POLIS ANNUAL CONFERENCE 2024
CITIES AND REGIONS FOR TRANSPORT INNOVATION

3G.
Pathways to climate neutrality

04:45 PM - 06:15 PM

Governance & Integration

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Climate City Contract

a tool for developing holistic pathways to climate neutrality

Anna Huttunen
NetZeroCities

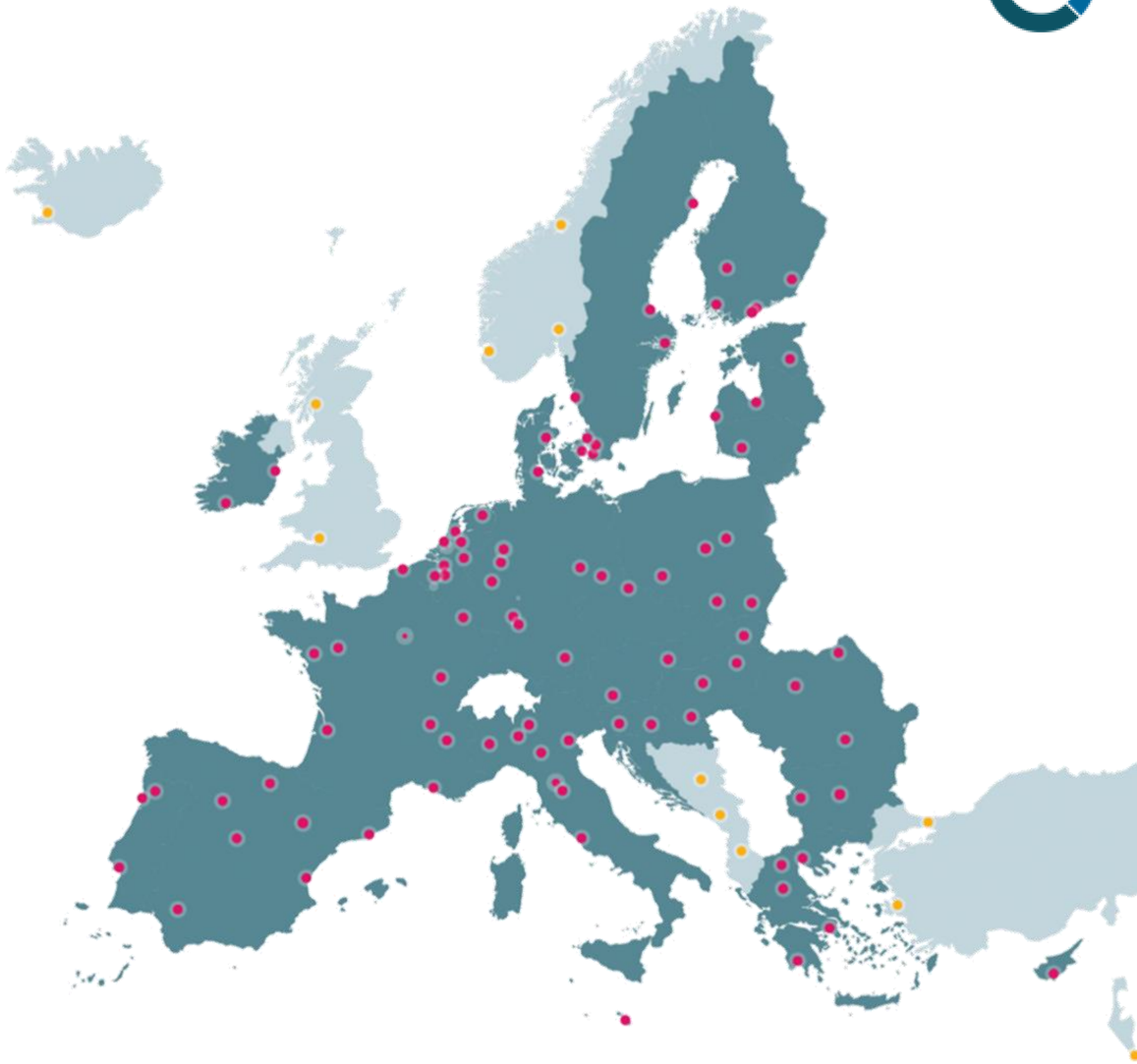
Supporting the EU Mission for “Climate Neutral and Smart Cities by 2030”

The EU has launched a Mission “100 Climate-Neutral and Smart Cities by 2030”.

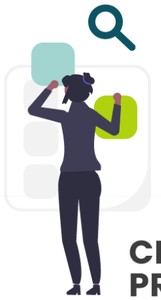
The objectives of the Mission are

- to achieve **100 climate-neutral and smart European cities by 2030.**
- to ensure that these cities act as experimentation and innovation hubs to **enable all European cities to follow suit by 2050**.

NetZeroCities, coordinated by Climate-KIC, currently manages the Platform to support the Mission. We will help Europe in its ambition to achieve climate neutrality by providing cities with **world-class expertise and services** tailored to their needs.



100 EU cities & **12** cities from
Horizon Europe Associated Countries



CITY LEARNING PROGRAMME

TWINNING PROGRAMME

CAPITAL HUB

PILOT CITIES PROGRAMME

CLIMATE TRANSITION MAP

NETZEROCITIES PORTAL

TRANSITION TEAM

CLIMATE CITY CONTRACT

CITY ADVISORS

Supporting Cities towards Climate Neutrality

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Climate City Contract: A Roadmap to Climate Neutrality

A multi-level government collaboration tool to help cities collaboratively address barriers to accelerate transformative action.

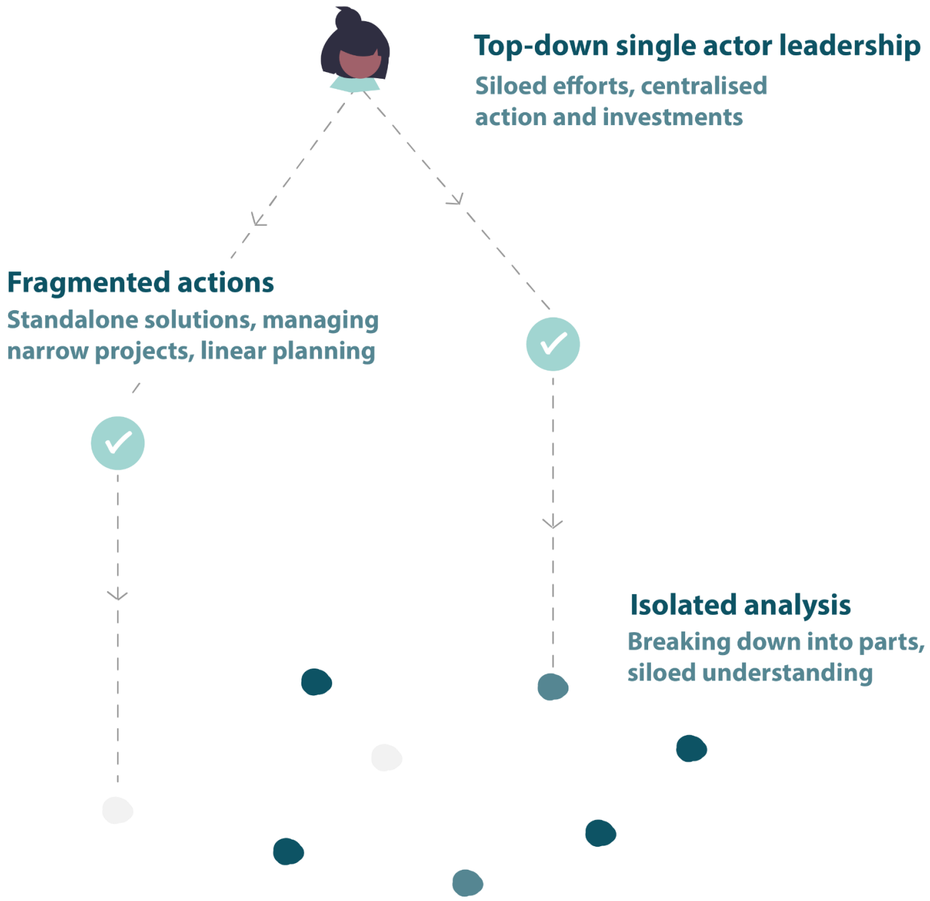
The Climate City Contract (CCC) has three interlinked components:

- **Commitments**
- **Action Plan**
- **Investment Plan**

Lays out action and investment pathways to climate-neutrality 2030

Cities Mission Climate City Contract

Systemic, multi-level, multi-actor



Top-down single actor leadership
Siloed efforts, centralised action and investments

Fragmented actions
Standalone solutions, managing narrow projects, linear planning

Isolated analysis
Breaking down into parts, siloed understanding

Deep collaboration
Collective efforts, distributed action and investments

Portfolios of actions
Coordinated levers, orchestrating an open portfolio, iterative programming

Understanding systems
Spotting patterns in the whole, collective understanding

53 Cities Awarded the EU Mission Label

EU MISSION LABEL

CLIMATE-NEUTRAL & SMART CITIES

1st batch of awarded cities (October 2023): Sønderborg (Denmark), Mannheim (Germany), Madrid, Valencia, Valladolid, Vitoria-Gasteiz and Zaragoza (Spain), Klagenfurt (Austria), Cluj-Napoca (Romania) and Stockholm (Sweden).

2nd batch of awarded cities (March 2024): Ioannina, Kalamata, Kozani, Thessaloniki (Greece), Heidelberg (Germany), Leuven (Belgium), Espoo, Lahti, Lappeenranta, Tampere, Turku (Finland), Barcelona, Seville (Spain), Pecs (Hungary), Malmö (Sweden), Guimaraes, Lisbon (Portugal),
Florence, Parma (Italy), Marseille, Lyon (France), Limassol (Cyprus) and Izmir (Türkiye).

3rd batch of awarded cities (October 2024): Aachen, Münster (Germany), Trikala (Greece), Miskolc (Hungary), Eilat (Israel), Bologna, Bergamo, Milan, Prato, Turin (Italy), Liepāja (Latvia), The Hague (the Netherlands), Porto (Portugal), Bucharest 2nd District, Suceava (Romania), Ljubljana, Kranj (Slovenia),
Gothenburg, Gävle, Umeå (Sweden).

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The analysis of the CCCs in underway..

..JRC feedback on the mobility pathways of the 33 Mission Labelled cities

Common areas for improvement:

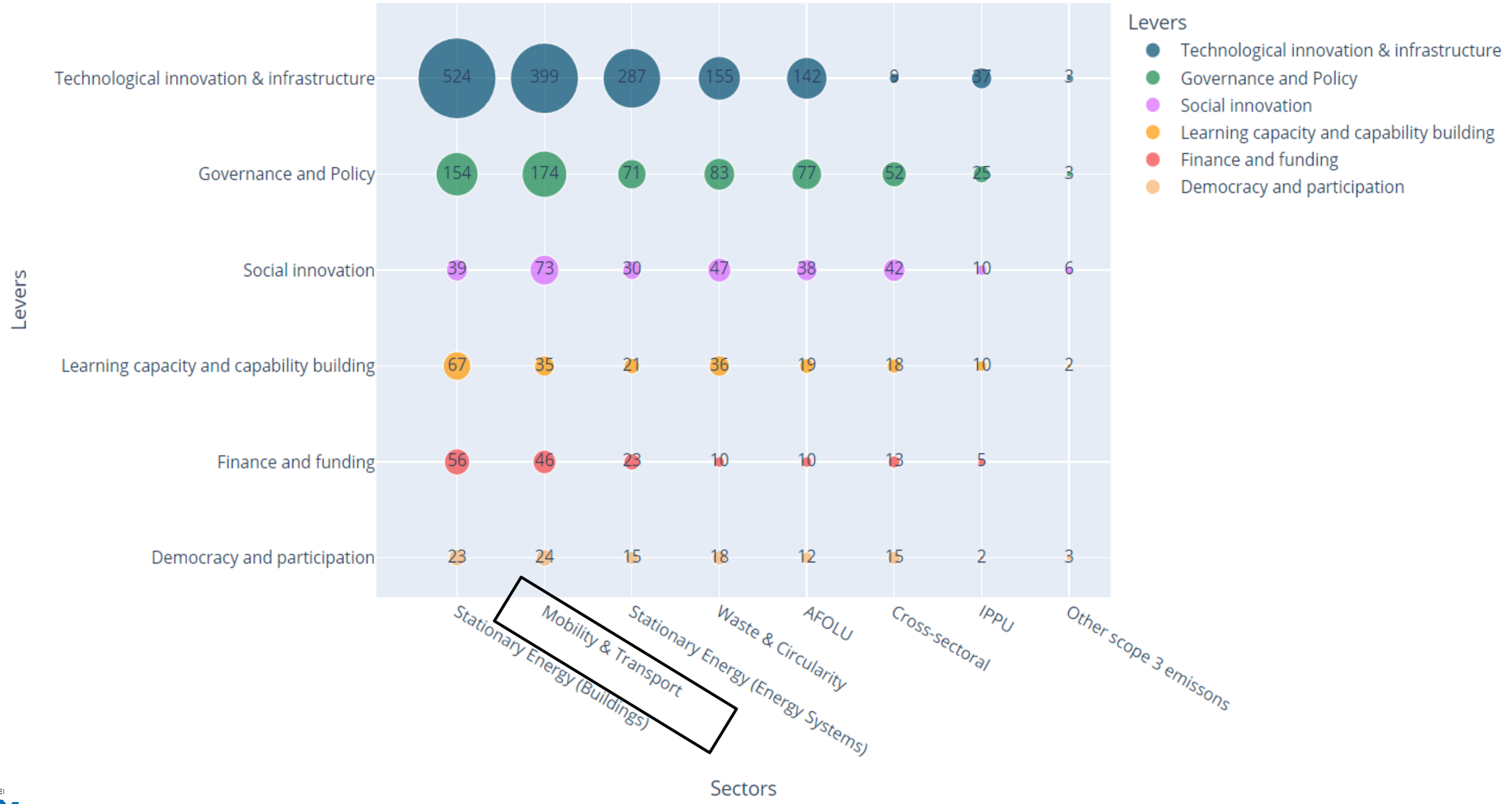
- **Holistic approach and inclusion of certain measures:** cities demonstrate awareness of stakeholder collaboration, emphasizing private, public, and academic involvement.
- **BUT gaps remain in addressing, reduction of the car traffic, Low Emission Zones, Urban Vehicle Access Regulations and digital integrations.**
- Emphasis on electrification is common but optimizing and **shifting demand through sustainable modes (e.g.active mobility) and logistics improvements are often overlooked.**
- **Lack of detail**

…JRC feedback on the mobility pathways of the 33 Mission Labelled cities

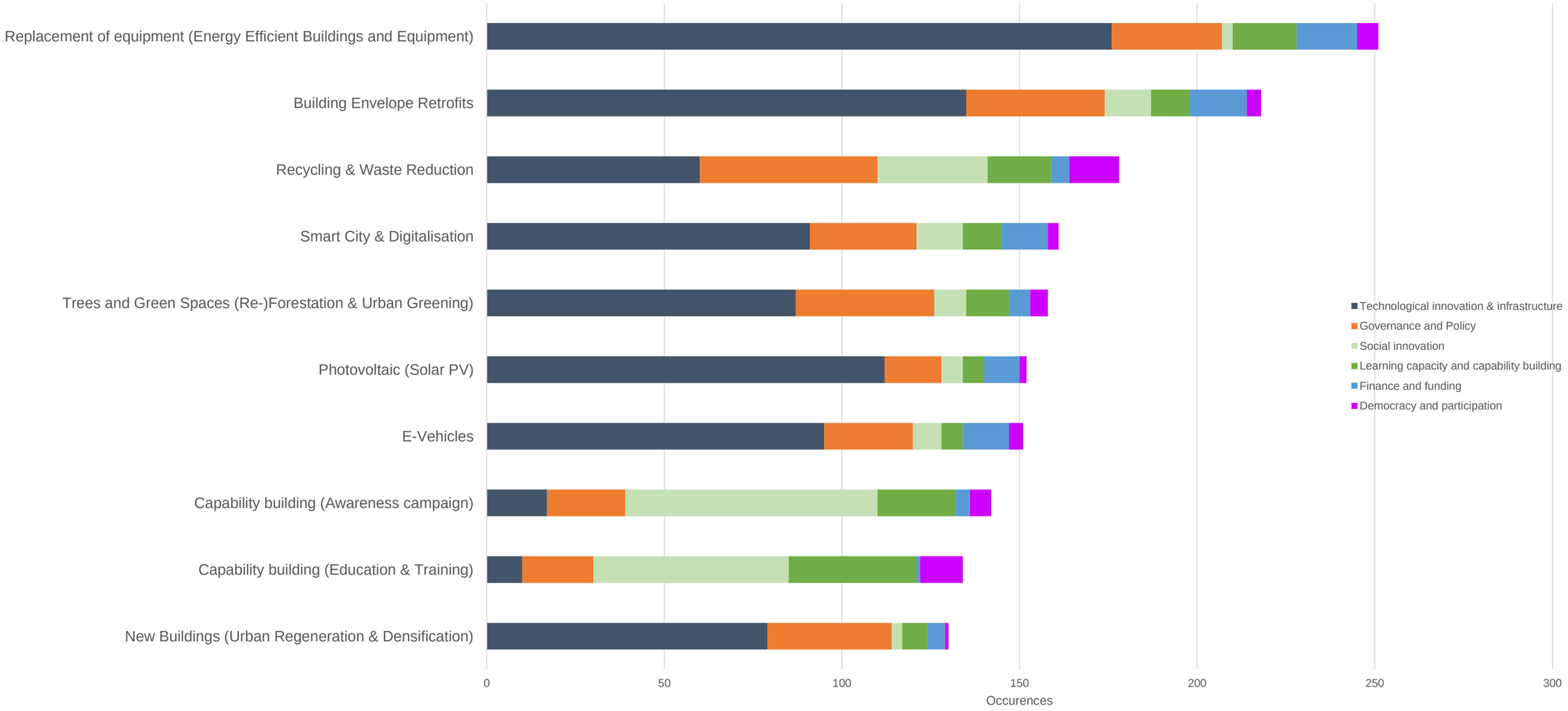
- Include **specific measures addressing the reduction of the need for motorized transport**, for modal shift and for shared transport;
- Assess **impacts beyond CO2 emissions** on changes in mobility
- Address emissions from **private cars, urban freight, airports**.
- Incorporate **innovative measures** (e.g., waterborne transport, cable car)
- Explore the **digitalization potential** and leveraging new data sources to enhance their transport planning.

...NZC analysis of 53 action portfolios

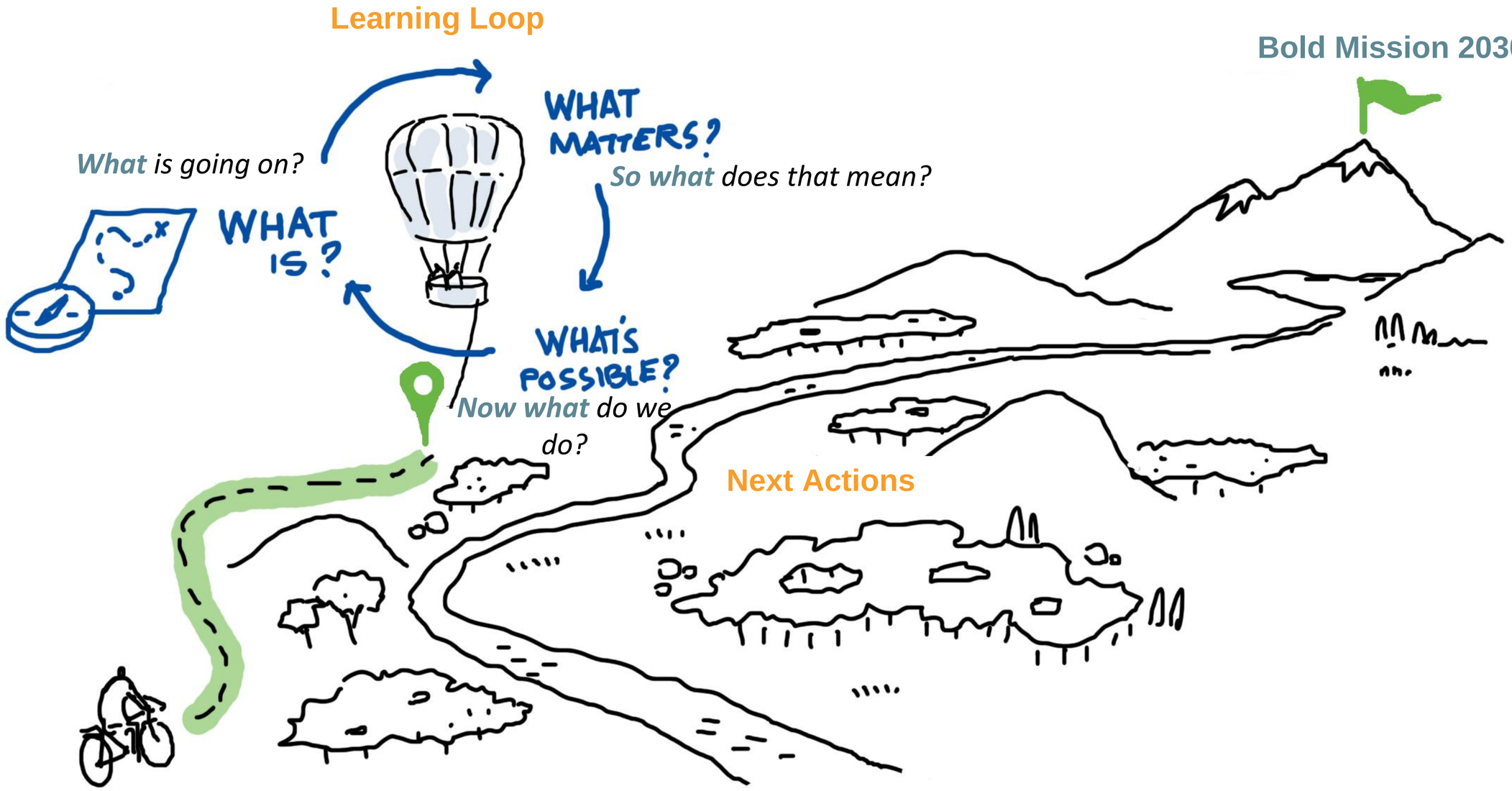
Overall portfolio tends to focus on T&I and stationary energy



..most frequently cited actions



Implementation and iteration



Join The NetZeroCities Portal

NetZeroCities.app

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Ministry of Transport

Karlsruhe

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PATHWAYS TO CLIMATE NEUTRALITY: How can Baden-Württemberg's digital state-wide transport demand model contribute to climate protection?

4:45 PM - 6:15 PM

27 November 2024

Linda Heine, Ministry of Transport Baden-Württemberg

Dr. Volker Waßmuth, PTV Transport Consult GmbH

Transforming the Transport Sector by 2030

Double the use of public transport

- 55% CO_2*

* compared to 1990

One in two cars is powered by renewable energy

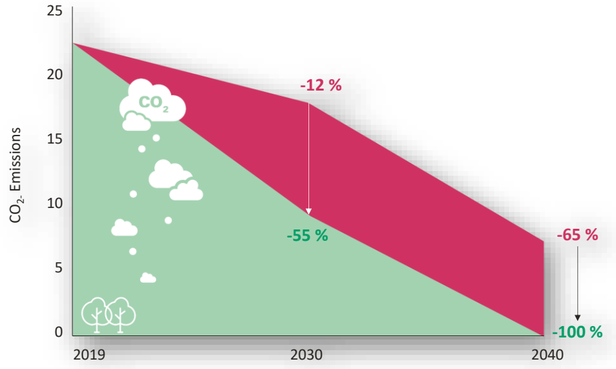
Half of all freight is transported by climate-neutral means

One fifth less car traffic in cities and rural areas

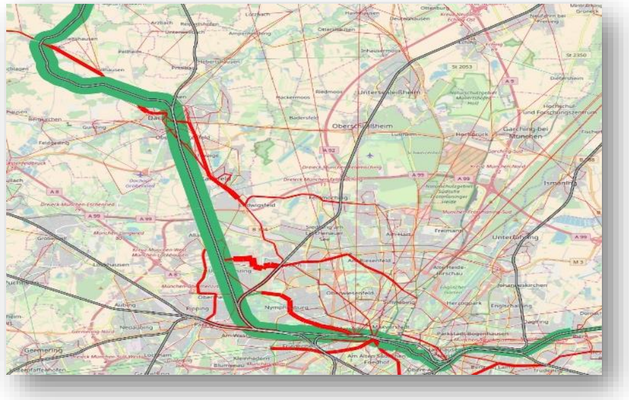
One in two trips is done walking or by bike

Key goals of the model

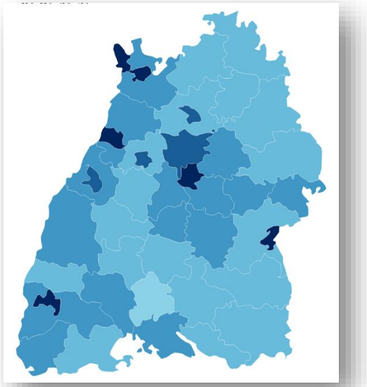
Calculation of CO_2-emissions



Basis for feasiblity studies road / rail / bike



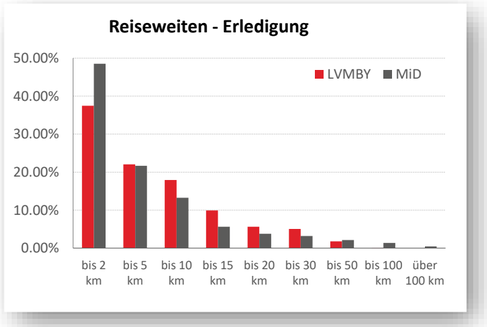
Scenarios for overall development



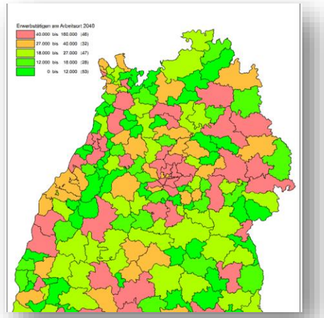
Integrated data base for urban applications

Structure of the Model

Behaviorial data



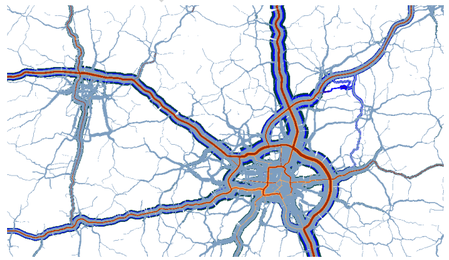
spatial structure

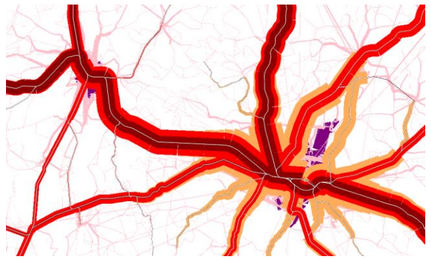


Network models

transport demand model

sensitive to all input variables



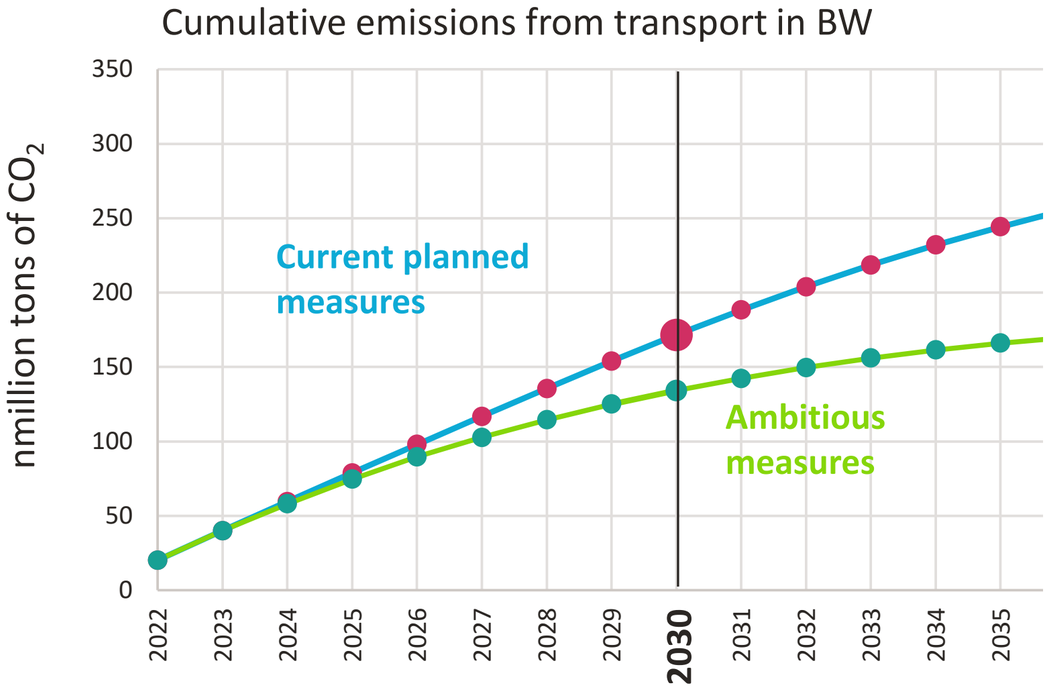


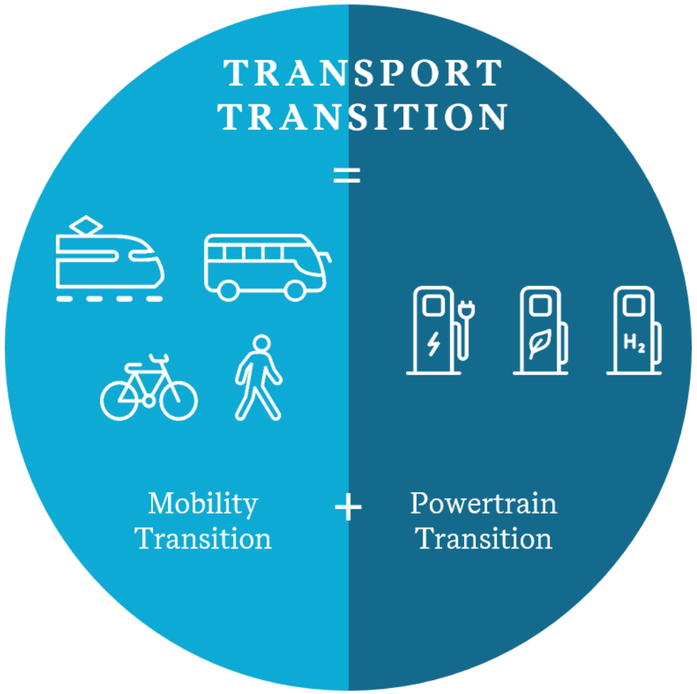
Output

- ➔ traffic volumes (all mode)
- ➔ impacts / emissions
- ➔ current travel times
- ➔ costs and revenues

Forecast Scenarios

Scenario 1:	**Current planned measures for 2030**	politically decided, firmly planned and/or financed measures
Scenario 2:	**Ambitious measures to meet 2030 targets**	ambitious measures to accelerate the transport transition

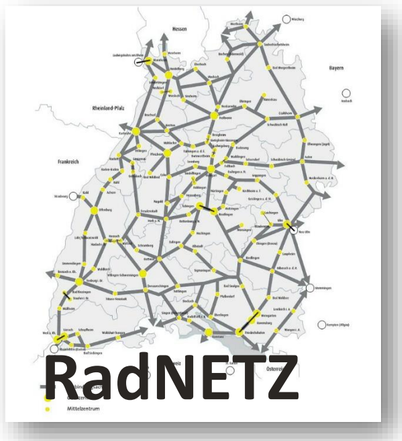


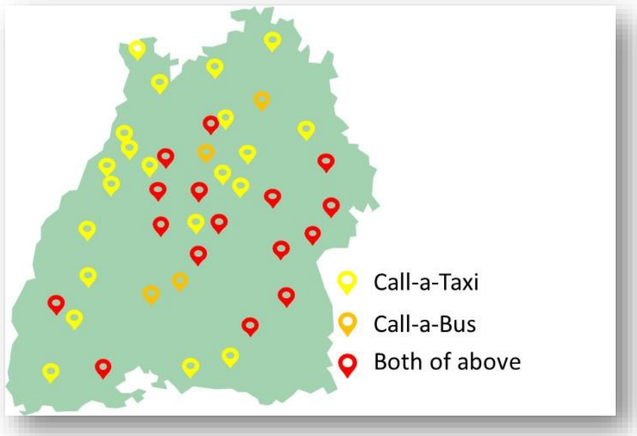


Innovative Features

State-of-the-art-transport demand model (and a little bit more…):

- Fully integrated bicycle network
- Sub-models for car ownership, public transport decisions, OnDemand transport, tariff structure …
- Modal choice model for freight transport
- Detailed, link based, calculation of emissions

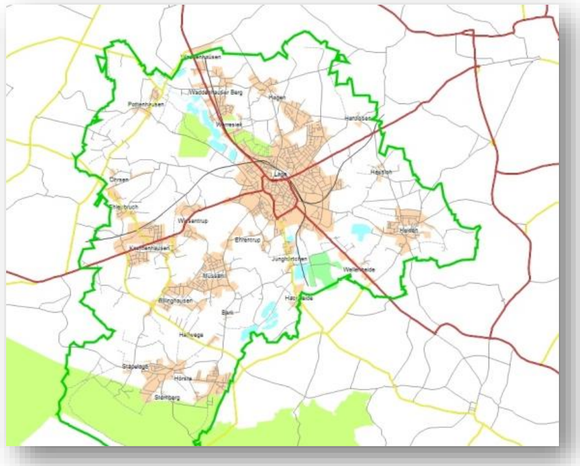


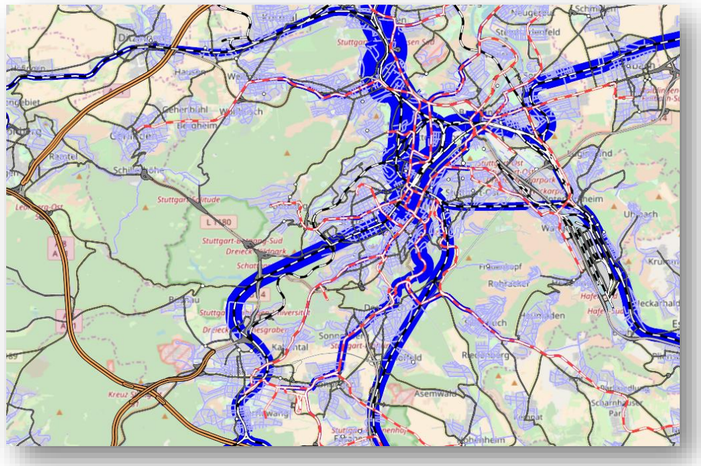


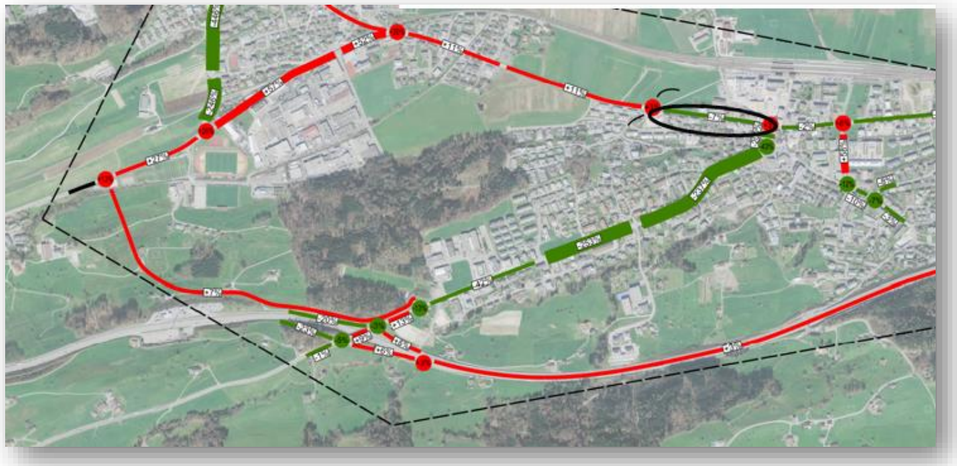
Urban Applications

Basis for

- Urban transport demand models
- SUMP / climate mobility plans
- Local and regional studies for cycle network planning, public transport operations, road safety analysis,….





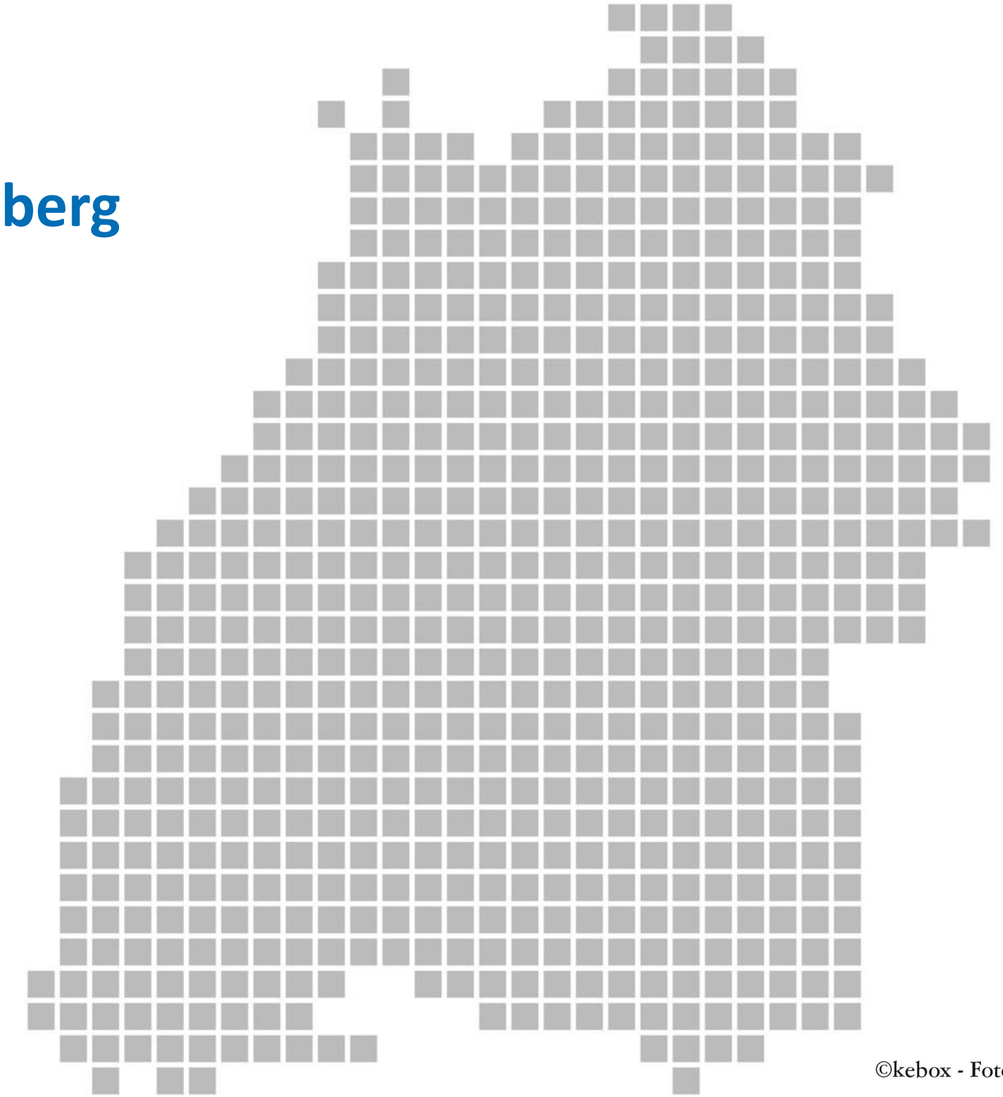


Conclusion

The Transport demand model for Baden-Württemberg

- Is innovative
- Offers many applications and secures consistency
- Can handle future tasks in traffic and transport

  (like MaaS, environmental analysis)
- Can be used by public authority and every consultant
- Can be refined and recalibrated in the local application
- Will be operational by end of 2025.



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Thank you for your attention!

Your questions…

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For more information:

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How does AI change the governance of (sustainable) mobility?

NOVEMBER 2024, POLIS

Frauke Behrendt, Associate Professor Transitions to Sustainable Mobility
Eriketti Servou, Freelance Researcher & Consultant

Technology, Innovation & Society Group

TU/e EINDHOVEN UNIVERSITY OF TECHNOLOGY

Forbes

FORBES > INNOVATION

Why AI-Based MaaS Is Poised To Be The Future Of Transportation

Shailesh Manjrekar Forbes Councils Member
Forbes Technology Council COUNCIL POST | Membership (Fee-Based)

Sep 14, 2020, 09:00am EDT

Global head of AI and strategic alliances at Weka.IO, driving AI strategy and business growth.

AI Humans

Decisions

Governance

Sustainability

TU/e

How is AI is used in MaaS? Sustainability?

Technical literature

- Smart mobility, Transport modelling, Computer science

Social Science literature

- Data governance, Algorithmic governance, Responsible innovation

Participant Observation

- 10 international MaaS Workshops on technical capabilities/data/AI in MaaS, 2021-2022

Dr. Eriketti Servou

- **Innovation Consultant at Egen Green**
- **Guest Researcher & former PostDoc at TU/e**

Servou, Behrendt, & Horst (2023) Data, AI and governance in MaaS - leading to sustainable mobility? Transportation Research Interdisciplinary Perspectives, 19, 1–10. https://doi.org/10.1016/j.trip.2023.100806

AI: Relevant for 3 key aspects of MaaS

End user demand

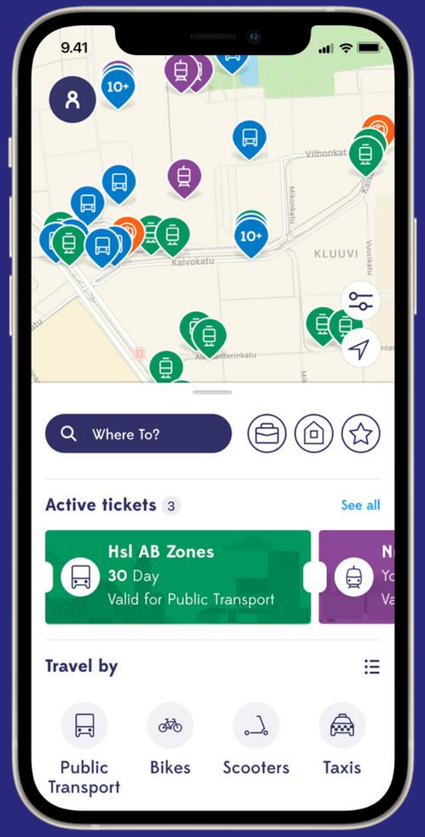
Mobility service supply

Mobility system optimization

AI: Relevant for 3 key aspects of MaaS

End user demand

- Understanding user behavior
- Personalizing journey planning, integrated ticketing and booking
- Creating flexible mobility packages
- Nudging user behavior



- **Rebound effects**
- **Discrimination in terms of, income, location, etc.**

AI: Relevant for 3 key aspects of MaaS

Mobility service supply

- Integrate mobility services & providers through AI recommenders
- Learn about transport mode availability/supply
- Collaboration among stakeholders & members
- New governance models (i.e., public-private collaborations)

- **Energy consumption (data centres)**
- **Cross-border scaling up: if supply integration is centralized**
- **AI might evade accountability**

AI: Relevant for 3 key aspects of MaaS

- **Existing MaaS projects have not achieved this**
- **Hypothesis abstracted from computer modelling**
- **Links to wider discussions on delegating governance of climate change to AI on a global scale**

Mobility system optimization

- Most complex & advanced level of MaaS
- Bundling supply & demand
- Predicting & modelling traffic
- “Brain” of urban mobility
- Can integrate sustainability goals (e.g. emission reduction, efficiency, accessibility)

AI: Relevant for 3 key aspects of MaaS

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How are decisions around mobility taken (governance)?

Policy Makers

Companies

Civil Society Organisations

Create frameworks in advance that guide

Sustainable Mobility e.g. MaaS

How are decisions around mobility taken (governance)? AI?

Policy Makers

Companies

Civil Society Organisations

AI

Decisions co-created

Real-time element

Sustainable Mobility e.g. MaaS

Hybrid Governance

AI

Policy Makers

Companies

Civil Society Organisations

- AI as actor in governance processes
- Interplay between humans & AI
- creates new accountabilities, opportunities and risks
- for sustainability and beyond

Hybrid AI & Human Governance

AI

Policy Makers

Companies

Civil Society Organisations

Developers

- Requires co-creation and collaboration between developers, policymakers, citizens and algorithms
- Objectives and values of algorithms need to be decided collectively by private and public actors
- To ensure alignment of interests and public value


Sustainability with AI
AI for Sustainability
Sustainability of AI
Hybrid Governance

Hybrid governance with AI: Shaping sustainable futures and decision making

- How to best care for sustainability in hybrid governance processes?
- How to translate policy goals, such as emission reduction or accessibility into AI?
- How to co-create strategies for hybrid governance that allow for open trade-offs between individual, market, and public interests – especially in the light of the climate crisis?
- Who should be involved and how: developers, policymakers, company leader, civil society? Skills?

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Pathways to climate neutrality
Evaluating the effectiveness of multimodal urban mobility hubs to motivate passengers to use more sustainable modes of transport for their first/last mile trip

16:45 PM - 18:15 PM

27 November 2024

Maria Morfoulaki, CERTH/HIT

Kornilia Maria Kotoula, CERTH/HIT

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 953939

MOVE 21

_urban multimodal mobility hubs concept

Designated locations within urban areas integrating various modes of transport

Strategically situated near major transport terminals

Aiming to enhance the overall mobility experience while:

- ✓ **reducing traffic congestion**
- ✓ **improving air quality**
- ✓ **encouraging the use of environmentally friendly transportation alternatives**

Valuable solution when dealing with traffic problems generated in TEN-T Urban nodes

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 953939

_ urban multimodal mobility hubs key features

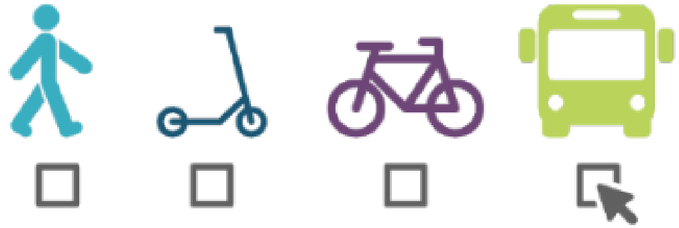
Intermodal Connectivity

Accessibility for all

Information and Services

- Travel Information
- Digital Logistics Platforms
- Digital Interactive Walls
- Charging points
- Wi-Fi

Multi-Modal Transportation Alternatives



Land Use Integration

embrace opportunities for

- ✓ retail activities
- ✓ socializing

This project has received f
European Union's Horizon
innovation programme unc
No 953939

_mechanisms behind the operation of urban multimodal hubs that influence travel behavior

Sustainability and awareness

Behavioural nudges and incentives

Improved travel experience

Convenience and accessibility

Car dependency reduction

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 953939

Evaluating the effectiveness of hubs in MOVE21 cases

Well structured questionnaires designed to

- Capture hub's users and non-usets travel attitudes
- Understand the prerequisites under which they are both willing to change travel habits

Sample of 1326 participants

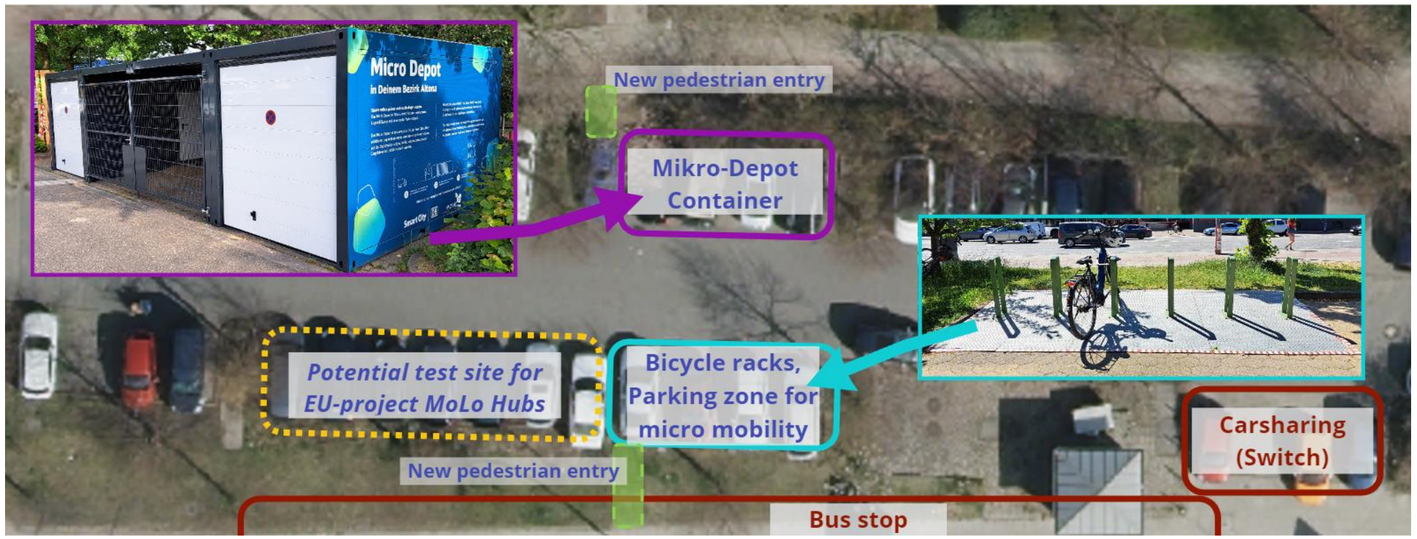
302 users

1024 non users

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 953939

_MOVE21 case studies
Hamburg – KaltenKircher Platz, multifuncional neighborhood hub

Different mobility services (Park & Ride/ Park & Shared modes) & Shared last mile logistics modes offer in the same place



Mobility services

- ✓Carsharing & charging infrastructure
- ✓Parking zone for micro-mobility
- ✓Bicycle racks
- ✓Charging point for commercial electric car-users (taxis)
- ✓Improve connection to existing bus station

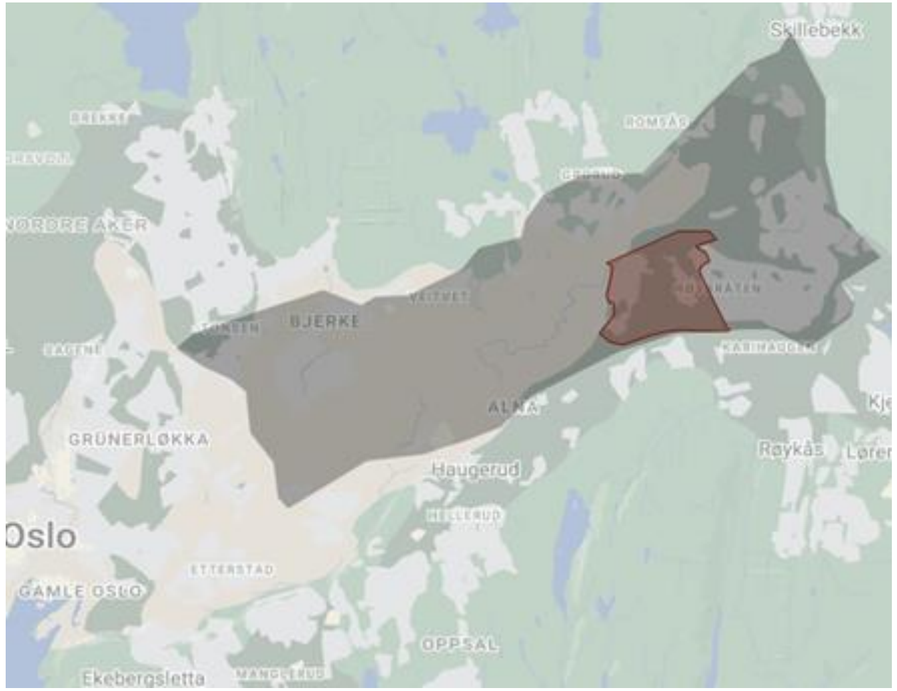
Last mile logistics services

micro-depot: logistic companies and start-ups use cargo bikes for last mile deliveries

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 953939

_MOVE21 case studies
Oslo Grorud Mobility Hub Network

Increase liveability without owning a private car with mobility hubs connected to existing nodes in suburban areas



Deployment of different mobility and freight services in public and private space

Mobility services

- ✓ e-scooters
- ✓ e-bicycles
- ✓ Car sharing
- ✓ Safe bicycle lockers
- ✓ Trains

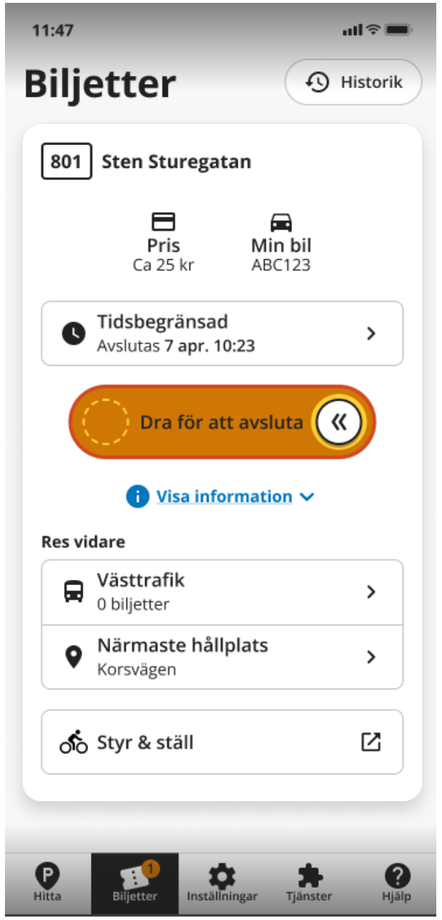
Logistics services

- ✓ Parcel lockers

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 953939

_MOVE21 case studies
GOTHENBURG - Park & Bike Klippan

Micromobility hub area offering different combinations of transport modes

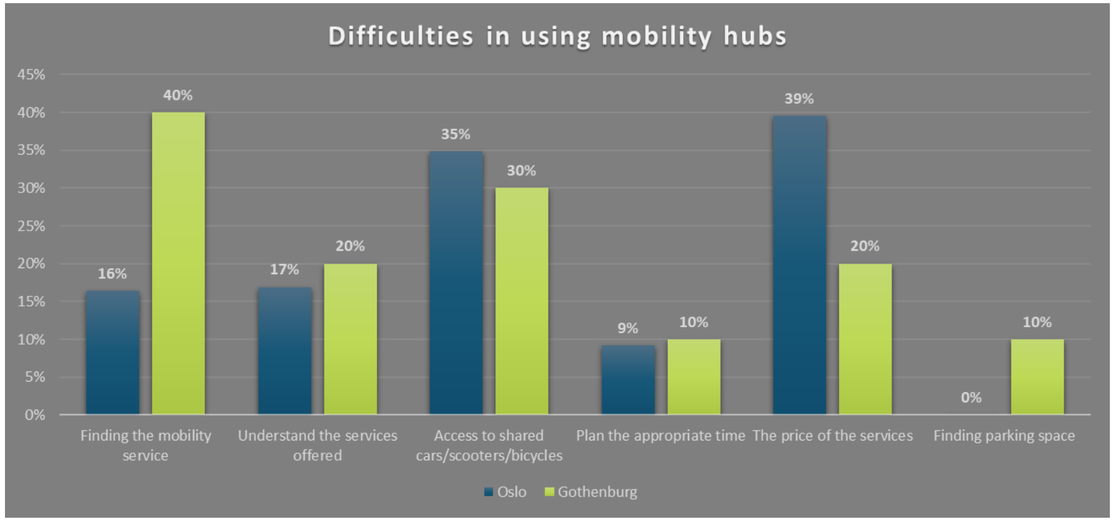


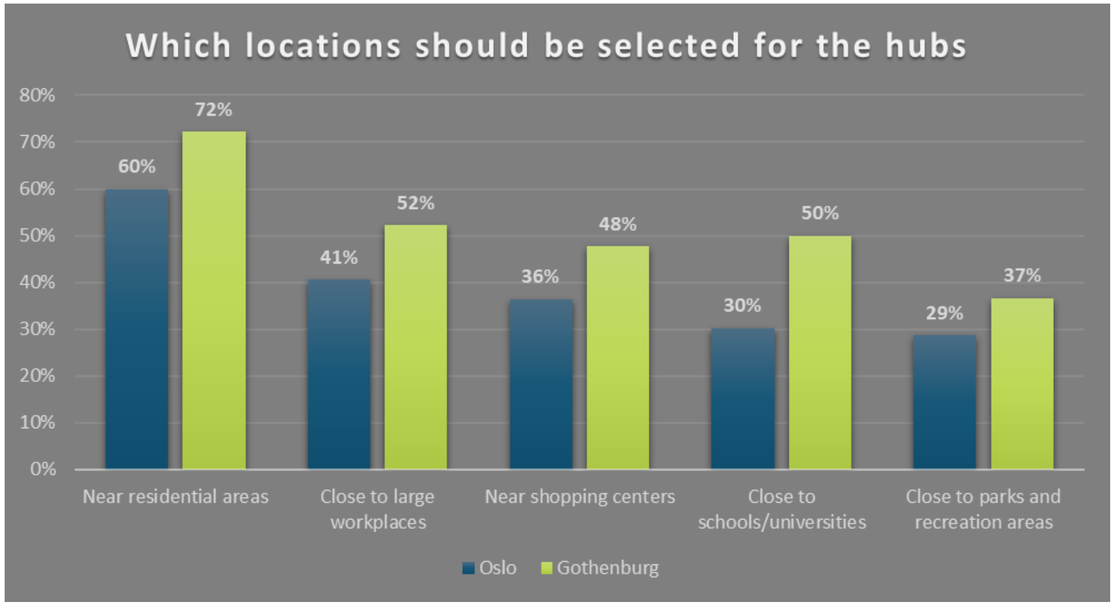
Mobility services

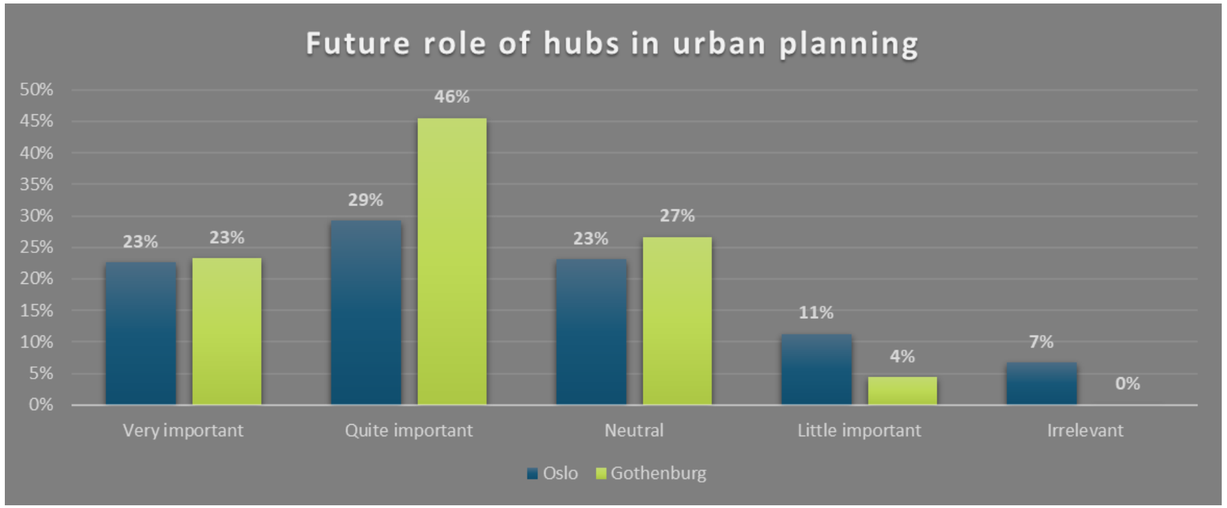
- ✓ New public rental bike-station to promote the Park & Ride as a mobility choice to the city center
- ✓ Integration parking app and public rental bike

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 953939

_evaluation findings – USERS







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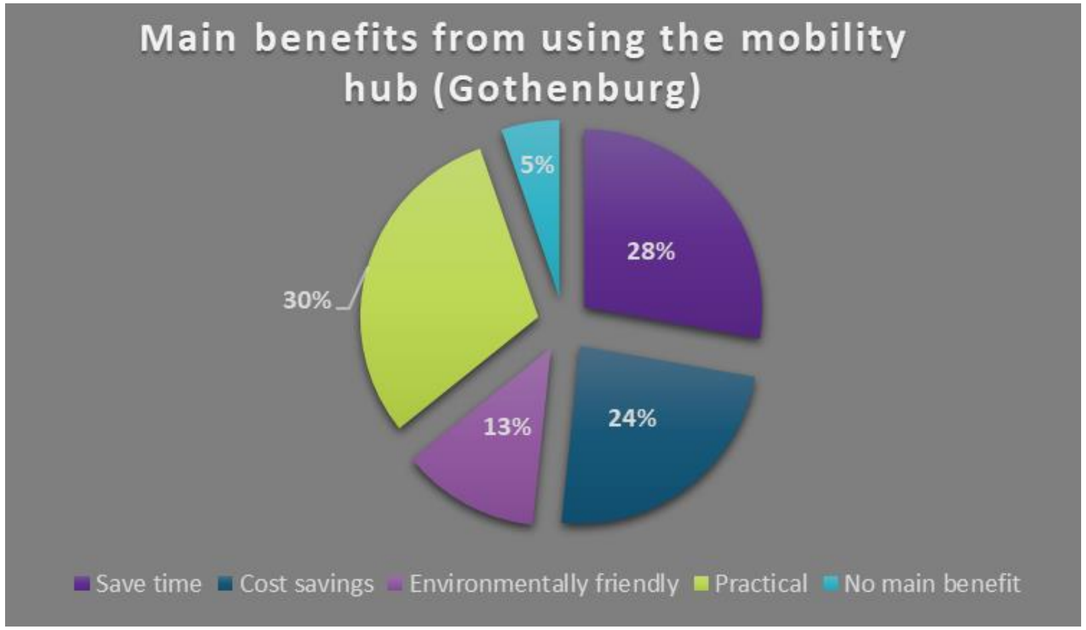

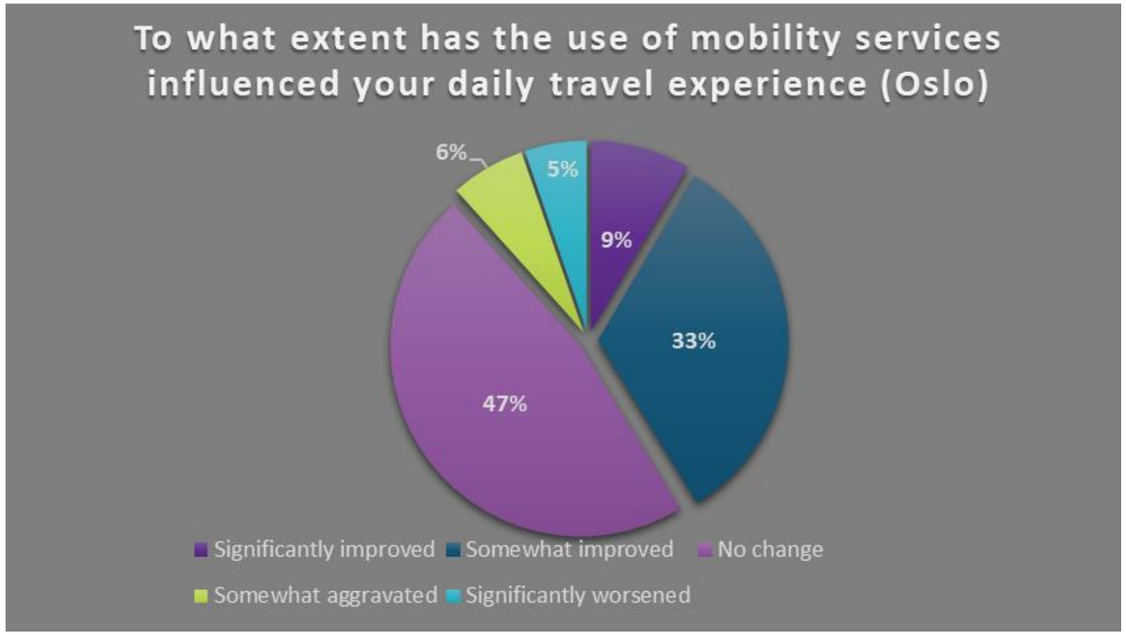

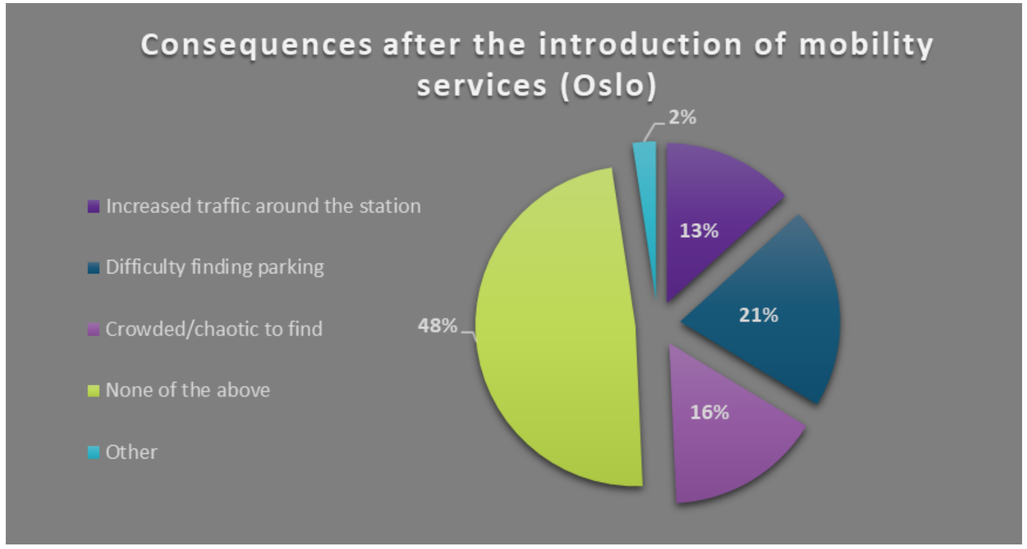

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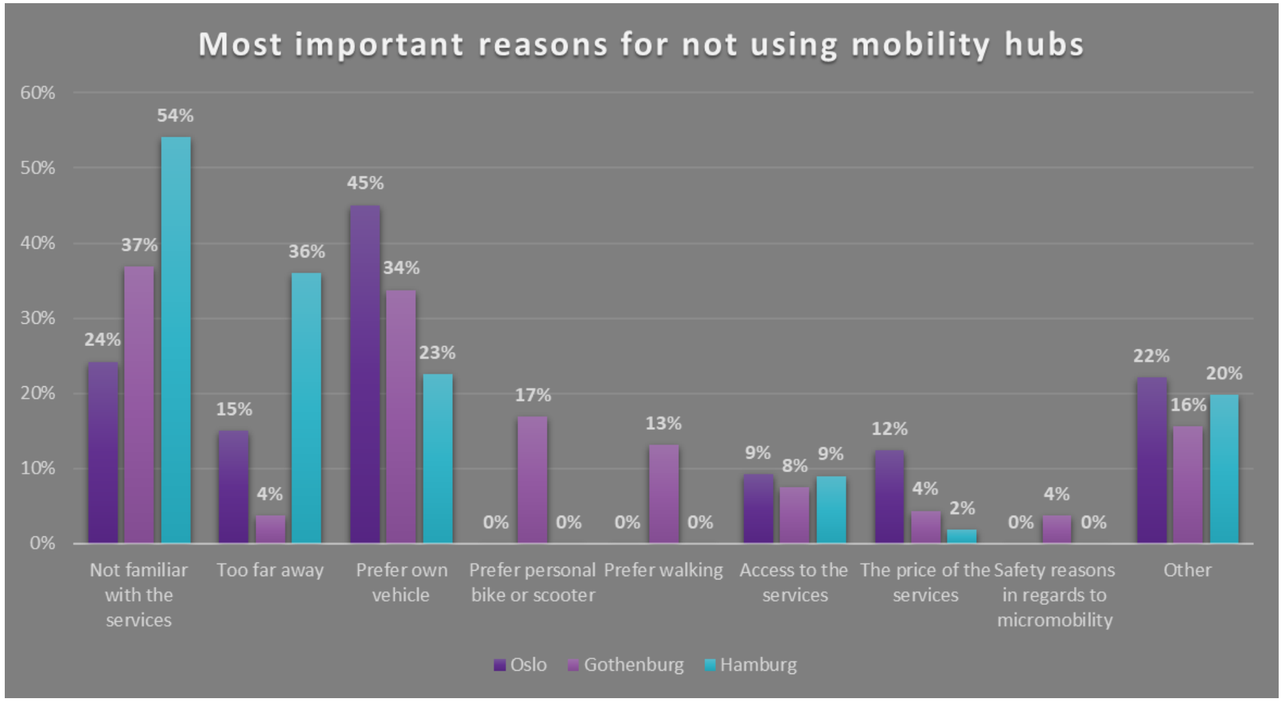
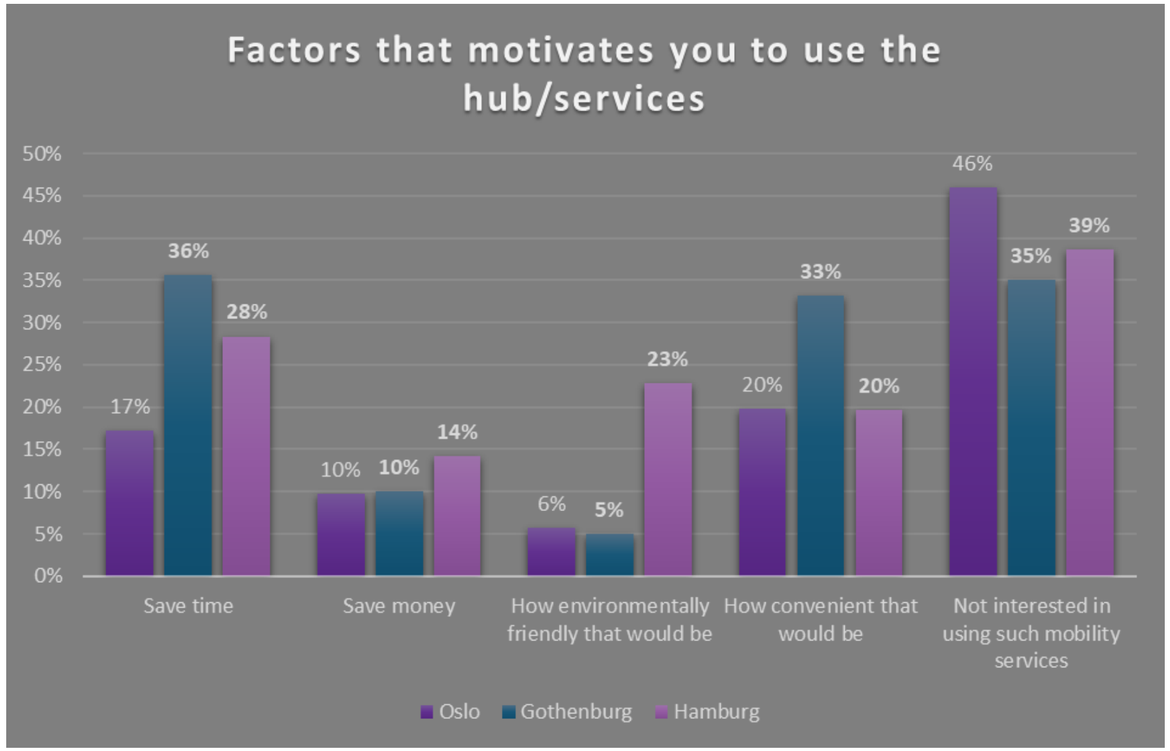
_evaluation findings – NON-USERS





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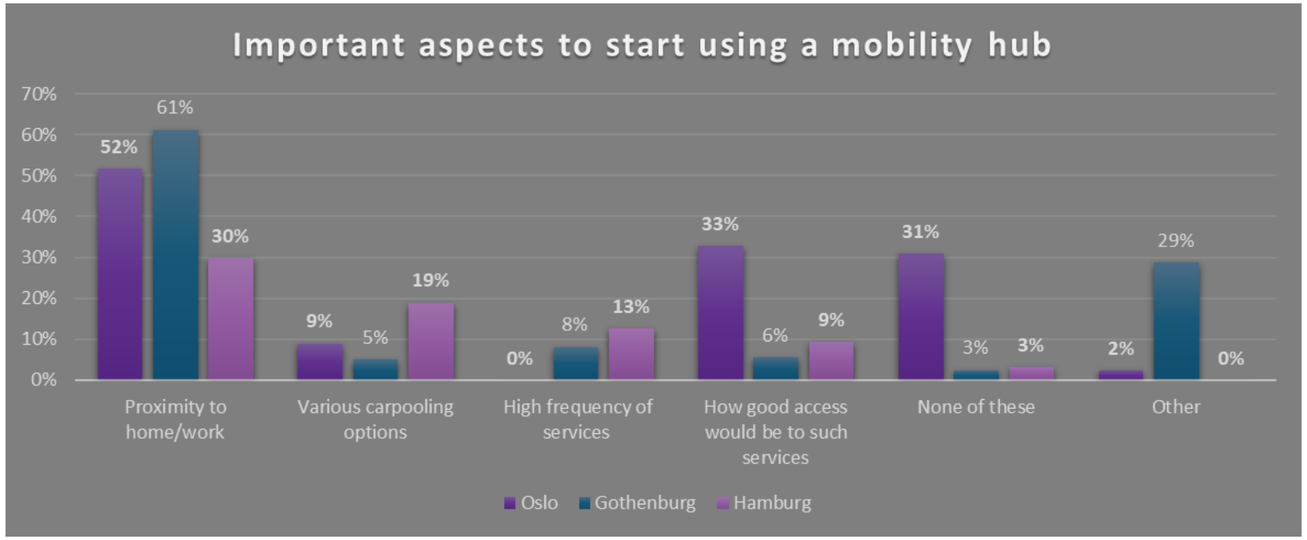

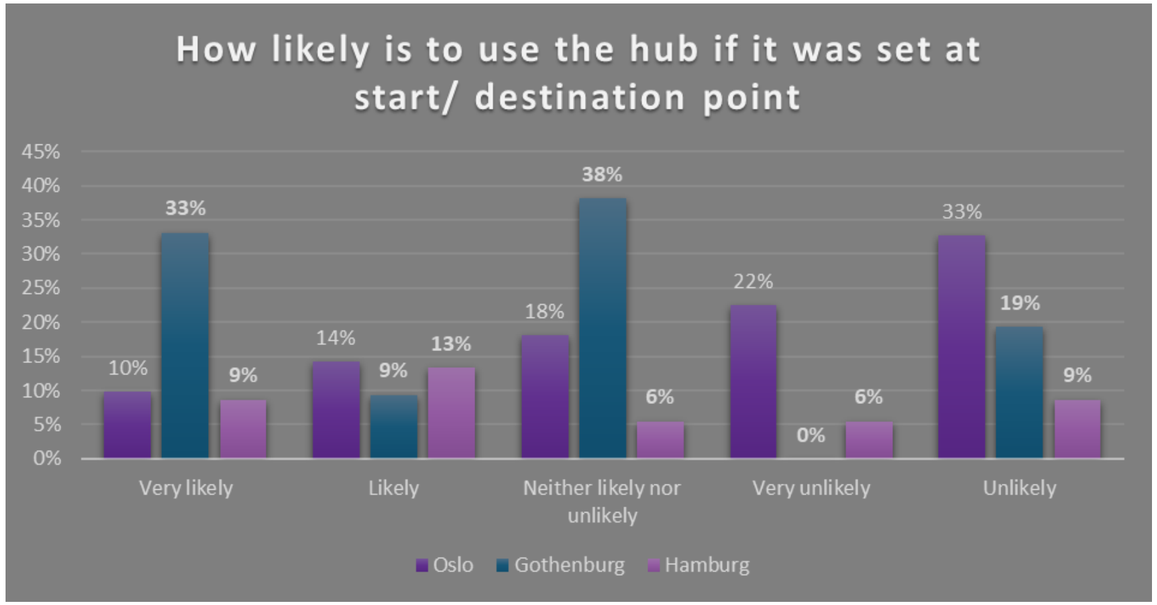

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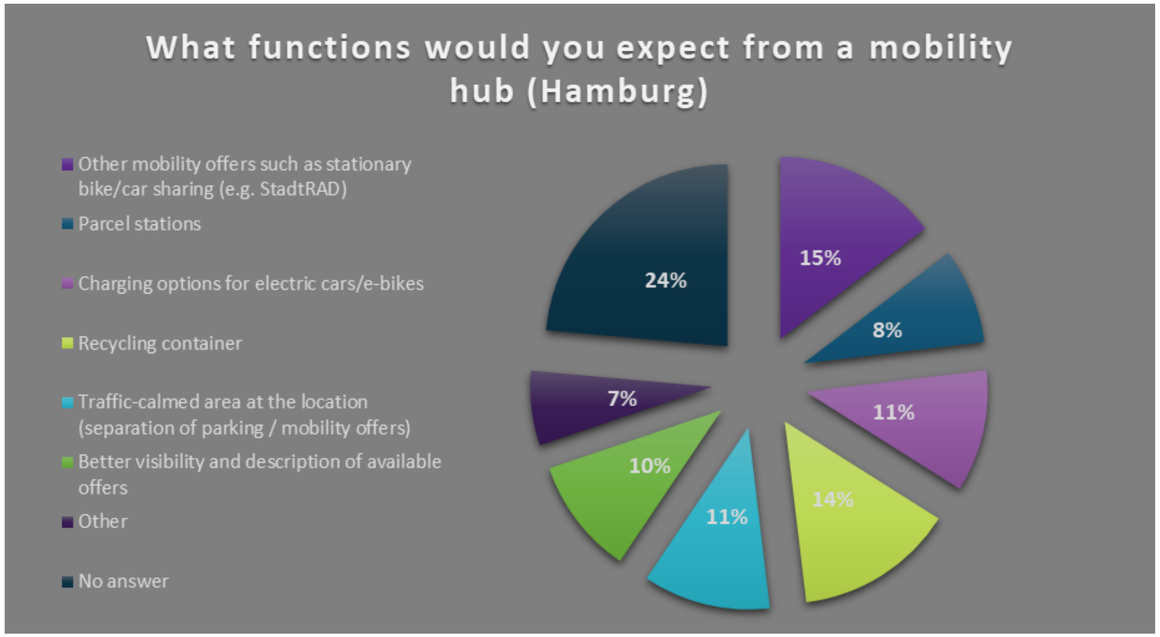
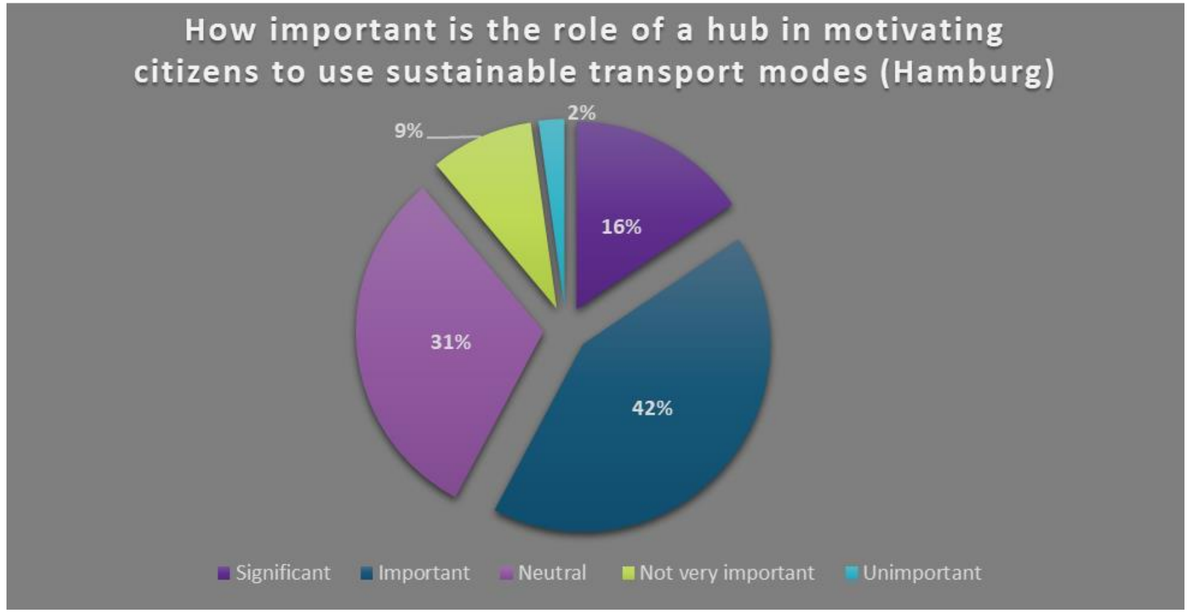
_evaluation findings – NON-USERS





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_conclusions

USERS

- Identify residential neighbourhoods and workplaces as optimal locations for establishing hubs to encourage the use of diverse transit options
- Emphasize that saving both time and money for commuting positively influences people to adopt greener and more sustainable travel practices
- 1 out of 2 believes hubs are essential for future urban mobility strategies and efforts to achieve climate-neutral cities
- Hubs and services offered should be clearly and thoughtfully designed to ensure ease of use, accessibility, and effective integration with other mobility options
- 4 out of 10 state that using the services improved significantly their daily travel experience

NON-USERS

- Reasons for not using a hub is private vehicle addiction and non-familiarity with the provided services
- Save of time and convenience are main reasons to start using a hub
- 6 out of 10 believe that hubs play a crucial role in motivating citizens to use sustainable transport modes
- Proximity to the residence and workplace are important aspects when using a hub

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POLIS
CITIES AND REGIONS FOR TRANSPORT INNOVATION
ANNUAL CONFERENCE 2024
27-28 NOVEMBER 2024
KARLSRUHE (DE)

Thank you for your attention!

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Ministry of Transport

Karlsruhe

MOVE 21

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