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THE CONCEPT OF MOBILITY HUBS

Characteristics and Typology of Mobility Hubs in MED Areas

EXECUTIVE SUMMARY

Today's public mobility faces several challenges. Urban Mediterranean cities are centres of high traffic congestion, air and noise pollution. In contrast, rural areas in the Mediterranean often lack convenient public transport, resulting in long travel distances and minimal first and last mile connectivity. This results in a high dependency on the private car. However, new mobility solutions are emerging in today's world that could help to solve these problems.

One way to integrate these new solutions is the concept of Mobility Hubs - a method of effectively combining different transport options in one place. The following introductory handbook on Mobility Hubs is a practical guide that outlines the meaning of a Hub, its elements and how it differs from a traditional railway and bus station. Mobility Hubs come in different forms, locations and face different mobility challenges. This handbook illustrates their relevance, the stakeholders involved in the process and the current status and challenges in the Mediterranean region.

This report has been developed as part of the GREENMO project and focuses on the six Mediterranean partner countries: Greece, Spain, Italy, Malta, Cyprus and Bosnia and Herzegovina. These countries, which together cover a significant Mediterranean area, have provided input on the status quo in their countries for this mobility hub handbook.

The GREENMO project promotes green and inclusive mobility hubs for greener living spaces in the Mediterranean region by addressing the real needs of citizens.

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The Concept of Mobility Hubs

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Characteristics and Typology of Mobility Hubs in MED Areas

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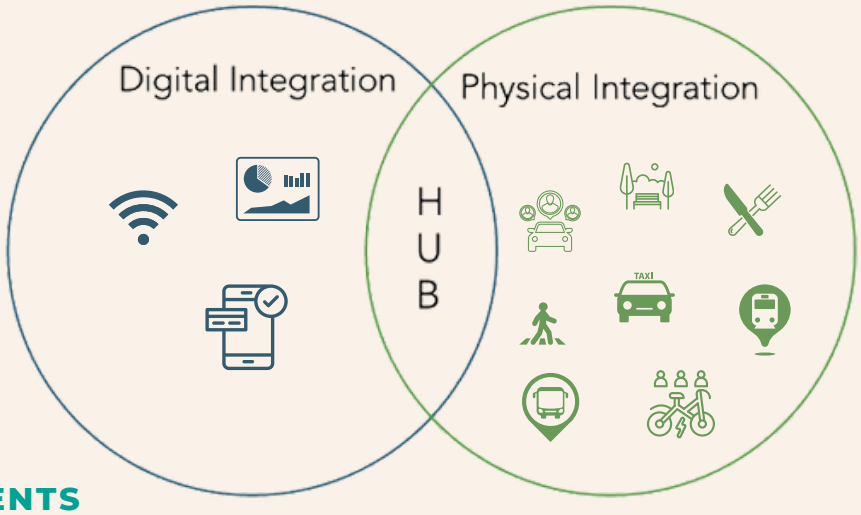
WHAT ARE MOBILITY HUBS?

So, what is behind this new concept of Mobility Hubs? Let's take a look at the definition we have created together for our GREENMO project.

Mobility hubs are meeting points for shared and active mobility within the existing public transport system. They serve as places of intermodal connectivity for these transport modes. In addition, mobility- related services such as parking facilities, and non- mobility related services such as food and drink kiosks are often integrated into mobility hubs. The aim is to centralize public mobility and other resources, ensuring a easy access between modes and the first- and last-mile connectivity.

But what truly defines a mobility hub as such? Various definitions and criteria exist to characterize what qualifies as a mobility hub. However, we commonly find that a hub includes the following key characteristics: the physical and digital integration of at least two new transport modes, such as bike sharing, on-demand service etc.



HUB ELEMENTS

At the heart of the mobility hub concept are three key elements: transport modes, mobility-related services, and non-mobility-related services. These elements are integrated seamlessly, both physically and digitally, within a central hub. Dedicated safety signage and precautions complement these elements.

Transport Modes:

- Public Transport: Bus, Tram, Metro, Train, Water taxis
- Shared Mobility: Bikes, Scooters, Cars, Carpooling
- Active Mobility: Parking spaces for own bikes, connectivity to bike paths and pedestrian streets
- On-demand service: Taxi stands, Uber Pick-up & Dropp-off zones , Community bus

Mobility-related Services:

- Car E-charging Infrastructure
- Car parking spaces

Non-mobility related Services:

- Layout Areas
- Food/drink Kiosks
- Delivery Lockers
- Shops
- Playground
- WiFi
- Public toilets

These are examples of hub elements. The extent to which these are integrated into a hub will depend on the type of hub that responds to the **space available** and the **local mobility challenges.**

KEY CHARACTERISTICS: MOBILITY HUB VS TRAIN STATION

Is a mobility hub simply a modern term for a conventional train station, or is there more to it? The following key characteristics answer this question:

- Diverse transport modes and services integrated with extended infrastructure
- Physical and digital integration for seamless intermodality and transit
- Hub branding and visibility
- Improved safety through enhanced measures, infrastructure, and strategies
- Transforming the bad image of a train or bus station into a convenient and pleasant place, a mobility hub

Mobility hubs seem to offer more than conventional train or bus stations while unlocking convenience features for everybody, let´s dive deeper into the topic.

Source: IntelligentTransport UK

TYPES OF HUBS

Talking about where to locate a Mobility Hub, this corresponds directly to the elements to be implemented in a Hub and the challenges and objectives to be faced. Lets have a look into the key characteristics that come with the different mobility hubs. We are focusing on 3 different types of hubs:

URBAN MOBILITY HUB

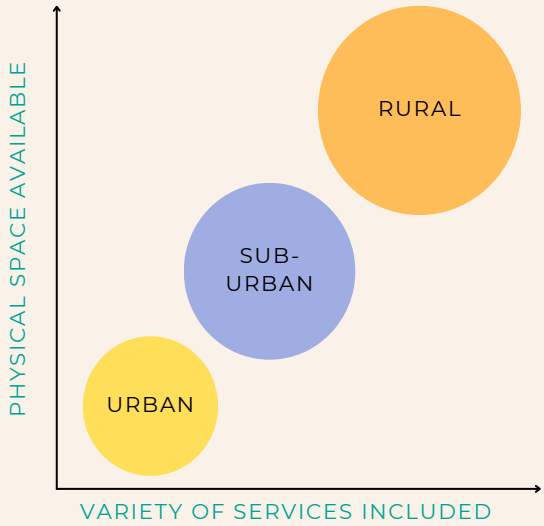
Urban hubs are located in areas of high population density and therefore have a high demand for transport services. The hub is compact in design, with multiple modes of transport and services integrated into a small area. There is access to public transport, shared mobility such as bike and scooter sharing, all with a focus on increasing multimodal public transport and active mobility, as well as reducing private car use and traffic congestion.

SUBURBAN MOBILITY HUB

A suburban hub is defined by moderate population density, mixed residential and commercial areas, and limited public transport, which collectively result in a high level of car dependency. The area offers sufficient space for car parking and bicycle parking, as well as the necessary charging infrastructure. The available space allows for the integration of park and ride facilities, transit areas, kiosks, delivery lockers and shared mobility options. By focusing on intermodal connectivity with regional transport networks, suburban neighbourhoods can provide first and last mile connectivity, reducing the need for private cars.

RURAL MOBILITY HUB

A rural mobility hub is defined by a lower population density, dispersed communities, and a lack of public transport options, which results in a high dependency on private cars. In rural areas, there is a significant amount of available space, which can be utilised for car parking, bike parking, charging infrastructure, delivery lockers, toilets, layover areas, and other purposes. The services offered are primarily shared mobility, on-demand services, carpooling, park&ride, and public transport. To cover long distances, it is essential to provide first and last mile connectivity, as well as integration with regional transport networks.



WHY DO WE NEED MOBILITY HUBS?

Mobility hubs play a certain role in modern sustainable transportation systems, offering centralized points of **access** and **connectivity** for various modes of mobility.

- **Accessibility**: Mobility hubs aim to improve the accessibility for all of public mobility by serving as a central meeting point for different transportation modes. This facilitates easier access for everyone to transportation options.
- **Connectivity:** Mobility hubs serve as meeting points for intermodal mobility, facilitating seamless connections between different transport modes for better first and last-mile solutions.

BENEFITS

But what other benefits do Mobility Hubs bring? Are they really that important, apart from better access and connectivity? Let's explore three of the key aspects:

Environment

- Mobility hubs promote multimodal transport options, decreasing reliance on private cars and reducing traffic congestion, thereby reducing greenhouse gas emissions.
- Less traffic from efficient hubs leads to better air quality and less noise pollution, enhancing overall community well-being.
- Integrating green technologies and sustainable infrastructure in mobility hubs minimizes environmental impacts.

People

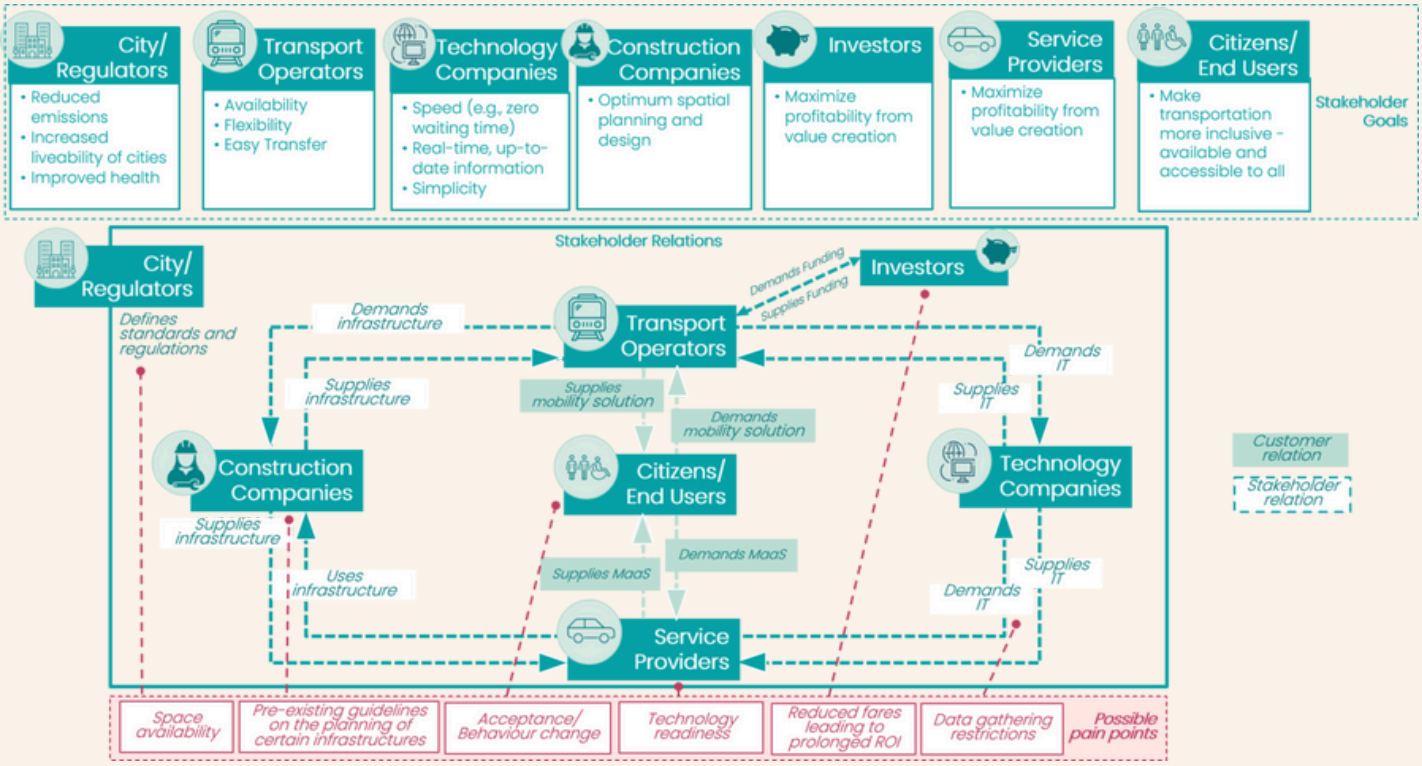
- Centralising all modes of transport in one hub facilitates planning and transfers between modes, making public mobility more attractive and providing efficient access to destinations, including first and last mile connectivity.
- This benefits everyone, including those with disabilities and limited access to private vehicles.
- All of this adds up to improved usability.
- Improving walking and cycling infrastructure increases safety and encourages active mobility, which improves physical and mental health and contributes to a cleaner, healthier urban environment and higher quality of life.
- The inclusion of non-mobility services, such as food and retail outlets at hubs, increases convenience and saves time on daily errands, while green spaces promote social interaction and community bonding.

Socio-Economic

- As a meeting point for a range of services, mobility hubs can increase economic opportunities for businesses in and around the hub and support local businesses through the attraction of customers and visitors: more users means more business.

WHO IS INVOLVED?

STAKEHOLDERS INVOLVED



Source: Gavilán Orozco, 2020; BABLE

There seems to be a significant number of relevant stakeholders involved in the planning and implementation of mobility hubs. This raises another question:
What is their role within the Mobility Hub concept?

City/Regulators:
Responsible for policy-making, regulation, and funding allocation related to mobility infrastructure and services. They often provide strategic direction and coordination among various stakeholders. The responsibility for creating mobility hubs often falls to the city as the manager of urban space and project owner. The city takes the lead role in the initiative.

Transport Operators:
Operators provide the public transportation services within mobility hubs, including bus, tram, subway, or rail services. They ensure regular and reliable transit connections to facilitate seamless transfers between different modes of transportation.

Technology Companies:
Their work includes developing a single mobile app for all services, ticketing and real-time transport information, as well as planning future enhancements.

Construction Companies:
Design and plan the physical layout of mobility hubs, considering factors such as land use, transportation networks, pedestrian access, and amenities to create efficient and user-friendly environments.

Investors:
Investors provide financial resources to support the development, construction, and operation of mobility hubs. Their role involves funding infrastructure, facilities, and services within the hub.

Service Providers:
Service providers deliver various transportation services, including shared mobility options like bike and scooter-sharing, car-sharing services, on-demand transportation services, courier companies, and retail businesses offering goods and services to commuters.

Citizens/End User:
Citizens and end-users play a crucial role in the success of mobility hubs. Their active participation includes using transport services, providing feedback and advocating for improvements. This engagement shapes the design and operation of hubs to better meet the needs of the community.

With all these seven different stakeholders, organisation becomes quite challenging. Close cooperation and interaction is therefore necessary.

PUBLIC PRIVATE COLLABORATION

Public-private collaboration in mobility hubs plays an essential role for creating effective and sustainable transportation solutions. These collaborations involve partnerships between government entities and private companies to plan, develop, and operate mobility hubs.

Planning and Development:
- Public and private entities collaborate to plan and design mobility hubs that meet the needs of both commuters and businesses. This involves identifying suitable locations, determining the types of transportation services to be offered, and designing the infrastructure and facilities.

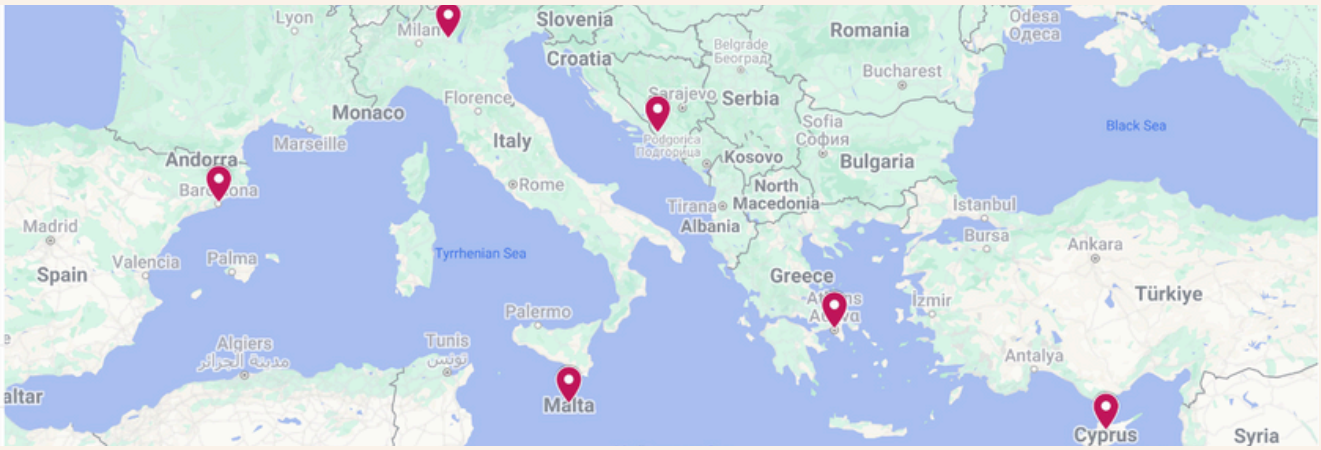
Funding and Investment:
- Public-private partnerships often involve shared funding and investment to finance the development and operation of mobility hubs. This may include contributions from government agencies, private investors, and transportation companies.

Operation and Management:
- Public and private partners work together to operate and manage mobility hubs efficiently. This includes coordinating transportation services, maintaining infrastructure, and ensuring a seamless experience for users.

Technology and Innovation:
- Collaboration between public and private sectors allows for the integration of innovative technologies and services into mobility hubs. This may include smart mobility solutions, digital payment systems, and real-time information platforms to improve accessibility and convenience.

Community Engagement:
- Public-private collaborations involve engaging with local communities and stakeholders to ensure that mobility hubs meet their needs and preferences - gathering feedback, conducting events, and involving the community in the planning process.

CURRENT STATE IN THE MED- AREA



Looking at the existing network of Mobility Hubs in our GREENMO project partner countries - Greece, Spain, Italy, Malta, Cyprus, and Bosnia and Herzegovina - a common theme emerges. None of the partner countries currently have branded Mobility Hubs. While there are existing mobility points such as traditional bus, train stations and other park&ride facilities, none are officially designated as mobility hubs. There are also no initiatives for the development of mobility hubs in any of the GREENMO countries.

In response to the question about the main barriers to the implementation of a Mobility Hub, partners mentioned:

- Lack of adequate public transport
- Challenges to the adoption of shared mobility
- Limited awareness and acceptance of alternatives to private car
- Involving citizens: understanding their preferences and needs
- Inadequate Information and Communication Technology (ICT): digital integration
- Fare policy between different modes (cycling and bus) to help reconcile the two
- Bridging connectivity gaps for rural areas
- Infrastructure development: cycle paths, public transport vs. shared mobility
- Cooperation between different levels of government
- Lack of policies to support alternative modes of transport (e-scooters, car, bike sharing)
- Integration of territorial and mobility planning.

Even though there are no established Mobility Hubs in the present partner countries, GREENMO partners provided relevant examples of existing mobility points that follow this definition:

There are different definitions and criteria to describe what constitutes a mobility hub. However, we generally find that it embodies the following key characteristics: the physical and digital integration of at least two new transport modes within an existing bus or train station. If these criteria are met, it can be classified as a Mobility Hub for the purposes of the project.

Here the examples from each one of the partner countries:

		
Location	Kifissia, Athens	Barcelona, Spain
Typology	Urban Hub	Urban Hub
Status	On going	On going
Description	Electric railway (overground metro) station combined with bus stops, shared bike and e-scooter station, taxi station, bicycle parking racks, a coffee shop and a cargo parcel station	Central Station with public transportation and other different modes
Operation start	2004	1975
Initiation of Hub	Athens Public Transport Organization SA, Government	Government initiated
Public Transport connected	Metro, Bus	Bus, train, metro
Shared Mobility included	Bike, E-scooter, Taxi	Car, Bike, Scooter sharing, Taxi, Carpooling
Digital Integration	Separate applications for accessing the various transport options	Separate applications for accessing the various transport options (one for bus/train/metro (combined), and a different one for each shared mobility option)
Mobility related Services	Parking for taxis, Parking racks for bicycles	Car parking, eCharging, Petrol station
Non mobility related facilities	Parcel station, Park/greenery, Coffee Places/ Restaurants	Parcel station, Waiting Rooms, Social Services, Luggage storage, Wi-Fi, Shopping, Café/ restaurant
Transfer between modes	Yes	Yes
Information, Visibility, branding	Information via telematics board and an Info Point	Info point with personal assistance on all services available at the hub
Democratic integration	No information available	No involvement or consideration of stakeholder interests and user needs.

		
Location	Milan, Italy	Valletta Region, Malta
Typology	Urban Hub	Urban Hub
Status	On going	On going
Description	Central Railway Stations with integration of Charging infrastructure and e-car sharing mobility. E-VAI (a company run by the railway operator Trenord) is basically an e-car sharing service integrated with other mobility options.	Central Park-and-Ride integrated with main line bus services and bus station
Operation start	2006	2006 and 2011
Initiation of Hub	Trenord Railway operator	Government of Malta
Public Transport connected	Bus, train, metro	Bus, Taxi
Shared Mobility included	Car, Bike, Taxi, e-car sharing	Bike sharing is no longer available. Shared e-scooters were banned from March 2024
Digital Integration	Separate applications for transport options	App available for free public transport; shared platform operators
Mobility related Services	Railway station, Car parking, eCharging	Car parking
Non mobility related facilities	Parcel station, Waiting Rooms, Social Services, Luggage storage, Wi-Fi, Shopping, Café/ restaurant	WiFi, waiting room, public toilets, nearby shops, health center
Transfer between modes	Yes	Yes
Information, Visibility, branding	Branding of e-charging stations and cars No specific brand for the HUB	No specific brand for the HUB
Democratic integration	No involvement or consideration of stakeholder interests and user needs.	Designed as part of the 2006 Valletta Strategy and the 2011 Public Transport Reform, which involved extensive stakeholder engagement.

Location	Nicosia, Cyprus	Skenderija, Bosnia and Herzegovina
Typology	Urban Hub	Urban Hub
Status	On going	On going
Description	Central station with public transportation providing service for the city of Nicosia	Train station and bus station with charging station for electric vehicles, smart bench and anti-vandal parking for bicycles
Operation start	Over 15 years ago and it has been renovated every 5 years	2023
Initiation of Hub	Government initiated/funded	City of Sarajevo – Interreg Adrion project TRIBUTE
Public Transport connected	Bus	Bus, train
Shared Mobility included	Car, Bike, Scooter sharing, Taxi, Carpooling	Car, Bike, Public bike
Digital Integration	Integrated within Nicosia's public transportation application (Pame app)	Smart bench, application for accessing the public bikes
Mobility related Services	Car parking, eCharging, Shared micro-mobility	Car parking, Bike parking, eCharging, Petrol station, Rent-a-bike
Non mobility related facilities	Waiting Rooms, Wi-Fi, Shopping, Café/Restaurant	Waiting Rooms, Wi-Fi, Shopping, Café/ restaurant
Transfer between modes	Yes (car – public transportation – micro-mobility)	Yes
Information, Visibility, branding	Service information available on social media, website and Pame app	Info board with the necessary information
Democratic integration	Designed with a public transport operator: Users were not involved	Online questionnaire in organization of City of Sarajevo and Ministry of Transport of Sarajevo Canton

CONCLUSION

Is there a common trend observed among the GREENMO partners' countries, or are there significant differences in the status quo of mobility hubs?

SIMILARITIES

- Taking a closer look at the current state of the GREENMO partner countries' Mobility Hubs, you can see that they all share a common feature: they are traditional central stations. These mobility points include the public transport systems available in each country and taxi services, with the exception of Bosnia and Herzegovina. Users can easily transfer between these modes. Additionally, car parking and e-charging stations are integrated into almost every central station, with the exception of Greece. Common non-mobility services such as waiting areas, cafes, Wi-Fi, and toilets are available at all hubs. Digital signs displaying departure times and info points are also present.

DIFFERENCE TO A MODERN MOBILITY HUB

- However, when it comes to innovations typically found in modern Mobility Hubs, these are still lacking. Only a few shared mobility options are integrated, and there is no general app encompassing all the available services. Pick-and-drop facilities, as well as additional non-mobility features to create a safe and livable atmosphere, are still missing.

OUTLOOK

Mobility hubs are a promising concept to solve the current mobility challenges in the Mediterranean region. These hubs offer a multi-faceted solution to pressing mobility challenges, including congestion, pollution and inefficient transport systems. By integrating different modes of public transport, shared mobility services and active mobility, hubs provide commuters with seamless and sustainable travel options. They also serve as focal points for urban development, promoting economic growth, social interaction and environmental sustainability.

While the implementation of Mobility Hubs is not yet a reality in the six Mediterranean partner countries, the GREENMO project serves as a crucial foundation for their adoption. By raising awareness of Mobility Hubs and establishing the necessary governance structures, the project aims to pave the way for their successful implementation across the Mediterranean.

Through joint efforts and strategic planning of all the GREENMO partners, the region can unlock the full potential of mobility hubs to create more liveable, connected and resilient communities in the Mediterranean.

FURTHER READING

- Bable smart cities: https://www.bable-smartcities.eu/explore/solutions/solution/mobility-hubs.html
- CoMoUK: https://www.como.org.uk/mobility-hubs/overview-and-benefits
- UITP: https://www.uitp.org/news/mobility-hubs-steering-the-shift-towards-integrated-sustainable-mobility/
- Smart Hubs: https://www.smartmobilityhubs.eu/
- Intertraffic: https://www.intertraffic.com/news/infrastructure/mobility-hubs-multimodal-stations-at-the-centre-of-everything
- Smart Cities: Mobility Hubs, an Innovative Concept for Sustainable Urban Mobility? https://link.springer.com/chapter/10.1007/978-3-031-35664-3_14
- MOBI-MIX: https://www.interreg2seas.eu/en/MOBI-MIX
- Policy Brief UITP - MOBILITY HUBS: STEERING THE SHIFT TOWARDS INTEGRATED SUSTAINABLE MOBILITY: https://cms.uitp.org/wp/wp-content/uploads/2023/06/Policy-Brief-Mobility-hubs-web.pdf
- Article - Exploring the concept of " mobility hubs " and assessing their impacts in two European cities: https://www.sciencedirect.com/science/article/pii/S235214652301061X