

## **D3.3 Report on training and peer-to-peer capacity building**

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## **Dissemination and uptake**

This deliverable aims to inform the dialogue with all Future Horizon partners, associated partners and the ERTRAC and 2ZERO partnerships.

D3.3 is a public deliverable and will be available to a broader audience.

## **Executive summary**

This report provides an overview of peer-to-peer exchange and capacity building among urban change makers from public and private sectors, civil society and academia. It highlights various workshops, webinars, training sessions during the project's lifetime, and additional capacity-building modules, such as the Urban Living Labs.

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## Table of Abbreviations

ALICE	European Technology Platform - Alliance for Logistics Innovation through Collaboration in Europe
BEVs	Battery electric vehicles
CO2	Carbon dioxide
CoP	Community of Practice
CRF	Centro Ricerche FIAT SCPA
DTEE	Decarbonising Transport in Emerging Economies Project
EMT	Empresa Municipal de Transportes de Madrid
EPoSS	European Association on Smart Systems Integration
ERTICO	European road Transport Telematics Implementation Coordination Organisation - Intelligent Transport Systems & Services Europe
ERTRAC	European Road Transport Research Advisory Council
ETIP SNET	European Technology and Innovation Platforms (ETIPs) - Smart Networks for Energy Transition
EU	European Union
EV	Electric vehicles
FCEV	Fuel cell electric vehicles
GEF	Global Environment Facility
GtCO2e	Gigatons of Carbon dioxide equivalent
IDIADA	IDIADA Automotive Technology
LCA	Life cycle assessment
LEVs	Light electric vehicles
MaaS	Mobility-as-a-service
MYC	MobiliseYourCity
P2P	Peer-to-peer
SULP	Sustainable urban logistics plan
SUMP	Sustainable urban mobility plan
TNA	Training Needs Assessment
TNO	Nederlandse Organisatie voor Toegepast Natuurwetenschappelijk Onderzoek
TUMI	Transformative Urban Mobility Initiative
UEMI	Urban Electric Mobility Initiative
UITP	Union Internationale des Transports Publics)
ULLC	Urban Living Lab Center
UNDP	United Nations Development Programme
UNH	UN-Habitat
VTT	VTT Technical Research Centre of Finland
ZLC	Zaragoza Logistics Centre

## 1 Introduction to the report

Emissions from the transport sector are a major contributor to climate change — in 2018, a total of 24% of global CO<sub>2</sub> emissions from fuel combustion came from transportation. Regarding transport modes, 72% of global transport emissions come from road vehicles, accounting for 80% of the rise in emissions from 1970-2010. The global transport sector could reduce 4.7 GtCO<sub>2</sub> e/year by 2030. Such a transition depends on cities that enable modal shifts and avoided journeys and provide incentives for the uptake of improved fuel efficiency and changes in urban design that encourage walkable cities, non-motorised transport and shorter commuter distances.

Cities pursuing sustainable transport benefit from reduced air pollution, congestion and road fatalities and can harness the relationship between transport systems, urban form, urban energy intensity and social cohesion. Electrification is an essential part of the solution to growing transportation sector emissions. It eliminates tailpipe emissions and harnesses the potential to decarbonise the power grid.

Accordingly, several cities have been developing and implementing sustainable urban mobility pilots with a strong focus on active and electric (public and shared) mobility embedded in their Sustainable Urban Mobility Plans (SUMP) with a high potential of being replicated in other areas of the cities.

This report (D.3. Report on Training and Peer-to-Peer Capacity Building) focuses on summarising peer-to-peer exchange and capacity building to boost low-carbon urban mobility in cities. The report embodies the work conducted as part of Task 3.3, which targets providing a platform that enables local authorities and public transport operators from different partner cities to work together and learn from each other. Furthermore, the platform facilitates discussions on technical issues and essential elements towards implementing sustainable mobility initiatives that are often overlooked, such as coalition building, public relations, stakeholder relationships, and financing.

## 2 Peer-to-peer exchange and capacity-building activities

As indicated in the 2Zero Strategy, the development of the necessary capacity-building instruments and tools to support the adoption and integration of innovative urban mobility concepts, solutions and services at the urban, regional and national levels is required for the seamless adoption of zero tailpipe emission vehicles. Likewise, the ERTRAC Roadmap identifies capacity building, knowledge transfer and site visits as key measures in upscaling and transferring innovative urban mobility solutions. Whilst the Roadmap acknowledges European cities' leadership and rich experiences in promoting sustainable transport and mobility, it advocates that such knowledge is shared through international cooperation with other regions of the world. It recommends mainstreaming, upscaling and transferring good experiences in urban mobility contexts, focusing on smaller cities outside Europe, and learning from best practices of countries outside Europe, such as emerging markets, to strengthen the competitiveness of the European transport industry.

In light of the above, this report highlights in the following sections the work of European Industry players who, through their participation in several EU-funded projects, extend capacity-building opportunities to cities outside of Europe. In the following paragraphs, we summarise the different workshops, webinars and training aiming at developing a network of change-makers and establishing capacity-building hubs and creating a platform that allows the facilitation of information exchange and e-learning resources. Through the platform, participants of the said capacity-building activities discuss technical issues and increase their awareness of topics relevant to implementing innovative urban mobility projects, such as coalition building, public relations, stakeholder relationships and financing activities. These topics are in line with ERTRAC's recommended training focus that borders on political acceptance and support for innovation, public acceptance of innovation, access to financial support, coherence in legal frameworks, access to 'best practice' studies and guidelines; standards, relationships between stakeholders on same and different levels, viable business models, living Labs approach, transferability methodology and cost-benefit analysis and impact assessment.

In this report, we draw attention to the EU's international cooperation on capacity building in some relevant initiatives and projects; for example, in the EU-funded SOLUTIONSplus project, which delivered several capacity-building activities in Africa, Asia, Europe, and Latin America. These activities include:

1. Living Lab oriented approach
2. Linking professional training with academic teaching
3. Peer-to-peer exchanges
4. Individual advice and trainings
5. E-learning
6. Training sessions at conferences
7. Integration into formal academic programmes
8. Integration into broader capacity-building programmes



## 2.1 Peer-to-peer exchange and Traditional Trainings

Peer-to-peer exchange is meant to facilitate dialogue between urban change makers. Such an exchange is hinged on developing a network of active participants coordinated and supported through capacity-building nodes or hubs.

This section provides highlights of relevant activities and events that feature both peer-to-peer exchange - which can be described as learning through dialogues, networking, and mentoring between the relevant change-makers - as well as traditional trainings - which rely on the delivery of information towards the transfer of knowledge and skills from external experts - that had occurred in the reporting period. In many cases, the events that are highlighted in this section feature a mix of these two approaches. The employment of such a blended approach has primarily been based on the requests of the targeted capacity-building audience (e.g. city representatives in Asia, Africa, and Latin America). The events are grouped into global, regional, and city-specific activities.

European experts – including those involved in the 2Zero Partnership, its supporting technology Platforms (ERTRAC, EPoSS, ETIP-SNET, ALICE, and Batteries Europe), and the Future-Horizon project – have significantly contributed towards the design, and delivery of these activities, contributing further towards the transfer of knowledge and experience from the region towards a global audience. The topics featured in these peer-to-peer exchange and traditional training events (most of them targeting stakeholders in developing regions) can be analysed through the lens of the research and innovation priorities of the 2Zero Partnership.

- **Vehicle technologies and vehicle propulsion solutions for Battery Electric Vehicles (BEVs) and Fuel Cell Electric Vehicles (FCEV)**

There had been significant peer-to-peer exchange and trainings that occurred in the reporting period centred on topics relating to the emergent vehicle technologies in the developing regions, primarily on Battery Electric Vehicles. Developing regions in Africa, Asia, and Latin America are experiencing an influx of more BEVs, particularly smaller two and three-wheeled electric vehicles. While such small electric vehicles (EVs) have been around in many partner cities (and countries) for quite some time, many of them are at the stage of EV uptake that they had not experienced before, also due to the changes in policy direction towards the stimulation of EVs markets. The co-design process adopted for developing the trainings and exchange in this report often highlights capacity-building needs related towards highlighting technological considerations towards aiding decision-making that is related to policy and regulations design, operations and management, financing, and infrastructure provision. Through these exchanges and training sessions, relevant technologies, strategies, policies and regulations from the European region have been shared with global audiences, providing insights on potential options towards aiding a smoother and just transition to e-mobility. Capacity building on strategies to address the disruptive impacts of the transition to e-mobility on existing transport services (e.g. operations, maintenance) is also deemed important for future activities.

- **Integration of BEV into the energy system and related charging infrastructure**

The integration of BEVs into energy systems and topics related to the provision of appropriate charging infrastructure has been integrated into the training and peer-to-peer activities design. Many of the partner cities are also implementing demonstration activities related to multimodal charging facilities and innovative charging modalities that have yet to be tested in the local contexts. One observation (based on discussions with partners in developing regions) is that there seems to be more research (and thus overall discussions) that has looked into the potential impacts of EVs (e.g., scaled-up scenarios) on the overall electricity demand. Still, less work has been done in terms of looking into the distribution (e.g., potential impacts and upgrades needed) side of the charging equation. Standardisation is also a key topic to address in future capacity-building programs so that decisions related to the adoption of charging standards are guided. Peer-to-peer exchanges and trainings involving a wider range of stakeholders such as energy generators, transmission and distribution services providers is also highly important.

- **Innovative concepts, solutions and services for zero-tailpipe emission mobility of people and goods**

The global audience of the trainings and dialogues with peers and experts have learnt significantly from the experiences in the European context in relation to the innovative concepts, solutions and services for zero-emissions mobility. For example, experiences in Madrid, Hamburg and examples from other European cities on the implementation of e-bike sharing and shared mobility services have inspired action in partner cities in Asia, Africa, and Latin America. European experiences in the implementation of low-emission zones, Mobility-as-a-service (MaaS), electrification of urban freight, and overall integration of e-mobility and zero emissions strategies into wider plans (e.g. sustainable urban mobility plans) have also been instrumental in furthering the discussions towards the decarbonisation of transportation in the partner cities.

- **Life-cycle Assessment (LCA) approaches and circular economy aspects for sustainable and innovative road mobility solutions**

The awareness and adoption of LCA approaches and discussions of circular economy in the field of transportation is still at an emerging stage, particularly in developing regions. Relevant authorities, transport operators, and users alike are still grasping the more basic concerns when it comes to technologies and strategies towards transport decarbonisation (e.g. financial implications, local applicability of solutions, employment impacts, and safety). However, there have been some significant highlights in terms of how the peer-to-peer activities have contributed towards furthering discussions on circular economy and the utilisation of more holistic assessment approaches. For one, 2<sup>nd</sup> life batteries from Europe are now to be tested in cities in Asia (e.g. Hanoi, Pasig, Kathmandu), with corresponding activities for capacitating local stakeholders and increasing awareness on such topics in general. Moreover, projects such as SOLUTIONSplus have integrated key performance indicators (KPIs) that assess the potential impacts of pilots and demos (albeit in a qualitative manner) related to materials

sourcing, disposal and recycling. Overall, there is still a need to increase global awareness regarding life cycle-inclusive assessments, which can also build the case for the transition towards circular economies related to transportation.

### 2.1.1 Global Trainings and Exchange

#### ▪ **Peer-to-peer Exchange on E-bike Sharing Systems**

Two peer-to-peer exchange sessions on e-bike sharing systems, targeting participants from Asia, Africa, and Latin America, were held in February 2022. The speakers are local authorities experienced in the successful roll-out of e-bike sharing systems (across continents, including Europe, Asia and Latin America) or international entities experienced in planning such systems. Presentations and discussions focused on the wider e-bike sharing system topic, addressing dimensions such as basic system information, main setup and implementation challenges, public transport integration, and data-related issues. The said events also became a venue for sharing practical experiences from cities such as Cairo, Egypt, and Mexico City, Mexico, and enabling best practice guidelines (e.g., bikeshare planning guidelines by the Institute for Transport Development Policy).

The Asia/Africa session was attended by 75 participants from at least 27 cities, while the Latin American session was attended by 78 participants from at least 11 different cities.

#### ▪ **African and Latin American city exchange in Bogota, Colombia**

22-26 October 2022, Bogota, Colombia: It is easy to become despondent about mobility challenges, particularly in the global south, with many demanding pressures on cities and their people. Hence, the power of connecting with similar realities and contexts to find innovative solutions and inspiration to tackle one's own. Moreover, solutions to other problems can be found once a mobility challenge is tackled. After all, mobility is not just about moving people or goods from point A to point B; it is a tool to experience and build our cities collectively.

An exchange for African and Latin American cities took place in Bogota from 22 to 26 October. It allowed a small delegation from Dar es Salaam, Kigali, Quito, Montevideo and Belo Horizonte to engage with the Bogota context and reflect on their challenges. The experience included a mix of activities ranging from the iconic Sunday's Ciclovía (which shuts down 100km of streets to motorised traffic every week), the relatively new cable car TransMicable and a private sector initiative to use bicycles for last-mile deliveries; to travelling in the heavy daily traffic and having conversations about the individual experience of vulnerable populations like domestic workers in Bogota. The immersion was only partial as time was limited; nevertheless, powerful points emerged in the exchange, highlighting the benefits of tackling transport challenges and the potential of the South-South exchange.

- **UN-Habitat Low-carbon Mobility Community of Practice**

The Community of Practice (CoP) session organised by UNH in May 2021 stimulated low-carbon mobility in cities in low- and middle-income countries, which have two core components: (i) showcasing the opportunity for public-private partnerships in implementing (co-developed) innovative solutions on e-mobility and, (ii) introducing the capacity building tools and training sessions to support local and national authorities, private parties and other stakeholders to design, adopt and implement sustainable, low-carbon urban mobility policies and practices.

- **World Economic Forum Zero Emission Urban Fleets**

SOLUTIONSplus, in cooperation with the World Economic Forum Zero Emission Urban Fleets, organised a Dialogue on electrification of the taxi sector, building upon the priority capacity-building needs identified by the City of Hamburg, one of the partner cities. Specifically, representatives from Hamburg, the Taxi Association and several German cities came together to discuss Hamburg's ongoing initiative on the taxi sector electrification and the common challenges faced in decarbonising the sector.

- **MOBI-MIX and SOLUTIONSplus workshop**

An online workshop focusing on new mobility and shared e-mobility services was co-organised by the SOLUTIONSplus project and MOBI-Mix on the 5<sup>th</sup> and 6<sup>th</sup> of May, 2022. The workshop featured presentations and discussions on the following: trends relating to new mobility services (particularly in Europe, with presentations for Hamburg and Rotterdam); regulating new and shared mobility (presentations from Oslo, Paris, Madrid, and Bremen); and the integration of shared e-mobility into transport systems.

- **COP 26 Side Events**

A side event was organised during the COP 26 in Glasgow (Nov 2021) entitled "How to Turn a City into A Smart and Net-Zero City?" served as a venue for highlighting the European experience in relation to paving the path for smart cities towards climate neutrality, as well as the EU experience in international cooperation in the field of urban mobility.

## 2.1.2 Regional Training and Exchange

- **Regional Training Program: Latin America and the Caribbean**

The first Regional Training on Light Electric Mobility: Challenges and Opportunities was organised in an online event spanning September 21-24, 2022, and were divided into two modules: 1) Regulatory framework for electric vehicles and 2) Planning for low-carbon urban logistics. About 237 participants took part in this series of training sessions. On September (26-30), 2022, the third training module focusing on charging infrastructure was delivered. This was attended by 191 participants representing 22 countries from across the globe. The 4<sup>th</sup> instalment of the training series was delivered on October 24-28, 2022, focusing on electric buses. The event featured presentations and discussions

about the experiences related to the deployment of e-buses around Latin America and Europe. This module was attended by 264 participants representing 12 countries.

- **Regional Training Program: Asia**

On May (24-28), 2021, the SOLUTIONSplus project held its first Asia regional (online) training focused on Integrated low-carbon urban mobility planning and e-mobility. The training program was jointly organised with UN-Habitat and the International Urban Training Center. Thirty (30) participants, who were pre-selected through an application process, took part in the week-long training representing nine countries in Asia (Bangladesh, India, Mongolia, Nepal, Pakistan, Philippines, Sri Lanka, Vietnam, and Malaysia). European experiences, for example, in terms of market stimulation and regulatory approaches towards new mobility services, were shared with the audience.

On October 19-21, 2021, another regional-level (online) training program was organised. The multi-day event featured presentations and discussions on the e-mobility ecosystem and stakeholders, EV policy and regulation, charging infrastructure planning, policy and operations. UITP, for example, shared the current state and outlook for the deployment of electric buses in Europe, as well as the best practices in the region in terms of electric bus charging strategies. About 346 participants from 17 countries attended the series of events.

- **Regional Training Program: Africa**

The 2021 regional training conducted for the stakeholders in the African region centred on the need for reliable and user-friendly EV charging infrastructure. This regional training on “E-mobility Charging Infrastructure” was held from the 27<sup>th</sup> of September to the 1<sup>st</sup> of October 2021. The program featured presentations and discussions on the following: contextualisation of e-mobility in Africa; EV charging infrastructure standards; financing, public procurement and business models; EV charging points; and policy planning and integration. European experiences relevant to e-mobility planning and policy frameworks were shared by Rupprecht Consult, while FIER shared insights on charging interoperability and strategy localisation and integration of charging infrastructure based on experiences in the Netherlands. IDIADA also shared a case study on EV development and electric and functional safety, while CRF shared future charging needs (related to fast and bi-directional charging).

### 2.1.3 City-Specific Trainings and Exchange

- **Kathmandu Nepal: E-mobility Integration in Public Transport**

A demonstration action was officially launched in Kathmandu on November 28, 2022. It aims to contribute towards creating an ecosystem for electric mobility in Kathmandu by demonstrating different EVs to enhance public transport, as well as suitable charging solutions and related services. It will support the integration of several innovative last-

mile solutions such as 30 new and 50 remodelled E-3-wheelers (for public transport) and 20 E-scooters/e-bikes (provided by the city/ Valeo) with 5 E-minibuses (8 metres in length and co-funded by the city), the buses in use currently and forthcoming E-buses. Support from 2Zero partners such as Valeo, Volvo, and other European entities, such as DTU, FIER, Wuppertal Institute, CRF, UITP, and UEMI, has been instrumental in guiding the progression of activities in Kathmandu. Moreover, European technologies (e.g., powertrains from Valeo; 2<sup>nd</sup> life batteries from Betteries) are also being integrated into the pilot vehicles and will be showcased and tested on the roads of Kathmandu. The demonstration action also enabled the assistance provision of European start-up PEM Motion, which provided technical support for the local start-ups in Kathmandu that are conducting the development of modern *safa tempos*.

An in-person workshop on “Business Model and Financing for Electrification of Public transportation in Nepal” was held on November 24, 2022, in Kathmandu, Nepal. The workshop aimed at supporting and facilitating a platform for EV operators/suppliers/business companies, policymakers, development partners, and academicians to exchange knowledge and findings about business models and financing mechanisms to scale up EVs in Nepal, focusing on public transportation. It underlines the gaps and policy interventions related to the financial aspects of this sector. The key parts of the workshop included: EV business in Nepal: Opportunities and challenges; International financing options on e-mobility; Driving investments towards National Urban Mobility Planning; Financial analysis of light EVs in Kathmandu; Multi-stakeholder panel discussion on policy and investment plans for EV, business models and financing public vehicles. A separate session was also held to validate the KPIs to be used in assessing the EV demonstration in Kathmandu. The event had 50 participants, mostly coming from government organisations (e.g., Ministry of Physical Infrastructure and Transport, Department of Roads, Alternative Energy Promotion Centre), NGOs and development partners (Nepal Transportation Federation, GIZ, GGGI etc.), private companies (Clean Energy International, Shree Eco-visionary, Thee-go, Chaudhary Group Motors etc.), and investment agencies (Nabil Bank, One to Watch, ALOI etc.). The female attendance was 25%.

- **Hanoi, Vietnam: Shared E-mopeds for Enhancing Access to Public Transport**

On November 29-30, 2022, a “National Training on E-Mobility” was jointly organised with a UNDP-led project called “Catalysing a Sustainable Shift Towards E-Mobility in Vietnam,” supported by the Government of Japan. The event focused on integrating e-mobility into existing transport and city development plans to contribute towards Vietnam's Net Zero emission target and towards implementing mitigation measures noted in the country's Nationally Determined Contribution to the transport sector. The 2-day session welcomed a mix of international speakers who provided the lessons learned and best practices and national experts who provided the local context on roadmaps, technical specifications and policies, as well as the status, challenges and opportunities.

A total of 103 participants joined the 2-day training in Hanoi, with 69 in-person attendees and 34 online attendees. Most attendees represent the government agencies, such as

the Department of Science, Technology and Environment of the Ministry of Transport, Vietnam Register, Institute of Strategy and Transport Development, Ministry of Science and Technology, Ministry of Planning and Investment, Institute of Energy of the Ministry of Industry and Trade, Department for Roads of Vietnam, and Vietnam Standards and Quality Institute of the Directorate for Standards, Metrology and Quality. Representatives from the research and academic institutions also joined the training, such as the University of Transport Technology, Center of Regional and Urban Studies in Ho Chi Minh City, Ho Chi Minh City Institute for Development Studies, Hue Institute for Development Studies, Hue University of Economics, Vietnam National University-University of Science in Ho Chi Minh City, Ho Chi Minh City's Vietnam National University's Institute of Environment and Natural Resources, University of Transport and Communications in Hanoi, Fulbright University Vietnam, Ho Chi Minh City Open University, and ThuongMai University.

The event also welcomed representatives from the private sector, such as Vietnam Honda Co., Vietnam Energy and Environment Consultancy JSC, Selex Motors, Center for Electronic Measuring Equipment Manufacturing in Central Vietnam, and Vietnam Sustainability Social Enterprise.

Local governments in Vietnam were also represented, including Hanoi Public Transport Management Center, Ho Chi Minh City's Public Transport Management Center, Hue's Department of Environment and Natural Resources, Can Tho's Department of Transportation, and the Committee Division of Hanoi People's Committee.

The event supports the implementation and awareness raising about the shared e-moped demonstration in Hanoi, which was also officially launched on November 28, 2022. The demonstration action aims to test a shared e-moped system to improve last-mile connectivity to main public transport modes such as the BRT.

#### ▪ **Pasig City, Philippines: Shared Smart Multi-purpose EVs**

A three-day event was organised on December 5-7, 2022, in Pasig City, Philippines. The event aimed at supporting the City of Pasig towards concretising its role in EV adoption and strengthening its knowledge on planning for charging infrastructure. The modules were designed to capacitate local authorities on their role pursuant to the national policy on EVs that became law in April 2022, the Philippine Electric Vehicle Industry Development Act or the Republic Act No. 11697. Representatives from other local government units in the Philippines were also present, along with other e-mobility proponents such as the GEF-funded Philippine country project "Low Carbon Transport Systems", which is co-implemented by the Department of Transportation.

Ninety-one (91) participants attended the event. Representatives from other cities in the Philippines also participated (i.e. Manila, Quezon, Mandaluyong, and Sta. Rosa, Paranaque). Because the training was aimed at local authorities, the participants came from various offices of the city governments, such as transport, planning, city health, environment, energy, social services, general services, finance, and city council (local policymakers). Most participants identified themselves as male except for the first day, where most identified as female.

The events, as mentioned earlier, support the demonstration action in the City of Pasig, which features smart, shared, locally designed and assembled multi-purpose e-quadricycles and e-vans. These e-quads and e-vans are initially to be tested by the City government, aiming to demonstrate the benefits to other potential users. The demonstration action is becoming a testbed for European technologies (e.g., Valeo power trains; 2<sup>nd</sup> life batteries from Betteries, which are to be integrated into the e-quad and e-van prototypes). PEM Motion also provided technical advisory support in terms of expert advice focusing on the structural design and battery cooling system of the e-vehicles.

- **Kigali, Rwanda - Using the e-mobility transition to create a better urban future for women.**

The SOLUTIONSplus project is conducting a demonstration in Kigali which focuses on integrating the public bus system with electrified feeder services provided by e-moto taxis (new and remodelled), as well as e-bikes that support first/last mile connectivity.

Together with Ampersand and GIZ Rwanda, the SOLUTIONSplus partners in Kigali jointly implemented a project to facilitate the involvement of women as drivers of electric motorcycle taxis. Thanks to the support of Urban Pathways, the women-led organisation Flone Initiative conducted an initial analysis of the conditions for gender-inclusive projects to succeed. Several enabling facets were identified and implemented, such as ad-hoc driving training, specific conditions for the practical test, and financial support to access electric motorcycles. This encompassing approach enables a driving test success rate of 69%, much higher than previous gender-inclusive projects.

On the 15th of November, 2022, 24 electric motorcycles were handed over to the women who will now join the moto-taxi industry. Partners will continue to monitor their activities, pursue further research on barriers faced by women, and discuss with external partners to identify conditions to scale up gender-inclusive e-mobility efforts in the long run.

- **Dar es Salaam, Tanzania: Electric bicycles to deliver medical parcels: multiple economics, health, and space benefits**

On November 23, 2022, SOLUTIONSplus launched a pilot in Dar es Salaam (Tanzania) promoting pedal-assist electric bicycles for urban deliveries. The cycling cooperative FASTA will use these e-bikes to deliver packages in the city, including medical parcels for the Aga Khan hospital. Based on FASTA's experience in the past few years with conventional bicycles, the e-bike pilot aims to increase the convenience of deliveries for the cooperative, give cyclists more visibility, and improve their business.

During the training and assembly workshop hosted by the Dar es Salaam Institute of Technology Company Limited (DIT), the project partners EURIST and Fabio trained participants on how to use the e-bikes before going into a two-day practical training on assembling the components to form the e-bike. Local assembly and the upgrading of maintenance skills is a key component of the pilot, enabled by the in-depth expertise of EURIST, FABIO and DIT. The 6-month pilot has now started, during which the cyclists will benefit from the support of DIT, providing storage of the e-bikes and charging of the batteries. GPS tracking and regular discussion with the cyclists will allow for continuous



monitoring and sharing of learnings. All partners are convinced of the major opportunities provided by e-bikes in cities: they enable more people to cycle - allowing active mobility and corresponding health benefits-, allow higher loads and longer trips, and are much more space-efficient than larger vehicles such as cars.

▪ **Quito, Ecuador: Advancing Last-Mile Delivery Logistics**

As part of the SOLUTIONSplus project, plans are ongoing to build a multimodal e-mobility hub in the historic centre of Quito. This hub will be primarily accessed by clean public transport vehicles, pedestrians and bicycles and will greatly contribute to making the area a low emissions zone (LEZ).

Quito's demonstration activities focus on improving the connectivity between public transport lines and stations. In addition to various vehicles (28 e-bikes for bike sharing, 12 e-cargo bikes, three e-buggies, ten e-quads, and one e-van) to allow passengers to move quickly from one part to the other, another focus is on advancing last-mile logistics for delivery services.

In the demo, ten e-quadracycles for last-mile e-delivery services and one e-delivery van are introduced and tested in the area, aiming to scale it up to a larger number of vehicles. Local SMEs are assembling the units based on their experience in the automotive sector. The European start-up PEM Motion has also supported several of the start-ups in Montevideo and provided technical recommendations related to vehicle design and components integration.

▪ **Montevideo, Uruguay: Multimodal Charging Hub**

Montevideo, Uruguay, is focussing on showcasing a multimodal charging hub in the Ciudadela Terminal, which is a bus terminal located at the centre of Montevideo. The demonstration shall contribute towards assessing opportunity charging schemes for e-buses, testing integrated strategies for multiple vehicle types (e-bus, e-taxis, light electric vehicles or LEVs), and improving the terminal. Moreover, international cooperation with the MOVÉS project for a joint program has been strengthened through the joint implementation of activities related to 1) local assembly of cargo e-2- and 3-wheelers, 2) a renting scheme for the produced vehicles that will ensure producers a renting fee for each vehicle during a year, and 3) identification of potential long-term users of the produced vehicles.

A series of on-site meetings and peer-to-peer sharing activities, wherein partners and experts (including European experts) from the SOLUTIONSplus project were held last July 2022. These activities included the following notable activities: a workshop on incentives towards promoting e-mobility; a site visit to the workshops where the demonstration prototypes are being developed; a site visit and ocular inspection at the Ciudadela Terminal; sharing of business, regulatory, and pricing schemes related to e-mobility in the Netherlands. European electric motors (Valeo) are also going to be integrated into some of the light EVs to be featured in the demo in Montevideo. The European start-up PEM Motion has also supported several of the start-ups in Montevideo and provided technical recommendations related to vehicle design and components integration.

## 2.2 E-Learning

This section presents the e-Learning activities – particularly those that feature structured learning modules and exercises and, in some cases, combine digital peer-to-peer dialogues embedded in the curricula. These e-Learning activities have been essential in continuing the build-up of capacities relating to decarbonisation and accelerating the development of sustainable and integrated transport solutions. The importance of such digital learning activities has been elevated during the COVID-19 pandemic.

- **Vehicle technologies and vehicle propulsion solutions for Battery Electric Vehicles and Fuel Cell Electric Vehicles**

Easy access to free-of-charge digital learning materials on the basics of different vehicle technologies and propulsion systems, their inherent characteristics, and advantages/disadvantages of different vehicle technologies is an essential element in bringing forth collective awareness about technology options for road transportation, and thus deliver more meaningful discussions towards guiding critical decisions related to policy, regulations, strategies and investments in road transportation. The e-Learning modules presented in this section embed significant contributions from European entities and experts who had shared knowledge about the developments in electric vehicle technologies and components in the region. For example, the e-Learning program on e-buses, as well as the battery training program, depended significantly on inputs contributed by European experts.

The need for further sharing of European insights and experience in relation to smaller EV applications (e.g. L-category) would be highly beneficial for increasing the capacities in other regions (e.g. Asia, Africa, Latin America) whose urban transport systems are highly dependent on such vehicles.

- **Integration of BEV into the energy system and related charging infrastructure**

Similarly, digital learning modules and courses focusing on the integration of EVs into wider planning (e.g. energy and infrastructure) are needed to be available on a massive scale. Tailored modules for different types of stakeholders that are relevant to charging infrastructure planning, and energy systems, in general, are also deemed important to pursue. Further sharing of practical European experience in moving towards integrated EV planning and strategy development can also benefit the global audience.

- **Innovative concepts, solutions, and services for zero-tailpipe emission mobility of people and goods**

The e-Learning activities in this section also highlight Europe's leading role in pursuing constant innovation in solutions and services towards more sustainable road transport systems. For example, the historical and current developments in terms of MaaS applications in Europe are highlighted in the e-course on MaaS. Global audiences can also benefit from developing digital learning materials focusing on the procedures (and the associated challenges and resolutions) towards scaling up successful innovation pilots' results. The challenge towards transferring the knowledge towards action in other regions lies primarily in the differences in contexts (and thus, the adaptability of

innovative schemes and solutions), differences in stages of uptake, and practical challenges (e.g., regulatory landscapes which render certain solutions not applicable). Similar to the insights explained in the previous section on traditional training and peer-to-peer exchange, intensified digital training materials and programs highlighting context-specific benefits of innovative concepts might elevate global audiences' interest towards accelerating such adoption.

- **LCA approaches and circular economy aspects for sustainable and innovative road mobility solutions**

There remains a significant space for intensifying digital learning focusing on LCA approaches and circular economy within the transportation paradigm. Elevating the overall awareness of such approaches may be critical in achieving a snowball effect in terms of accelerating the adoption of integrated solutions towards decarbonisation and sustainability in the transport sector. These are also crucial in alleviating unintended negative impacts and leakages that may arise as the globe transitions towards electrification, automation, and energy and transport integration.

The Wuppertal Institute is partnering with the International Transport Forum in an International Climate Initiative-funded project called Decarbonising Transport in Emerging Economies (DTEE). As a part of the project, the ITF is developing a national-level tool to calculate emissions from the transport sector in India. This tool is based on the LCA methodology. The availability of such a tool will not only allow the decision-makers in India to assess the transport-related emissions but also allow the development of transport interventions that develop scenarios for future decarbonisation. The tool and the development approach will also be a potential opportunity for a global south-north knowledge exchange.

### 2.2.1 Electric Mobility: More than Just Electrifying Cars

A global e-learning programme on electric mobility has been designed through the SOLUTIONSplus project, which aims to provide a comprehensive introduction to electric mobility planning and implementation in local contexts.

The first part of the course is primarily designed for city and regional authorities but can provide a solid knowledge base for any stakeholder interested in electric mobility. In addition to the preparation of different video lectures, a series of interviews with relevant stakeholders have been carried out to enrich the content of the material. Some interviewees were MRA-E (Metropolitan Region of Amsterdam Electric, Cities of Rotterdam, Quito, MOVÉS Montevideo, University of Transport Technology Hanoi, RMI India). To start off the course, a kick-off webinar was organised (January 28, 2021) to discuss the general outline of the course and individual units, identify the key learning areas and clarify technical and organisational questions.

As part of this e-course, more than 40 video lectures were produced from contributions from various global entities, as well as European ones - wherein European entities such as IDIADA, Valeo, CRF, POLIS, Wuppertal Institute, ERTICO, VTT, TNO, ZLC and

UEMI. Two exchange sessions were organised (March 25, 2021, and June 15, 2021), which featured sharing of experiences and discussions with representatives from various regions. Exchange sessions were designed to be open to the public, beyond registered course participants, aiming to reach a wider audience. The exchange sessions are deemed important in contributing towards a deeper understanding of the similarities, differences and representativeness of all world regions and addressing critical aspects of e-mobility.

### 2.2.2 Electric Mobility: Electrification of Buses and Integration in Cities

The e-course on electric mobility, “Electrification of buses and integration in cities’ public transport systems” (the second part of the aforementioned global e-learning program), aims to provide a comprehensive overview of the electrification of buses and their integration in cities’ public transport systems. The course is designed for city and regional authorities but can provide a solid knowledge base for any stakeholder involved or interested in e-mobility, e-buses, and public transport. In addition to the video lectures, the e-course will include material for self-study, assignments, and live virtual exchange sessions to accompany the course enabling interactive discussions with and among participants.

European expertise and experience on topics such as electric bus systems; charging approaches for e-buses; electric bus operations; and planning, procurement and commissioning of electric buses were shared by representatives from POLIS, UITP, VTT, VDL Bus and Coach, EMT Madrid, and HOCHBAHN.

### 2.2.3 Mobility as a Service and ITS

This e-course is part of the global e-learning programme on electric mobility and focuses on the concept of MaaS and the decarbonisation of the transport system, linking it with Intelligent Transport Systems solutions. The course is designed for city and regional authorities but can provide a solid knowledge base for any stakeholder involved or interested in e-mobility, ITS and MaaS. Similar to the prior courses, experience and expertise from Europe in the design and implementation of MaaS systems are being shared with the global audience through contributions from European entities such as ERTICO, POLIS, UITP, Pluservice, Ministry of Transport and Communications of Finland, in cooperation with other global partners.

### 2.2.4 Battery training e-learning course

This training aimed at increasing the participants' awareness about the main concepts related to EV batteries, which are critical to aiding decision-making. Fundamental notions about the sizing and selection of batteries were presented and discussed. Also, technical aspects (e.g. connectors, communication) were also included in the course. The initial course was launched and delivered from May 16th-20th, 2022. Practical and technical knowledge and expertise from Europe were shared by entities such as ERTICO, FIER, and Betteries. IDIADA also took on the lead role in the interactive training part of the course, which featured hands-on exercises for demonstrating the essential calculation

procedures for determining the appropriate size of batteries (for different vehicle types relevant to local contexts and actions in the participating cities).

### 2.2.5 Transformative Urban Living Labs Course in EDx

Together with the MIT energy initiative, the Wuppertal Institute and the Urban Living Lab Center have offered a course on MIT's edx platform titled "Transformative Urban Living Labs". The course introduces the living laboratory model of achieving sustainable urban mobility systems. The course aims to explore how multiple stakeholders and agencies organise and investigate living labs to find innovative solutions for urban mobility.

Several European entities were part of developing the course material. The involved entities have contributed by sharing real-life examples of implementing innovative urban mobility solutions. For example, Volvo shared its experience partnering with the city of Gothenburg to implement its electric bus fleet.

The course lasted for six weeks and consisted of 6 modules ranging from basics of sustainable mobility and innovative solutions, urban living labs and implementing solutions with stakeholder participation. Over 700 students have participated in the course and represented over 100 countries.

## 2.3 Integration into formal academic programmes

ERTRAC's emphasis on research provides a contextual relevance for academic study on urban mobility innovations. In ERTRAC's Roadmap, one of the focus actions that can help create an innovation culture and establish the right context conditions for innovation is the facilitation of access to 'best practice' studies and guidelines directed at a specific innovation measure. To support in producing of such studies and guidelines, EU research institutions and universities (also recognised by the 2Zero Partnership as key stakeholders) could, through their participation in EU international cooperation projects, make use of existing research facilities and resources to support capacity building activities aimed at strengthening and promoting efforts geared towards climate-neutral and clean road transport system in Europe and abroad. Such efforts could include mainstreaming identified ERTRAC research focus areas into academic teaching and learning activities, whipping students' interest in such areas through research thesis and publications, design workshops, etc. The results from academic research works could help inform European priorities and partnership objectives on international cooperation; and provide, as indicated in the 2Zero Strategy, evidence-based policy recommendations, standards and roadmaps for optimal transition to zero-emission road mobility and logistics adoption, ultimately leading to the integration of zero emission road mobility and logistics in cities' Sustainable Urban Mobility Plans (SUMP) or Sustainable Urban Logistics Plans (SULP).

In the following sections, we highlight some of the academic research activities of some universities participating in EU-funded international cooperation projects. These activities include tailored Master programmes and Design Studios, with the latter taking a holistic perspective on identified problems by putting forward design proposals for a

specific location in cities and undertaking macro or mezzo scale analysis of socio-economic, policy and spatial considerations relevant to the implementation of the design solutions. Most of the analyses in the Design Studios are carried out for cities outside of Europe and are not only focused on smaller cities (as recommended in the ERTRAC Roadmap). The Design Studio engages with the respective city partners and seeks their contribution in defining specific outputs and deliverables, sharing relevant city or national-level documentation and participating in the review and final presentation of the Studio outputs. The outcomes of these research works are intended to inform and support local authorities in their decision to implement appropriate urban mobility innovations that can help address pertinent challenges they are confronted with. The multi-stakeholder and living Lab approaches, as recommended in the ERTRAC Roadmap, usually guide these Design Studio works where open innovation and a series of innovation options are explored by students and, in some cases, taken forward in real-life demonstration pilots as a basis for further knowledge transfer between cities.

### 2.3.1 Technical University Berlin (TUB) Design Studio

The design studios have been implemented as a part of the TUB's contribution to the capacity-building activities within the EU project SOLUTIONSPlus and the Urban Change Makers initiative under the Urban Pathways Project. These studios were carried out to develop a concept for innovative urban mobility solutions, focusing on the linkages between urban planning, design and access to public transport.

Between January 2020 and April 2021, two studios were realised:

- Urban Change Makers - Rethinking Multimodal Urban Mobilities (summer semester 2019/2020)
- Urban Mobility Living Labs - Cross-sectorial projects for better connectivity and accessibility (winter semester 2020/2021)

These courses were attended by nine students from Architecture, Urban Design and Urban Planning master courses at the Technical University of Berlin. Each course was linked to an additional PIV modality (Projektintegrierte Veranstaltung) directed at the documentation of the studios' results in the form of a project brochure.

Overall, four design solutions were elaborated for the cities of **Pasig**, **Quito**, **Montevideo** and **Dar es Salaam**. Each solution was developed in broader teams of up to 10 members, including the enrolled students, representatives of municipalities, course supervisors and technical experts from partner institutions such as the Wuppertal Institute and Urban Electric Mobility Initiative. Consequently, many demand-driven designs focusing on the integration of e-mobility into a broader city structure, transportation networks and local socio-economic contexts were prepared. This resulted in targeted proposals for each of the cities, including:

- A multimodal corridor in the historic centre of Quito, Ecuador.
- Light e-hub model for the city of Pasig.
- A bus and e-mobility charging facility, including recreational facilities and multifunctional bus stops in the central part of Montevideo.

- Modular concept for integrating e-mobility into BRT stations across Dar es Salaam.

To date, the outcomes of the studio were incorporated in several external academic materials, including:

- UN-Habitat toolkit on e-mobility (in development)
- SOLUTIONSplus global learning programme on electric mobility coordinated by Rupprecht Consult.

Finally, the studio's results were presented to partner municipalities, and components of proposed solutions were considered for implementation in Quito and Montevideo.

### 2.3.2 Master's programmes

At the Technical University Berlin and the Erasmus University Rotterdam, collaborations with master's programmes were developed, focussing on urban development in emerging economies. Several master's theses were developed that assess the sustainable mobility transition in Africa, Asia and Latin America.

## 2.4 Integration into broader capacity-building programmes

To disseminate the learnings and experience from the European partners, several capacity-building materials were developed, and training activities were curated. Partnerships with ongoing projects have amplified the expected results from the project. Some of these synergies are mentioned below. The synergies developed are in line with the strategic objectives of the 2Zero partnership. The training and materials developed by the project allow for north-south partnership and south-north knowledge transfer. The material developed and the courses increase the technical capacity of the decision-makers and aim at increasing the educational skills of the future workforce in the partner countries and cities. The activities extend the reach of the EU-funded projects in enabling technology transfer and provide leapfrogging options for emerging economies.

### 2.4.1 Decarbonising Transport in Emerging Economies Project

The Wuppertal Institute, in partnership with the International Transport Forum, is implementing the Decarbonising Transport in Emerging Economies (DTEE) project. The project is implemented in 4 countries, viz. Argentina, Azerbaijan, India, and Morocco. The Wuppertal Institute is working at an urban level to increase the technical capacities of local decision-makers in conceptualising, planning, and implementing innovative low-carbon transport options. As a part of this training materials and sessions are developed on implementing electric mobility, charging infrastructure, and eBus implementation. The resources and expertise of the Future Horizon partners were instrumental in developing these materials.

### 2.4.2 E-Learning course on MIT edx platform

With the MIT edx team, Wuppertal Institute offered an e-course on implementing innovative low-carbon mobility through the methodology of urban living labs. The course

was available on MIT's edX platform. Over 700 participants took the course from various emerging economies. Partners from Future Horizon and leading European organisations (such as Volvo, Betteries, and UITP) have offered interviews on implementing electric mobility solutions, and partner city examples were used in the e-course. More information on the course contents can be seen in section 2.2.5 (above).

#### 2.4.3 Training modules on electric mobility

Decision makers and stakeholders in Asia, Africa, and Latin American cities participated in a series of training sessions on planning and implementing various electric mobility solutions. European industry partners, SMEs and outreach organisations supported the UEMI and UN-Habitat in developing training materials assorted into modules ranging from the basis of electric mobility to planning and implementing electric bus systems in developing cities. The training materials are housed in an online platform hosted by Rupprecht Consult and are available at no charge for all interested stakeholders.

#### 2.4.4 MobiliseYourCity Partnership

MobiliseYourCity (MYC) Partnership is an initiative funded by the European Commission and the governments of Germany and France. MYC supports cities in emerging economies in Asia, Africa, and Latin America in developing sustainable urban mobility plans (SUMP), planning and implementing low-carbon mobility options and gaining access to financing from development banks. The Wuppertal Institute is an implementing partner of the MYC partnership. New knowledge products are planned and developed by Wuppertal Institute and the MYC partnership to increase the awareness of the local decision-makers. The material developed was also used as resource material during the training sessions mentioned earlier in this section.

#### 2.4.5 Transformative Urban Mobility Initiative

The TUMI partnership is a GIZ-led initiative implemented in collaboration with various organisations to promote low-carbon mobility in emerging economies. One of the key actions includes promoting the implementation of electric buses as public transport modes to replace conventional fossil fuel vehicles. Together with the EU-funded SOLUTIONSplus project, which is led by UEMI and in which UN-Habitat, Wuppertal Institute and several European industry partners are consortium members, the TUMI initiative is working towards quantifying the emissions saved from shifting to electric buses. This activity is complemented by developing guidance material for cities to calculate the saved emissions from transitioning to electric mobility in the public transport fleets.

#### 2.4.6 Capacity building hubs

The UH-Habitat, in collaboration with MIT, TU Berlin and the Wuppertal Institute, has established the Urban Living Lab Center (ULLC). The centre aims to promote the uptake of urban living lab methodology in planning and implementing urban solutions, including urban mobility. The update is facilitated by developing thematic hubs. The thematic hubs



would link the academic and research community with local practitioners such as the city governments. Through this collaboration, the research and practice divide is bridged.

The thematic hubs will also increase the skills in partner universities and promote academic programs and training sessions that are imparted to the students enrolled in courses at the partner universities. It is expected that the students who undergo these courses will be the future urban transport planners working on implementation projects in the cities. In developing the content of the courses, the ULLC will draw heavily on the existing knowledge and experience in Europe, and that is documented in various activities of the Future Horizon project.

The main objective for the engagement of Future Horizon into the Urban Living Lab Center is the opportunity to contribute the institutionalization of the capacity building activities into thematic hubs and regional hubs housed at partner universities. Through trainings of lecturers in partner universities replication and multiplication will be fostered across the regions and through the integration of capacity building material into formal curricula of relevant study programmes this process can continue well beyond the lifetime of the project.

### **3 Lessons Learnt and Recommendations: International Exchange and Capacity Building**

International exchange and capacity building can be a key stepping stone towards closer cooperation with public and private sector partners. The capacity building activities outlined in this deliverable focus on the interaction with partners from emerging and developing countries and had a particular focus on electric mobility.

Capacity building and peer-to-peer exchange activities should focus on key topics to foster technical capacity and foster skills and knowledge that are critical for the development and implementation of sustainable mobility solutions. A vital step in this process is an assessment of the needs of the target audience. This points towards critical information which helps understand the critical barriers which may be addressed through strengthened capacity building and peer-to-peer exchange activities, as well as in identifying opportunities for expertise and experience towards addressing knowledge and capacity gaps. The table below shows an example of topics in the area of electric mobility that were identified by selected partners from local authorities, transport operator and entrepreneurs as important to consider in capacity-building activities:

Technology	Technology specifications*
	Batteries
Business modelling	Basics of business model development*
	Attracting start-ups*
	Developing frameworks towards encouraging private sector involvement*
Financing and procurement	ToR development*
	Financing options*
	Financing requirements*
	Procurement and contractors
Operations	Electricity grid interaction with EVs

	E-mobility solutions for deployment
	Maintenance of EVs
Infrastructure	EV charging infrastructure*
	E-bus charging*
	Charging standards*
	Charging plans*
	Electricity grid needs
Policies and Regulations	Fiscal incentives*
	Other incentives
	Integration with SUMPs
	Communication, advocacy, promotion
	Logistics plan and delivery
	Mobility and integrated planning
	Intermodality
Cross-sectoral cooperation	

Note: \* Rated as key priorities

Peer-to-peer exchange activities have been considered by many partners as preferred mode of knowledge exchange as it highlights topics with perspectives that are similar situation in terms of challenges, contexts, and resources. The following criteria were rated by the respondents as the most important ones to consider in selecting partner cities for exchanging experiences:

- Common sustainable mobility objectives/ challenges;
- Similarity in terms of types of vehicles/technology to be implemented in their city;
- Similar levels of budget are available for planned e-mobility innovations;
- Similar levels of economic welfare;
- Long-term experiences of the partner city with specific transportation modes;
- Similar geographic features of a city (flat land, hilly area, wetlands);
- Status of a city as international leader/ best practice in e-mobility.

“Similarity” seems to be a critical term that had been mentioned in these criteria for peer-to-peer activities. This highlights the importance of having dialogues with those who have been able to pursue successful solutions. In this light, establishing success factors and going further in terms of highlighting how to contextualise these factors would be highly useful in maximising the transformative potential towards the action of experiences shared from European cities and industries.

Overall it is important to consider that capacity building activities focus on complementary to short- and medium-term activities of sector projects for competence development. It is necessary to adapt capacity building and training programs to the requirements of sustainable development. This includes the further development of existing training framework plans and the expansion of the training offer and, if necessary, the development of new training programs. Core aspects of sustainability, climate protection and *just transition* should increasingly be part of the core competencies in many professional profiles. The following recommendations result for the systematic further development of training offers:

- When determining training needs, the needs of the small but rapidly growing start-up scene should also be oriented towards the areas of e-mobility and mobility services

in addition to established transport companies, vehicle manufacturers, importers and mobility providers.

- Different offers from short-term training, training and further education offers to higher education should be better coordinated.
- With a view to finding a balance between the short-term needs of a growing number of start-ups and SMEs and the long-term changes in the transport sector, a combination of short-term further training offers and longer-term adjustments to core components in curricula is important.
- A solid basic understanding of the interaction between urban development, system integration, mobility and digitization should be conveyed target audiences in the areas of vehicle technology, traffic management and logistics and be incorporated accordingly into the development of curricula.
- A priority in development cooperation should be, on the one hand, the expansion of existing training frameworks, particularly in the area of vehicle technologies, and, on the other hand, the introduction of new training courses, including in the areas of traffic management and logistics, since these professions make a significant contribution to the can achieve green transformation in transport.
- So far, in most partner countries, the main focus has been on training for jobs in the field of transport infrastructure and conventional drives. An expansion of the portfolio of capacity building and training, in particular with offers in the field of traffic management, integration of different modes of transport and efficient logistics systems should be an important focus of the expansion of existing training framework plans. The introduction of adapted programs, e.g. for entrepreneurs in the areas of transport services and logistics, can usefully complete the range of training offered in partner countries.
- Similar processes are currently underway in higher education in relevant transport and urban planning courses, with the focus expanding substantially into sustainable and integrated transport, energy and urban planning solutions. For the integration of vocational schools and universities and the exchange with relevant training and practice partners, it is advisable to coordinate the content of the dialogue and development processes.
- Since in practice university graduates of vocational schools work side by side, it is important to coordinate the content of sustainable mobility in different training courses. It is therefore essential to involve urban and transport science faculties in the training and further education of vocational school teachers and trainers.
- The involvement of universities and vocational schools in real laboratories of sustainable mobility can offer an important contribution to the integration of relevant practice partners. In this way, core competencies for training can be conveyed and trainees can make active contributions to the validation of innovative mobility solutions.