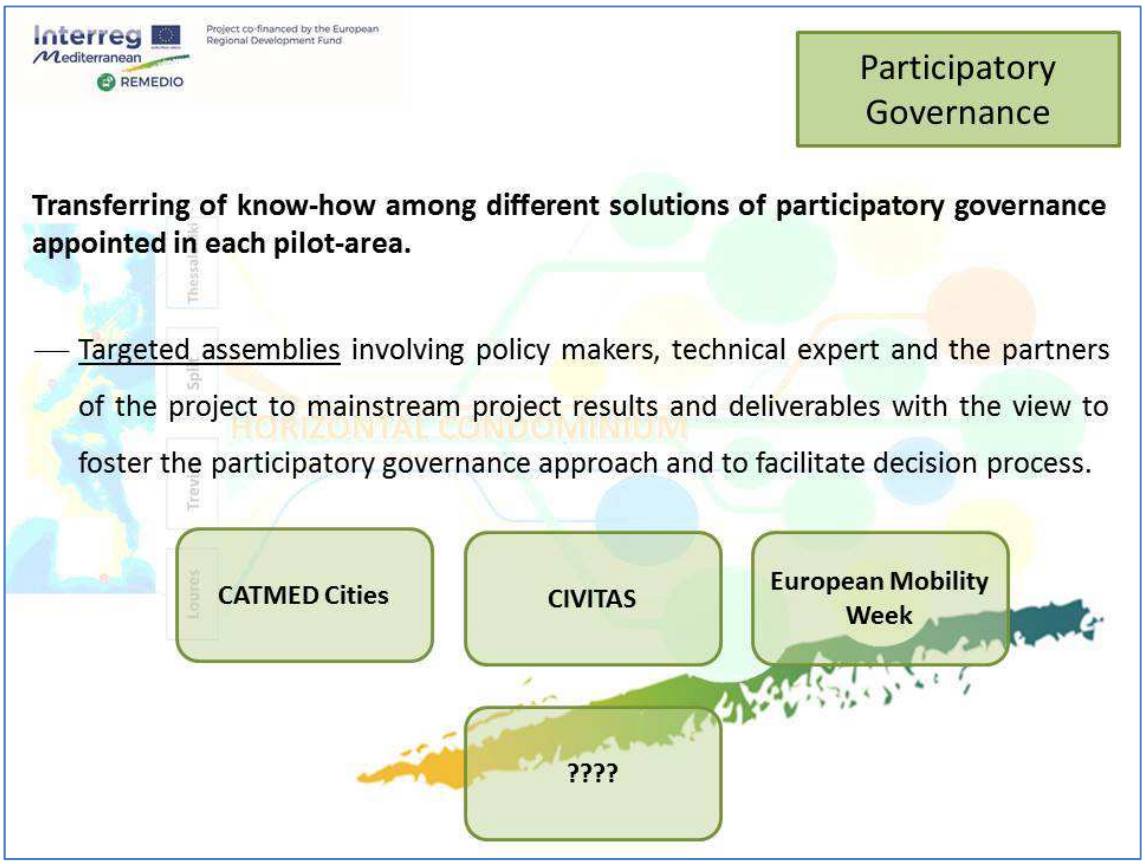

Project co-financed by the European Regional Development Fund
REMEDIO
REMEDIO Main Actions
Integrated Modelling Tool
Horizontal Condominium
Participatory Governance
Low Carbon Mobility Solutions
Present and Future Scenarios
Multi-level government coordination
Multimodal integration
Targeted assemblies
Local agreements/ protocols/ MoUs

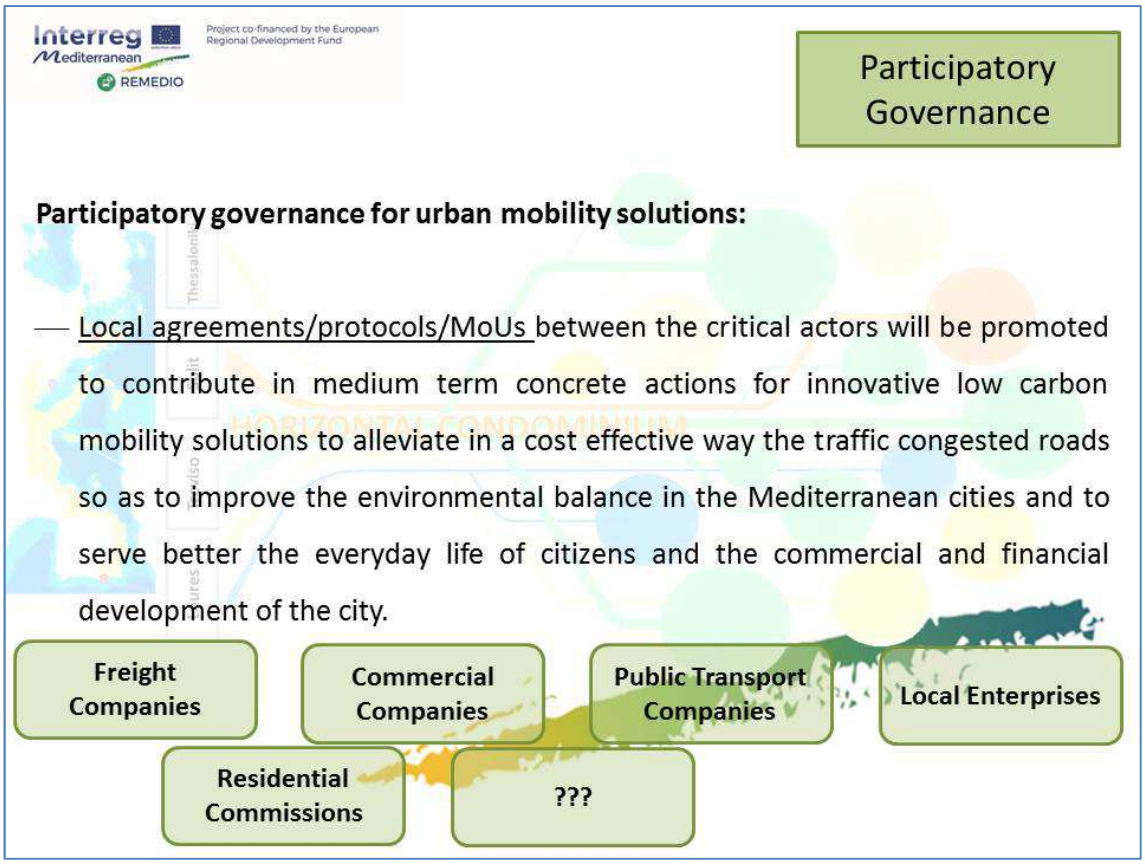

Project co-financed by the European Regional Development Fund
REMEDIO
Integrated Modelling Tool
TRAFFIC MODULE
Traffic Characterization
Road/Pilot-Area Characterization
PROFILE
ENERGY EFFICIENCY
Fleet Composition
Fleet Average Age
Fleet Average Speed
Exhaust Emissions
Average Energy Consumption
Time spent for driving
AIR POLLUTION EMISSION
AIR POLLUTION DISPERSION
NOISE
CARBON FOOTPRINT
MODULE COST & HEALTH
Emission Factors Emission Data
Emission Inventory
Meteo, Topography Buildings geometry Emission data, Land use
Surface gridded concentrations (road level)

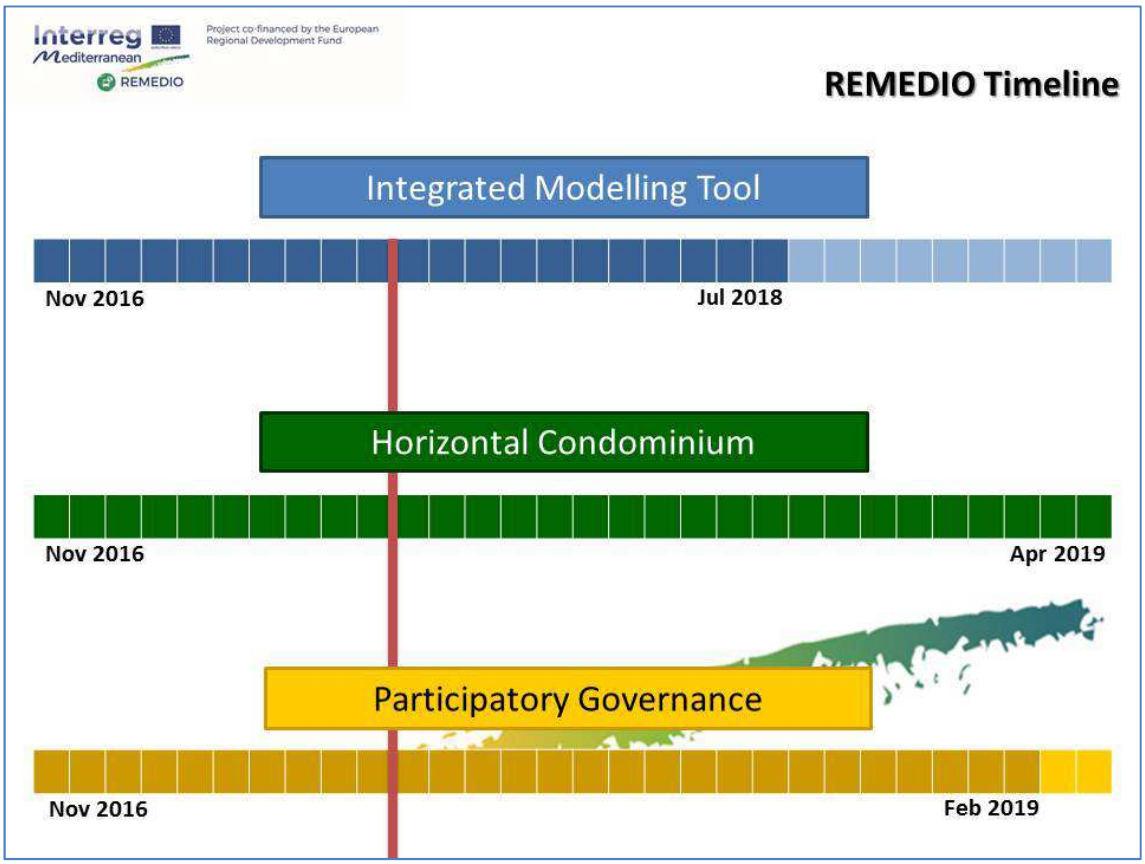

Interreg
Mediterranean
REMEDIO
Project co-financed by the European Regional Development Fund
Integrated Modelling Tool
Loures
Treviso
Split
Thessaloniki
TRAFFIC MODULE
PROFILE
ENERGY EFFICIENCY
AIR POLLUTION EMISSION
AIR POLLUTION DISPERSION
NOISE
CARBON FOOTPRINT
MODULE COST & HEALTH
REMEDIO Pilot-Areas


Interreg
Mediterranean
REMEDIO
Project co-financed by the European Regional Development Fund
Integrated Modelling Tool
Thessaloniki
Split
Treviso
Loures
REMEDIO Low Carbon Mobility Solutions
Electric Bike Network
Bicycle Parking Areas
Bus Rapid Transit
Green-taxiway
Safety road infrastructure for bus stops
Multi-modal public transport optimization
TRAFFIC MODULE
PROFILE
ENERGY EFFICIENCY
AIR POLLUTION EMISSION
AIR POLLUTION DISPERSION
NOISE
CARBON FOOTPRINT
MODULE COST & HEALTH
Create a set of scenarios on their present and future mobility and environmental settings.


Interreg Mediterranean
Project co-financed by the European Regional Development Fund
REMEDIO
Horizontal Condominium
Thessaloniki
Split
Treviso
Loures
HORIZONTAL CONDOMINIUM
— Multi-level government coordination, coordination among local stakeholders, and regulator-operator coordination.
— Multimodal integration: PARTNERSHIP or MoU


Interreg Mediterranean
Project co-financed by the European Regional Development Fund
REMEDIO
Participatory Governance
Transferring of know-how among different solutions of participatory governance appointed in each pilot-area.
— Targeted assemblies involving policy makers, technical expert and the partners of the project to mainstream project results and deliverables with the view to foster the participatory governance approach and to facilitate decision process.
CATMED Cities
CIVITAS
European Mobility Week
????


Project co-financed by the European Regional Development Fund
Participatory Governance
Participatory governance for urban mobility solutions:
— Local agreements/protocols/MoUs between the critical actors will be promoted to contribute in medium term concrete actions for innovative low carbon mobility solutions to alleviate in a cost effective way the traffic congested roads so as to improve the environmental balance in the Mediterranean cities and to serve better the everyday life of citizens and the commercial and financial development of the city.
Freight Companies
Commercial Companies
Public Transport Companies
Local Enterprises
Residential Commissions
???


Project co-financed by the European Regional Development Fund
REMEDIO Timeline
Integrated Modelling Tool
Nov 2016
Jul 2018
Horizontal Condominium
Nov 2016
Apr 2019
Participatory Governance
Nov 2016
Feb 2019


Interreg
Mediterranean
REMEDIO
Thank you
/remediomed
remedio.interreg-med.eu/
remedio-med@ctn.tecnico.ulisboa.pt
Project co-financed by the European Regional Development Fund
arpav
TÉCNICO LISBOA
LOURES
Aristotle University of Thessaloniki

3.11. A11 – CIALP 1 - Oral

Project co-financed by the European Regional Development Fund

CIDADES MAIS SUSTENTÁVEIS – ESTUDO DE CASO DE MOSCAVIDE, PORTUGAL

MARINA ALMEIDA-SILVA [1,2], Filipa Vogado [2], Daniela Lourenço [2], Ana Marta Teixeira [2], Fernando Noivo [3], Anabela Ramos [3], Rui Cota [3], Susana Marta Almeida [1]

marina.silva@estesl.ipl.pt

ESCOLA SUPERIOR DE TECNOLOGIA DA SAÚDE DE LISBOA
INSTITUTO POLITÉCNICO DE LISBOA
TÉCNICO LISBOA
LOURES

Project co-financed by the European Regional Development Fund

Cidades vs Mobilidade urbana

De acordo com a OMS (2017)[1] "Dois terços da população da Europa vivem em cidades. As áreas urbanas são muitas vezes lugares insalubres para viver, caracterizadas por **tráfego**, poluição, ruído, violência e isolamento social para idosos e famílias jovens."

Fonte: https://www.dinheirovivo.pt/economia/lisboa-admite-proibir-entrada-de-carros-por-causa-da-poluicao-do-ar/

[1]OMS, WHO/Europe - Urban Health. [Internet]. Consultado in: 11/11/2017. Disponível: http://www.euro.who.int/en/health-topics/environment-and-health/urban-health/urban-health (2017)

2

Interreg Mediterranean REMEDIO
Project co-financed by the European Regional Development Fund

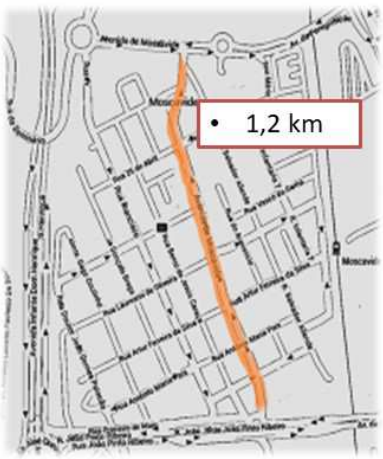
Projeto REMEDIO

O Projeto REMEDIO visa "fortalecer a capacidade das cidades de usar sistemas de transporte de **baixa emissão de carbono** e incluí-los nos seus **planos de mobilidade** testando soluções de mobilidade existentes"

3

Interreg Mediterranean REMEDIO
Project co-financed by the European Regional Development Fund

Moscavide, Loures



4

Project co-financed by the European Regional Development Fund

Moscavide, Loures

Transportes públicos coletivos

- Metro
- Autocarro
- Comboio

5

Project co-financed by the European Regional Development Fund

Moscavide, Loures

Soluções de baixa mobilidade de carbono	Descrição
Regeneração do espaço público	• **Passeios ampliados** para melhorar a capacidade de caminhar • Bancos de rua • Cafés ao ar livre
Gestão do tráfego	• Redução o **número de vias** (2→1); • Redução de velocidade até um máximo de **30 km/h**; • Redução do número **de lugares de estacionamento**
Uso de bicicletas	• **Pista de bicicletas**

6

Project co-financed by the European Regional Development Fund

Moscavide, Loures

Antes

Depois

7

Project co-financed by the European Regional Development Fund

Projeto REMEDIO: Metodologia

- Porta-a-porta
- Perguntas gerais
- Perguntas específicas: residentes
  trabalhadores
  passagem/comércio

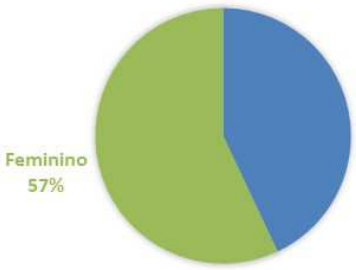
Objetivo

- Qualidade de vida em Moscavide
- Melhorias após intervenção

Outubro/Dezembro 2017

8

Projeto REMEDIO: Caracterização População



105 Pessoas

Faixa Etária
- 41% → 41-64 anos
- 35% → mais de 65 anos

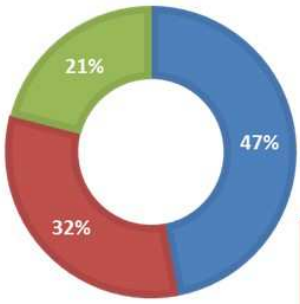
Nível de educação
- 55% → entre o 2º, 3º Ciclo e Secundário

- 77% dos inquiridos conhecem a avenida antes da intervenção

9

Projeto REMEDIO: Caracterização População

Residentes Trabalhadores Passagem

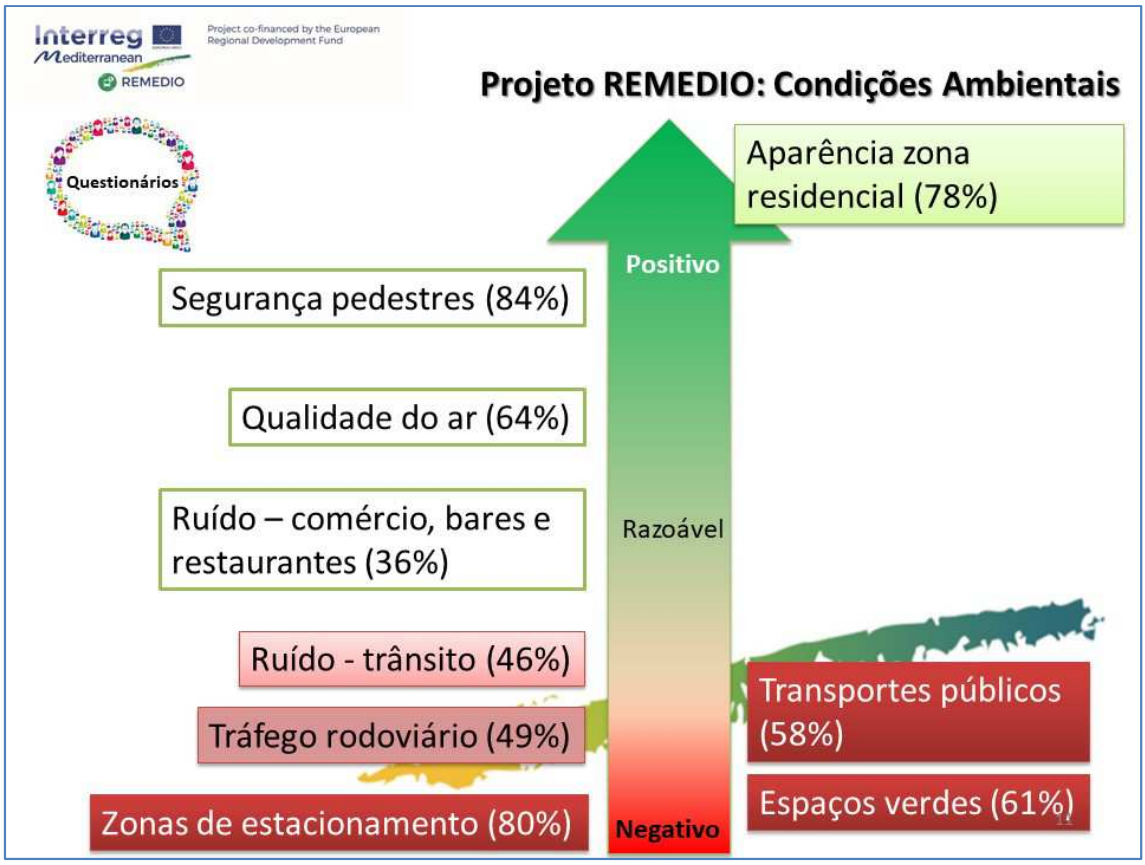


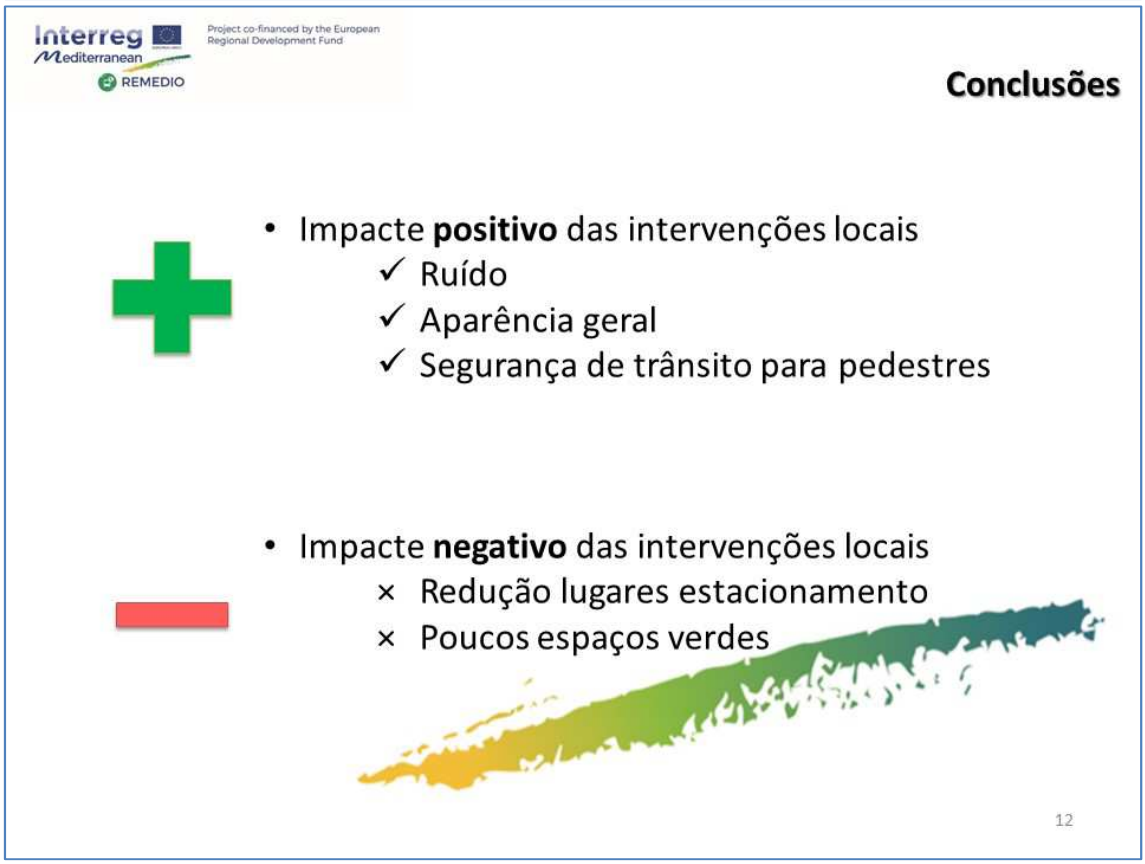
Residentes
- 59% → s/veículo próprio
- 37% → 1 veículo próprio

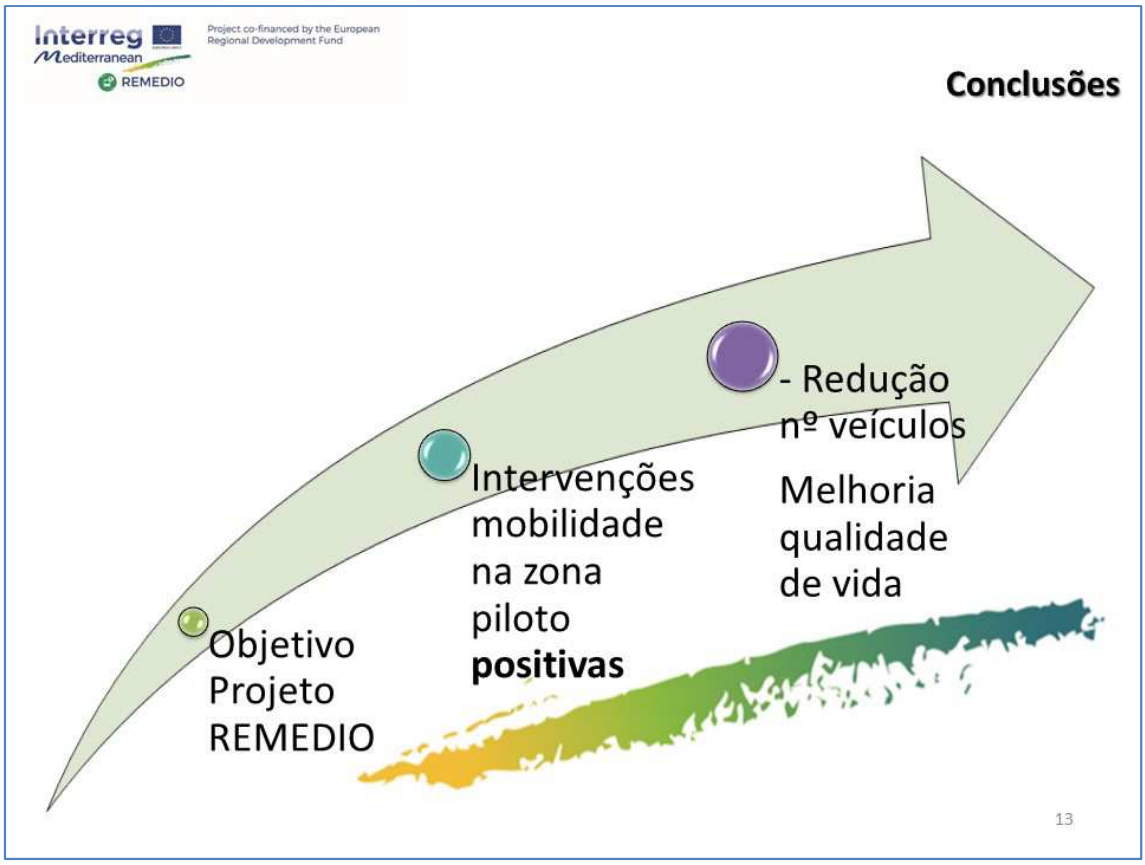
Trabalhadores
- 9h-19h
- Veículo próprio

Pessoas de passagem
- 3-4x p/ semana
- Deslocações a pé

10


Interreg Mediterranean
Project co-financed by the European Regional Development Fund
REMEDIO
Projeto REMEDIO: Condições Ambientais
Questionários
Aparência zona residencial (78%)
Positivo
Segurança pedestres (84%)
Qualidade do ar (64%)
Ruído – comércio, bares e restaurantes (36%)
Razoável
Ruído - trânsito (46%)
Tráfego rodoviário (49%)
Zonas de estacionamento (80%)
Negativo
Transportes públicos (58%)
Espaços verdes (61%)
11


Interreg Mediterranean
Project co-financed by the European Regional Development Fund
REMEDIO
Conclusões
• Impacte **positivo** das intervenções locais
✓ Ruído
✓ Aparência geral
✓ Segurança de trânsito para pedestres
• Impacte **negativo** das intervenções locais
× Redução lugares estacionamento
× Poucos espaços verdes
12



REMEDIO project is co-financed by the European Regional Development Fund

3.12. A12 – CIALP 1 – Proceeding

CIDADES MAIS SUSTENTÁVEIS – ESTUDO DE CASO DE MOSCAVIDE, PORTUGAL

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Resumo

O Projeto REMEDIO [Regenerating mixed-use MED urban communities congested by traffic through Innovative low carbon mobility sOlutions, do programa Interreg MED e co-financiado pelo FEDER (Ref.862)] tem como objetivo reforçar a capacidade das cidades a utilizar sistemas de transporte de baixo teor de carbono e incluí-los nos seus planos de mobilidade, testando soluções de mobilidade existentes, através de uma ferramenta de avaliação e esquemas de governança participativa. Neste estudo foi aplicado um questionário de satisfação a mais de 100 pessoas que residem, trabalham e/ou passam pelo local de estudo. A avaliação permitiu perceber as necessidades da população face à intervenção na Avenida Moscavide.

Introdução

"Dois terços da população da Europa vivem em cidades. As áreas urbanas são muitas vezes lugares insalubres para viver, caracterizadas por tráfego, poluição, ruído, violência e isolamento social para idosos e famílias jovens." [(1)]

Os problemas de mobilidade urbana variam de cidade para cidade e produzem algumas mudanças na forma como as cidades e os seus sistemas de circulação são planeados [(2)]. Esta questão é de grande importância porque está diretamente associada a mudanças na qualidade do ar nas cidades, o que, por sua vez, leva ao aparecimento de doenças e problemas de saúde em indivíduos, particularmente ao nível do sistema respiratório.

Na Europa, as emissões de poluentes atmosféricos diminuíram substancialmente nas últimas décadas, levando a uma melhoria da qualidade do ar. No entanto, nas áreas urbanas as concentrações de poluentes atmosféricos permanecem elevadas fazendo com que os problemas relacionados com a qualidade do ar persistam [(3,4)]. As fontes de poluição atmosférica têm várias origens: emissões industriais e do tráfego automóvel, ou emissões naturais resultantes da atividade biológica ou geológica [(3,4)]. No entanto, o transporte rodoviário tornou-se, de longe, a principal fonte de poluição ambiental nas regiões urbanas [(4)]. De acordo com Stump [(5)] e Rubin [(6)], as emissões evaporativas dos

meios de transporte dependem de muitos fatores, sendo o principal fator a volatilidade do combustível combinada com a variação da temperatura do combustível devido a flutuações na temperatura ambiente, radiação solar e fontes de calor (ex. motor). A atual legislação europeia sobre emissões evaporativas de veículos remonta à Directiva 98/69/CE do Conselho [7], considerando-se necessário rever a legislação europeia sobre as emissões evaporativas para melhorar o desempenho do sistema de controlo das emissões [8,9].

Metodologia

Projeto REMEDIO

O projeto REMEDIO é um projeto desenvolvido na União Europeia e visa "fortalecer a capacidade das cidades de usar sistemas de transporte de baixa emissão de carbono e incluí-los nos seus planos de mobilidade testando soluções de mobilidade existentes". O projeto reúne parceiros com papéis complementares de vários países do Mediterrâneo que contribuirá para a partilha de boas práticas e implementação de soluções para os desafios comuns que afetam as estradas congestionadas do MED. Este projeto visa dar especial atenção à população em geral, uma vez que será a principal recetora das ações implementadas de baixas emissões de carbono. Os cidadãos têm a capacidade para mudar o comportamento da sociedade a longo prazo e contribuir para uma economia de baixo carbono, mobilidade sustentável, eficiência de recursos e crescimento inteligente e sustentável.

Em Portugal, a zona-piloto escolhida foi Moscavide que foi intervencionada em termos de mobilidade, por forma a promover melhorias no espaço urbano, a ajudar a melhorar a experiência pedestre na zona-piloto, promovendo também o alívio do trânsito na área e o uso de modos de transporte alternativos. Todas estas ações visam contribuir para uma mobilidade sustentável, melhoria da qualidade do ar, redução do ruído e do tráfego, proporcionando uma melhoria da qualidade de vida na área-piloto.

Descrição do local

Este estudo, foi realizado numa rua característica em Moscavide, localizado em Loures, Portugal. Esta zona-piloto está localizada a sudoeste da cidade de Loures e é rodeada por Sacavém (a norte) Portela (a oeste), Santa Maria dos Olivais (a sul) e também pelo rio Tejo (no lado este), tendo 1,66 km² e 21 891 habitantes (em 2011).

Figura 6 - Localização do zona-piloto

A rua selecionada (Fig. 1) tem uma extensão total de 1,2 km e é servida por metro, autocarro e comboio. A velocidade de circulação de veículos na área-piloto é de cerca de 15 a 20 km/h. Durante os picos do tráfego, são necessários 15 minutos para atravessar a área piloto. Está disponível cerca de 150 metros por dia, 12 trajetos diários de autocarro por dia útil e 924 paragens de autocarro por dia útil.

Questionário

Este estudo, foi realizado no período de outubro a dezembro de 2017, na Avenida de Moscavide, através de um questionário digital via google© distribuído porta-a-porta à população. O questionário inicia-se com perguntas gerais, e ao longo da entrevista detalha-se em perguntas específicas para os diferentes tipos de população possível, nomeadamente: pessoas residentes na zona-piloto, pessoas que trabalham na zona-piloto e pessoas que frequentam a zona-piloto como forma de passagem ou comércio local. As questões abordadas têm como objetivo perceber a qualidade de vida em Moscavide, e abrange questões como, a forma deslocamento para o emprego; avaliação dos serviços existentes para a população assim como possíveis mudanças propostas pela mesma.

Discussão de Resultados

Caracterização da população

O questionário foi aplicado a um total de 105 pessoas, das quais 57% do sexo feminino e 43% do sexo masculino (Tabela 1).

Tabela 1- Género da população

Masculino	Feminino
43%	57%

Os indivíduos inqueridos foram divididos por diferentes faixas etárias pertencendo a idades compreendidas entre os 15-24 anos 11% dos inquiridos, dos 25-40 anos 11%, entre os 41-64 anos 41% das pessoas e com mais de 65 anos 35% dos indivíduos. Dos 100 indivíduos que responderam ao nível de educação, apenas 21% destes tinham

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frequentado o Ensino Superior e 24% não tinham qualquer nível de escolaridade ou tinham apenas o 1º ciclo de Ensino Básico, os restantes 55% apresentava escolaridade entre o 2º, 3º Ciclo e Secundário. 77% dos inquiridos conhecem a avenida antes da intervenção, 12% durante a intervenção e apenas 10% a conhecem apenas depois da intervenção que ocorreu (Tabela 2).

Tabela 2- Idade, Nível de Educação e "Desde quando conhece a avenida"

Idade	Percentagem (%)	Nível de Educação	Percentagem (%)	Conhece a Avenida desde quando?	Percentagem (%)
15-24	10	Sem escolaridade	6	Antes da intervenção	77
25-40	11	1º Ciclo do EB	22	Durante	12
41-64	41	2º Ciclo do EB	10	Após	10
65+	37	3º Ciclo do EB	21		
		Ensino Secundário	21		
		Licenciatura	15		
		Mestrado/Doutoramento	5		

A Avenida de Moscavide é constituída por uma longa área residencial e de comércio local, assim 47% dos inquiridos é residente na avenida, 32% trabalha na avenida e 21% encontravam-se de passagem. Os agregados familiares dos residentes são constituídos de 1 a 4 ou mais pessoas, destes 59% das pessoas não apresentam veículo próprio e 37% têm apenas uma viatura. Dos trabalhadores da avenida, a maioria entra ao serviço às 9:00h terminando o seu dia de trabalho por volta das 19:00h, descolando-se na sua maioria de veículo próprio, que estacionam nas ruas ao redor da avenida, e os restantes de transportes públicos ou transportes da empresa.
Das pessoas que se encontravam apenas de passagem, estas frequentavam a avenida na sua maioria todos os dias ou 3 a 4 vezes por semana, sendo a minoria apenas raramente ou 1 a 2 vezes por semana. Para o fazer estas descolocavam-se ao longo da avenida na sua maioria a pé (Tabela 4).

Tabela 4- Forma de deslocação para o trabalho

Deslocação	%
A pé	8
De autocarro	17
De metro	14
De carro	56
Transporte Empresa	6

Facilidades de acesso

Os inquiridos foram questionados quanto à facilidade de acesso em diferentes áreas com níveis de 1 a 5 em que 1 representa muito mau e 5 muito bom, de forma a perceber quais as necessidades da população, os dados encontram-se na tabela abaixo. É possível

verificar que o acesso à educação tem atribuído na sua maioria o nível 4 e 5, verificando-se que existe uma facilidade de acesso razoável a esta. O mesmo se passa com o abastecimento de alimentos e o comércio geral, sendo esta uma zona de elevada concentração de mercearias, pastelarias, padarias, lojas de roupa e eletrodomésticos. A facilidade aos diversos serviços como seguradoras, farmácias, consultórios médicos, óticas e bancos também é elevado. Verifica-se que Moscavide é uma zona de baixo acesso ao entretenimento e lazer e à cultura sendo o existente bastante associado à igreja ou a pequenas atividades dirigidas pela câmara municipal. A facilidade de acesso à saúde tem na sua maioria um nível elevado visto verificando-se um posto médico na zona, e na avenida consultórios médicos, farmácias, óticas, etc. De todos a grande facilidade de acesso encontra-se ao centro da cidade de Lisboa, sendo Moscavide abrangido por diversos transportes públicos de rápido e fácil acesso.

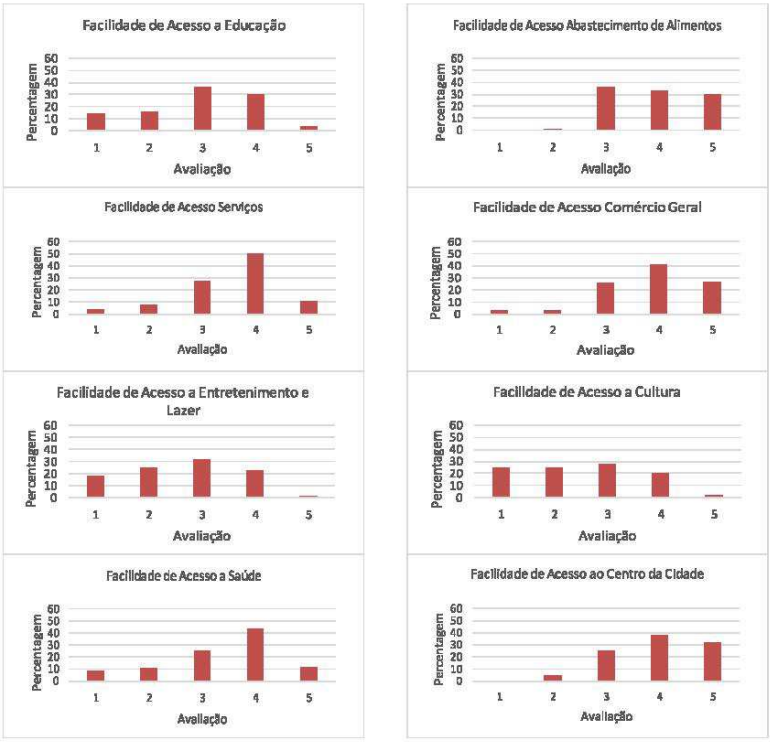

Figura 7 - Respostas ao questionário sobre "Facilidades de Acesso" na/à zona-piloto

Condições ambientais

A aparência da zona residencial é na sua maioria avaliada de forma positiva (78% das pessoas). A qualidade do ar é apontada como razoável (64% das pessoas). O ruído devido ao trânsito é um ponto bastante forte a ter em consideração, visto que este se divide em opiniões umas negativas (46% das pessoas) e outras positivas (28% das pessoas), uma

vez que a avenida é bastante frequentada ao longo do dia por diversos tipos de veículos. Quanto ao ruído devido ao comércio ou aos bares e restaurantes este é apontado de forma razoável (36% das pessoas) visto que na sua maioria ocorre durante o dia. Um ponto fraco de Moscavide são as áreas verdes, que mesmo após as intervenções continuam poucas, sendo este o ponto com mais nível de avaliação 1 e 2 apontado pelos inquiridos (61%), verificando-se pequenos pontos de relva e arvores ao longo da avenida. A segurança para pedestres após a intervenção verificou-se sobretudo no espaçamento dos passeios, e nas diversas passadeiras ao longo de toda a avenida, assim esta é avaliada de forma razoável e boa pela população (84%). O tráfego rodoviário é apontado de forma negativa (49% das pessoas), uma vez que como já referido esta é uma avenida com elevado movimento.

Avaliação da intervenção da zona-piloto

Ações implementadas em Moscavide

No caso de Moscavide, a principal preocupação foi promover melhorias no espaço urbano que ajudam a melhorar a experiência pedestre na área-piloto, promovendo também o alívio do trânsito na área e promovendo o uso de modos de transporte alternativos, por exemplo, bicicleta. Na tabela abaixo é possível verificar quais as soluções implementadas.

Soluções de baixa mobilidade de carbono	Descrição
Regeneração do espaço público	Passeios ampliados para melhorar a capacidade de caminhar e, portanto, permitir que as pessoas "vivam" a rua; Instalação de vários bancos de rua; Criação de espaços para cafés ao ar livre; Melhorar o comércio local promovendo o aumento do número de pedestres; Aumentar e facilitar a revitalização de edifícios antigos na área, bem como promover a reconstrução de edifícios abandonados.
Gestão do tráfego	Redução o número de vias (de dois para um) para diminuir os volumes de tráfego; Promover uma redução de velocidade até um máximo de 30 km/h; Redução do número de lugares de estacionamento.
Uso de bicicletas	Implementação de uma pista de bicicletas para aumentar o uso das mesmas.

As imagens abaixo mostram a área-piloto antes da intervenção e após a intervenção, em diversos pontos da avenida.

Figura 8 - Zona-piloto antes da intervenção

Figura 9 - Zona-piloto após a intervenção

Avaliação da população sobre a intervenção

Esta avaliação foi realizada com base em respostas ao questionário, referentes à opinião da população quanto às melhorias que ocorreram após a intervenção com o objetivo de saber se foram positivas.

Quanto aos transportes públicos as respostas foram na sua maioria negativas (58%), e isto encontra-se relacionado com alterações e eliminações de paragens, diminuições de vias e por isso maior trânsito. A nível das condições pedestres a avaliação foi positiva (73%) verificando-se um alargamento dos passeios dando maior estabilidade aos idosos e pessoa com mobilidade física reduzida, assim como um nivelamento dos mesmos, definição de novas passadeiras, etc. As zonas de estacionamento são o maior

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descontentamento da população, sendo esta avaliada de forma negativa (80%) quanto à melhoria, uma vez que segundo a população deixou de existir lugares de estacionamento ao longo da avenida, tendo impacto no comércio local.
As zonas verdes, continuam a ser poucas, apenas se verificam pequenos canteiros, algumas árvores e pequenos locais de relva, assim a população caracteriza este ponto como algo que não foi melhorado (65% respostas negativas). Quanto à melhoria da economia local, de uma forma geral os inquiridos que responderam não a esta questão (58%), têm como justificação a diminuição do número de clientes, justificado pela falta de estacionamento e o facto deste muitas das vezes não ser gratuito. Quanto ao aumento da segurança as respostas também são negativas (54%), sendo que a população o justifica com a falta de policiamento na rua, por outro lado nas respostas positivas obtidas, justifica-se com base nas condições gerais da rua, o que leva a rua a ser "segura".

Conclusão

De uma forma geral as pessoas que trabalham, residem e/ou passam na zona-piloto consideram que as intervenções tiveram um impacte positivo, nomeadamente no que concerne ao ruído do trânsito, na aparência geral e na segurança de trânsito a pedestres. No entanto existe algum descontentamento por parte da população local devido à diminuição dos lugares de estacionamento, podendo estar relacionado com o decréscimo da frequência de visitas a lojas e consequentemente o impacte negativo na economia local.
Sendo o objetivo principal do Projeto REMEDIO, "fortalecer a capacidade das cidades de usar sistemas de transporte de baixo nível carbono e incluí-los nos seus planos de mobilidade, testando soluções de mobilidade existentes" pode-se concluir que a intervenção na zona-piloto de Loures está a ser positiva, tendo em conta a diminuição do número de veículos, melhorando assim a qualidade de vida da população local. Em suma, conclui-se que a qualidade de vida da população tende a melhorar face às intervenções de mobilidade efectuadas.
O Projeto REMEDIO continua a ser implementado e por essa razão mais resultados irão surgir, complementado os apresentados neste trabalho.

Agradecimentos

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Referências

4. OMS, WHO/Europe - Urban Health. [Internet]. Consulted in: 11/11/2017. Available in: http://www.euro.who.int/en/health-topics/environment-and-health/urban-health/urban-health (2017).
5. S. Arnout, M. Guo, D. Durinck, P. T. Jones, J. Elsen, B. Blanpain and P. Wollants, "Phase Relations in Stainless Steel Slags", in Proceeding of European Metallurgical Conference (EMC 2007), Edited by N.

L. Piret. Society for Mining, Metallurgy, Resources and Environmental Technology (GDMB), Düsseldorf, Germany, 2007.
6. European Environment Agency, 2017. Atmospheric Pollution. Available in: https://www.eea.europa.eu/pt/themes/air/intro. Visualized at 2017.11.20.
7. Costabile, F., Wang, F., Hong, W., Liu, F., Allegrini, I., 2006c. Spatial distribution of traffic air pollution and evaluation of transport vehicle emission dispersion in ambient air in urban areas. JSME International Journal Series B 49 (1), 27e34.
8. Stump F., Knapp K., Raw W., 2000. Seasonal impact of blending oxygenated organics with gasoline on motor vehicle tailpipe and evaporative emission data 2, pp. 24(1):19-33.
9. Rubin J., Kean J., Harley A., Millet B., Goldstein H., 2006. Temperature dependence of volatile organic compound evaporative emissions from motor vehicles. J Geophys Res Atmos 2006;111
10. Council Directive 98/69/EC relating to measures to be taken against air pollution by emissions from motor vehicles and amending. Parliament, European. 1998.
11. REGULATION (EC) No 715/2007 on type approval of motor vehicles with respect to emissions from light passenger and comercial. Parliament, European. 2007.
12. 2008/C 182/08 communication on the application and future development of community legislation concerning vehicle emissions from light duty vehicles and acess to repair and maintenance information (Euro 5 and 6). Parliament, European. 2008.

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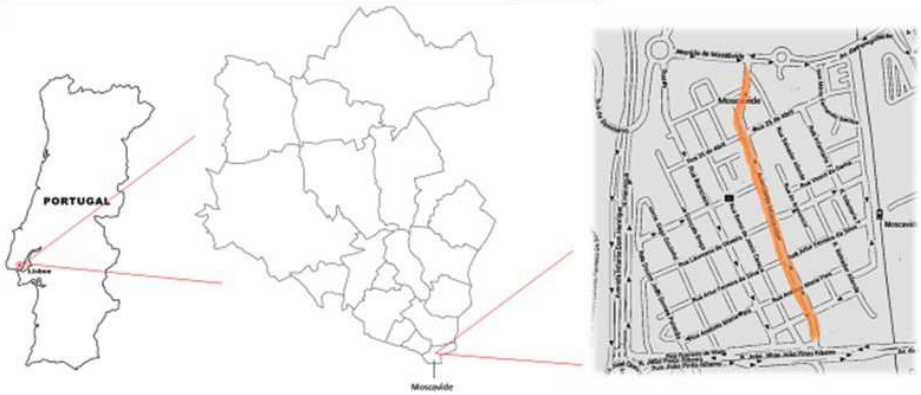
3.13. A13 – CIALP 2 - Oral

Área-piloto em estudo



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Área-piloto em estudo

- Centro urbano com características de *"street canyon"*
- Tráfego automóvel intenso
- Proximidade ao rio Tejo

Moscavide, Loures

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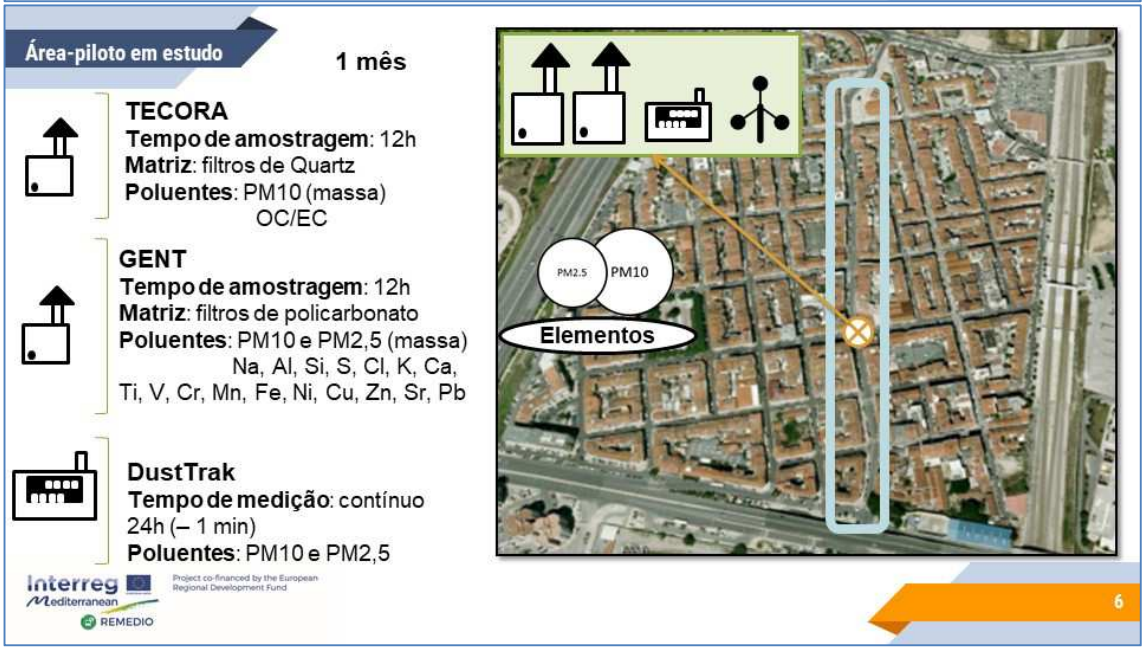
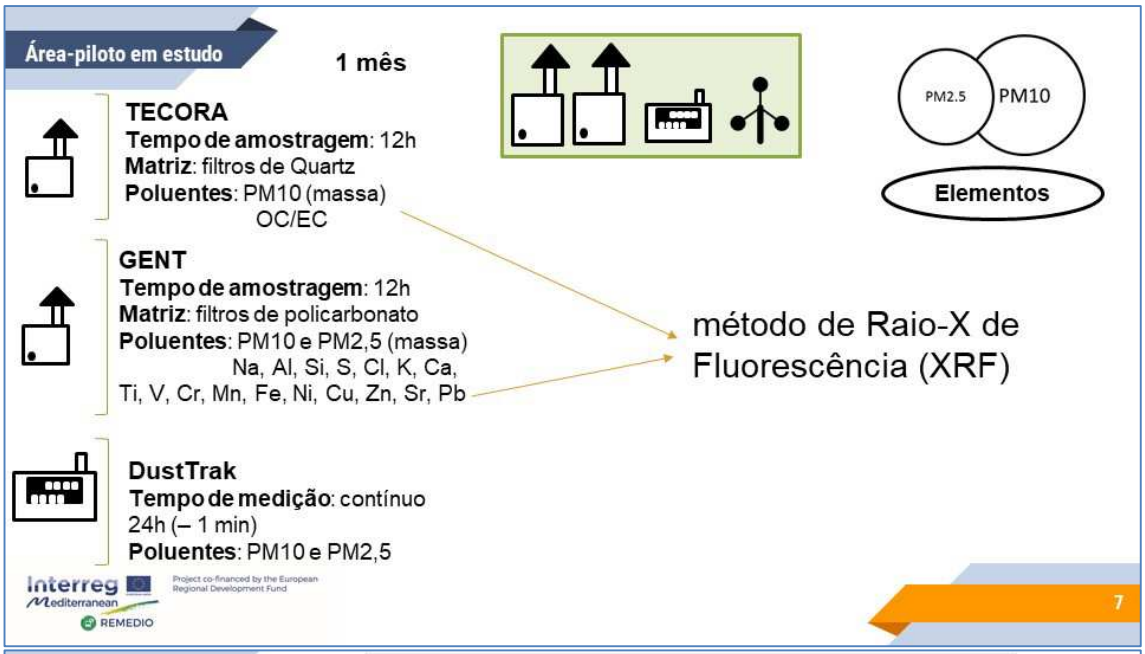
Área-piloto em estudo
Transporte privado
Autocarro
Comboio
Metro
• 1,2 km
Moscavide, Loures
5


Área-piloto em estudo
1 mês
TECORA
Tempo de amostragem: 12h
Matriz: filtros de Quartz
Poluentes: PM10 (massa)
OC/EC
GENT
Tempo de amostragem: 12h
Matriz: filtros de policarbonato
Poluentes: PM10 e PM2,5 (massa)
Na, Al, Si, S, Cl, K, Ca,
Ti, V, Cr, Mn, Fe, Ni, Cu, Zn, Sr, Pb
DustTrak
Tempo de medição: contínuo
24h (– 1 min)
Poluentes: PM10 e PM2,5
PM2.5
PM10
Elementos
6


Área-piloto em estudo
1 mês
TECORA
Tempo de amostragem: 12h
Matriz: filtros de Quartz
Poluentes: PM10 (massa)
OC/EC
GENT
Tempo de amostragem: 12h
Matriz: filtros de policarbonato
Poluentes: PM10 e PM2,5 (massa)
Na, Al, Si, S, Cl, K, Ca,
Ti, V, Cr, Mn, Fe, Ni, Cu, Zn, Sr, Pb
DustTrak
Tempo de medição: contínuo
24h (– 1 min)
Poluentes: PM10 e PM2,5
PM2.5
PM10
Elementos
método de Raio-X de Fluorescência (XRF)
interreg Mediterranean
REMEDIO
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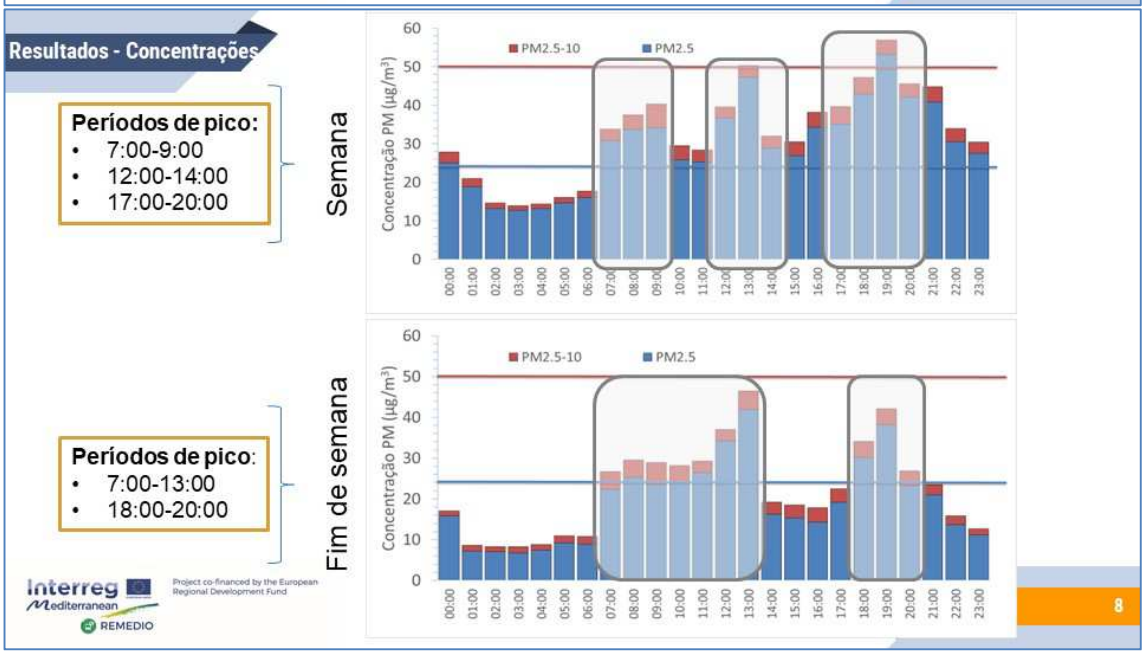
Resultados - Concentrações
Períodos de pico:
• 7:00-9:00
• 12:00-14:00
• 17:00-20:00
Semana
Concentração PM (µg/m³)
PM2.5-10
PM2.5
Períodos de pico:
• 7:00-13:00
• 18:00-20:00
Fim de semana
interreg Mediterranean
REMEDIO
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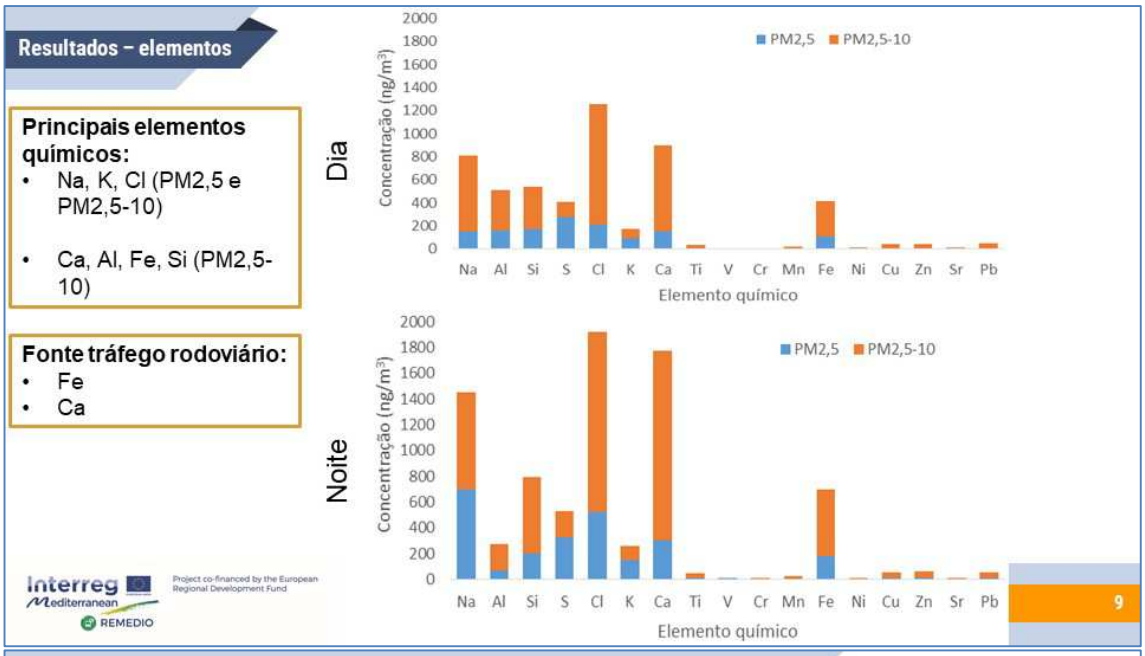
Resultados – elementos
Principais elementos químicos:
• Na, K, Cl (PM2,5 e PM2,5-10)
• Ca, Al, Fe, Si (PM2,5-10)
Fonte tráfego rodoviário:
• Fe
• Ca
Dia
Noite
PM2,5
PM2,5-10
Concentração (ng/m³)
Elemento químico
Na Al Si S Cl K Ca Ti V Cr Mn Fe Ni Cu Zn Sr Pb
interreg Mediterranean
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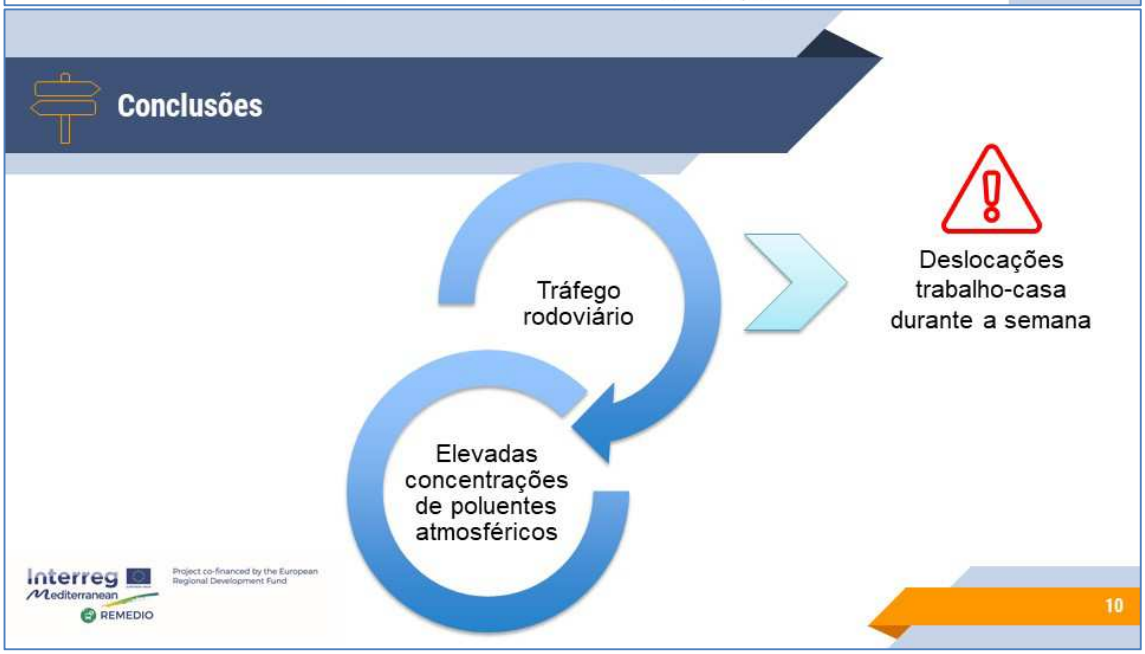
Conclusões
Tráfego rodoviário
Elevadas concentrações de poluentes atmosféricos
Deslocações trabalho-casa durante a semana
interreg Mediterranean
REMEDIO
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Conclusões

- Exposição a elevadas concentrações de poluentes em ruas designadas por *"street canyon"* é um problema atual e que necessita de especial atenção e intervenção por parte dos Tomadores de decisão

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Obrigada!

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3.14. A14 – CIALP 2 – Proceeding

CONCENTRAÇÃO DE PARTÍCULAS E ELEMENTOS QUÍMICOS EM MOSCAVIDE, PORTUGAL

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Resumo

No âmbito do Projeto REMEDIO, o presente estudo foi realizado em Moscavide (Portugal) no período de Outono de 2016, com o propósito de analisar as concentrações elementares de PM2,5 e PM10. Os resultados deste estudo permitiram identificar a distribuição horária das concentrações de PM2,5 e PM10, possibilitando identificar os períodos do dia mais problemáticos em termos de impacte de poluição atmosférica. As concentrações médias de PM2,5 e PM10 excedem os valores limite, em períodos do dia cujo tráfego rodoviário é superior. Há uma predominância dos elementos oriundos de aerossóis marinhos (Na, K e Cl), seguidos daqueles provenientes da crosta terrestre (Ca, Fe, Si, Al) e por fim dos elementos químicos provenientes de fontes antropogénicas (S, Ti, V, Cr, Mn, Ni, Cu, Zn, Sr, Pb).

Introdução

O Projeto REMEDIO [Regenerating mixed-use MED urban communities congested by traffic through Innovative low carbon mobility sOlutions, do programa Interreg MED e co-financiado pelo FEDER (Ref.862)] tem como objetivo reforçar a capacidade das cidades na utilização de sistemas de transporte de baixo teor de carbono e incluí-los nos seus planos de mobilidade, testando soluções de mobilidade existentes, através de uma ferramenta de avaliação e esquemas de governança participativa.

Nos centros urbanos, onde reside a maior parte da população mundial (Banister, 2008), é facilmente observável a presença de edifícios comerciais e residenciais ao longo dos dois lados da rua, originando uma rua designada por "*street canyon*" (Kwak et al., 2016). A par com o desenvolvimento urbano, verifica-se um crescente número de veículos e tráfego automóvel (Thaker e Gokhale, 2016) com especial atenção para

as "*street canyons*", devido às suas configurações particulares, sendo conhecidas como pontos críticos em termos de poluição atmosférica (Karra et al., 2011; Li et al., 2016). Este estudo foi realizado numa "*street canyon*" na cidade de Loures (Portugal) - Moscavide, para analisar as concentrações de partículas (PM2,5 e PM10) e dos elementos químicos associados.

MATERIAIS E MÉTODOS

Descrição do local

Neste estudo, a concentração de partículas e a sua composição química foram analisadas numa rua característica em Moscavide, localizado em Loures, Portugal. Esta área-piloto está localizada a sudoeste da cidade de Loures e é rodeada por Sacavém (a norte) Portela (a oeste), Santa Maria dos Olivais (a sul) e também pelo rio Tejo no lado este, tendo 1,66 km² e 21 891 habitantes (em 2011).

Figura 1 - Localização do local em estudo

A rua selecionada (Fig. 1) tem uma extensão total de 1,2 km e é servida por metro, autocarro e comboio. A velocidade de circulação de veículos na área-piloto é de cerca de 15 a 20 km/h. Durante os picos do tráfego, são necessários 15 minutos para atravessar a área piloto. Está disponível cerca de 150 metros por dia, 12 trajetos diários de autocarro por dia útil e 924 paragens de autocarro por dia útil.

Amostragem e caracterização de partículas atmosféricas

Foi realizada uma campanha de amostragem de partículas atmosféricas com a duração de um mês entre 31 de outubro de 2016 e 27 de novembro de 2016, em Moscavide, entre as 7:00h e as 21:00h e as 21:00h e as 7:00h. Estes dois momentos de amostragem permitem caracterizar períodos de: pico e não-pico de tráfego. Recorreu-se à aplicação de um método de medição gravimétrico, utilizando os equipamentos de amostragem TCR-Tecora® e Gent e um método de leitura direta, utilizando o equipamento DustTrak, para amostragem e monitorização de poluentes atmosféricos, respectivamente. Para a análise e determinação das concentrações dos elementos

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químicos associados às partículas amostradas foi utilizado o método de Raio-X de Fluorescência (XRF).

Resultados

Os resultados deste estudo permitiram identificar os picos horários com maiores concentrações de partículas atmosféricas e os períodos do dia mais problemáticos em termos de impacte de poluição atmosférica (Fig. 2).

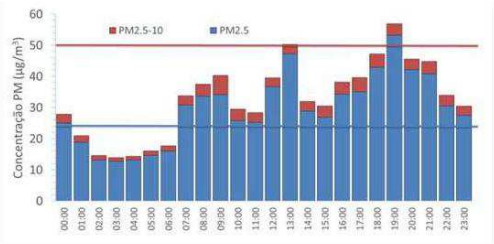

Figura 2 - Variação horária da concentração média de PM2,5 e PM2,5-10 em dias de semana

As concentrações médias de PM2,5 e PM2,5-10 excedem os valores limite, de 25 µg m^{-3} e 50 µg m^{-3}, respetivamente, em períodos do dia cujo fluxo rodoviário é superior. É evidenciado pela Figura 2 que as concentrações de ambas as frações de partículas (PM2,5 e PM2,5-10) em dias de semana seguiram o mesmo padrão, com três picos distintos, durante a manhã (7:00h-9:00h), no horário de almoço (12:00h-14:00h) e ao final do dia (17:00-20:00h). Estes picos podem ser explicados pelo intenso tráfego durante os dias úteis. Na Figura 3 estão apresentados dois picos horários de partículas durante o fim-de-semana, na parte da manhã (7:00h-13:00h) e ao final do dia (18:00-20:00h). Um estudo realizado anteriormente demonstrou que o tráfego rodoviário é uma fonte de emissão de partículas, principalmente emitidas pelos escapes de veículos, resultantes também do desgaste de pneus e travões e por re-suspensão de partículas do solo (Almeida et al., 2009). Constata-se também através das Figuras 2 e 3 que as concentrações de PM foram superiores nos dias de semana em relação aos fins-de-semana, que pode ser explicado pelo aumento do tráfego rodoviário, devido às deslocações casa-trabalho e trabalho-casa durante a semana em comparação com os fins-de-semana.

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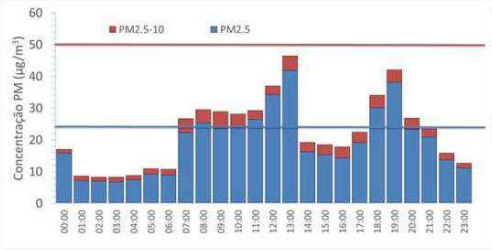

Figura 3 - Variação horária da concentração média de PM2,5 e PM2,5-10 ao fim-de-semana

Das amostras de PM2,5 e PM2,5-10 recolhidas foram identificados os seguintes elementos químicos: sódio (Na), alumínio (Al), silício (Si), enxofre (S), cloro (Cl), potássio (K), cálcio (Ca), manganês (Mn), ferro (Fe), cobre (Cu), zinco (Zn), chumbo (Pb), titânio (Ti), crómio (Cr), vanádio (V), níquel (Ni) e Estrôncio (Sr). A concentração média em (ng m^{-3}) durante os dois períodos de amostragem (dia e noite) de cada elemento químico identificado é apresentada na Figura 4. Em relação à massa química de PM2,5, durante o período diurno, os elementos marinhos apresentaram concentrações superiores - Na (702±317,00 ng m^{-3}), K (148±99,30 ng m^{-3}) e Cl (524±541,00 ng m^{-3}) e de PM2,5-10, determinaram-se também concentrações elevadas destes elementos - Na (753±265,00 ng m^{-3}), K (115±54,90 ng m^{-3}) e Cl (1400±1404,00 ng m^{-3}). Estes resultados podem ser explicados pela proximidade ao rio Tejo, sendo transportados pela brisa marítima (Almeida et al., 2005). Os elementos provenientes da crosta terrestre (Ca, Al, Fe e Si) representaram uma concentração elevada da composição química total durante os dois períodos (dia e noite), em especial no que respeita às PM2,5-10, o que era expectável pelo facto de a composição das partículas grosseiras do solo serem maioritariamente compostas por esses elementos. Adicionalmente, o Fe pode ser relacionado com outras fontes, tais como travagens, desgaste de asfalto e ferrugem (Srimuruganandam e Nagendra, 2011). Os elevados níveis de Ca podem resultar da dispersão de poeiras de pavimento rodoviário (Kim et al., 2006)

Figura 4 - Variação da concentração média por elemento químico nas amostras de PM2,5 e PM2,5-10 em dois períodos distintos, durante o dia (gráfico à esquerda) e durante a noite (gráfico à direita)

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Conclusões

As concentrações de PM2,5 e PM2,5-10 e da sua composição química foram analisadas, permitindo estabelecer uma relação entre o tráfego rodoviário e elevadas concentrações de poluentes atmosféricos em determinados períodos do dia, resultado maioritariamente das deslocações casa-trabalho e trabalho-casa durante a semana. Os resultados deste estudo demonstram com clareza que a exposição às elevadas concentrações de poluentes em ruas designadas por *"street canyon"* é um problema atual e que necessita de especial atenção e intervenção por parte das Entidades Governativas. É fundamental a aplicação de estratégias de planeamento urbano para controlo das emissões de poluentes decorrentes do tráfego rodoviário, nomeadamente, através da implementação de políticas que visem a redução da circulação rodoviária e a fluidificação do trânsito nas cidades para evitar e reduzir congestionamentos e os fluxos de tráfego "pára-arranca" que conduzem a elevados níveis de poluição atmosférica e consequentemente a possíveis efeitos adversos na saúde pública.

Agradecimentos

Os autores amavelmente agradecem ao Programa de Financiamento Interreg MED e ao Fundo Europeu de Desenvolvimento Regional pelo co-financiamento dado ao Projecto REMEDIO (Regenerating mixed-use Mediterranean urban communities congested by traffic through innovative low carbon mobility solutions). Os autores do C2TN/IST/UL agradecem à FCT o seu apoio através do projecto UID/Multi/04349/2013.

Referências

1. Almeida SM, Pio CA, Freitas MC, Reis MA, Trancoso MA (2005) Source apportionment of fine and coarse particulate matter in a sub-urban area at the Western European Coast. Atmos Environ. 39:3127–38
2. Almeida SM, Freitas MC, Repolho C, Dionísio I, Dung HM, Pio CA, Alves C, Caseiro A, Pacheco AMG (2009) Evaluating children exposure to air pollutants for an epidemiological study. J Radioanal Nucl Chem 280(2):405–409
3. Banister, D (2008) The sustainable mobility paradigm. Transport Studies Unit, Oxford University Centre for the Environment, Oxford, UK. Transport Policy 15, 73–80.
4. Karra S, Malki-Epshtein L, Neophytou M (2011) The Dispersion of Traffic Related Pollutants Across a Non-Homogeneous Street Canyon. Urban Environmental Pollution 2010. Procedia Environmental Sciences 4, 25–34.
5. Kim KH, Mishra VK, Kang CH, Choi KC, Kim YJ, Kim DS. (2006) The ionic compositions of fine and coarse particle fractions in the two urban areas of Korea. J Environ Manage. 78:170–82.
6. Kwak, KH, Lee, SH, Seo, J M, Park SB, Baik, JJ (2016) Relationship between rooftop and on-road concentrations of traffic related pollutants in a busy street canyon: Ambient wind effects.
7. Li, XB, Lu, Qing-C, Lu, SJ, He HD, Peng ZR, Gao Y and Wang ZY (2016) The impacts of roadside vegetation barriers on the dispersion of gaseous traffic pollution in urban street canyons. Urban Forestry & Urban Greening 17, 80-91.

8. Srimuruganandam B, Nagendra SM S (2011) Chemical characterization of PM10 and PM2.5 mass concentrations emitted by heterogeneous traffic. Science of the Total Environment 409, 3144–3157.
9. Thaker P, Gokhale S (2016) The impact of traffic-flow patterns on air quality in urban street canyons. Environmental Pollution 208, 161-169.

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3.15. A15 – CSUM2018 – Proceeding

Microsimulation Modelling of the Impacts of Double-Parking Along an Urban Axis

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Abstract. Illegal parking, particularly in urban areas, can cause severe delays and contribute significantly to traffic congestion. The main objective of the present work is to assess, using microsimulation modeling, the impacts of the phenomenon of double parking along an urban axis. A case study of an urban axis of the city of Thessaloniki, that daily serves heavy traffic, with a dedicated bus lane, is presented. Two different scenarios are modelled; one where only legal on-street parking along the axis is considered and a second one, representing the actual situation, where also a number of double-parking events are modelled; and the interaction with the traffic the axis serves is studied. Data on vehicle speed, average travel time, delay and stopped time are compared and the results show that all traffic indicators are affected by the phenomenon of double parking. Additionally, energy consumption and emissions of air pollutants are also compared to assess the impacts of double parking on the environment. The findings assist in quantifying the impacts of double parking, highlighting the importance of enforcement and measures aimed at reducing and eventually eliminating illegal parking, in order to improve traffic conditions and the quality of the atmosphere along the axis and consequently upgrade the quality of life of its residents, employers and travelers.

Keywords: Microsimulation modelling · Double-parking
Sustainable urban mobility · Traffic and environmental impacts

1 Introduction

In an urban network, illegal parking can have several major negative impacts such as traffic congestion with increased delays and travel times, unnecessary fuel consumption and increased resulting emissions, decrease of the quality of bus services, even increase of the possibility for an accident. Furthermore, illegal parking contributes in the aesthetic and environmental degradation of urban areas, making them less attractive for both vehicles and pedestrians.

Double parking is a type of illegal parking that many cities suffer from, caused either by private vehicles, stopping for a while so that passengers can serve personal activities, or freight vehicles, stopping for loading and unloading purposes.

Several case studies have been examined by researchers in order to evaluate the impacts of illegal parking but only a few of them concentrate on illegal double parking

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using a modelling approach. In 2007, Lu and Viegas analyzed how illegal double parking influences traffic flow and studied its impacts in an area of Lisbon using VISSIM software. Also in 2007 Galatioto and Bell simulated, using DRACULA framework, illegal double parking in a high-density area of Palermo, Italy, showing its significant negative impacts in traffic, in terms of length of queues, capacity, and the environment, in terms of vehicle emissions. Later, in 2013, Kladeftiras and Antoniou studied, using TransModeler microsimulation software, the traffic and environmental impacts the reduction or even elimination of illegal double parking phenomenon would have in the city of Athens, Greece. Gao and Ozbay, in 2015, used a M/M/∞ queueing model and developed a microsimulation model in Paramics to estimate double parking impact on traffic in case studies in Midtown Manhattan and Downtown Brooklyn.

The present paper also uses a microsimulation traffic model to study the phenomenon of double parking along an axis of the city of Thessaloniki, Greece in order to examine the impacts it has in traffic, energy consumption and emissions. The paper is structured as follows. After this introductory part, the methodology that has been followed for the assessment of illegal double parking impact is presented, Sect. 3 presents the case that is studied from the city of Thessaloniki, Sect. 4 the results of the case study and the last section concludes the paper.

2 Methodology

The methodology of this research is based on the set-up, calibration and validation of a micro-simulation model reflecting the traffic conditions along an urban road axis. In order to explore the effects of illegal double parking along the axis, two simulation scenarios were examined:

Scenario 1: Current situation where illegal double parking that has been recorded has been simulated.

Scenario 2: An 'ideal' situation where there is complete compliance with the existing parking regulations.

In more detail, the methodological approach followed included:

- Data collection about illegal parking along the axis (time of day, location, duration).
- Set-up of a micro-simulation traffic model in AIMSUN software with detailed information about the road geometry (number/width of lanes, bus lanes, bus stop locations, traffic control, turning movements, etc.), public bus transport, traffic demand and traffic composition.
- Introduction of an approach to model in AIMSUN locations and duration of double parking phenomenon using reserved lanes plus incidents to model the burden that is caused to adjacent lanes for as long as parking maneuvers take place.
- Calibration of the model parameters to reflect the actual drivers' behavior.
- Evaluation of the outputs, making a comparison between the scenarios and assessing the impacts of the phenomenon through 4 traffic and 5 energy/environmental indicators (travel time, mean speed, stop time, delay time, fuel consumption, CO2 emissions and NOx, VOC, PM emissions).

3 Case Study

The present paper chooses to study the phenomenon of on-street illegal, double parking on an urban axis in the city of Thessaloniki, Greece.

It is a major axis with a total length of 6,2 km that daily serves heavy traffic, with direction from the east to the west of the city. It is a one-way road with 4 lanes, one of them being used as a dedicated bus lane. The axis is one of the most important of the city connecting its southeastern areas with the city center.

At the same time, it is an important commercial axis of the city, with a large number of businesses and stores located along it. Hence, it acts as a pole of attraction from adjacent areas and, in conjunction with the high density residential area located alongside, serves the needs of large numbers of people living and being active on it.

As a result there is high parking demand along the axis that is however not served by the available legal on street parking offer and this combined with the absolute lack of enforcement in the area are causing an intense phenomenon of illegal parking and double parking.

The average daily traffic of the axis is estimated at 35.000 vehicles. The peak is observed during the morning period, and in particular from 08:00 to 09:00, during which more than 11.000 journeys are served by the axis (Mitsakis et al. 2013). Of these, 523 movements (4,8% of the total) carry out a through movement along the whole axis.

A parking characteristics survey that took place in 2013 to support the planning of a controlled parking system in the Municipality of Thessaloniki (Aifantopoulou et al. 2013) - that has not been implemented in the area yet- recorded along the axis 128 parking spaces. 63% of the vehicles recorded by the survey were illegally parked, with 49% of them being double parked, and parking deficit was calculated at 854 car parks per day (Fig. 1).

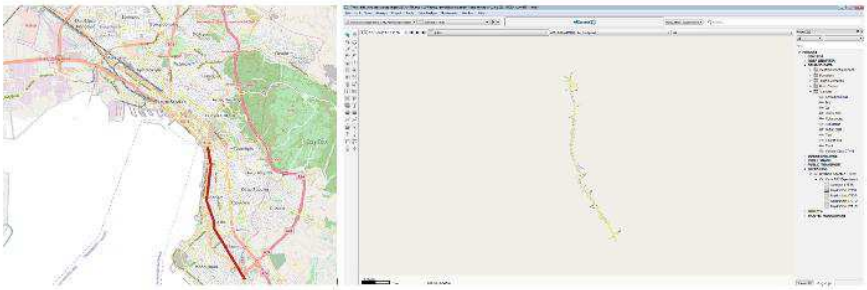

Fig. 1. The location of the study axis in the city of Thessaloniki (a) and the axis simulated in AIMSUN software (b).

The present work studies the phenomenon of on-street illegal, double parking on the axis for the typical weekday morning peak period, 08:00–09:00.

Based on the methodology described above:

Illegal double parking along the axis was quantified, in terms of location and duration. Detailed on-site observations were held in order to identify the locations where the phenomenon of illegal double parking appears. Additionally, and in order to determine how long double parking events last, data from the detailed recording of legal and illegal parking along the axis that took place in the framework of the 2013 parking characteristics survey were used.

A microsimulation traffic model was set-up in AIMSUN (Advanced Interactive Microscopic Simulator for Urban and Non-Urban Networks). (Dynamic Route Assignment Combining User Learning And microsimulation) a software of TSS (Transport Simulation Systems) company that allows mesoscopic, microscopic and hybrid simulation.

The representation of the road axis in AIMSUN software environment consists of 379 road sections, 86 intersections, 31 of which are signalized and includes information about road direction, number, width and functional use of lanes, capacity, maximum permitted speed, slope, type of vehicles using the road, bus stops locations, on street parking locations, nodes geometry allowed turns, signage, traffic control, pedestrians' crossings, and traffic signals timing.

Information about the 9 bus lines of public transport serving the axis was also included in the model. For each bus line, information about the road sections that it runs, the bus stops where it stops, the detailed timetable for the peak hour and the average bus stop duration was included.

Traffic demand was taken from the macroscopic traffic model of the metropolitan area of Thessaloniki that has been developed by the Hellenic Institute of Transport (Stamos et al. 2011). The data refer to the morning peak hour (8:00–9:00) and was given in 6 Origin/Destination matrixes, for the 6 different types of vehicles using the road (cars, taxis, motorbikes, buses, trucks and public transport buses) and used 92 centroid locations to allocate the demand on the network.

To simulate double parking, 'incidents' were used to specify where, when and how long double parking events along the axis occur based on the results of the data collection. In addition, extra 'incidents' were inserted to model the burden caused to adjacent lanes, that includes time for identifying a sufficient gap between already parked vehicles, the vehicle speed reduction and the necessary maneuvers to park. A time of 15 s (±5 s) was considered as the mean time a driver needs for this procedure.

Figure 2 presents the two simulation scenarios that were set-up, without and with illegal double parking events along the axis.

The model was then calibrated to represent the traffic conditions as accurately as possible. Data from traffic counts in 8 nodes and 2 sections along the axis were used for this purpose as well as data about average speed and travel time of taxis and public transport buses along the axis taken from their fleet monitoring centers. Comparing this actual data with simulation outputs, the model was calibrated and the figures below (Fig. 3) compare the measured vs the simulated values.

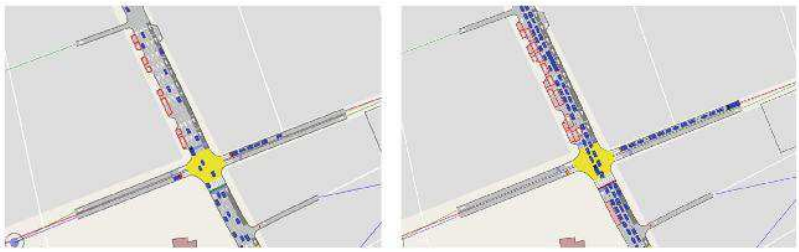

Fig. 2. Traffic conditions on the axis without (left) and with (right) illegal double parking.

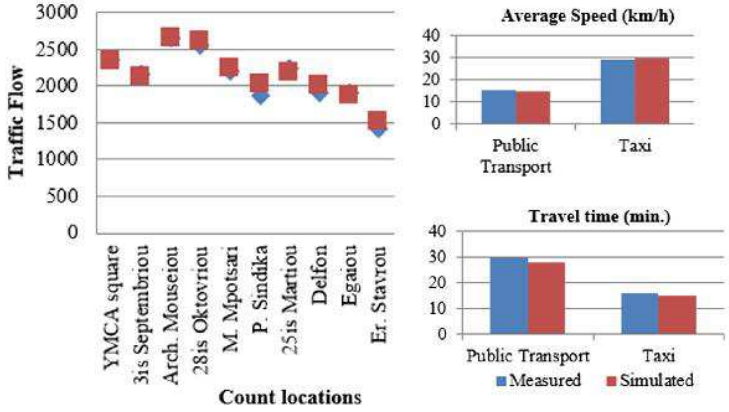

Fig. 3. Comparison of measured-simulated traffic flows (left) and PuT and taxis travel times and average speed (right).

The simulation time was set at 1 h, recording data every 15 min, that is standard time period use according to Roess et al. and 5 replications of each scenario were performed according to the software guidelines (AIMSUN 2017). For the estimation of the environmental/energy indicators, the integrated in AIMSUN software microscopic emission model, (Panis et al. 2006) has been used that relates vehicle emissions with the instantaneous speed and acceleration of the vehicle (Fig. 5).

4 Results

After the calibration and the validation of the traffic model and considering it as reliable, the two scenarios were tested in order to estimate the impacts of illegal double parking on traffic conditions of the axis, as well as the consequences on the environment.

The results of the traffic indicators (Fig. 3) show that all are heavily affected by the phenomenon of illegal double parking. More specifically, average speed of private cars is reduced by about 18 km/h, dropping from 45 to 26 km/h, average speed of taxis by

16 km/h, of public transport buses by 6 km/h, dropping to 15 km/h, and of other commercial vehicles by 14–16 km/h leading to an increase of travel time of about 10 min for private cars and motorbikes, 7 and 10 min for taxis and public transport buses respectively and 10 min for commercial vehicles. Consequently, delay time and stopped time increase for all vehicles.

The effects of illegal double parking are also assessed in terms of fuel consumption and emissions (Fig. 4). The fuel consumption indicator represents the total fuel, in liters, that all vehicles consume during the simulation time. The results show an increase of 50% on fuel consumption with the existence of illegal double parking. Regarding the emissions and more specifically carbon dioxide (CO_2), oxides of nitrogen (NOx), volatile organic compounds (VOC) and particulate matter (PM) a significant increase is also observed in the illegal double parking scenario of about 500–900%, depending on the emission type since the instantaneous speed and acceleration of the vehicle are severely affected (Fig. 5).

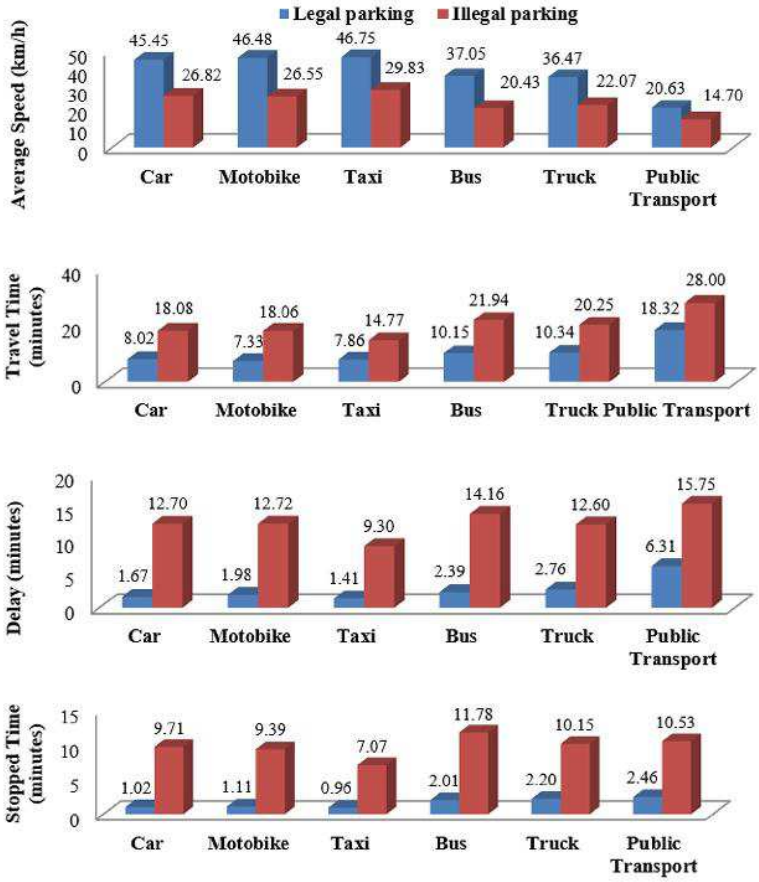

Fig. 4. Results of the case study related to the traffic indicators

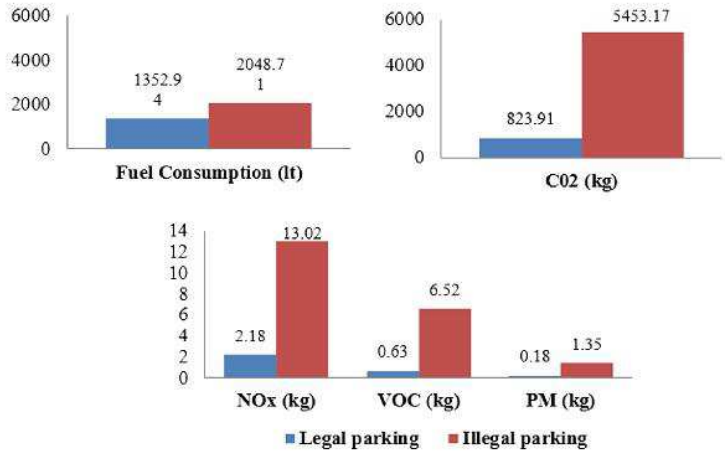

Fig. 5. Results of the case study related to the environmental/energy indicators.

5 Conclusions

The present paper analyzes the important impact of illegal double parking along an urban axis, during peak hour, not only in traffic but also in the environmental conditions. The results indicate a significant decrease of travel speed for all vehicle types using the axis and a resulting increase in travel and delay time resulting in lost productivity time of travelers. The performance of public transport bus lines is affected, with unreliable timetables and increased delay times, resulting in public transport unattractiveness.

The results make apparent that eliminating illegal double parking in the axis would result in tremendous improvement of traffic conditions as well as in the important reduction of fuel/energy consumption and the improvement of quality of the atmosphere along the axis and they quantify the benefits that would arise from a potential limitation. Therefore, the importance of enforcement and measures aimed at reducing and eventually eliminating illegal double parking by the responsible authorities is highlighted, in order to upgrade the quality of life of the areas' residents, employers and travelers.

Acknowledgement. The present work has been implemented in the framework of the co-financed by the European Regional Development Fund project REMEDIO «Regenerating mixed – use MED urban communities congested by traffic through innovative low carbon solutions» of the Interreg MED programme.

References

AIMSUN Version 8.2 User's Manual, TSS-Transport Simulation Systems (2017)

Aifadopoulou, G., Morfoulaki, M., Kotoula, K.M.: Deliverable D5: Implementation Study of Thessaloniki's Controlled Parking System, in the framework of "Technical consulting services to the Municipality of Thessaloniki for the preparation of Technical Specifications for the suggested parking control system", February 2013

Galatioto, F., Bell, M.C.: Simulation of illegal double parking: quantifying the traffic and pollutant impacts. In: 4th International SIIV Congress, Palermo, Italy (2007)
Gao, J., Ozbay, K.: Modeling double parking impacts on urban street. In: 95th Annual Meeting of the Transportation Research Board (TRB), Washington, D.C., USA (2016)
Kladeftiras, M., Antoniou, C.: Simulation-based assessment of double-parking impacts on traffic and environmental conditions. Transp. Res. Rec. J. Transp. Res. Board **2390**, 121–130 (2013)
Lu, B., Viegas, J.: The analysis of the influence of the double parking vehicles to the central traffic flow. In: International Conference on Transportation Engineering (ICTE), pp. 3121–3126 (2007)
Mitsakis, E., Stamos, I., Salanova, J.M., Chrysochoou, E., Iordanopoulos, P., Aifadopoulou, G.: Urban mobility indicators for Thessaloniki. JTLE **1**, 148–152 (2013)
Panis, L.I., Broekx, S., Liu, R.: Modelling instantaneous traffic emission and the influence of traffic speed limits. Sci. Total Environ. **371**, 270–285 (2006)
Roess, R.P., Prassas, E.S., McShane, W.R.: Traffic Engineering, 4th edn. Pearson, Upper saddle River (2010)
Stamos, I., Salanova, J.M., Mitsakis, E., Aifadopoulou, G.: Large scale dynamic traffic assignment model for real-time traveler information services. In: ITS 2011, Patras, Greece (2011)

3.16. A16 – COMECAP2018 1 – Poster

Integrated Modelling Tool
Congested Roads

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1. Research aim

The REMEDIO project, co-funded by the Interreg Med Programme, develop an **Integrated Modelling Tool (IMT)** to analyse the curren situation and possible soft actions to reduce congestion for a trans low-carbon mobility. The IMT is composed by 8 individual modul cover the main impacts of traffic on the city and its inhabitants, **energy efficiency, noise, atmospheric pollutant emissions and footprint, air pollution dispersion, freight streamlining, cos health impacts**.

2. IMT modelling

User can simulate with each one of the IMT individual modules th effects caused by traffic in congested-road from **a common pla**

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Integrated modelling tool for the analysis of traffic-congested roads in urban centers.

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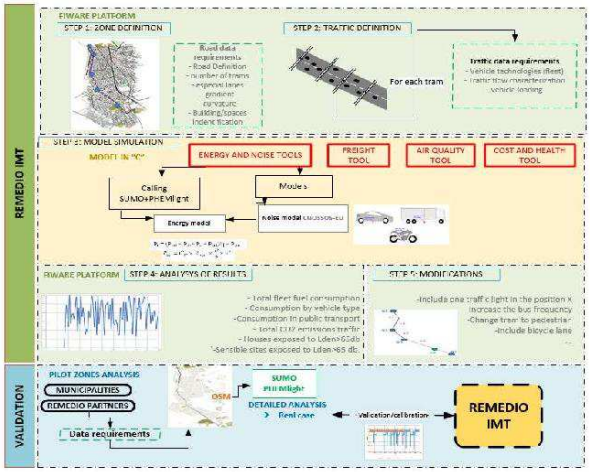
Abstract Traffic-congested roads are one of the main problems in cities due to their influence on air pollution, greenhouse effect and health. The REMEDIO project, co-founded by the Interreg Med Programme, aims to develop an Integrated Modelling Tool (IMT) to analyze the current situation and possible mobility soft actions for a transition to a low-carbon scenario. This tool is implemented through FIWARE platform that allows users to calculate by several modules the traffic effects on emissions, fuel consumption, noise, air pollutant concentrations, health effects and costs from the information of the simulation area. The first steps are the introduction by the user of necessary inputs to define the zone (road definition, special lanes, traffic lights) and traffic data (vehicle technologies, flows). Traffic calculations within the tool are made from the open-source software SUMO, modules are programmed in Python. Within IMT, SUMO is linked with the models 'Passenger Car and Heavy-Duty Emission Model (Light)' (PHEMlight), 'Pollutant dispersion in the atmosphere under variable wind conditions' (VADIS) and a noise module based on the EU 'Common Noise Assessment Methods' methodology (CNOSSOS-EU). After simulation and analysis of results, users can simulate the implementation of soft actions to compare different solutions to reduce the traffic effects.

1 Introduction

A novel Integrated Modelling Tool (IMT) has been developed as a tool for mobility decision making within the REMEDIO project (REgenerating mixed-use MED urban communities congested by traffic through Innovative low carbon mobility sOlutions), co-founded by the Interreg Med Programme. The IMT is composed by 8 individual modules that cover the main impacts of traffic on the city and its inhabitants, namely, energy efficiency, noise, atmospheric pollution emission and carbon footprint, air pollution dispersion, freight streamlining, cost and health impact.

As result, user can simulate the main effects (each one of the individual modules) caused by traffic in congested-road from a common platform, which is developed to facilitate the user interaction with the core models within a step by step process. Fig.

lemented within FIWARE platform that allows users (i.e. technician responsible for traffic management from a certain city), to calculate by means of several modules the traffic effects on emissions, fuel consumption, noise, air pollutant concentrations, health effects and costs from the information of the area to simulate.



efinition. A complete zone definition requires data about road length, number of edges and lanes, coordinates of traffic lights, stop signals and pedestrian crossing, specification of special lanes (i.e. bus lanes, bike lanes), slope, road surface material. In the step 2, vehicles technologies and traffic flows are introduced by the user.

Traffic calculations within the IMT are carried out using the open-source software SUMO (Simulation of Urban MObility). SUMO is developed in C++; it uses only portable libraries; it allows microscopic and multimodal traffic simulation and no artificial limitations in network size and number of simulated vehicles. A more detailed explanation of traffic simulation by using SUMO is showed in the following section.

After traffic calculations, the platform has the inputs needed for run each one of the IMT modules. Each individual module is programmed within the REMEDIO project by using open-source software (i.e. Python). For the pollutant emissions concentrations estimation, specific models are used as: i) the emission model 'Passenger Car and Heavy Duty Emission Model (Light)' (PHEMLight) and ii) the model 'Pollutant dispersion in the atmosphere under variable wind conditions' (VADIS) (coupling a boundary layer flow module with a Lagrangian dispersion module).

After simulation, results of each module are presented as graphics, figure or tables and the users can simulate a new situation by implementing soft actions to compare different solutions to reduce the impact of traffic effects.

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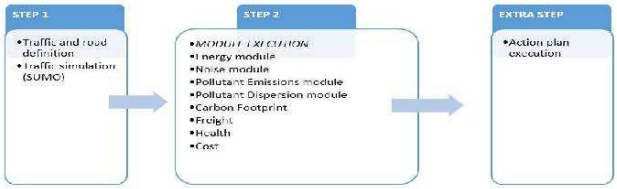
2 IMT Platform

The Integrating Modelling Tool (IMT) is a platform designed to integrate a traffic simulator and a set of executable modules that provide the possibility of analysing the impact of traffic on the population.

The IMT has been developed as a web application based on an architectural pattern known as Model-View-Controller (MVC). This kind of architectural pattern divides an application into three interconnected parts: Model, View and Controller. The components of MVC framework and the programming languages used for their development are presented below:

- Model: Contain a representation of data managed by the system. Implementing the logic for the application's data domain. Often model objects retrieve and store model state in database. Responsible for managing the data of the application. To model the data used, it has been employed MongoDB database. MongoDB is part of the new family of NoSQL database systems. Instead of storing data in tables as is done in relational databases, MongoDB stores data structures in JSON-like documents with a dynamic schema (MongoDB uses a specification called BSON), making data integration in certain applications easier and faster.
- Views: Components that display the application's user interface. Responsible for displaying information. It is the user's way of interacting with the platform.
- To manage the view system, it has been employed CSS/ PUG languages. PUG is a JADE evolution, it is simpler than HTML but uses the same labels and tags. To modify the information shown in views, has been employed JavaScript and Ajax.
- Controller: Components that handle user interaction, does the operations over the models to deliver the results of the query to the user. Ultimately select a view to render that displays user interface. Responsible for responding to user input and interaction.

A general schema of these steps is showed below:



The resolution process followed by the IMT involves two main steps: first step involves traffic characterization and simulation, and second step, using outputs from traffic simulation, carries out Modules execution. An extra step, under development, will consist in the execution of an action plan where a series of interesting actions in order to improve traffic congestion and its consequences will be studied.

3 IMT modules

3.1 Energy module

The energy module is an application created by using Python code which takes the traffic results as inputs. The aim of the module is to calculate the fuel consumption and emissions caused by

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traffic. Energy model results have been validated considering literature models for driving cycles calculations.

3.2 Noise module

Noise problems associated to traffic affect an estimated 125 million people in Europe (European Environmental Agency, 2014) causing neurological and psychiatric diseases, hypertension cases, hearing problems and sleep disturbance (Forouhid 2017). Due to this strongly relation it is necessary to characterize the noise associated with road traffic.

The noise module is an application created by using Python code which implements a theoretical model based on previous CE projects (IMAGINE2 and CNOSSOS2). This module calculates the directional sound power per meter per frequency band of the traffic noise determined by the source line, "The road traffic noise".

3.3 Atmospheric pollution emission and carbon footprint module

Atmospheric pollutant emissions and carbon footprint are estimated using a simplified version of the vehicle emission model PHEM (Passenger Car and Heavy Duty Emission Model). This simplified version, named PHEMlight, was developed within the COLOMBO project (Hausberger & Krajzewicz 2014) and it is embedded into SUMO. PHEMlight estimates emissions of NO_x, HC, CO, PM as well as carbon footprint (CO_2) based on vehicle data to be entered for various driving cycles on basis of characteristic emission curves and vehicle longitudinal dynamics.

The main input parameters needed for the emissions computations are emission class, speed, acceleration and slope of the road. The emission class compromises information on the vehicle category and size (passenger cars, light commercial vehicles (including three classes depending on size), heavy duty vehicles (including trucks, trucks and trailer, city buses and coaches)), the technology (diesel, gasoline, hybrid, compressed natural gas, battery electric vehicles) and the emission standard (EU0, EU1 to EU6c).

3.4 Freight streamlining module

The Freight module (FM) simulates the impacts in terms of number and type of vehicles of specific scenarios regarding freight deliveries in the road segment/section to be studied, by maintaining the level of service (m^3 of cargo transported). These specific scenarios can include: change in vehicle type; vehicle downsizing; changes in delivery hours; introducing of alternative technologies; and optimization of load factors. The simulation of freight demand in a specific case study requires a detailed characterization of the current situation, based on statistics, traffic counts or surveys.

3.5 Air pollution dispersion module

The VADIS model was selected to be included in the IMT to simulate the dispersion of pollutants based on the traffic and emissions estimation by the previous modules of the tool. The dispersion module outputs can be visualized in the IMT for air quality assessment and/or to evaluate the impacts of emission reduction scenarios.

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VADIS model, developed at the University of Aveiro, allows the calculation of urban street-canyon air pollution due to road traffic emissions and the estimation of local hot spots, particularly under unfavorable dispersion condition such as thermal stability and low wind speeds (Borrego et al. 2000). This model supports multiple obstacles and source definition and the characterization of time-varying flow fields and emissions.

VADIS structure is based on two modules, FLOW and DISPER. The first module, FLOW, uses the numerical solution of the three-dimensional (3D) Reynolds averaged Navier–Stokes equations and the k-Ɛ turbulence closure to calculate the wind, turbulent viscosity, pressure, turbulence and temperature 3D fields. The second module, DISPER, applies the Lagrangian approach to the computation of the 3D pollutant concentration field using the wind field estimated by FLOW.

3.6 Health module

The goal of Health Module (HM) is to provide information on the number of health events that can occur given a certain level of concentration of several air pollutants. At the time, four air pollutants are considered in HM: $PM_{2.5}$, PM_{10}, NO_2, and O_3. Given to concentration of these four pollutants, HM is now able to estimate the number of health events related to cardiac, respiratory and cerebrovascular diseases in the short-term exposure, i.e., mean exposure in a range of 3 days maximum. Furthermore, HM can also inform the user on the occurrence of lung cancer given the long-term exposure, i.e., the yearly average exposure.

To provide such information to IMT users, additional information on seasonal trends, holidays, temperature and barometric pressure are taken into account, due to the known effects that previously mentioned variables could have on health outcomes.(Michelozzi et al. 2005, Stafoggia et al. 2006) HM embeds all this information using Generalized Additive Models (GAMs), statistical models able to flexibly relate air pollution, temperature, seasonal trends, the barometric pressure to the health events. Using GAMs, HM can provide an estimation of a daily number of health events for all the time simulated by IMT.

3.7 Cost module

An individual cost is associated to each health outcome. Individual cost can be decomposed in two parts: a part related to medical costs and a part related to indirect costs, i.e. all the costs that do not cover health care procedures. The module is able to use default costs stored into it or take a set of customized costs for each health outcome.

At the moment, default costs are available for two type of health outcomes: hospitalizations for cardiac diseases and hospitalizations for respiratory diseases. Costs associated to cardiac hospitalizations are those related to Costs for Coronary Heart Disease (CHD) and stroke, while cost associated to respiratory hospitalizations are those related to Chronic obstructive pulmonary disease (COPD).

Costs for Coronary Heart Disease (CHD) and stroke were derived from the report of the American Heart Association (Khavjou et al., 2016) (which reported data on costs derived from the Medical Expenditure Panel Survey (MEPS) of the U.S. Agency for Healthcare Research and Quality), considering 2015 data. Costs for COPD were derived from the paper of Fen et al (Ford et al. 2015), they were represented only by medical costs and referred to the year 2010. Medical costs of the US were used for developing of the module, users can upload their outcome-specific costs about their interest and the situation simulated under study.

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4 Conclusions

A novel Integrated Modelling Tool (IMT) has been developed as a tool for mobility decision making within the REMEDIO. The IMT is composed by 8 individual modules that cover the main impacts of traffic on the city and its inhabitants, namely, energy efficiency, noise, atmospheric pollution emission, carbon footprint, air pollution dispersion, freight streamlining, cost and health impact. The IMT provides to users (i.e. technician responsible for traffic management) the possibility of analyze the main effects of traffics over congested roads in the current situation, as well as analyzing the effects of applying potential soft-actions to mitigate the road-congestion problems.

Acknowledgment This work has been supported by the Interreg Med Programme under grant agreement No. 862, project REMEDIO, project co-financed by the European Regional Development Fund.

References

Borrego, C., Tchepel, O., Barros, N., Miranda, A.., 2000. Impact of road traffic emissions on air quality of the Lisbon region. Atmospheric Environment 34, 4683–4690. https://doi.org/10.1016/S1352-2310(00)00301-0

European Environmental Agency, 2014. Noise in Europe 2014. https://doi.org/10.2800/763331

Ford, E.S., Murphy, L.B., Khavjou, O., Giles, W.H., Holt, J.B., Croft, J.B., 2015. Total and state-specific medical and absenteeism costs of COPD among adults aged ≥ 18 years in the United States for 2010 and projections through 2020. Chest 147, 31–45. https://doi.org/10.1378/chest.14-0972

Forouhid, A.E., 2017. Noise emissions from highway with the use of measuring and modeling. Vibroengineering PROCEDIA 15, 94–99. https://doi.org/10.21595/vp.2017.18313

Khavjou, O., Phelps, D., Leib, A., n.d. Projections of cardiovascular disease prevalence and costs: 2015–2035.

Michelozzi, P., de Donato, F., Bisanti, L., Russo, A., Cadum, E., DeMaria, M., D'Ovidio, M., Costa, G., Perucci, C.A., 2005. The impact of the summer 2003 heat waves on mortality in four Italian cities. Euro Surveillance: Bulletin Europeen Sur Les Maladies Transmissibles = European Communicable Disease Bulletin 10, 161–165.

Stafoggia, M., Forastiere, F., Agostini, D., Biggeri, A., Bisanti, L., Cadum, E., Caranci, N., de' Donato, F., De Lisio, S., De Maria, M., Michelozzi, P., Miglio, R., Pandolfi, P., Picciotto, S., Rognoni, M., Russo, A., Scarnato, C., Perucci, C.A., 2006. Vulnerability to heat-related mortality: a multicity, population-based, case-crossover analysis. Epidemiology (Cambridge, Mass.) 17, 315–323. https://doi.org/10.1097/01.ede.0000208477.36665.34

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Interreg Mediterranean REMEDIO

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Environmental assessment of low carbon mobility solutions with the use of an Integrated Modeling Tool

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INTRODUCTION

A **novel Integrated Modelling Tool** has been developed composed of individual modules that assess the main impacts of traffic on **pollutant emissions, air pollution dispersion, carbon footprint, energy efficiency, noise, cost and health effects**.

The aim of this study is the use of the Integrated Modeling Tool to assess the impact on the atmospheric environment of the redesign of a main road axis of Thessaloniki with the objective to promote sustainable modes of transport and to upgrade the bus transport along it. The assessment focuses on possible **environmental benefits** including **reductions in traffic-related pollutants' emissions and carbon footprint** in addition to **improvements in energy efficiency** between the **present-time traffic conditions scenario** and **future scenarios**, when the mobility solution (i.e. redesign of the road axis) will be implemented.

ROAD AXIS MAIN CHARACTERISTICS

- Road axis **connecting the city entrance from the airport with the city center** (Figure 1),
- Road axis **crossing through the compact mixed-use inner part of the city** including areas with important commercial activity and dense residential ones.

ROAD AXIS REDESIGN ACTIONS FOR SUSTAINABLE URBAN MOBILITY

- **Reduction of traffic lanes from 3 to 2,**
- **Upgrade of the existing on the right-hand side of the road bus lane to a 2nd generation separated bus lane,**
- **Construction of a Bicycle Lane on the road left-hand side** (Figure 2)

MODELLING SYSTEM APPLICATION

The **Integrated Modeling Tool** (Figure 3) is linking the :

- Traffic model **'Simulation of Urban Mobility' (SUMO)**,
- Emission model **'Passenger Car and Heavy Duty Emission Model (Light)' (PHEMLight)**,
- **'Pollutant dispersion in the atmosphere under variable wind conditions' (VADIS)** model (coupling a **boundary layer flow module** with a **Lagrangian dispersion module**),
- **Noise module** based on the EU **'Common Noise Assessment Methods' methodology (CNOSSOS-EU)**,
- **Health and Cost modules** based on **statistical modeling.**

Simulation Period: 19 September 2017 on hourly basis.

Main Input Data: a) **Measurements of traffic volume** at different sites along the axis (passenger cars, light commercial vehicles, heavy duty trucks, buses, motorcycles) (Figure 4), b) **Vehicle categorization** according to **technology** (gasoline, diesel etc) and **emission standard** (EURO 0 to EURO 6), c) **Network characteristics** (links, nodes, traffic lights, signs, pedestrian crossings, road slope etc), d) **meteorological and air quality data** and e) **health data** (hospitalizations and deaths).

3 Scenarios for Traffic Conditions:

1st : Present-time traffic conditions (Base Case scenario (BC)) (example emission map in Figure 5),
2nd : Reduction of number of passenger cars and motorcycles by -10% (Scenario-10 (SCN10)),
3rd : Reduction of number of passenger cars and motorcycles by -20% with increase by a factor of 2 of bus circulation frequency (Scenario-20 (SCN20)).

RESULTS - CONCLUSIONS

Base Case Scenario (BC) (24hours analysis)

- **Traffic load** along the axis is configured by the **major contribution of passenger cars** (about 80%) and that of motorcycles (15%) (Figure 6).
- The diurnal variation of pollutant emissions and carbon footprint (CO_2 emissions) is configured by the diurnal pattern of the traffic load. The **emission values** are **maximum the hours 7:00 am to 10:00 am. Increased amounts of pollutants**, presenting small hourly variability, are emitted **from 10:00 am until 9:00 pm** (Figure 7). Similar is the diurnal pattern for the fuel consumption (not shown here).
- CO_2 emissions are the highest. NOx emissions are higher than those of HC and PM mostly during daytime (Figure 7).
- **NOx, PM and HC are emitted mostly by the passenger cars**. The **second** most polluting **emission source for PM and HC** is the **Motorcycles** while **for NOx are the Buses**. **Passenger cars** are the **major CO_2 emission source** (Figure 8).

Scenario-10 (SCN10) (Analysis for the traffic peak hour: 8 am – 9 am)

- Decrease of passenger cars pollutant emissions by about -18%, carbon footprint by about -15% and fuel consumption (Table 1).
- Decrease of motorcycles pollutant and CO_2 emissions ranging between -7% and -12% and fuel consumption (Table 1).
- **Reduction of all vehicle types pollutant emissions up to about -15%** (Figure 9).
- **Reduction of fuel consumption by about -15 %** (Figure 9).
- **The average vehicle speed is increased by +2.5% resulting in reduction of travel time by -8%** (Figure 9).

Scenario-20 (SCN20) (Analysis for the traffic peak hour: 8 am – 9 am)

- Important reductions of passenger cars and motorcycles pollutant emissions, CO_2 emissions and fuel consumption being 1.5 to 3 times higher than those for SCN10 (Table 1).
- Buses pollutant emissions, CO_2 emissions and fuel consumption are almost doubled with respect to BC scenario (Table 1).
- **More pronounced reductions in fuel consumption and in CO_2 and HC emissions** with respect to SCN10 except for PM emissions (Figure 9).
- **NOx emissions are higher than those of the BC scenario** (Figure 9).
- **Small further increase in average vehicle speed and decrease in travel time with respect to SCN10** (Figure 9).

The reduced use of private cars in SCN20, being 2 times more than that of SCM10, would result in more clear benefits for the atmospheric environment in the case of enhancement of the local public transportation with the use of clean vehicles in the city buses fleet.

Figure 1. Thessaloniki road axis for modelling simulations.

Figure 2. Redesign of the road axis.

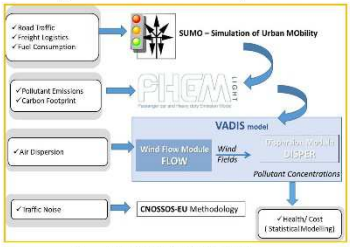

Figure 3. Integrated Modeling Tool.

Figure 4. Monitoring sites of traffic volume the period 18 to 22 September 2017.

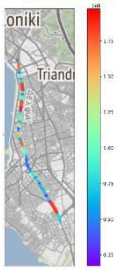

Figure 5. Map of CO_2 emissions (mg/hour) at traffic peak hour.

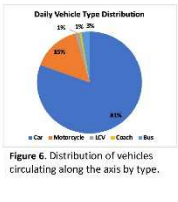

Figure 6. Distribution of vehicles circulating along the axis by type.

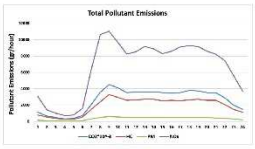

Figure 7. Diurnal variation of pollutant emissions and carbon footprint.

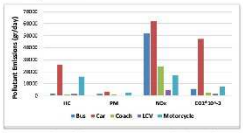

Figure 8. Daily pollutant emissions and carbon footprint per vehicle type.

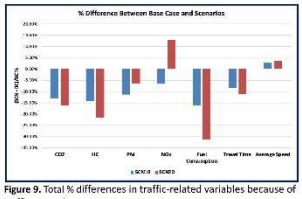

Figure 9. Total % differences in traffic-related variables because of traffic scenarios.

Table 1. % Differences* in pollutant emissions, carbon footprint and fuel consumption per vehicle type because of traffic scenarios.

	Scenario-10 (SCN10)					Scenario-20 (SCN20)				
	CO_2	HC	PM	NOx	Fuel Consumption	CO_2	HC	PM	NOx	Fuel Consumption
Car	-15.40%	-19.48%	-18.14%	-17.46%	-16.85%	-27.17%	-30.01%	-30.68%	-27.33%	-34.30%
Motorcycle	-11.71%	-7.20%	-11.58%	-6.74%	-11.20%	-22.77%	-20.62%	-23.77%	-18.36%	-22.70%
Bus	+0.38%	-2.87%	-3.42%	+2.83%	+0.39%	+92.91%	+88.20%	+96.44%	+96.16%	+92.92%

* % Difference = $\frac{(SCN - BC)}{BC}$ %

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References

1) Konrego, E., Tchepel, O., Barros, N., Miranda, A.I., 2000. Impact of road traffic emissions on air quality of the Lisbon region. Atmospheric Environment 34, 4683–4690.
2) Kephalopoulos, S., Paviotti, M., Anfosso-Lédée, F., 2012. Common Noise Assessment Methods in Europe (CNOSSOS-EU). https://doi.org/10.2788/31776.
3) PHEMLight User Guide Version 1. Passenger Car and Heavy Duty emission model. Technische Universität Graz. Erzherzog-Johann-Universität-INSTITUT FÜR VERBRENNUNGSKRAFT MASCHINEN UND THERMODYNAMIK.
4) SUMO website: http://sumo.dlr.de/wiki/SUMO_User_Documentation

3.19. A19 – COMECAP2018 2 – Abstract

Environmental assessment of low carbon mobility solutions with the use of an Integrated Modeling Tool

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Abstract The reduced environmental impact of the urban transport is a current scientific and policy challenge, considering that over 80% of EU population is expected to inhabit urban areas by 2050 resulting in an increased transport demand to put a tremendous pressure on the urban atmospheric environment. The use of low carbon mobility solutions can contribute to environmental sustainability. The aim of this study, performed within the EU project REMEDIO, is the assessment of the impact on the atmospheric environment of the redesign of a main road axis of Thessaloniki, which crosses through the compact mixed-use inner part of the city connecting its entrance from the airport with the city center, with the objective to promote sustainable modes of transport and upgrade bus transport along it. The study involves the application in local scale of an Integrated Modeling Tool linking the traffic model 'Simulation of Urban Mobility' (SUMO), the emission model 'Passenger Car and Heavy Duty Emission Model (Light)' (PHEMLight), the model 'Pollutant dispersion in the atmosphere under variable wind conditions' (VADIS) (coupling a boundary layer flow module with a Lagrangian dispersion module) and a noise module based on the EU 'Common Noise Assessment Methods' methodology (CNOSSOS-EU). The assessment focuses on possible environmental benefits including reductions in traffic-related pollutants' emissions/concentrations, carbon footprint and noise in addition to improvements in energy efficiency between the present-time traffic conditions scenario and that for the future, when the mobility solution will be implemented.

3.20. A20 – Ciência 2018 – Poster

universidade de aveiro cesam centro de estudos do ambiente e do mar

Organic and elemental carbon in atmospheric particles sampled at a traffic site located in Portugal

Estela Vicente[1],
Nuno Canha[1,2], **Marina Almeida-Silva**[2,3], **Tiago Faria**[2], **Joana Lage**[2], **Célia Alves**[1], **Susana Marta Almeida**[2]

[1] Department of Environment and Planning & CESAM, University of Aveiro
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[3] H&TRC - Health & Technology Research Center, ESTeSL - Escola Superior de Tecnologia da Saúde, Instituto Politécnico de Lisboa

Abstract

Air quality in urban environments is directly connected to structural street aspects and operational traffic variables, justifying the need for local assessments for adequate characterisation and definition of possible improvements. Street canyons are a typical example of it.
This study, within the framework of REMEDIO project, aimed to characterise the organic and elemental carbon in atmospheric particles sampled at a traffic site located in Mosqavide (Loures), Portugal.
PM_{10} was sampled for one month in autumn 2016 and PM_{10} mass concentration, organic and elemental carbon content were assessed.
21% of the samples were found to be above the PM_{10} daily limit value of 50 μg.m^{-3}, corresponding to 9 out of 43 sampling periods. All the sampling periods above the limit value occurred during weekdays, 78% of which during daytime (from 7AM to 9PM)
Higher ratios of EC/OC were found during weekdays showing the impact of traffic on PM_{10}.

Introduction

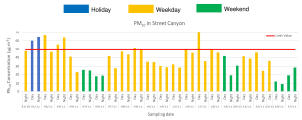
HEMEDIO project (Hegenerating mixed-use MED urban communities congested by traffic through Innovative low carbon mobility of the Interreg MED program and co-financed by the ERDF) aims to strengthen cities' capacity to use low carbon transport solutions and include them in their mobility plans, testing existing mobility solutions through an assessment tool and participatory governance schemes.

Within this project, the main avenue of Mosqavide a street canyon in the municipality of Loures (Portugal) - was used as case study where air quality assessment was conducted before and after a structural intervention to improve its mobility plan. This intervention comprised the inclusion of bike parking areas, a cycling track, green areas and street furniture, enlargement of sidewalks, and velocity limitation to 30 km/h, with the reduction from two to a single traffic lane.

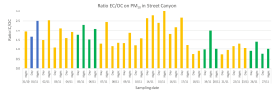
The main aim was to understand which was the impact of the chosen mobility solutions on the air quality of the area. One of the studied parameters was the carbonaceous content of the atmospheric particles (PM_{10}): organic (OC) and elemental carbon (EC). This work presents the results for the phase before the intervention at the chosen street canyon.

Results

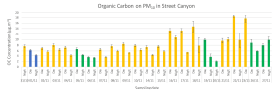
- 21% of the sampling periods showed PM_{10} values above the limit value of 50 μg.m^{-3}, all of them during weekdays



- Highest mean PM_{10} concentration during the day period on weekdays (40.0 ±11.6 μg.m^{-3})



- Higher ratios of EC/OC during weekdays showing the impact of traffic on PM_{10}

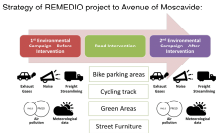


- Mean OC concentrations of 10.3 ±4.1 μg.m^{-3} and mean EC concentrations of 8.3 ± 5.4 μg.m^{-3}

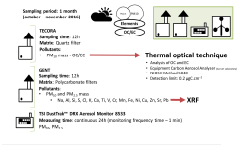
Methodology

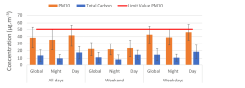
- Study site:
  - Avenue of Moscavide (Loures, Portugal)

- Strategy of REMEDIO project to Avenue of Moscavide:



- Experimental set-up for PM_{10} sampling and OC/EC analysis:





Conclusions

- PM_{10} levels above the limit value in some cases
- High EC/OC ratios suggest a PM_{10} origin in traffic
- During the sampling period, total carbon PM_{10} mass fractions ranged from 28% (night period) to 42% (day period)

Acknowledgments

This work was supported by the European Regional Development Fund (ERDF) through the Interreg Med project REMEDIO (Ref. 862). E.V. acknowledges the PhD grant SFRH/BD/117993/2016 and N.C. his Postdoc grant SFRH/BPD/102944/2014, both from the Foundation of Science and Technology (FCT, Portugal). The FCT support is also gratefully acknowledged by C²TN/IST authors (through the UID/Multi/04349/2013 project). Thanks are due for the financial support to CESAM (UID/AMB/50017-POCI-01-0145-FEDER 007638), to FCT/MEC through national funds, and the co funding by the FEDER, within the PT2020 Partnership Agreement and Compete 2020. All the authors kindly acknowledge the Municipality of Loures for the permission to park the container in the Avenue during more than a month.

Project co-financed by the European Regional Development Fund

3.21. A21 – ICCPA2019 – Abstract

12th International Conference on Carbonaceous Particles in the Atmosphere
03.-06.04.2019, Vienna - Austria

P2-1 Studies of carbonaceous particles at a traffic site - Moscavide/Lisbon, Portugal

Joana Coutinho[1], Nuno Canha[1], Marina Almeida-Silva[1], Catarina Galinha[1], Joana Lage[1], Tiago Faria[1], Vânia Martins[1], Célia Alves[2], Casimiro Pio[2], Teresa Nunes[2], Martin Rigler[3], Griša Mocnik[4], Marta Almeida[1]

[1]*C2TN, Instituto Superior Técnico, Bobadela, Portugal*
[2]*CESAM - Centre for Environmental and Marine Studies, Aveiro, Portugal*
[3]*Aerosol d.o.o., Ljubljana, Slovenia*
[4]*Jozef Stefan Institute, Ljubljana, Slovenia*

Particulate matter (PM) is a complex mixture of extremely small particles and liquid droplets emitted by different sources and produced in the atmosphere. It is very spatially and temporally heterogeneous and many sources contribute to PM and their gaseous precursors. One of the most important fractions is carbonaceous matter, which includes a refractive primary component - black carbon (BC).

BC is emitted during the incomplete combustion of fossil fuels, biofuels, and biomass burning and absorbs at all wavelengths of solar radiation. Together with methane and tropospheric ozone, BC is one of the most important contributor to current global warming after carbon dioxide. BC and co-pollutants are currently considered a major environmental cause of respiratory and cardiovascular diseases, with a global estimation of more than 7 million premature deaths annually from exposure to indoor and outdoor polluted air. Thus, it is of main importance to determine the chemical composition of submicron aerosol at high time resolution, providing the necessary information for accurate source apportionment.

With the purpose of characterising ambient aerosols and their time evolution and to assess the contribution of the main emission sources and processes leading to aerosol formation in the atmosphere a campaign was conducted in the urban centre of Moscavide (North of Lisbon, Portugal). A traffic air quality monitoring station was located close to one-way street with a total length of 1.2 km. Particulate matter was sampled and on-line BC measurements (Aethalometer AE33) and total carbon (TC, measured by TCA08) were performed simultaneously. The sampled filters were analysed by gravimetry, by XRF, for the determination of element concentrations, and by thermo-optical analysis, for the measurement of organic and elemental carbon.

We present highly time resolved measurements, perform source apportionment and investigate local and regional pollution events. Separation of contributions to BC from different combustion sources is based on the dependence of absorption on the wavelength, while the measurement of TC allows the determination of equivalent OC, that is the difference between TC and EC (inferred from BC), at high time resolution. The combination of the data generated by the on-line equipments was combined with data from the chemical analysis of filters (OC/EC and elements), obtaining for the first time the parameters for the thermal protocol applied in the University of Aveiro. Additionally, data from chemical characterisation of particles is used to support the source apportionment.

Acknowledgements

The authors wish to thank Life Program - Life Index Air project, Interreg Med – REMEDIO project, Cost Action - CA16109 COLOSSAL.

3.22. A22 – ICCPA2019 – Poster

Studies of carbonaceous particles at a traffic site @ Moscavide, Portugal

Joana T. Coutinho[1], Nuno Canha[1], Marina Almeida-Silva[1], Catarina Galinha[1], Joana Lage[1], Tiago Faria[1], Vânia Martins[1], Célia Alves[2], Casimiro Pio[2], Teresa Nunes[2], Martin Rigler[3], Griša Močnik[3,4], Susana Marta Almeida[1]

[1] CTN - Centro de Ciências e Tecnologias Nucleares, Instituto Superior Técnico, Universidade de Lisboa, EN 10 ao km 139.7, 2695-066, Bobadela, Portugal
[2] Department of Environment and Planning & CESAM, University of Aveiro
[3] Aerosol d.o.o., Kamniška ulica 39a, 1000, Ljubljana, Slovenia
[4] Jozef Stefan Institute, Jamova cesta 39, 1000, Ljubljana, Slovenia

e-mail: coutinho.joana@ctn.tecnico.ulisboa.pt

Abstract

With the purpose of characterising ambient aerosols and their time evolution and to assess the contribution of the main emission sources and processes leading to aerosol formation in the atmosphere a campaign was conducted in the urban centre of Moscavide (North of Lisbon, Portugal). A traffic air quality monitoring station was located close to one-way street with a total length of 1.2 km. Particulate matter was sampled and on-line BC measurements (Aethalometer AE33) and total carbon (TC, measured by TCA08) were performed simultaneously. The sampled filters were analysed by gravimetry, by XRF, for the determination of element concentrations, and by thermo-optical analysis, for the measurement of organic and elemental carbon.

We present highly time resolved measurements, perform source apportionment and investigate local and regional pollution events. Separation of contributions to BC from different combustion sources is based on the dependence of absorption on the wavelength, while the measurement of TC allows the determination of equivalent OC, that is the difference between TC and EC (inferred from BC), at high time resolution. The combination of the data generated by the on-line equipments was combined with data from the chemical analysis of filters (OC/EC and elements), obtaining for the first time the parameters for the thermal protocol applied in the University of Aveiro. Additionally, data from chemical characterisation of particles is used to support the source apportionment.

Introduction

Particulate matter (PM) is a complex mixture of extremely small particles and liquid droplets emitted by different sources and produced in the atmosphere. It is very spatially and temporally heterogeneous and many sources contribute to PM and their gaseous precursors. One of the most important fractions is carbonaceous matter, which includes a refractive primary component - black carbon (BC).

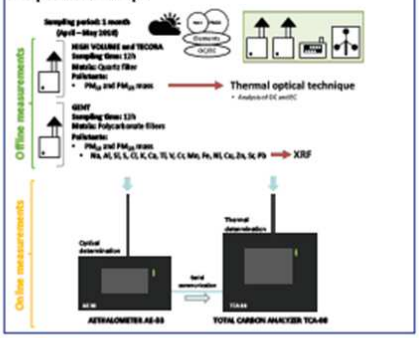
BC is emitted during the incomplete combustion of fossil fuels, biofuels, and biomass burning and absorbs at all wavelengths of solar radiation. Together with methane and tropospheric ozone, BC is one of the most important contributor to current global warming after carbon dioxide. BC and co-pollutants are currently considered a major environmental cause of respiratory and cardiovascular diseases, with a global estimation of more than 7 million premature deaths annually from exposure to indoor and outdoor polluted air. Thus, it is of main importance to determine the chemical composition of submicron aerosol at high time resolution, providing the necessary information for accurate source apportionment.

Methodology

- **Study site:**
  - Avenue of Moscavide (Loures, Portugal) → urban-traffic background

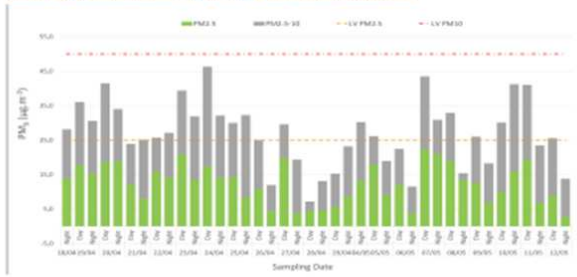
Lisbon

- **Experimental set-up:**



Results and Discussion

- **No sampling periods showed PM_{10} or $PM_{2.5}$ values above the limit value**



- Highest mean PM_{10} and $PM_{2.5}$ concentration during the day period on weekdays (35.1 ± 7.2 $\mu g.m^{-3}$ and 16.9 ± 4.1 $\mu g.m^{-3}$, respectively)

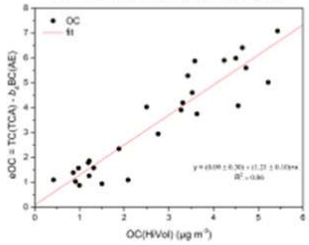
- **TC-BC method**

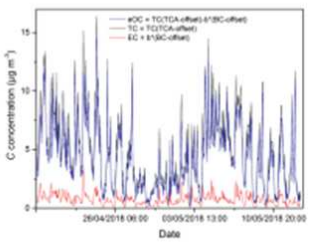
This method combines two different highly time resolved measurements to determine organic carbon (OC) fraction with **high time resolution:**

- Optical measurement of BC with Aethalometer AE-33
- Thermal measurement of TC with newly developed TCA-08

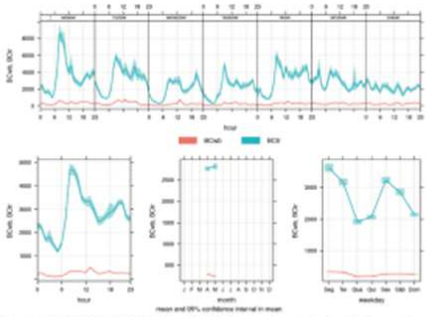
$$OC = TC - b_A \cdot BC$$

- b_A.BC is equivalent to elemental carbon (EC), and the determined proportionality parameter b_A is region/site specific but also depends to a large extent on a thermal protocol used to determine the EC fraction with the conventional OC/EC method.





- **Aethalometer model**
  - BC source apportionment – dominated by traffic while wood burning contribution was negligible as expected (T_{ave} 30°C);
  - Absorption Ångström exponent (AAE) values chosen were of 1.0 for traffic (α_{TR}) and 2.0 for wood burning (α_{WB}).



Acknowledgments

This work was supported by the European Regional Development Fund (ERDF) through the Interreg Med project REMEDIO (Ref. 862). Additionally, JTC wishes to acknowledge the Life Program through the Life Index Air project and the Cost Action - CA16109 COLOSSAL. The FCT support is gratefully acknowledged by C²TN/IST authors (through the UID/Multi/04349/2013 project). All the authors kindly acknowledge the Municipality of Loures for the permission to park the container in the Avenue during more than a month.

Project co-financed by the European Regional Development Fund

3.23. A23 – RICTA2019 – Poster

Source Apportionment of Carbonaceous Aerosols with High Time Resolution

Joana T. Coutinho[1], M. Almeida-Silva[1], C. Galinha[1], N. Canha[1], A. Alaustey[2], M. Rigler[3], G. Močnik[4], S. Marta Almeida[1]

[1] C²TN - Centro de Ciências e Tecnologias Nucleares, Instituto Superior Técnico, Universidade de Lisboa, EN 10 ao km 139.7, 2695-066, Bobadela, Portugal
[2] IDÆA, Spanish National Research Council, C. Jordi Girona 18-26, 08034, Barcelona, Spain
[3] Aerosol d.o.o., Kamniška ulica 39a, 1000, Ljubljana, Slovenia
[4] Jozef Stefan Institute, Jamova cesta 39, 1000, Ljubljana, Slovenia

e-mail: coutinho.joana@ctn.tecnico.ulisboa.pt

Abstract

With the purpose of characterising ambient aerosols and their time evolution and to assess the contribution of the main emission sources and processes leading to aerosol formation in the atmosphere a campaign was conducted in the urban centre of Moscavide (North of Lisbon, Portugal). A traffic air quality monitoring station was located close to one-way street with a total length of 1.2 km. Particulate matter (PM) was sampled and on-line black carbon (BC) (Aethalometer AE33) and total carbon (TC, measured by TCA08) measurements were performed simultaneously.

Separation of contributions to BC from different combustion sources is based on the dependence of absorption on the wavelength (*Aethalometer model*), while the measurement of TC allows the determination of equivalent OC, that is the difference between TC and EC (inferred from BC), at high time resolution (*TC-BC method*).

Introduction

Chemical composition of aerosols is characterised by a large spatio-temporal heterogeneity, being carbonaceous aerosols the major components of the submicron fraction of atmospheric PM. They are emitted by different sources that exert a negative impact on human health, and also affect the climate and the environment. The components of carbonaceous PM (TC) are organic carbon (OC), elemental carbon (EC) and inorganic carbon (IC). When EC is measured using optical methods relying on its strongly light absorbing character it is called BC, which is emitted during the incomplete combustion of fossil fuels, biofuels, and biomass burning and absorbs at all wavelengths of solar radiation.

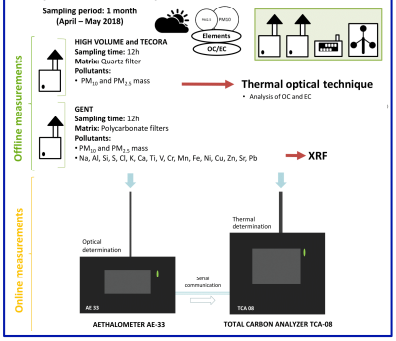
Thus, it is of main importance to determine the chemical composition of fine aerosols at high time resolution, providing the necessary information for accurate source apportionment.

Methodology

- **Study site:**

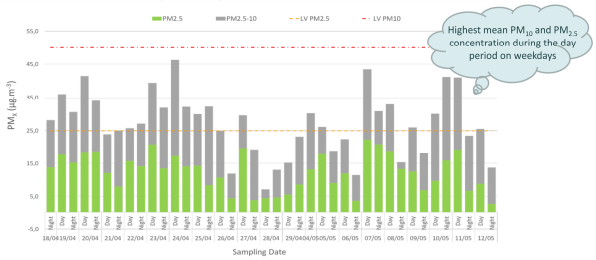
Av. Moscavide (Loures, PT) → urban-traffic background

- **Experimental set-up:**



Results and Discussion

- **No sampling periods showed PM_{10} or $PM_{2.5}$ values above the limit value**



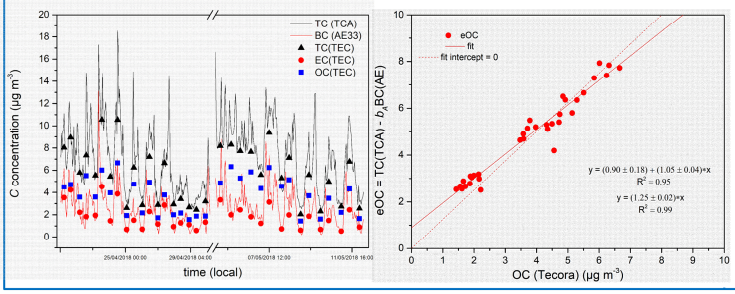
- **TC-BC method**

This method combines two different highly time resolved measurements to determine the OC fraction with **high time resolution**:

- Optical measurement of BC with Aethalometer AE-33
- Thermal measurement of TC with newly developed TCA-08

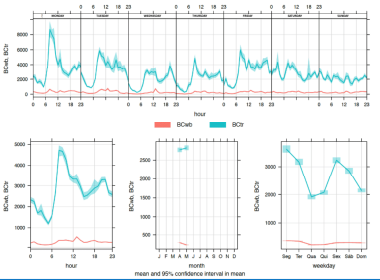
$$eOC = TC - b_A \cdot BC$$

- b_A·BC is equivalent to EC, and the determined proportionality parameter b_A is region/site specific but also depends to a large extent on the thermal protocol (EUSAAR2) used to determine the EC fraction with the conventional OC/EC method.



- **Aethalometer model**

- BC source apportionment: dominated by traffic (T_{aver} ~ 30ºC);
- Absorption Ångström Exponent (AAE) values: 1.0 for traffic (BCtr) and 2.0 for wood burning (BCwb).



Acknowledgments

This work was supported by the European Regional Development Fund (ERDF) through the Interreg Med project REMEDIO (Ref. 862). Additionally, JTC wishes to acknowledge the Life Program through the Life Index Air project and the Cost Action - CA16109 COLOSSAL. The FCT support is gratefully acknowledged by C²TN/IST authors (through the UID/Multi/04349/2013 project). All the authors kindly acknowledge the Municipality of Loures for the permission to park the container in the Avenue during more than a month.

Project co-financed by the European Regional Development Fund

3.24. A24 – EAC2019 – Poster 1

Source Apportionment of Carbonaceous Aerosols with High Time Resolution

Joana T. Coutinho[1], Marina Almeida-Silva[1], Catarina Galinha[1,2], Nuno Canha[1,2], Célia Alves[2], Teresa Nunes[2], Casimiro Pio[2], Marco Pandolfi[3], Andrés Alaustey[3], Martin Rigler[4], Griša Močnik[5], Susana Marta Almeida[1]

[1] C²TN - Centro de Ciências e Tecnologias Nucleares, Instituto Superior Técnico, Universidade de Lisboa, EN 10 ao km 139.7, 2695-066, Bobadela, Portugal; [2] CESAM, Universidade de Aveiro, Campus Universitário de Santiago, 3810-193, Aveiro, Portugal; [3] IDÆA, Spanish National Research Council, C. Jordi Girona 18-26, 08034, Barcelona, Spain; [4] Aerosol d.o.o., Kamniška ulica 39a, 1000, Ljubljana, Slovenia; [5] Jozef Stefan Institute, Jamova cesta 39, 1000, Ljubljana, Slovenia

e-mail: coutinho.joana@ctn.tecnico.ulisboa.pt; *twitter:* joanacoutinho

Abstract

With the purpose of characterising ambient aerosols and their time evolution and to assess the contribution of the main emission sources and processes leading to aerosol formation in the atmosphere a campaign was conducted in the urban centre of Moscavide (North of Lisbon, Portugal). A traffic air quality monitoring station was located close to one-way street with a total length of 1.2 km. Particulate matter (PM) was sampled and on-line black carbon (BC) (Aethalometer AE33) and total carbon (TC, measured by TCA08) measurements were performed simultaneously.

Separation of contributions to BC from different combustion sources is based on the dependence of absorption on the wavelength (*Aethalometer model*), while the measurement of TC allows the determination of equivalent OC, that is the difference between TC and EC (inferred from BC), at high time resolution (*TC-BC method*).

Introduction

Chemical composition of aerosols is characterised by a large spatio-temporal heterogeneity, being carbonaceous aerosols the major components of the submicron fraction of atmospheric PM. They are emitted by different sources that exert a negative impact on human health, and also affect the climate and the environment. The components of carbonaceous PM (TC) are organic carbon (OC), elemental carbon (EC) and inorganic carbon (IC). When EC is measured using optical methods relying on its strongly light absorbing character it is called BC, which is emitted during the incomplete combustion of fossil fuels, biofuels, and biomass burning and absorbs at all wavelengths of solar radiation.

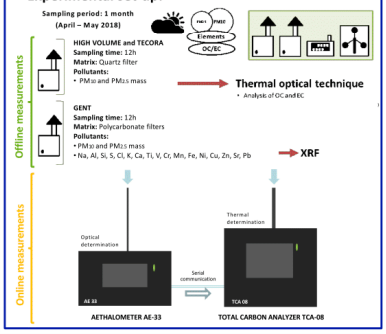
Thus, it is of main importance to determine the chemical composition of fine aerosols at high time resolution, providing the necessary information for accurate source apportionment.

Methodology

- **Study site:**

Av. Moscavide (Loures, PT) → urban-traffic background

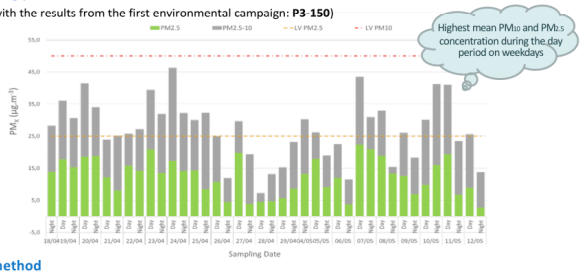
- **Experimental set-up:**



Results and Discussion

- **No sampling periods showed PM_{10} or $PM_{2.5}$ values above the limit value**

(compare with the results from the first environmental campaign: **P3-150**)



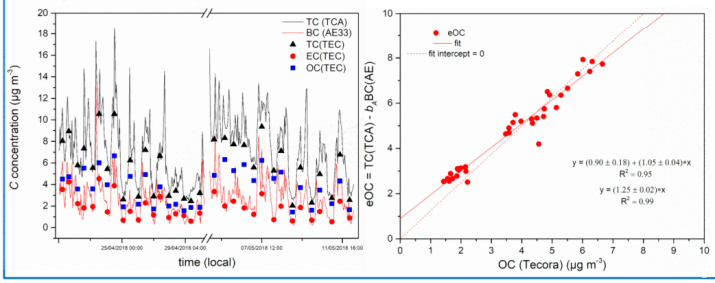
- **TC-BC method**

This method combines two different highly time resolved measurements to determine the OC fraction with **high time resolution**:

- Optical measurement of BC with Aethalometer (model AE-33)
- Thermal measurement of TC with newly developed Total Carbon Analyzer, model TCA-08

$$eOC = TC - b_A \cdot BC$$

- b_A.BC is equivalent to EC, and the determined proportionality parameter b_A is region/site specific but also depends to a large extent on the thermal protocol (EUSAAR2) used to determine the EC fraction with the conventional OC/EC method.



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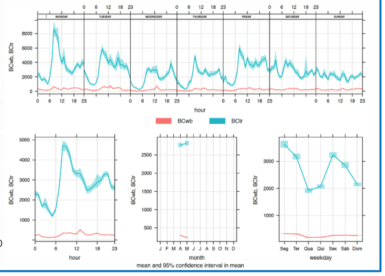

Acknowledgments

This work was supported by the European Regional Development Fund (ERDF) through the Interreg Med project REMEDIO (Ref. 862). Additionally, JTC wishes to acknowledge the Life Program through the Life Index Air project and the Cost Action - CA16109 COLOSSAL. The FCT support is gratefully acknowledged by C²TN/IST authors (through the UID/Multi/04349/2013 project). All the authors kindly acknowledge the Municipality of Loures for the permission to park the container in the Avenue during more than a month.

Project co-financed by the European Regional Development Fund

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REMEDIO project is co-financed by the European Regional Development Fund

3.25. A25 – EAC2019 – Poster 1 – Abstract

Source Apportionment of Carbonaceous Aerosols with High Time Resolution

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Keywords: black carbon, Aethalometer, Total Carbon Analyzer, thermal protocol
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Introduction

Chemical composition of aerosols is characterised by a large spatio-temporal heterogeneity, being carbonaceous aerosols the major components of the submicron fraction of atmospheric particulate matter (PM) (Mohr, 2011). It is emitted by different sources that exerts a negative impact on human health, and also affects the climate and the environment. (UNEP-CCAC, 2014).

The components of carbonaceous PM (total carbon, TC) are organic carbon (OC), elemental carbon (EC) and inorganic carbon (IC). When EC is measured using optical methods relying on its strongly light absorbing character it is called black carbon (BC), which is emitted during the incomplete combustion of fossil fuels, biofuels, and biomass burning and absorbs at all wavelengths of solar radiation (Becerril-Valle, 2017). It is thus of paramount importance to determine the chemical composition of submicron PM at high time resolution, providing the necessary information for accurate source apportionment.

Methods

With the purpose of characterising ambient aerosols and their time evolution and to assess the contribution of the main emission sources and processes leading to aerosol formation in the atmosphere a campaign was conducted in the urban centre of Moscavide (North of Lisbon, Portugal). Different fractions of air particulate matter were collected and on-line black carbon measurements (BC, Aethalometer AE33) and total carbon (TC, measured by Total Carbon Analyzer TCA08) were performed, simultaneously. The sampled filters were analysed by gravimetry, thermo-optical analysis for the measurement of OC/EC (using two different thermal protocols), and Transmissometer OT21 to measure the absorption of light.

The Aethalometer Model (Sandradewi, 2008) was applied for the BC source apportionment due to fossil fuel (BC_{ff}) and biomass burning (BC_{bb}) contributions (Figure 1). The recently developed TC-BC online method, which combines an optical method for measuring BC by the AE33 (Drinovec, 2015) and a thermal method for TC determination by the TCA08, was used for source apportionment of carbonaceous aerosols with high time resolution. This method determines equivalent OC fraction (eOC) of carbonaceous aerosols that is the difference between TC and EC (inferred from BC), at high time resolution as $eOC = TC - b \cdot BC$. The determined proportionality parameter b is region/site specific and depends to a large extent on a thermal protocol used to determine the EC fraction with the conventional OC/EC method.

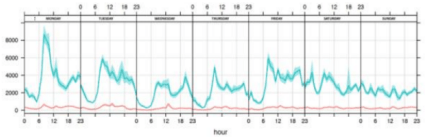

Figure 1. Source apportionment of BC using $\alpha_{ff} = 1.0$ and $\alpha_{bb} = 2.0$ (green: BC_{ff}, orange: BC_{bb}).

Conclusions

The combination of the data generated by the on-line equipments with data from the analysis of the filters allowed us to obtain the parameters for the thermal protocol applied in CESAM and perform an inter-comparison between this protocol and EUSAAR2.

This work was supported by Life Program - Life Index Air project, Interreg Med - REMEDIO project and Cost Action - CA16109 COLOSSAL.

Becerril-Valle, M., Coz, E., Prévôt, A.S.H., Mocnik, G., Pandis, S.N., de la Campa, A.M. S., Alastuey, A., Díaz, E., Pérez, R.M., Artíñano, B. (2017). *Atmos. Environ*, 169, 36-53.

Drinovec, L., Mocnik, G., Zotter, P., Prévôt, A.S.H., et al. (2015). *Atmos. Meas. Tech.*, 8, 1965–1979.

Mohr, C., Richter, R., DeCarlo, P. F., Prévôt, A. S. H., and Baltensperger, U. (2011). *Atmos. Chem. Phys.*, 11, 7465-7482.

Sandradewi, J., Prévôt, A.S.H., Szidat, S., Perron, N., Alfarra, M.A., Lanz, V.A., Weingartner, E., Baltensperger, U. (2008). *Environ. Sci. Technol.*, 42, 3316-3323.

UNEP-CCAC (2014). Time to act to reduce short-lived climate pollutants.

3.26. A26 – EAC2019 – Poster 2

Assessment of Aerosol Emission Sources in a Traffic Site Combining On-line and Off line Measurements

Joana T. Coutinho[1], Nuno Canha[1,2], Catarina Galinha[1], Vânia Martins[1], Tiago Faria[1], Marina Almeida-Silva[1], Joana Lage[1], Célia Alves[2], Martin Rigler[3], Griša Močnik[4], Evangelia Diapouli[5], Konstantinos Eleftheriadis[5], Susana Marta Almeida[1]

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Abstract

In urban areas evidences from epidemiological and experimental studies show that traffic-related air pollution has adverse effects on respiratory and cardiovascular systems. Urban air pollution accounts for 3% of mortality from cardiopulmonary disease and 1% of mortality from acute respiratory infections in children under 5 years, worldwide. Therefore, disease and mortality associated with vehicle emissions represent a substantial challenge in public health.

Source apportionment, using receptor models, is an essential tool to support the implementation of the European and Member States legislation on air quality and principally to reduce the impact of exposure to Air Particulate Matter (PM) on human health.

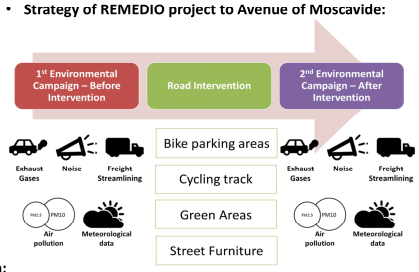
This work was developed in the framework of the Interreg Med project REMEDIO and aims to assess the aerosol emission sources in an urban traffic site, located in the outskirts of Lisbon.

Methodology

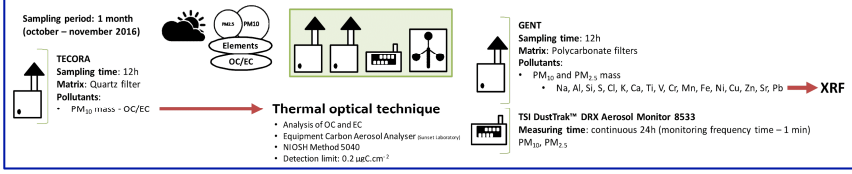
- **Study site:**

Av. Moscavide (Loures, PT) → urban-traffic background

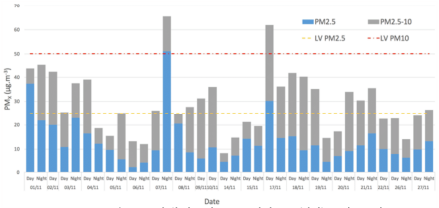
- **Strategy of REMEDIO project to Avenue of Moscavide:**



- **Experimental set-up for the 1st Environmental Campaign:**

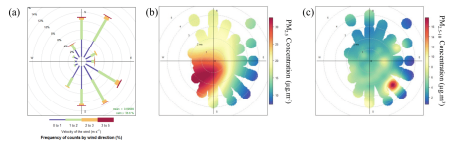


Results and Discussion



PM_{10} and $PM_{2.5}$ **daily levels exceed the guidelines** (WHO)

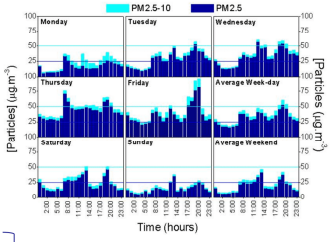
mitigation measures should be implemented in the studied area in order to protect the population health (*check **P3-135** for the results of the 2nd environmental campaign!)*



(a) frequency of wind direction and velocity, (b) pollution dispersion maps of $PM_{2.5}$, and (c) pollution dispersion map of $PM_{2.5-10}$ during the monitoring campaign at the studied street canyon.

✓ $PM_{2.5}$ and $PM_{2.5-10}$ hourly variation (time of the day in hours) and average mass concentration in weekdays and weekend;

✓ PM concentrations were higher on weekdays than on weekends, which can be explained by higher road traffic levels on weekdays.



Concentrations (ng.m⁻³)	PM2.5 DAY Mean	PM2.5 DAY STD	PM2.5 NIGHT Mean	PM2.5 NIGHT STD	PM2.5-10 DAY Mean	PM2.5-10 DAY STD	PM2.5-10 NIGHT Mean	PM2.5-10 NIGHT STD
Na	750	382	a)	a)	587	401	624	497
Al	73.4	74.3	217	203	145	109	350	467
Si	209	178	193	166	478	263	345	194
S	339	330	315	320	167	67.4	123	67.2
Cl	551	622	296	341	a)	a)	992	949
K	159	116	113	72.2	a)	a)	75.1	30.2
Ca	326	305	187	163	1146	743	691	499
Ti	11.7	9.78	8.13	3.61	29.9	19.4	23.1	9.3
V	7.43	7.15	9.62	5.90	a)	a)	a)	a)
Cr	1.53	1.56	1.01	0.17	2.86	1.38	3.05	1.88
Mn	5.15	0.84	4.10	1.61	15.8	8.22	17.9	5.36
Fe	195	170	123	74.9	412	232	281	148
Ni	2.08	1.27	3.63	1.90	1.84	0.89	1.70	1.03
Cu	9.24	4.69	8.04	3.12	32.9	19.6	34.5	21.0
Zn	12.7	9.10	10.6	5.19	36.4	17.5	31.2	14.9
Sr	2.86	0.79	a)	a)	2.64	1.85	3.47	1.49
Pb	14.6	9.81	11.0	5.46	30.1	15.1	37.6	16.3

Concentrations of chemical elements

predominance of elements from **marine aerosols** origin (Na and Cl); followed by those from the **Earth's crust** (Ca, Fe, Si, Al); and, finally, by chemical elements associated to with anthropogenic sources, mainly **traffic influence** (S, Ti, V, Cr, Mn, Ni, Cu, Zn, Sr, Pb).

Results from this study clearly showed that exposure to air pollutants in a street canyon is a problem that should be tackled. The low dispersion of pollutants observed can be explained by the street layout and the intense traffic in some periods of the day.

Acknowledgments

This work was supported by the European Regional Development Fund (ERDF) through the Interreg Med project REMEDIO (Ref. 862). Additionally, JTC wishes to acknowledge the Life Program through the Life Index Air project and the Cost Action - CA16109 COLOSSAL. The FCT support is gratefully acknowledged by C²TN/IST authors (through the UID/Multi/04349/2013 project). All the authors kindly acknowledge the Municipality of Loures for the permission to park the container in the Avenue during more than a month.

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3.27. A27 – EAC2019 – Poster 2 – abstract

Assessment of Aerosol Emission Sources in a Traffic Site Combining On-line and Off-line Measurements

Joana T. Coutinho[1], Nuno Canha[1], Catarina Galinha[1], Vânia Martins[1], Tiago Faria[1], Marina Almeida-Silva[1], Joana Lage[1], Martin Rigler[2], Griša Močnik[3], Evangelia Diapouli[4], Konstantinos Eleftheriadis[4], Susana Marta Almeida[1]

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Keywords: Particulate Matter, urban area, PMF, source apportionment
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Introduction

In urban areas evidences from epidemiological and experimental studies show that traffic-related air pollution has adverse effects on respiratory and cardiovascular systems. Urban air pollution accounts for 3% of mortality from cardiopulmonary disease and 1% of mortality from acute respiratory infections in children under 5 years, worldwide (Cohen et al., 2005). Therefore, disease and mortality associated with vehicle emissions represent a substantial challenge in public health.

Source apportionment, using receptor models, is an essential tool to support the implementation of the European and Member States legislation on air quality and principally to reduce the impact of exposure to Air Particulate Matter (PM) on human health.

This work was developed in the framework of the Interreg Med project REMEDIO and aims to assess the aerosol emission sources in an urban traffic site, located in the outskirts of Lisbon, combining on-line and off-line measurements.

Methods

PM_{10} and $PM_{2.5}$ were collected in a sampling campaign conducted in the urban centre of Moscavide (North of Lisbon, Portugal). The filters were analysed by XRF for the determination of element concentrations. Simultaneously, online measurements of black carbon and total carbon were performed with an Aethalometer AE33 and with the recently developed TCA08.

With the purpose of characterising ambient aerosols and assess the contribution of the main emission sources and processes leading to aerosol formation in the atmosphere, source apportionment was performed by applying the Positive Matrix Factorization (PMF) model (Paatero & Tapper, 1994). PMF allowed the identification and the quantification of the contributions to the aerosol from different sources.

Conclusions

Figure 1 shows that PM_{10} and $PM_{2.5}$ daily levels exceed the guidelines stablished by the World Health Organization (50 and 25 $\mu g.m^{-3}$ for the 24-hour mean of PM_{10} and $PM_{2.5}$, respectively). This indicates that mitigation measures should be implemented in the studied area in order to protect the population health.

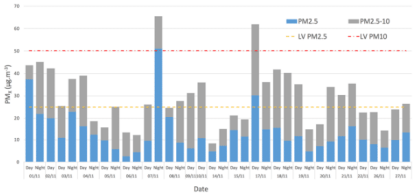

Figure 1. Particulate Matter (PM_{10} and $PM_{2.5}$) daily variation in Moscavide.

Source apportionment using PMF was used to investigate local and regional pollution events, with data from chemical characterisation of particles. Separation of contributions to BC from different combustion sources was based on the dependence of absorption on the wavelength, using the Aethalometer Model (Sandradewi, 2008).

This work was supported by Life Program - Life Index Air project, Interreg Med - REMEDIO project and Cost Action - CA16109 COLOSSAL.

A.J. Cohen, H. Ross Anderson, B. Ostro, K.D. Pandey, M. Krzyzanowski, N. Kunzli et al. (2005). The global burden of disease due to outdoor air pollution. Journal of Toxicology and Environmental Health A., 68 (13-14), 1301–7.

Paatero, P., Tapper, U. (1994). *Environmetrics*, 5, 111-126.

Sandradewi, J., Prévôt, A.S.H., Szidat, S., Perron, N., Alfarra, M.A., Lanz, V.A., Weingartner, E., Baltensperger, U. (2008). *Environ. Sci. Technol.*, 42, 3316-3323.

3.28. A28 – PANACEA – Poster

Project co-financed by the European Regional Development Fund

1st Scientific Conference PANACEA
September 23-24, 2019
Crete, Greece

Environmental analysis in traffic-congested roads using an Integrated Modelling Tool

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INTRODUCTION

In the framework of the REMEDIO project, a **novel Integrated Modelling Tool (IMT)** has been developed composed of individual modules that assess the main impacts of traffic on **pollutant emissions, air pollution dispersion, carbon footprint, energy efficiency, noise, cost and health effects**.

The aim of this study is the presentation of the IMT as well as its application on a main road axis of Thessaloniki. The air pollutant emissions and carbon footprint results are presented along with a validation through the comparison of IMT with the emission model COPERT Street level. Furthermore, a comparison between the present-time traffic conditions scenario and future scenarios, when a **mobility solution** (i.e. redesign of the road axis) will be implemented, is shown.

IMT MODULES

The Integrated Modeling Tool (Figure 1) is linking the :

- Traffic model **'Simulation of Urban Mobility' (SUMO)**,
- Emission model **'Passenger Car and Heavy Duty Emission Model (Light)' (PHEMLight)**,
- **'Pollutant dispersion in the atmosphere under variable wind conditions' (VADIS)** model (coupling a **boundary layer flow module** with a **Lagrangian dispersion module**),
- **Noise module** based on the EU **'Common Noise Assessment Methods' methodology (CNOSSOS-EU)**,
- **Health and Cost modules** based on **statistical modeling**.

IMT MODELING

User can simulate with each one of the IMT individual modules the main effects caused by traffic in congested-road from a **common platform**, within a step by step process divided in 5 steps:

- **Steps 1-2**: **Zone and traffic definition.**
- **Step 3: Traffic calculations** using the open-source software SUMO (Simulation of Urban MObility).
- **Step 4: Execution** of each one of the **IMT modules** with **results** presented as graphics, figures or tables.
- **Step 5:** Simulation of new traffic conditions because of **mobility soft actions** implementation to compare different mobility solutions to **reduce the impact of traffic.**

IMT APPLICATION – THESSALONIKI CASE STUDY

ROAD AXIS MAIN CHARACTERISTICS (Figure 2)

- **connecting the city entrance from the airport with the city center**
- **crossing through the compact mixed-use inner part of the city** including areas with important commercial activity and dense residential ones.

MODELLING SYSTEM APPLICATION

- **Simulation Period**: 19 September 2017 on hourly basis.
- **Main Input Data**: a) **Measurements of traffic volume** at different sites along the axis (passenger cars, light commercial vehicles, heavy duty trucks, buses, motorcycles) (Figure 3), b) **Vehicle categorization** according to **technology** (gasoline, diesel etc) and **emission standard** (EURO 0 to EURO 6), c) **Network characteristics** (links, nodes, traffic lights, signs, pedestrian crossings, road slope etc), d) **meteorological and air quality data** and e) **health data** (hospitalizations and deaths).
- **3 Scenarios :**

  1st : Present-time traffic conditions (Base Case scenario (BC)) (example emission map in Figure 4),

  Road axis redesign actions for sustainable urban mobility → Reduction of traffic lanes from 3 to 2, upgrade of the bus lane

  2nd : Reduction of number of passenger cars and motorcycles by -10% (Scenario-10 (SCN10)),

  3rd : Reduction of number of passenger cars and motorcycles by -20% with increase by a factor of 2 of bus circulation frequency (Scenario-20 (SCN20)).

RESULTS – CONCLUSIONS

Base Case Scenario (BC) (24hours analysis)

- **Traffic load** along the axis is configured by the **major contribution of passenger cars** (about 80%) and that of motorcycles (15%) (Figure 5).
- The diurnal variation of pollutant emissions and carbon footprint (CO_2 emissions) is configured by the diurnal pattern of the traffic load. The **emission values** are **maximum the hours 7:00 am to 10:00 am**. **Increased amounts of pollutants**, presenting small hourly variability, are emitted **from 10:00 am until 9:00 pm** (Figure 6). Similar is the diurnal pattern for the fuel consumption (not shown here).
- CO_2 emissions are the highest. NOx emissions are higher than those of HC and PM mostly during daytime (Figure 6)
- **NOx, PM and HC are emitted mostly by the passenger cars**. The **second** most polluting **emission source for PM and HC** is the **Motorcycles** while **for NOx are the Buses**. Passenger cars are the major CO_2 emission source (Figure 7).

Comparison between COPERT Street Level (SL) and air pollutant emissions and carbon footprint module of IMT

- both models present a similar hourly distribution of NOx, PM, HC/VOC and **carbon footprint** emissions (CO2 shown in Figure 8)
- the **correlation** between the daily emission values of the two models is very high (**0.9**) indicating a **good model performance**

Scenario-10 (SCN10) (Analysis for the traffic peak hour: 8 am – 9 am)

- Decrease of passenger cars pollutant emissions by about -18%, carbon footprint and fuel consumption by about -20% (Table 1).
- Decrease of motorcycles pollutant and CO_2 emissions and fuel consumption by about -22% (Table 1).
- **Reduction of all vehicle types pollutant emissions ranging from -10% to approximately -20%.** (Figure 9).
- **Reduction of fuel consumption by about -18 %** (Figure 9).

Scenario-20 (SCN20) (Analysis for the traffic peak hour: 8 am – 9 am)

- Higher reductions compared to SCN10 of **passenger cars** and motorcycles pollutant emissions, CO_2 emissions and fuel consumption **ranging from -22% to -25%** (Table 1).
- Buses pollutant emissions, CO_2 emissions are almost doubled with respect to BC scenario. Fuel consumption increases by ~47% compared to BC (Table 1).
- **More pronounced reductions in fuel consumption and in CO_2 and HC emissions** with respect to SCN10 except for PM emissions (Figure 9).
- **NOx emissions are higher than those of the BC scenario** (Figure 9) due to the increase in bus circulation.

➢ **The reduced use of private cars in SCN20, being 2 times more than that of SCM10, would result in more clear benefits for the atmospheric environment in the case of enhancement of the local public transportation with the use of clean vehicles in the city buses fleet.**

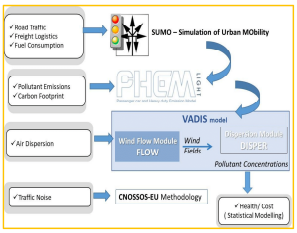

Figure 1. Integrated Modeling Tool.

Figure 2. Thessaloniki road axis for modelling simulations.

Figure 3. Monitoring sites of traffic volume the period 18 to 22 September 2017.

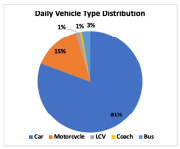

Figure 5. Distribution of vehicles circulating along the axis by type.

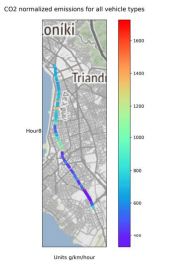

Figure 4. Map of CO_2 emissions (g/km/hour) at traffic peak hour.

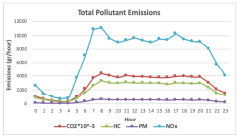

Figure 6. Diurnal variation of pollutant emissions and carbon footprint.

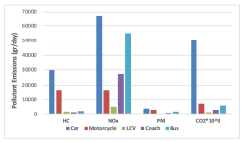

Figure 7. Daily pollutant emissions and carbon footprint per vehicle type.

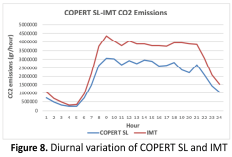

Figure 8. Diurnal variation of COPERT SL and IMT carbon footprint.

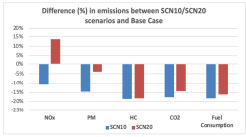

Figure 9. Total % differences in traffic-related variables because of traffic scenarios.

Table 1. % Differences* in pollutant emissions, carbon footprint and fuel consumption per vehicle type because of traffic scenarios.

	Scenario-10 (SCN10)					Scenario-20 (SCN20)				
	CO_2	HC	PM	NOx	Fuel Consumption	CO_2	HC	PM	NOx	Fuel Consumption
Car	-19.83%	-17.37%	-16.65%	-18.28%	-19.71%	-24.73%	-25.61%	-22.11%	-24.72%	-32.89%
Motorcycle	-22.37%	-22.50%	-21.76%	-22.94%	-22.52%	-26.10%	-18.45%	-26.38%	-17.17%	-34.50%
Bus	+0.29%	-2.40%	+3.75%	+2.61%	-0.36%	+92.00%	+82.51%	+85.39%	+86.75%	+47.69%

* % Difference = $\frac{(SCN - BC)}{BC}$ %

Acknowledgements

This work is financed by the European Territorial Cooperation Programme INTERREG MED 2014-2020 project REMEDIO (REgenerating mixed-use MED urban communities congested by traffic through innovative low carbon mobility sOlutions), co-financed by the European Union (ERDF) and by National Funds.

References

1) Borrego, C., Tchepel, O., Barros, N., Miranda, A.I., 2000. Impact of road traffic emissions on air quality of the Lisbon region. Atmospheric Environment 34, 4683–4690.
2) Kephalopoulos, S., Paviotti, M., Anfosso-Lédée, F., 2012. Common Noise Assessment Methods in Europe (CNOSSOS-EU). https://doi.org/10.2788/31776.
3) PHEMLight User Guide Version 1. Passenger Car and Heavy Duty emission model. Technische Universität Graz. Erzherzog-Johann-Universität, INSTITUT FÜR VERBRENNUNGSKRAFT-MASCHINEN UND THERMODYNAMIK
4) SUMO website: http://sumo.dlr.de/wiki/SUMO_User_Documentation

REMEDIO project is co-financed by the European Regional Development Fund

3.29. A29 – ICEH2019 – Poster

Assessment of Aerosol Emission Sources in a Traffic Site Combining On-line and Off line Measurements

Joana T. Coutinho[1], Nuno Canha[1,2], Catarina Galinha[1], Vânia Martins[1], Tiago Faria[1], Marina Almeida-Silva[1], Joana Lage[1], Célia Alves[2], Martin Rigler[3], Griša Močnik[4], Evangelia Diapouli[5], Konstantinos Eleftheriadis[5], Susana Marta Almeida[1]

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Abstract

In urban areas evidences from epidemiological and experimental studies show that traffic-related air pollution has adverse effects on respiratory and cardiovascular systems. Urban air pollution accounts for 3% of mortality from cardiopulmonary disease and 1% of mortality from acute respiratory infections in children under 5 years, worldwide. Therefore, disease and mortality associated with vehicle emissions represent a substantial challenge in public health.

Source apportionment, using receptor models, is an essential tool to support the implementation of the European and Member States legislation on air quality and principally to reduce the impact of exposure to Air Particulate Matter (PM) on human health.

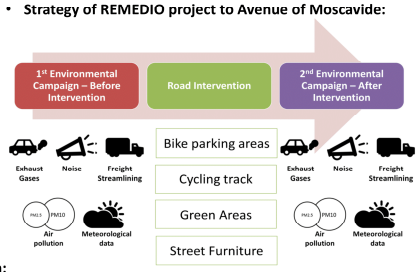
This work was developed in the framework of the Interreg Med project REMEDIO and aims to assess the aerosol emission sources in an urban traffic site, located in the outskirts of Lisbon.

Methodology

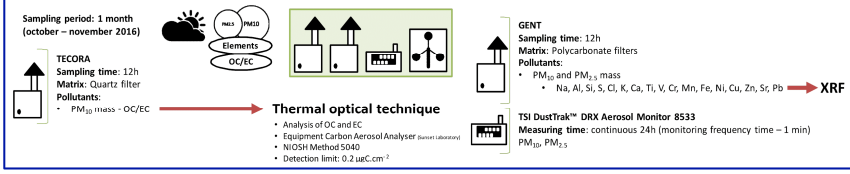
- **Study site:**

Av. Moscavide (Loures, PT) → urban-traffic background

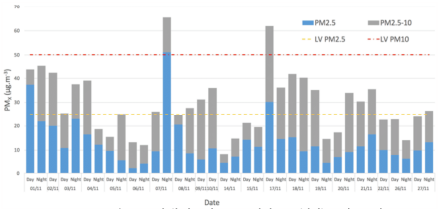
- **Strategy of REMEDIO project to Avenue of Moscavide:**



- **Experimental set-up for the 1st Environmental Campaign:**

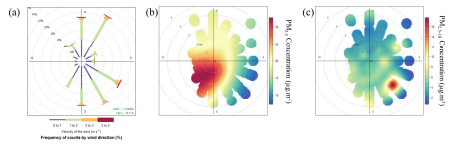


Results and Discussion



PM_{10} and $PM_{2.5}$ **daily levels exceed the guidelines** (WHO)

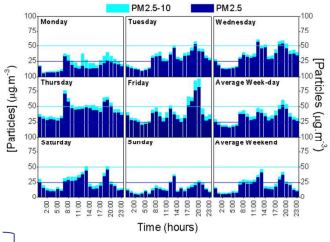
mitigation measures should be implemented in the studied area in order to protect the population health (*check **P3-135** for the results of the 2nd environmental campaign!)*



(a) frequency of wind direction and velocity, (b) pollution dispersion maps of $PM_{2.5}$, and (c) pollution dispersion map of $PM_{2.5-10}$ during the monitoring campaign at the studied street canyon.

✓ $PM_{2.5}$ and $PM_{2.5-10}$ hourly variation (time of the day in hours) and average mass concentration in weekdays and weekend;

✓ PM concentrations were higher on weekdays than on weekends, which can be explained by higher road traffic levels on weekdays.



Concentrations (ng.m⁻³)	$PM_{2.5}$				$PM_{2.5-10}$			
	DAY		NIGHT		DAY		NIGHT	
	Mean	STD	Mean	STD	Mean	STD	Mean	STD
Na	750	382	a)	a)	587	401	624	490
Al	73.4	74.3	217	203	145	109	350	467
Si	209	178	193	166	478	263	345	194
S	339	330	315	320	167	67.4	123	67.2
Cl	551	622	296	341	a)	a)	992	949
K	159	116	113	72.2	a)	a)	75.1	30.2
Ca	326	305	187	163	1146	743	691	499
Ti	11.7	9.78	8.13	3.61	29.9	19.4	23.1	9.3
V	7.43	7.15	9.62	5.90	a)	a)	a)	a)
Cr	1.53	1.56	1.01	0.17	2.86	1.38	3.05	1.88
Mn	5.15	0.84	4.10	1.61	15.8	8.22	17.9	5.36
Fe	195	170	123	74.9	412	232	281	148
Ni	2.08	1.27	3.63	1.90	1.84	0.89	1.70	1.03
Cu	9.24	4.69	8.04	3.12	32.9	19.6	34.5	21.0
Zn	12.7	9.10	10.6	5.19	36.4	17.5	31.2	14.9
Sr	2.86	0.79	a)	a)	2.64	1.85	3.47	1.49
Pb	14.6	9.81	11.0	5.46	30.1	15.1	37.6	16.3

Concentrations of chemical elements

predominance of elements from **marine aerosols** origin (Na and Cl); followed by those from the **Earth's crust** (Ca, Fe, Si, Al); and, finally, by chemical elements associated to with anthropogenic sources, mainly **traffic influence** (S, Ti, V, Cr, Mn, Ni, Cu, Zn, Sr, Pb).

Results from this study clearly showed that exposure to air pollutants in a street canyon is a problem that should be tackled. The low dispersion of pollutants observed can be explained by the street layout and the intense traffic in some periods of the day.

Acknowledgments

This work was supported by the European Regional Development Fund (ERDF) through the Interreg Med project REMEDIO (Ref. 862). Additionally, JTC wishes to acknowledge the Life Program through the Life Index Air project and the Cost Action - CA16109 COLOSSAL. The FCT support is gratefully acknowledged by C²TN/IST authors (through the UID/Multi/04349/2013 project). All the authors kindly acknowledge the Municipality of Loures for the permission to park the container in the Avenue during more than a month.

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3.30. A30 – ICEH2019 – Abstract

Assessment of Aerosol Emission Sources in a Traffic Site Combining On-line and Off line Measurements

J.T. Coutinho[1], N. Canha[1], C. Galinha[1], V. Martins[1], T. Faria*[1], M. Almeida-Silva[1], J. Lage[1], M. Rigler[2], G. Močnik[3], E. Diapouli[4], K. Eleftheriadis[4], S.M. Almeida[1]

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In urban areas evidences from epidemiological and experimental studies show that traffic-related air pollution has adverse effects on respiratory and cardiovascular systems. Urban air pollution accounts for 3% of mortality from cardiopulmonary disease and 1% of mortality from acute respiratory infections in children under 5 years, worldwide. Therefore, disease and mortality associated with vehicle emissions represent a substantial challenge in public health. Source apportionment, using receptor models, is an essential tool to support the implementation of the European and Member States legislation on air quality and principally to reduce the impact of exposure to Air Particulate Matter (PM) on human health.
This work was developed in the framework of the Interreg Med REMEDIO project and aims to assess the aerosol emission sources in an urban traffic site, located in the outskirts of Lisbon. With that purpose, PM_{10} and $PM_{2.5}$ were collected in a sampling campaign conducted in the urban centre of Moscavide (North of Lisbon, Portugal). The filters were analysed by XRF for the determination of element concentrations. With the purpose of characterising ambient aerosols and assess the contribution of the main emission sources and processes leading to aerosol formation in the atmosphere, source apportionment was performed by applying the Positive Matrix Factorization (PMF) model. PMF allowed the identification and the quantification of the contributions to the aerosol from different sources.

Figure 1 shows that PM_{10} and $PM_{2.5}$ daily levels exceed the guidelines stablished by the World Health Organization (50 and 25 $\mu g.m^{-3}$ for the 24-hour mean of PM_{10} and $PM_{2.5}$, respectively). This indicates that mitigation measures should be implemented in the studied area in order to protect the population health. Source apportionment using PMF was used to investigate local and regional pollution events, with data from chemical characterisation of particles.

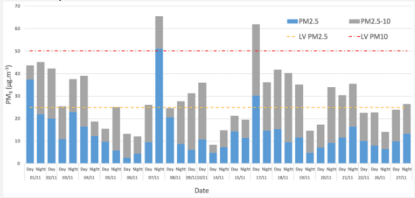

Figure 1. Particulate Matter (PM10 and PM2.5) daily variation in Moscavide.

REMEDIO project is co-financed by the European Regional Development Fund