TIDE

Transport
Innovation
Deployment
for Europe

GUIDELINES FOR IMPLEMENTERS

Clean City Logistics

TIDE is a Coordination Action funded by the European Commission's DG Research and Innovation under the 7th Framework Programme for Research and Development.

SEVENTH FRAMEWORK PROGRAMME

What is it about?

e–city–logistics electric transporters, Berlin

Source: www.now–gmbh.de

E–City Logistics, Berlin, Germany

The project E–City–Logistik was part of the Model Region Electromobility Berlin/ Potsdam.

Within this project the use of electric freight vehicles was tested and evaluated in two scopes of application: local distribution in the CEP sector (courier, express and parcel delivery) and the supply of retail stores in inner city areas.

The test areas were high–density districts with housing and shopping streets (e.g. Steglitz and Friedenau) and retail locations (e.g. Kurfürstendamm).

Deutsche Post DHL used three electric transporters (Iveco Electric Daily, 3,5 t) for parcel delivery while Meyer & Meyer Transport Services used electric trucks (modified MAN, 11 t) to supply two major retail outlets in Berlin.

Characteristics

City logistics, with its repeating daily routes, limited distances and frequent stops, provides an ideal field for the application of battery electric vehicles. The use of these vehicles addresses key problems of urban freight transport, such as local pollution and noise, and complements other measures in this domain i.e. cooperative delivery centres, dedicated loading areas, night–time delivery, etc..

Clean City Logistics:

- are an ideal field for application of battery electric vehicles;
- provide eco–friendly freight delivery;
- present an attractive image for the operating company and city.

The measure is transferable all over Europe if adopting cities manage to establish conditions which support logistics companies in operating clean freight vehicles economically (e.g. by providing incentives).

Key benefits

Clean City Logistics combine the use of electric freight vehicles with innovative logistics concepts. The benefits can be summarized as:

- reduced local noise and air pollution;
- increased efficiency and fleet utilization;
- access to formerly restricted areas for logistics companies;
- reduced operational costs (energy consumption, maintenance).

Check list

City size	No size restrictions. The positive effects will be more visible the higher the density of the implementing city.
Costs	Relatively high costs for implementation (charging infrastructure, electric vehicles) but lower operational costs (energy consumption, maintenance). Private logistics companies might need to be subsidized by public authorities.
Implementation time	Depends on the extent to which the use of electric freight vehicles is combined with additional measures. For electric freight vehicles only, the implementation time is short except from financing issues. The establishment of an urban delivery centre can take up a few years
Stakeholders involved	• Residents. • Customers: private/business. • Public authorities. • Logistics companies. • Sender/manufacturer.
Undesirable secondary effects	Rebound effects: "Greenwashing" instead of reducing nonessential urban freight traffic.

"The project "E–City–Logistic" analysed the potential of electric utility vehicles in cities. The project states the feasibility of operating the respective logistics processes using full electric vehicles in an impressive manner."

Thomas Meißner,
Head of Division Energy & Mobility,
Berlin Partner for Business and Technology,
Berlin, Germany

"Electric vehicles contribute to a green, clean and economically strong city. Rotterdam is convinced that in the near future, urban delivery to the inner city can be carried out using electric freight vehicles (EFV) only. To accomplish this, we closely cooperate with the private sector. The local authority, private companies and a research institute have signed a local Green Deal on Zero Emission Urban Delivery. Each party is responsible for several actions laid down in a Road Map to 2020. We jointly determine which incentives are both feasible and effective to improve the logistics business case for EFV. These transport companies are important front runners. They try to engage a large community of organisations to follow their example. Our active participation in European projects is tuned to give maximum support to this Green Deal."

More info: http://bit.ly/1Ckgle4

Jos Streng,
Transport Planner,
Rotterdam City Council,
Rotterdam, Netherlands

Electric transporter, Rotterdam
Photo: www.frevue.eu

Benefits & Costs

La Petite Reine, Paris, France

Two types of tricycles with electrical assistance were introduced in the central arrondissements of Paris in 2003 to test an alternative to motorised vehicles for final delivery of goods, especially parcels.

The use of this delivery service increased during the trial period. 796 trips in the first month and 14.631 trips in month 24. 156.248km of diesel van activity was avoided during the trial. This has saved 43,3t oil equivalent of energy consumption, and helped to avoid 112t of CO_2, 1,43t and 280kg of NOx (source: BESTUFS Good practice guide on urban freight transport).

Vehicle of La Petite Reine

Source: www.flickr.com/photos/croquezz/5311404237/sizes/l/in/photostream/

Benefits

Projects in clean city logistics vary from one city to another and most of them consist of a set of different individual measures. But they all aim to optimize urban freight distribution and reduce its negative impacts on the urban environment.

From a public perspective the main benefits are:

- reduction of local noise and absence of local pollutants emissions caused by freight traffic;
- less congestion;
- more efficient use of urban logistics spaces and infrastructure.

The private sector can benefit from:

- access to formerly restricted areas (e.g. pedestrian roads);
- extended delivery time slots (e.g. night time delivery);
- potential reduction of operational costs;
- potential increase in fleet utilization.

Costs

The costs depend on the extent and number of individual measures. However the overall objective of clean city logistics is to be economically viable in the long term.

While the costs for the actual implementation are relatively high for the operating logistics company (apart from policy measures) there is a potential to cover the high expenses by lower operational costs.

The different cost include:

- capital costs of electric freight vehicles;
- capital costs of charging infrastructure, installation and equipment;
- operation of an urban distribution centre;
- lower operational costs (energy consumption, maintenance, fleet utilization) compared to conventional freight delivery.

Users & Stakeholders

Users and target groups

The key target group of users are the people and businesses of a city in both their role as a customer, who receives goods, and as a manufacturer/shipper, who dispatches them.

Residents: Want to live in a sustainable City and want a clean and livable environment.

In their role as private customers, i.e. by ordering goods on e–commerce platforms, they expect high quality service. Also the demand for eco–friendly deliveries in the business–to–customer–sector is constantly growing.

Retail business and commercial enterprises: recipients in the business–to–business–sector have an interest in fast deliveries while at the same time ordered volumes tend to become smaller, to minimize stocks in favor of value added space.

To meet customer expectations the request for eco–friendly logistics services by businesses is also increasing.

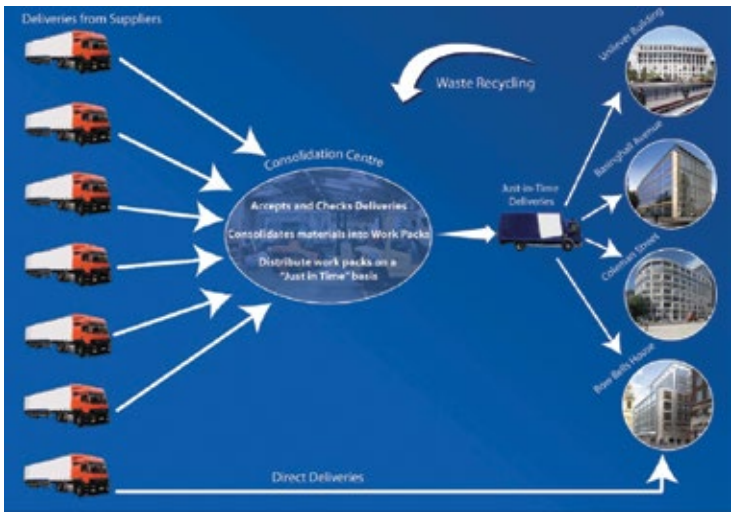


Photo: Distribution of Goods via cooperate Consolidation Center
Source: London Construction Consolidation Centre, Freight Quality Partnerships, Department of Transport, London

Key stakeholders for implementation

The key stakeholders can be divided into two major groups of public and private stakeholders. Each group shows a wide variety of aims and stakes internally as well as between each other.

Within the public sector the **local authorities´** role is to rationalize the urban supply to reduce the negative impacts of the multiplication of urban freight movements as well as to ensure good economic conditions

The **private stakeholders** can be divided into two major groups of professionals:

For **shippers**, who receive or dispatch the goods, the key element is profitability and cost efficiency of their supplies.

The **carriers** operate the transport and storing of urban freight. Their goal is to offer efficient logistics with a high quality of service at competitive prices while having a high degree of capacity utilization.

FQP — Freight Quality Partnership, UK

FQPs are a means for urban authorities, businesses, freight operators, environmental groups, the local community and other interested stakeholders to address specific freight transport problems.

The purpose is to find comprehensive and simplified sustainable solutions together to provide advantages to all participants and users.

Assessing the potential for your city

Is this something for us?

If there already is an existing freight traffic strategy in the adopting city it can be complemented by integrating the measure. If there is no strategy yet it is recommended to combine Clean City Logistics measures with the development of an overall freight traffic strategy so the city to receive an efficient and successful output.

Furthermore Clean City Logistics might be reasonable for cities with:

- high density, narrow streets, few delivery zones such as historical old towns;
- high volume of commercial traffic;
- a lot of retail and small businesses, resulting in a large a number of recipients deliveries with small volumes;
- manufacturers in the urban area, a high number of shippers;
- electric mobility as pillar of sustainable mobility along with installation of charging infrastructure.

The listed factors favour the positive effect of Clean City Logistics for cities and logistics companies. The use of electric freight vehicles and bundling the flows of goods for more efficiency in urban freight distribution might also be appropriate.

Pre–assessing the costs and benefits

In terms of expected benefits for a city the potential impact largely depends on the commitment of the private sector in the long term. Therefore, cities and regions in which a vibrant collaboration between local authorities and the private sector takes place, are already in a very good position for introducing Clean City Logistics.

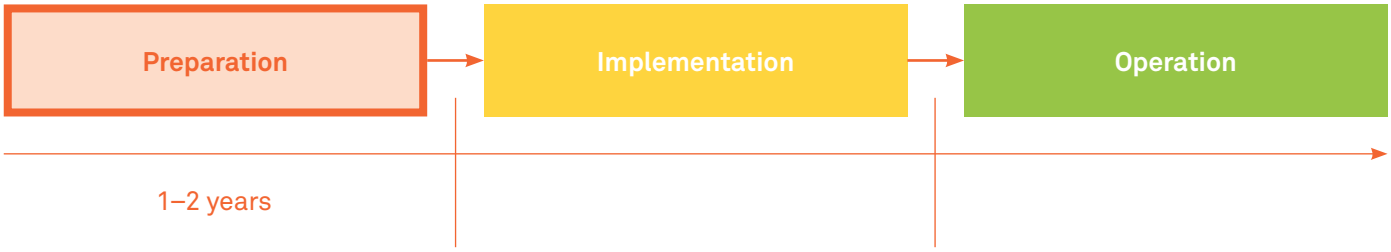
The expected costs for adopting cities are low whereas capital costs for participating logistics companies might be considerable (vehicles, infrastructure, etc.). Thus the success of this measure is more likely if cities manage to shape framework conditions which support the private sector in operating clean city logistics from an economic point of view.

Photo: Fraunhofer Institute


ENERGIE STEIERMARK

From plan to reality

Preparation



In general the use of electric vehicles for inner city freight delivery should not be considered as an individual measure. Cities should take into consideration that the greatest benefit is obtained when the use of electric freight vehicles is linked to additional measures such as urban consolidation centers, dedicated delivery zones, the installation of charging infrastructure, inner city night–delivery or other policy measures.

Key aspects at this stage

Since the distribution of goods in inner cities is handled mainly by private companies, it has to be ensured that the economical entry barriers can be overcome. High acquisition costs and the outlay for the redesign of logistic concepts complicate the implementation of Battery Electric Vehicles in the logistics sector.

Therefore an important issue for clean city logistic concepts is the difference in scope between on the one hand public authorities and research institutions, which have a long term perspective on potential benefits for cities, and on the other hand the focus on short term wins of companies. If there are no real gains in the near future for the private sector, the chances are limited that the policy turns out to be sustainable in the long term. Solutions or initiatives in the past that were not market–based and lacked a real incentive for the private parties involved were not successful.

Goods distribution strategy

When it comes to mobility, cities tend to leave urban goods distribution aside to focus on its citizens mobility. Therefore cities should fist revise their sustainable urban mobility plans to check if urban freight traffic is sufficiently taken into consideration and develop an overall goods distribution strategy.

Stakeholder network

Goods delivery in an urban context is a complex process in which many stakeholders are involved and not all measures within the field of Clean City Logistics are well perceived by everyone. Therefore it is important to get a detailed overview of all local institutions which are directly involved or indirectly affected by clean city logistics concepts and their role and relevance in it.

Broad consensus

A broad consensus across all relevant stakeholders regarding the need for action and the way to articulate it makes acceptance for the measures more likely. This paves the way for further developments, which are crucial to reduce political and strategic barriers due to the variety of interests of involved stakeholders.

Creating political support

Strong political support is needed to facilitate economic efficiency of electric freight vehicles in commercial fleets of private logistics companies. A detailed analysis of the existing conditions in urban freight distribution, its negative impact and potential solutions will help to gain support of political decision makers.

Ready for implementation?	✓
Identification of all relevant stakeholders	
Political support by decision makers	
General goods distribution strategy for the City	
Public funding available?	
Real gains for the private sector	

Public–private partnerships (PPP) Rotterdam, the Netherlands

To make Clean City Logistics attractive, the City of Rotterdam coordinates and facilitates infrastructure implementation, funding, communication, knowledge exchange, monitoring and is working on additional incentives such as night time distribution.

Incentives play an important role and can improve the business case for private companies without having to invest directly in or to subsidize electric vehicles.

Binnenstadservice in Rotterdam: Goods consolidation and clean vehicles

Source : cpr.rotterdam.nl/binnenstadservice

Electric vehicle

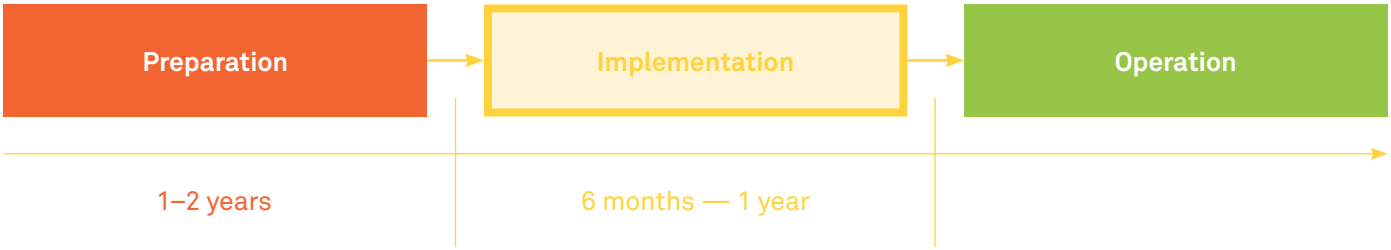
Photo: Fraunhofer IAO

Electric transporter, ELMO

Photo: www.wrp–textilpflege.de

From plan to reality

Implementation



When it comes to implementation, tactical and practical questions arise. At this stage it is important that the private logistics companies develop their individual goods distribution strategy in close cooperation with their clients as well as public authorities to gain broad support for planned activities.

Key aspects at this stage

- Establish a Freight Quality Partnership.
- Policy measures and their relevance for economic efficiency.
- Area of application, market characteristics and urban framework conditions.
- Selection and purchase of electric freight vehicles.
- Selection and installation of infrastructure.

Freight Quality Partnership

It is recommended to establish a local Freight Quality Partnership (if nonexistent). FQP is a form of organization for urban authorities, businesses, freight operators, environmental groups, the local community and other interested stakeholders to work together, exchange information and experiences, and initiate projects regarding sustainable urban freight transport.

Policy measures

During the implementation phase it already has to be clear to the operating logistics companies to what extent they can count on supportive policy measures such as entry to low emission zones, the use of bus lanes, night–time delivery, discounts on congestion charges or lower taxes. Policy measures are crucial to increase the fleet utilization of the companies and to overcome the key barrier, namely the high purchase price of electric freight vehicles.

Photo: Fraunhofer Institute

Area of application / Market characteristics

Depending on their individual logistics concept and business model in the city adopting the policy, the logistics companies involved have to consider where the use of electric freight vehicles will bring the smallest disadvantages compared to conventional ones or — better still — where electric vehicles are even more efficient. They can then adjust their routes according to their analysis.

Relevant factors amongst other things are the characteristics of the delivered goods (e.g. size, weight, volume), topography and the urban structure (density, location of loading areas, depots). Furthermore different market segments have to be analyzed according to their suitability for new, innovative Clean City Logistics.
During that process close cooperation between private companies and local authorities should be further maintained.

Purchase of vehicles

After the area of application is determined the requirements concerning the load–capacity, range and handling of the electric freight vehicles can be defined to decide which vehicle type is the most promising one in the local context.

Although the number is still very small there are already models in almost every vehicle category available, from electric cargo bikes at the lower end, to box wagons, 3.5–7.5–ton vans, up to an 18–ton electric truck which is already operated in Rotterdam.

Installation of infrastructure

To operate electric freight vehicles, charging infrastructure has to be available. Depending on the route–planning and logistics concepts, the vehicles have to charge in depots, on–street while delivering or, if part of the concept, at an urban distribution center. Also depending on the logistics concept as well as the urban environment different, charging–types might be necessary, e.g. fast charging. Also the need for further loading bays in delivery areas has to be discussed at this point.

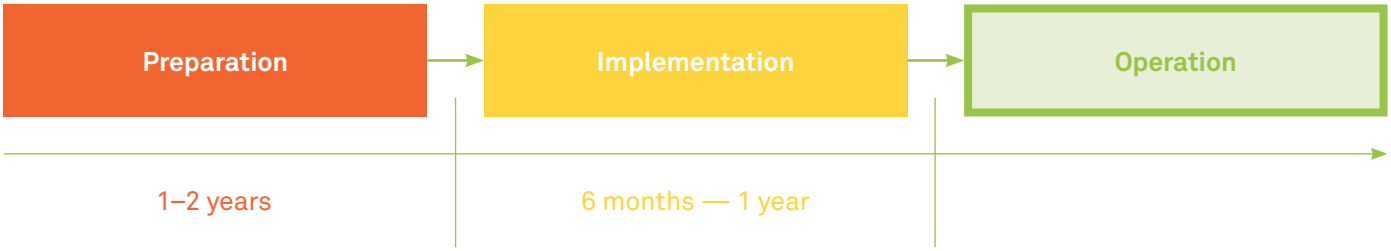
Efficient Goods Distribution in San Sebastian, Spain

To support the implementation of Clean City Logistics, the City Council of San Sebastian converted a former warehouse into an urban Consolidation Centre for the reception of goods from which they are further delivered to their final destination by clean vehicles. Within the project six electric cargo bikes were used for last–mile delivery.

Electric Cargo Bike in San Sebastian
Source: txita.adoxnet.net

From plan to reality

Operation



After a successful implementation it is important to keep up the collaboration between all involved public and private stakeholders also during the operation phase to ensure ongoing support for the measure by local authorities.

Key aspects at this stage

- Enforcing policy measures.
- Continuous marketing and awareness raising.
- Monitoring of costs and savings to further improve the concept.
- Maintenance and close collaboration with vehicle manufacturers.

Enforcing policy measures

The local public authorities have to ensure that policy measures which support the use of Clean City Logistics are translated effectively into practice.

Mobility Agents in San Sebastian, Spain

To guarantee free loading and unloading areas, sixty mobility agents were engaged for a control campaign to stop parking offenders. The implementation of this campaign resulted in an important decrease in the number of parking offences and increased the awareness of this measure.

Continuous marketing/ Awareness raising

Marketing should be understood as a continuous activity. Citizen awareness is a support to the success of Clean City Logistics. It is beneficial when recipients in business–to–customer and business–to–business logistics — which means citizens and the local retail sector — are committed and their support of a behavioral change towards sustainable mobility is also extended to urban goods delivery. Initiatives can then rely on sufficient social support.

Monitoring

Short–term wins for logistics companies are important to keep them committed to Clean City Logistics during the whole project phase and beyond. Therefore it is recommended to monitor costs as well as savings with the goal to further improve the concept even in the operational phase.

Maintenance

Because there are still only a few electric freight vehicles in operation the manufacturers rely on information about practical experience to improve their products so that the logistics companies are able to ensure a high quality of service.

Further information & contacts

Further information

- **Efficient Goods Distribution in San Sebastian**
  www.civitas.eu/content/efficient–goods–distribution
- www.civitas.eu/sites/default/files/documents/ARC_MERT_65_F_EfficientGoodsDistribution.pdf
- **E–City Logistik Berlin**
  www.now–gmbh.de/uploads/media/05–F_BEHRENDT.pdf
- **Good Practice Guide on Urban Freight Transport**
  www.eltis.org/docs/tools/English_BESTUFS_Guide.pdf
- Jesus Gonzalez–Feliu, Frederic Semet and Jean–Louis Routhier (editors), Sustainable Urban Logistics — Concepts, Methods and Information Systems, Springer Verlag.
- Eiichi Taniguchi & Russell G.Thompson (editors), Innovations in City Logistics, Nova Science Publishers.

Further TIDE training on this measure:

Webinars and e–learning courses

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Photo on title page: Fraunhofer Institute

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About TIDE — Transport Innovation Deployment for Europe

The European TIDE project aims to foster a more favourable climate for cities and regions to integrate innovations in their urban mobility policies. This should lead to increased acceptance and take–up of new urban transport solutions and technologies. TIDE will help cities and regions to address common challenges in a collaborative and integrated way.

Why should you care about innovation?

On several occasions, European cities have indicated that innovation can help to tackle challenges resulting from the economic crisis. Innovation can save costs as well as contribute to reaching urban policy goals. Still, cities lack resources to conclude a full innovation cycle.

Innovative ideas usually start in one or just a few places before they reach wider coverage. TIDE will help cities and regions across Europe to shorten the path towards the implementation of innovative measures by showing that it is not necessary to re–invent the wheel and much more effective to exchange on innovation and transfer successful solutions from one European region to another. TIDE thus offers a cost–efficient way of spreading innovation throughout Europe

Our mission — Guided by your needs!

TIDE will enhance the broad take–up of 15 innovative urban transport and mobility measures throughout Europe and will make a visible contribution to establishing them as mainstream measures. The TIDE partnership is making a range of new and feasible solutions more easily accessible, to address key challenges of urban transport such as energy efficiency, decarbonisation, demographic change, safety, access for all, and new economic and financial conditions.

TIDE focuses on fostering awareness, advancing expertise via tried and new tools, practical work with cities, and costs and benefits. The needs of practitioners in European cities are thereby a guiding principle. TIDE is actively supporting 15 committed cities to develop implementation scenarios for innovative urban transport measures, setting the example to an even wider group of take–up candidates. These measures cover the following five TIDE themes: new pricing measures, non–motorised transport, advanced network and traffic management to support traveller information, electric mobility, and public transport organisation.

The TIDE innovative transport measures

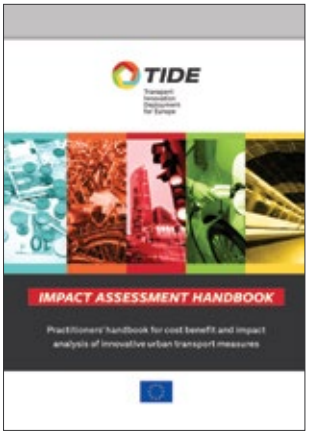
TIDE covers fifteen innovative measures across the five TIDE–themes.

New pricing measures	• Road user charging in urban areas • Parking charge policies • Efficient and convenient pricing and charging for multimodal trips
Non–motorised transport	• Bicycle parking schemes • Creating people–friendly streets and public spaces • Fast cycling lanes
Advanced network and traffic management to support traveller information	• Open data server for applications–based traveller information • User–friendly human machine interface for traveller information • Advanced priority systems for public transport
Electric mobility	• Clean city logistics • Financing schemes for charging stations • Inductive charging for public transport
Public transport organisation	• Creation of public transport management bodies for metropolitan areas • Contracting of services focused on improving passenger satisfaction and efficiency • Marketing research as optimisation tool in public transport

The TIDE Innovation Toolbox brochure highlights these fifteen inspiring transport measures and illustrates them with good practice examples, listing characteristics and benefits, key aspects for implementation, and useful references.

The TIDE Practitioner Handbooks on Transferability and Impact Assessment provide methods and examples to help understand the local potential for innovative measures in urban transport.

The Guidelines for Implementers are ten individual implementation guideline brochures addressing the full implementation process of ten of the fifteen TIDE innovative measures, as well as their costs and benefits, stakeholders to be involved, etc., illustrated with good practice examples.



The mission of the TIDE project

is to enhance the broad transfer and take–up of 15 innovative urban transport and mobility measures throughout Europe and to make a visible contribution to establish them as mainstream measures.

TIDE focuses on 15 innovative measures in five thematic clusters: financing models and pricing measures, non–motorised transport, network and traffic management to support traveller information, electric vehicles and public transport organisation. Sustainable Urban Mobility Plans are a horizontal topic to integrate the cluster activities.

The TIDE team

The TIDE consortium is composed of a variety of experts in the field of urban transport, bringing in the knowledge of the academic sector, the experience of cities, the expertise of consultants and the multiplier effect of European networks.

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BKK Budapesti Közlekedési Központ
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TIDE Transport Innovation Deployment for Europe

SEVENTH FRAMEWORK PROGRAMME