

2050 CliMobCity Final Dissemination Event - Report

19-21 June 2023

City hall, Martin-Luther-Ring 4 (day 1)
& Simplooffice, Markgrafenstrasse 2 (day 2), Leipzig

(hybrid meeting)



FDE Day 1 - Agenda

time	topic	who
14:00	Reception	
14:15	Partner meeting	
15:45	2050 CliMobCity Final Dissemination Event – introduction	<i>Ekki Kreutzberger, Delft University of Technology</i>
16:00	"Leipzig bewegt nachhaltig,/"Leipzig moves sustainable"	<i>Anja Hähle-Posselt, Kommissarische Amtsleiterin Amt für Wirtschaftsförderung, Stadt Leipzig</i>
16:30	"Leipzig having become one of the 100 EU climate-neutral cities"	<i>Simone Ariane Pflaum, Leiterin des Referats für Nachhaltige Entwicklung und Klimaschutz, Stadt Leipzig</i>
17:45	Short guided tour through the city centre	
19:30	Joint Dinner (Auerbach's Keller, Leipzig)	

Reception

The reception of the guests was at the entrance of the 'New City Hall', where inscriptions in the pavement refers to the fact that Leipzig and, amongst others, Thessaloniki are partner cities. The informal reception was continued in the meeting room.

Partner Meeting

The partner meeting was only accessible for partners in the 2050CliMobCity project. The meeting was also the last formal project meeting. The minutes of this partner meeting have been made available to the participants.

Final Dissemination Event

2050 CliMobCity Final Dissemination Event – introduction

By: Ekki Kreutzberger, Delft University of Technology; 2050 CliMobCity Project Leader

Ekki Kreutzberger welcomes the participants of the Final Dissemination Event (FDE), both those who are present in Leipzig and those participating online.

He shortly explains the program of the FDE: this first afternoon dedicated to introductions from the city of Leipzig presenting the setting of the project in one of the partner cities, followed by a short city visit.

The second day of the FDE will give insight in the different activities of the project, including the Action Plans, City Demonstrations and Good Practices. Regarding the City Demonstrations, the cities' measure packages, mobility effects and carbon emissions (CO₂e) effects will be presented, and the responses and the possible follow-up actions of cities be discussed.

During the third day of the FDE we will visit some interesting examples of measures that are being implemented in Leipzig in their policies to reduce carbon emissions from mobility.

Introduction: "Leipzig bewegt nachhaltig,"/"Leipzig moves sustainable"

By: Anja Hähle-Posselt, Kommissarische Amtsleiterin Amt für Wirtschaftsförderung, Stadt Leipzig / Head of department of Economic City Development

Summary of the presentation:

The city of Leipzig faces multiple challenges, including the consequences of COVID but of course also the carbon issue.

In the recent years, the city of Leipzig saw significant changes in population, from about 400,000 to 600,000 inhabitants. This means more homes, facilities, workplaces as well as of course more transport.

We've created an efficient railway system including the S-Bahn (regional train), tram, but also a bus transport system, the latter now also with electric propulsion. So, we've done a lot, but a lot of things still remain to be done. This includes for instance building a new circle line and introducing better trams; this is done trying to move people out of their cars, promoting active transport. This all takes time, and a lot of money – the systems are quite expensive.

But cars will be necessary, therefore, we aim to have much more electric cars, supported by sufficient charging systems.

John Green: how important is climate policy for you as an economic department?

Anja Hähle-Posselt: growing sustainably is a main and first goal for the city, and it is even more important than other goals.

Jan Becker: we try not to build too many new streets, but want to make better use of existing roads. Also, we want to make separate bike and tram lanes.

John Green: would that [the combination of significant population growth, but a restrained effort on building new roads] result in more congestion?

Jan Becker: that was indeed a main concern among a lot of stakeholders, but thus far, it hasn't proven to be a big issue.

Daniel Forster: in the UK the economic development board is quite successful, but doesn't see climate change as their main problem, why does it seem to work in Leipzig?

Jan Becker: we think that in the long term coping with climate change effects are much more expensive than trying to limit effects now.

Anja Hähle-Posselt underlines the climate priority also in economic policies: you can also use financial incentives to support climate friendly activities. We've now also a dedicated climate department in the city.

Ekki Kreutzberger: are the large companies in Leipzig also connected to these goals? For example regarding the movement of employees.

Jan Becker adds: indeed, there is no direct connection to e.g. one of the big car manufacturers by train or tram, but we now try to improve the bus system (incl. automated vehicles), shared car initiatives and even promote bike-use. Now talks are being held to open a dedicated railway station near the factories. Anja Hähle-Posselt confirms that financially less viable measures to access big employer's location sustainability perhaps deserve consideration in the light of the priority of climate also for economic development. Ekki Kreutzberger adds: many workers in the factories come from different areas, also from the countryside, so that complicates sustainable transportation.

Introduction: "Leipzig having become one of the 100 EU climate-neutral cities"

By: Simone Ariane Pflaum, Leiterin des Referats für Nachhaltige Entwicklung und Klimaschutz, Stadt Leipzig / head of department of sustainable development and climate protection.

Summary of the presentation:

Leipzig is part of the '100 climate neutral and smart cities' initiative.

In the past, the developments in the city triggered higher average temperatures, with effects such as heat stress and – in several regions – a lack of water. After the reunification of Germany, a lot of work already has been done in nature protection and climate mitigation. The efforts of Leipzig were, in 2017 and 2021, awarded with a gold European Energy Award.

Leipzig now strives for climate neutrality using the matrix of the Climate Alliance, aiming to reduce energy used in Mobility, heat and power, with associated lower CO₂ emission targets. Climate neutrality would effectively mean 0.25 ton CO₂ emission per annum per person in 2040/2050, because this emission can be compensated for by natural resources in the Leipzig area. In total we estimate that about 18 billion Euro has to be spend to achieve this goal.

In the Sustainable Energy and Climate Action Plan (SECAP) a pathway to climate neutrality, with intermediate milestones, has been defined. This has been translated in a Mobility Strategy 2030 (70% climate friendly in 2030, 90% in 2040), but also in other strategies including supply and waste disposal activities, strategies for public buildings and facilities, integrated planning and construction concepts, communication and cooperation, and nutrition and agricultural targets.

Both Leipzig and Thessaloniki are part of the EU Mission on climate-neutral smart cities. This participation doesn't result in getting funding for these activities, but it results in collaboration and sharing expertise and experiences. Via infrastructure programs Leipzig tries to get sustainable initiatives co-funded.

Challenges especially include getting sufficient renewable energy. This also relates to other challenges, for instance land use (we would need 1,000 ha for solar farms and wind turbines to achieve climate neutrality).

For mobility, the challenge is to reduction of traffic demand, inter modality and comparable goals, but at the same time guaranteeing that mobility systems are inclusive. This is also related to urban development. This is an important topic in the 'Sustainable energy Positive & zero cARbon CommunitieS' (SPARCS) project (<http://sparcs-leipzig.info/>).

Georgios Papastergios: what is the reason that Leipzig did develop a second SECAP?

Simone Ariane Pflaum: this relates to the fact that the (first) SECAP was not expected to result in climate neutrality in 2040, so it needed to be updated.

Georgios Papastergios: to achieve climate neutrality of course means a city asks a lot of efforts from citizens, companies etc. Do you know how much effort would be needed? Do you need EU advisers for this, because they also have tools to calculate this. They estimate that about 2/3 of the effort has to be funded by citizens themselves?

Simone Ariane Pflaum: we do these analyses ourselves; we've also accepted that in 2030 it is not feasible to have zero emissions, so we still focus on 2040. It is now difficult to get funding from the EU, but also important to engage citizens. But it also clear, that we won't even meet the 2030 goals – it is important to be realistic. But it is also important to do at least something.

John Green: where does the 0.25 ton/person/annum come from?

Georgios Papastergios and Jan Becker answer: it is the 'residual' emission, which can be compensated for instance through forests.

Penelope Antoniou: how did you approach and convince companies?

Simone Ariane Pflaum: some companies wanted to be seen, wanted to be frontrunners, so they wanted to be involved. However, SMEs are difficult to include, because lack of manpower.

Jan Becker adds: it could also help to set standards; for instance, companies that want to produce for BMW and DHL (companies that want to be climate neutral) have to comply with standards, this also goes for SMEs. So, perhaps we can use this model on a broader scale within the city – for instance in the cultural sector.

Hanna Lewandowska: how do you reach companies? What are the benefits for companies to be climate neutral, does the city have some kind of grants?

Simone Ariane Pflaum: yes, there is a kind of grant-system for city climate contracts.

Hanna Lewandowska: is it obligatory from the German national government to have a SECAP?

Jan Becker & Simone Ariane Pflaum: no, that is not an obligation, it only follows from the European project.



2050ClimobCity - FDE DAY 2 – Tuesday 20 June

FDE Day 2, agenda

time	topic	who
9:00	Welcome and reception; introduction	
	Project intro: Interregional learning, demonstrations, Action plans, good practices, project meetings and seminars	<i>Arjan van Binsbergen, Delft University of Technology (Project LP)</i>
	About the Interreg Europe programme	<i>Brume Delaunay, Interreg Europe, policy officer</i>
9:30	City Demonstrations	
	The central thread through the demonstrations	<i>Ekki Kreutzberger Project leader, Delft University of Technology (Project LP)</i>
	The measure packages (BAU and 2050 CliMobCity)	<i>City representatives of Thessaloniki, Plymouth, Bydgoszcz, Leipzig</i>
	The change of mobility	<i>Ekki Kreutzberger</i>
	The reduction of CO ₂ e emissions	<i>Fabian Reitemeyer, PIK Potsdam</i>
	Feed-back: What are the conclusions from these results for the policy-making?	<i>City representatives of Thessaloniki, Plymouth, Bydgoszcz, Leipzig</i>
	Reflection 1: Further-reaching measures	<i>Ekki Kreutzberger</i>
	Reflection 2: Climate-friendly urban and mobility development. Learning from European cities	<i>Björn Weber, DIFU</i>
15:15	Action plans of the partner cities	
	About the implemented actions	<i>City representatives of Thessaloniki, Plymouth, Bydgoszcz, Leipzig</i>
	Living Lab ThessM@LL	<i>Josep Maria Grau Salanova, Associate researcher CERTH-HIT</i>
16:30	Further developments & closure	
	Policy instrument Bydgoszcz	<i>Izabela Szczesik Zobek, director ZIT, for language reasons presented by Hanna Lewandoski</i>
	EUCityCalc	<i>Luis Costa, PIK</i>
	Wrap up	<i>Arjan van Binsbergen</i>
19:00	Conference dinner	

Welcome and reception; introduction

Project introduction: Interregional learning, demonstrations, Action plans, good practices, project meetings and seminars, by Arjan van Binsbergen

The 2050 CliMobCity is about climate mitigation in the field of urban mobility. Many cities have formulated ambitious climate aims for 2030 or 2050. Still, many cities are uncertain about if and how they can achieve these goals. The central question of the project is *'How must mobility and the urban structure change to achieve climate-friendly mobility? What are potential measures, what is their effect? What can we learn from each-other? What can cities actually do, what concrete actions could they take?'*

These questions are taken up in a series of activities including interregional learning (with expert seminars, site visits), city demonstrations, showing 'good practices' and by defining concrete actions in city Action plans.

The topics addressed in the activities of interregional learning included (novel) *Policy strategies and modelling* (including the 'Triple Access' concept, Modelling micro- and on-demand mobility, Analysing and modelling urban freight transport and SUMP-Plus approaches) as well as *Practical implementations and pilots* (including initiatives like Car sharing and on-demand services, Advanced parking and traffic management initiatives, Personalised mobility advice to new inhabitants & Mobilising citizens, Hub annex charging station locations and electrification – for instance of boats).

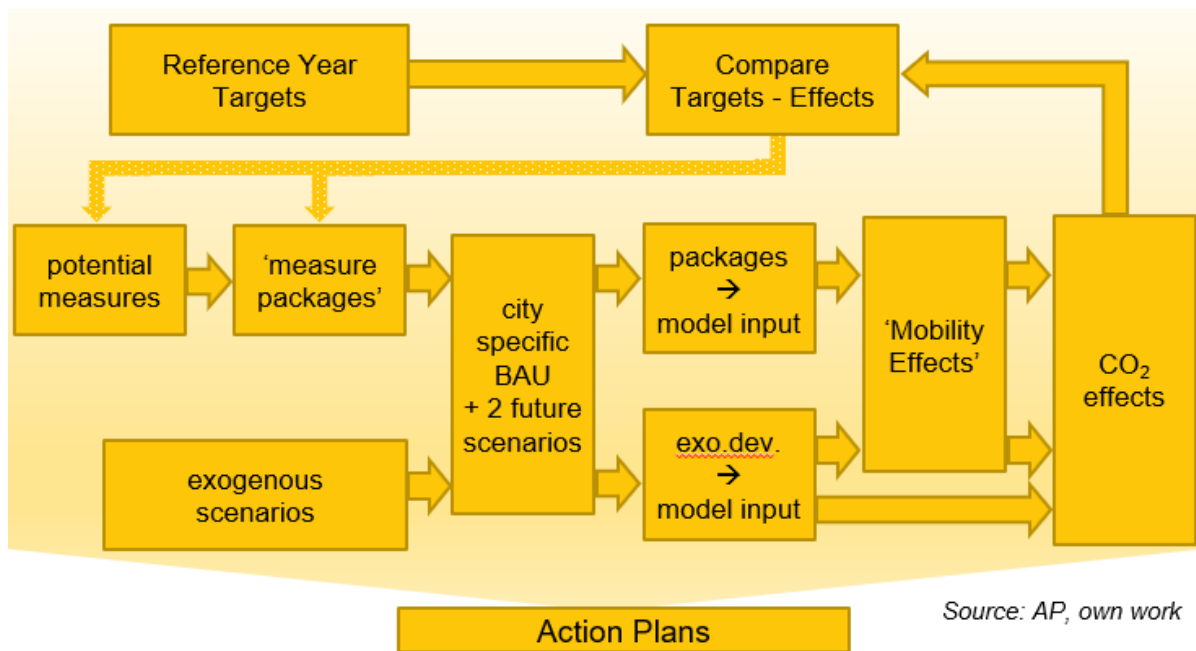
In the city demonstrations, policy measures and measure packages proposed by the cities were analysed in terms of their effects on changing mobility and on effectively reducing CO₂e emissions¹ for future years. Because policies aim for the longer term, 'Business as Usual' scenarios had to be developed to capture exogenous developments and unaltered implementation of already running or accepted policy interventions. On top of these BAU scenarios, measure package scenarios and in some cases additional sensitivity analysis scenarios were added, forming the CliMobCity scenario's. On the basis of these scenarios, the mobility effects and CO₂e emission effects were estimated.

Inspired by and/or on basis of the experiences shared in interregional learning or during the city demonstrations, cities defined concrete actions, to be implemented and monitored during the project runtime, and addressing regional Policy Instruments.

Cities chose different approaches, fitting to their respective planning processes, strategic plans and planning culture. The actions varied from further analysis of potential measures to feed the policy making process to writing advisory reports for future policies, formalising collaborative initiatives, and the actual (pilot) implementation of (micro) mobility hubs and charging stations.

In 'Good Practices' project partners highlighted example and pilot projects that could function as an example for (other) cities, both within and outside the project.

¹ In the 2050 CliMobCity publications we use the term 'CO₂e emissions', or carbon-dioxide equivalent emissions, as a standard expression. However, in city publications and document other expressions are used, such as greenhouse gas emissions (GHG emissions), carbon emissions or CO₂ emissions. These expressions are considered to be more or less equivalent in our project.



About the Interreg Europe programme, by Brume Delaunay

Brume Delaunay explained the position and the purposes of the Interreg Europe program within the European Union. Exchanging experiences and knowledge is the main goal of the program, rather than for example research. 'Projects' (like 2050 CliMobCity) and the 'Policy Learning Platform' are the two main branches of the program. Platforms' services include 'People', 'Knowledge' and 'Expertise', all on specific topics including sustainable mobility.

Concrete activities include webinars and publications, which are accessible for partners of Interreg Europe projects and others.

During 2014-2020, 4 calls were launched with an overall budget of 322 million Euro and resulting in 258 projects. 23% of these were on low carbon and about 26 sustainable mobility and 4 of them specifically on urban sustainable mobility with 2050 CliMobCity being one of those selected projects.

The leverage of the programme – i.e. ratio between Interreg Europe subsidies and quantified and monetised effect, is about 4.4. This is excluding the large effect on knowledge and experience exchange and learning.

Interreg Europe continues with the 2021-2027 program, with an increased budget of 379 million Euro ERDF budget and with the priority on capacity building and with six thematic areas including 'Smart', 'Green', 'Connected', 'Social', 'Citizens' and 'Governance'. The second call for this program recently closed and the proposals are being assessed.

City Demonstrations

The central thread through the demonstrations, by Ekki Kreutzberger

Ekki explains the set-up of the city demonstrations, including defining measures and measure packages, the predictions of mobility the calculations of emissions and a reflection thereof – useful for updating policies if necessary.

Cities have identified measures and composed measure packages tuned to the specific needs, current policies and aims of the cities – for different years in the future.

This resulted in different types of measure packages, some more experimental than others, but all aiming to reduce CO₂e emissions.

Based on the measure packages, future scenarios have been developed including these measure packages as well as estimations of other developments in land use, population/ and demography and work force, post-fossil powertrain penetration rate and energy mix development. Also, cities stated reduction aims for future years (Bydgoszcz: climate neutral in 2050, Plymouth: climate neutral in 2034, Thessaloniki: initially 42% CO₂e reduction, now climate neutral in 2030, and Leipzig initially climate neutral in 2040, recently climate neutral in 2030).

First, Business as Usual (BAU) scenarios were developed, in which mobility estimations for future years were made based on current and already approved policies.

Already in the BAU, significant differences between cities can be observed: first because cities function in different socio-economical and geographical settings, second they expect rather different population and spatial developments and third their current and approved measures differ significantly. For instance, both Thessaloniki and Leipzig plan or already implement massive expansions of the public transport systems in BAU, while Bydgoszcz planned larger investments the public transport and the road network, and Plymouth's BAU policies were in comparison road directed.

On basis of the measures and measure packages, cities developed CliMobCities scenarios that describe the implementation of (additional) measures, most often on top of the BAU, in a few cases substituting BAU measures (like Bydgoszcz's cancellation of roads projected in BAU plans or the re-urbanisation in the same city).

The proposed measures have been translated into transport model input and the effects of these measures have been estimated on basis of these models, often with additional analysis of experts (especially of measures that cannot be translated to model inputs). This resulted in predicted mobility effects. On basis of these mobility effects and on measures that directly impact CO₂e emissions (such as electrification), the effects of measure packages on CO₂e emissions have been calculated. These effects are strongly influenced by the penetration rate – and therefore share – of electric vehicles in the vehicle kilometres (partially influenced by local policies), and partly by the way electric energy is generated. Both factors differ greatly between countries and thus partner cities.

For the remainder of the FDE program it is important to already observe that the scenarios of the cities have significant impact on mobility and especially on CO₂e emissions, but at the same time are not yet sufficient to achieve the stated goals.

Therefore, additional measures could be considered, and to this end, additional analysis have been performed.

Measure packages: Thessaloniki / Rafail Katkadigas (online presentation)

As part of the project and by leveraging on the city's existing SUMP strategy and interventions, the project team has developed a mix of measures and strategies for reducing CO₂e emissions on the basis of enhancing and further elaboration measures by the SUMP and additional measures.

The BAU is the existing strategy and therefore is already very ambitious in terms of public transport (new metro lines), bicycle infrastructures, P+R, a Sulp, and traffic and parking measures.

The CliMobCity scenarios build on that with elaboration of measures, including electric car sharing stations, introducing fleets of electric vehicles, awareness raising campaigns, innovation (electrification bus fleet), and introducing sustainable mobility management initiatives.

Measure packages: Plymouth / Daniel Forster

Plymouth experienced a 12% reduction in CO₂ between 2005-2014 and therefore found it necessary to a considerable degree accelerate incentives in order to achieve the climate goals (climate neutrality in 2034).

They composed a CliMobCity scenario on basis of the maximum set of imaginary but realistic measures that could be taken in Plymouth. The selection of measures was based on a thorough analysis of policy measures aiming for CO₂ emission as considered in British cities. This analysis took about 18 months of review of transport media and specialists to identify potential measures and to create a refined list of measures.

The resulting UK Max scenario comprises 40+ measures in a varied array including promoting walking, cycling, bus, rail, ferry, electric vehicles etc. It is a theoretical package, i.e. a combination of measures that would be ultimately possible in the context of Plymouth.

In the follow up, the mobility effects of this CliMobCity / UK Max scenario were analysed with the city wide transport model, an adapted SATURN Highway. Given the scope of this model, additional expert analysis were done, for instance on the effects of modal shift to public transport, bicycling and electrification.

Measure packages: Bydgoszcz / Arkadiusz Drabicki

In the BAU scenario, Bydgoszcz expects to see an increase in travel distances, partially due to a population growth, but especially due to urbanisation. As a result of improvements in the (road) network system, also higher travel speeds are expected. These developments together are foreseen to result in more car vehicle kilometres, a somewhat higher share of car trips at the cost of lower shares of public transport and walking trips.

In the 'W1' CliMobCity scenario, the city proposes hard investment expansion in public transport (better coverage of the urban area) and clean traffic and/or charged traffic zones and even some pedestrian areas within the central area of the city, a P+R system. Additional measures include a zero-emission bus fleet.

The more tentative 'W2' scenario analyses the effects of an inner-city re-urbanisation, a corresponding further increase in the public transport system (especially higher frequencies in the central city area), a limitation of the road investments, and a more strict limitation of road transport in the city's central area.

These measures are analysed in the transport model, resulting in only limited positive effects of W1 (car-travel reduction effects in the city centre) and substantial benefits in W2 with car shares at about 50% as compared to 54.3% in BAU.

To analyse potential effects of travel behaviour measures, Bydgoszcz also developed ‘+’ scenarios. In the analysis of these scenarios the transport models have been modified to mimic a more ‘carbon aware’ traveller behaviour. The analysis approach can be seen as a sensitivity analysis of traveller behaviour (and especially traveller preferences).

As a result, mode choice shifts a bit more towards sustainable transport modes, and away from car use (now with an estimated modal share of about 36.2 – 41.4%). Also, the car traffic impact in terms of vehicle kilometres and vehicle hours will be some 8% lower than expected in the BAU scenario.

The discussion in the city is now about the feasibility of moving part of the population to achieve re-urbanization, for example by smartly tuning housing renewing programs, stimulating living in the central area of the city.

Measure packages: Leipzig / Jan Becker

Leipzig's Mobility strategy 2030 was the input for the BAU scenario. This included about 20 road infrastructure measures to improve the road network, but also integration of tram and bikeways. In addition, there are about 10 initiatives for rail infrastructures and 15 tram interventions (including higher capacity trams, tram service frequencies etc.), and other measures to make public transport more attractive.

The 2050 CliMobCity project enabled to update the ‘*Leipzig city of intelligent mobility*’ strategy, now also included in the CliMobCity scenarios – including (smart) electric charging stations and mobility stations and hubs for freight transport (enabling to use smaller, electric vehicles and even transport bikes).

The change of mobility by Ekki Kreutzberger

For the analysis of carbon emissions by mobility, vehicle-kms, in particular road vehicle-kms are the ultimate variable. The Project summary shows the changes in vehicle-kms, distinguishing between cars, trucks etc. and road types, and explains their backgrounds, as change of average distance or modal shift.

For Bydgoszcz it is important to notice that in the BAU there is a very significant increase in private car mobility (about 40%), whilst the use of public transport declines a bit, although there are substantial investments into public transport like expanding the tram network. But there are also quite some investments into the road network. At the end road transport remains quite attractive. Also there is suburbanisation leading to urban sprawl in- and outside of the municipality, the latter mainly by car. The CliMobCity measures are able to reduce the number of trips as well as the total vehicle kilometres, especially in scenario W2 in which there is a better balance between pull (to sustainable modes) and push (from the private car) measures. However, also in the CliMobCity scenario the estimated car trips and kilometres are still higher than in the reference year. Bydgoszcz has conducted a sensitivity analysis (in the scenarios W1+ and W2+) in which modelling parameters were varied mimicking a change of mobility preferences, namely that in the future people could averagely could be more public transport and active travel minded. While the assumptions of the

require research for validation the modelling shows that the road vehicle-kms are (a little) less than in W1 and W2.

Also in Plymouth, in the BAU scenario we see a significant increase in vehicle kilometres (19%) for passenger cars and an even much higher growth in freight kilometres. The growth seems to be especially related to population growth, but also to increasing average distance. The CliMobCity scenario (UK Max) is more public transport and active travel minder and seems to be able to limit the expected growth to slightly above 2015 (+5%).

For Thessaloniki in the BAU scenario, especially due to the huge investments in PT, we see a significant reduction in car kilometres (18%), despite of the population increase. The CliMobCity scenarios hardly have an impact on the car kilometres but have an impact on emission, which will be shown later.

In Leipzig, the situation is similar. There is a reduction in car kilometres by about 8% in the BAU, especially due to a lot of measures in public transport, and even taking into account population growth. The CliMobCity scenarios do not have an impact on the car kilometres. However, also for Leipzig, the packages have an impact on emission, which will be shown later.

The reduction of CO₂e emissions by Fabian Reitemeyer

The emission modelling part of the 2050 CliMobCity project was inspired by the family of so-called 2050 Calculators: EuCalculator and CityCalculator, the result of earlier (European) project. A key feature of the model is the use of so-called levers each of which can be set to mimic inputs resulting from different urban plans and strategies. The model than shows potential changes towards decarbonisation.

These levers and levels describe the model for the respective urban reference and target year, e.g. 2015-2050 for both behaviour (e.g. time spent in transport every day) and technologies (e.g. technology share in passenger transport). In the 2050 CliMobCity project, part of the lever settings (model inputs) are set on basis of the mobility effects estimations as produced by the cities. Other lever settings were based upon additional scenarios and values from literature study and especially related to the penetration rate of electric vehicles (power trains) and the way electric energy is produced (energy mix).

The share of powertrain scenarios have been labelled 'EU Reference' for a baseline and 'Tech' scenarios. These are the result of country specific investigations and have been published before. The values in the Tech scenario have more ambitious shares. The energy mix scenarios are a baseline 'Mix A' and a 'Green' scenario. In all these scenarios, available European or country scenarios have been tuned to specific city conditions when needed.

The results of the analysis show a varied picture.

Plymouth

- Goal: climate neutrality in 2030 (2034).
- The demonstration focusses on the period 2015-2034.
- The BAU scenario shows a population increase resulting in +22% car trips.
- CliMobCity measure package UK Max limits the car vehicle kilometre growth to 5%;
- The scenarios for the electric vehicle penetration rate that in 2034 the share of post-fossil vehicles is 18% (EU Reference) to 56% (Tech scenario).

- Fabian shows the CO₂e reduction for different scenarios. The reduction in BAU in comparison to 2015 is 5%, in CliMobCity 9% (EU reference), 24% (Tech), and 32% (Tech plus green electricity production). Four lever exercise with additional modal shift, reduction of distance, additional electrification and combinations of these lead to an additional reduction of maximally 13% (together 45% reduction). Pro capita values are slightly larger. The remaining emissions come from cars (55%), freight (35%) and bus (11%).

Bydgoszcz:

- Goal: climate neutrality in 2050.
- The demonstration focusses on the period 2021-2050.
- Population decrease, but due to urban sprawl still a +40% car vehicle kms are expected in BAU, most likely also resulting in more emissions. Also a quite high share of freight vehicles are expected.
- The scenarios for the electric vehicle penetration rate that in 2050 the share of post-fossil vehicles is 23% (EU Reference) to 43% (Tech scenario).
- Fabian shows the CO₂e developments for different scenarios. The change in BAU in comparison to 2021 is +1%, in CliMobCity scenario W2 -1% (EU reference), -6% (Tech), and -19% (Tech plus green electricity production). Four lever exercise with additional modal shift, reduction of distance, additional electrification and combinations of these lead to an additional reduction of maximally 13% (together 32% reduction). The remaining emissions come from cars (55%), freight (35%) and bus (11%). In the CliMobCity scenario W1 the reductions are less, in W2+ more. Pro capita values are slightly smaller (population decline).

Thessaloniki:

- Goal: initially climate goals for 2030 set as 42% reduction as related to 1990, now updated to climate neutrality in 2030. The equivalent reduction for the base year 2018 is 52%.
- The demonstrations focusses on the period 2018-2030.
- Population increase, but a very ambitious BAU already, resulting in a decrease in passenger car vehicle kilometres.
- The scenarios for the electric vehicle penetration rate that in 2030 the share of post-fossil vehicles is 1.5% (EU Reference) to 11% (Tech scenario).
- Fabian shows the CO₂e reduction for different scenarios. The reduction in comparison to 2018 in BAU is 8%, in CliMobCity 14% (EU reference), 15% (Tech), and 21% (Tech plus green electricity production). Four lever exercise with additional modal shift, reduction of distance, additional electrification and combinations of these lead to an additional reduction of maximally 3% (together 24% reduction). Pro capita values are slightly larger. The remaining emissions come from HGVs (lorries), also PT-busses (1/3 of them still are fossil fuel busses) and 2-wheelers.
- Two back casting lever exercises have been conducted. However, the maximal reduction of car share does not reduce CO₂e emissions to the required level. This can be achieved by a substantial electrification (54% reduction).

Leipzig:

- Goal: climate goals initially climate neutrality in 2040, meaning 80% CO₂e reduction in 2035. with climate neutrality in now aimed for in 2030;
- The demonstrations focusses on the period 2015-2035.
- Population increase expected as well as a car kilometres increase in BAU; electrification aims especially in the CiMobCity;

- The scenarios for the electric vehicle penetration rate that in 2030 the share of post-fossil vehicles is 17% (EU Reference) to 51% (Tech scenario).
- Fabian shows the CO₂e reduction for different scenarios. The reduction in comparison to 2018 in BAU is 39%, in CliMobCity 40% (EU reference), 49% (Tech), and 57% (Tech plus green electricity production). Four lever exercise with additional modal shift, reduction of distance, additional electrification and combinations of these lead to an additional reduction of maximally 10% (together 67% reduction). Pro capita values are slightly larger.
- One back casting lever exercise has been conducted. A mix of powerful modal shift and powertrain shift provides 80% CO₂e reduction.

As generic conclusions we can see that the emission reduction results depend very much on external developments, especially the technological improvements and the effect of cleaner electric energy
Other findings are:

- The analysed reduction of CO₂e emissions from passenger and freight mobility in the CliMobCity scenarios of the partner cities is not sufficient to meet the targets.
- CO₂e emissions per ton-km are high in comparison to those per passenger-km. The volume of vehicle-kms is expected to grow in all four cities (between more than 10% and 30% for HGVs) while there is only a small shift to post-fossil fuel trucks.
- Shift to post-fossil vehicles can interrupt the relation of reduction of vehicle kilometres, energy consumption and emission reductions.

Feed-back: What are the conclusions from these results for the policy-making?

Conclusions for policy making: Thessaloniki / Pinelopi Antoniou (presentation available)

Emission targets 42% less emissions than in 1990, but adapted for the mobility sector
We have to deal with a 9% growth increase of the overall trips that start and/or end within MoT between 2018-2030 and a significant increase of 20% of CO₂ that is assumed/approximated for the period 1990-2018.

Additional measures proposed:

- Further modal shift through local measures but to a specific scale for a realistic scenario;
- Additional fossil fuel car-free scenario for the city centre of MoT;
- Urgency in addressing urban freight logistics;
- Simulate penetration rate of BEV's, including shared schemes, charging station infrastructure, financial support and awareness campaigns, regulations;
- Also address issue of electricity generation, although this is a topic on a national level.

Other suggestions include:

- Closer collaboration with other cities in the region;
- Incentives for travel demand reduction within business sector.

Updated ambition to be climate neutral in 2030, so quite a lot of measures must be taken well before that time.

However: project acknowledged that achieving the emission reduction target solely for mobility is challenging, and initiatives by the national governments are very important (incl. electric energy generation, financial incentives and regulations).

Conclusions for policy making: Plymouth / Daniel Forster

Despite increasingly supportive local transport and land use policy, very limited success to date in decarbonising mobility over 20+ years now. Local administrations are very dependent on bids to a wide range of national funds which inhibits strategic planning and implementation. Localised decision-making for most impactful but politically challenging policy measures. UK Max is an ambitious theoretical analysis.

- we expected significant but nevertheless insufficient per capita reductions, because the majority of measures aim to improve attractiveness of sustainable modes but only few measures inhibit the predominant use of private ICE car use. Also, most key policy levers are national and not local. Also, the privatised organisation of public transport as it is now does not help to achieve the targets.
- The model outputs per capita were about 32% CO₂ reduction, and UK Max would only have the direct possibility and capacity to achieve perhaps one third of the proposed measures – a tough challenge

Follow up actions are (therefore):

- further analysis of potentials and analysis, also for the local level, brief cabinet member for transport on the final model results and work on a formal organisational response in 2023/2024.

Conclusions for policy making: Bydgoszcz / Arkadiusz Drabicki

From the analysis of and for Bydgoszcz show that re-urbanisation could, theoretically, an interesting solution. However, it is a politically sensitive discussion, the discussions on this topics are now starting and will take time to materialise.

The Bydgoszcz climate adaptation plan also points to the need of collaborating within the functional area (region) of the city.

Energy production for Bydgoszcz, on national level, is currently indeed dependent of coal, but it is changing rapidly – so the development to greening is at least gaining attention and also accelerating. Also in other topics – for instance mobility management on specific routes, is now being taken into consideration – a change of policies. The results of the project can help to further raise awareness, also on the regional and national level.

Conclusions for policy making: Leipzig / Jan Becker:

The conclusion of the analysis is that focusing on public transport and modal split to reduce carbon emissions turns out not to be sufficient. Also, 'motivations' seem not to be sufficient, so perhaps we have to include thinking about restrictions as well, for instance a ban on fossil fuel vehicles.

As a department of economic development we already focused on getting better possibilities for charging and for freight transport, and we will continue to do so and even have to consider to step-up these efforts.

Reflection 1: Further reaching measures by Ekki Kreutzberger

Ekki Kreutzberger reflects in general terms on the findings:

- non-transport developments (technology, economy, demography) have a very significant impact on expected developments in mobility and CO₂e emissions, also in BAU;
- the starting situation hugely impacts potential effect of measures;

- a strong quality boost in public transport can induce a large modal shift – especially in areas that do/did not have a strong public transport service network;
- promoting bike use can have effects as well, but on numbers of trips rather than on total amount of kilometres;
- mobility measures alone can significantly contribute to 2030 climate goals, but are by no means sufficient to achieve the goals set by the cities: measures such as *electrification* or other climate neutral propulsion systems such as *H₂* are needed, as well as ‘greening’ electric energy generation are certainly needed.
- Reduction of CO_{2e} emissions by only electrification and other shift to post-fossil fuel vehicles will by far not on time lead to the reduction the cities aim for.
- In all four partner cities the CliMobCity measure packages do not sufficiently respond to the cities’ climate aims.

Ekki Kreutzberger draws attention to four numbers. Thessaloniki in the BAU scenario reduces car-kms by 18%. Its CO_{2e} reduction is 8%. Leipzig in the BAU scenario reduces car-kms by 8%. Its CO_{2e} reduction is 39%. The answer to how such seemingly inconsistency is possible is: take a look at the share of post-fossil vehicles of the remaining road vehicle fleet. In Thessaloniki the share in 2030 is expected to be 1.5%, in Leipzig the share in 2035 is expected to be 17%. A small share reduces the effect of a good reduction of car-kms. A large share unfolds the benefits of a the reduction of car-kms. Another issue in the remaining vehicle-kms are the HGVs. They have a heavy weight in the total emissions.

To this end, two additional analysis, a ‘forecasting lever exercise’ and a ‘back casting lever exercise’.

In the ‘forecasting lever exercise’ we mimicked the situation that the measures that have been proposed by cities a pushed bit further: 10% lower share of cars; 10% shorter trip distances; 10% higher share of post-fossil fuel vehicles. The result were additional reductions of between the 3 and 13%, dependent on the city. This is interesting, but for most cities still not sufficient.

In the ‘back casting lever exercise’ we changed the lever settings in such a way that the targeted emission reduction aims can be achieved. From this – i.e. the lever settings - we can *deduct* what level of mode shifts and penetration rates for post-fossil fuel vehicles would be needed (without being able to say what measures would be needed to arrive at such a situation). As can be expected, achieving the CO_{2e} emission reduction ambitions would mean an additional substantial modal shift and penetration grade of post-fossil fuels – assuming ‘clean’ electric energy generation. An example of a result is in Leipzig the combination of modal shift (share = - 25 %-points cars and other LDVs) and powertrain shift (share = + 32 %-points battery electric vehicles) in comparison to the CliMobCity scenario with Tech powertrain shares and green energy mix for electricity production.

Measures that are often mentioned to help to achieve a substantial modal shift or shift to post-fossil vehicles include the introduction of micro mobility, shared services, hubs, awareness raising and reducing emissions of freight transport.

From empirical data and academic research, regrettable, not much evidence can be found yet about the effectiveness of micro mobility.

Shared services, especially shared cars, can have a positive impact as some empirical evidence seems to indicate that replacing a owned car by a shared car reduces the total number of car trips. Also, the life cycle emissions of shared cars might be lower than that of privately owned cars.

Evidence on the effectiveness of shared e-scooters and other forms of micro-mobility is less decisive, because rather than the modal shift from car to these modes, several authors observe a shift from public transport or non-electric bike use to shared micro mobility, which is not necessarily beneficial for CO₂e emission reduction.

What professional (e.g. municipality Leipzig) and scientific literature, also in the world of micromobility, shared vehicles and mobility hubs (in)directly underlines is the widespread willingness amongst substantial parts of the cities' residents, often not the majority, but a substantial part of the population, to change mobility habits, from car ownership to choice of mode. Ekki Kreutzberger cites some quantifications. The message is for policy-makers to mobilise this willingness in favour of climate-friendly mobility. Awareness raising can be an important instrument in mobilising the willingness.

Another important field to reduce fossil-fuel vehicle kms is freight transport, which in the cities mainly takes place by trucks to vans. Electrifying the latter seems to be a quick-win as vans have the highest CO₂e emissions per ton-km and because the distance to be covered per day is compatible with current battery and charging technology. Otherwise there are, given the time space pattern of goods distribution and collection in the city, and looking to powertrain scenarios for the long distance, interesting perspectives for making freight transport in the cities climate-friendly. Also other types of measures could, have effect:

- New combinations of push/pull/technological/behavioural measures;
- More effective pricing/taxing measures, e.g. income dependant;
- More sustainability-focused pricing/taxing measures.

Also, to improve the speed of the transition, additional supporting measures it might be necessary, including:

- Sufficient financing and staff at municipalities and other governing bodies for managing procedures;
- Appropriately reorganise local public transport planning and financing, both regarding investments and operations;
- Making better use of the willingness to transition amongst a substantial part of the population.

Overall, the following conclusions can be drawn from the project:

Given the current governance frameworks, it is will be virtually impossible to achieve climate neutrality for mobility in 2030 (e.g. insufficient financing for more shift to public transport or more shift to post fossil fuel vehicles and faster greening of electricity production; e.g. inappropriate legal assignment of competences to cities).

Given the climate urgency, it is important to stick to ambitious climate mitigation aims like climate neutrality in 2030, and to strive for climate neutral mobility as soon as possible

It is therefore necessary to conduct strategic city and mobility planning including quantitative projections / checks for the future if the foreseen measures indeed are expected to bring about sufficient mobility change and sufficient CO₂e reduction?

Cities should avoid a *laissez faire* mentality or climate cynicism in their city and mobility development planning because there is still much to gain, both from modal shift and – especially – electrification, and these developments benefit more than only CO₂e emission reduction.

Important supporting policies will be needed:

- Awareness raising, information and incentives to mobilise cooperation of residents and organisations
- Awareness raising to regional and national governments directed towards changing governance frameworks in favour of effective climate mitigation
- Attention for carbon capturing, albeit not a governance subject on the municipal level. Mobility in cities may be a reason to search for carbon capturing on (inter)national levels.

Reflection 2: Climate-friendly urban and mobility development. Learning from European cities, by Björn Weber, German Institute of Urban Affairs/Deutsches Institut für Urbanistik

DIFU undertook a comparative international study on what German cities can learn from other cities in Europe on climate-friendly urban mobility development.

Regarding CO₂ emissions we can see that overall, CO₂ emission is reduced between 1990-2020, except for mobility and that is related to mobility growth in both passenger and freight transport that couldn't be offset by technological advances.

This means that an acceleration is needed to reduce CO₂ emissions from transport, where we can see a predominance of the passenger car in the modal split (especially in kilometres).

The DIFU project research questions were about synergies for climate friendly urban development and mobility, the particular challenges for German cities, and good practices.

So, how would or could a Climate Neutral City look like?

Generally, public transport would function as the main transport mode for longer-distances transport. Further, there would be a large emphasis on walking and biking. Both transport modes ask for higher densities, but also attention for blue and green infrastructures.

Most cities now adapted policies for climate adaptation and mitigation, still, acceptance for fundamental changes is perhaps not as high as desired for. Also, time is needed, whilst there is actually no time to lose.

Example cities from the DIFU study included:

- Basel with a 'commuter fund' launched in 2013 that eventually resulted in a relative high share of public transport and walking: In Basel, 11% travel by car or motorbike, 48% use the tram or bus and 42% cycle or walk to work [Website Basel]
- Victoria [Spain] - introduction of 'Super Blocks', aiming to reduce car use on neighbourhood level, resulting with a 25% reduction in car use.
- Helsinki – MaaS approach with a single, uniform portal that manages the services and is easy to access. Finnish legislation enabled to get and integrate data from different providers and to make available a single management tool/app.

From the example cities investigated in the report, a lot can inspiration can be drawn from, for instance related to combining push and pull measures, and also to have a firm legal foundation for various transitions – re-allocating road space to other uses, financial arrangements, data exchange etc. At the same time, even these example cities did not always reach the targets yet, and attention is needed for transport flows outside urban centres.

Action plans of the partner cities²

Implemented actions of Plymouth

Targeted Policy Instrument: Subregional plan Plymouth and South-West Devon Joint Local Plan.
Investment priority 4e: Promoting low-carbon strategies for all types of territories

Action 1: Mobility Hubs: 50 e-bike sites, 3 EV charging points and 1 car club vehicle are operational; implemented as planned, but more to be realised in the future.

Action 2: Assess 2050 CliMobCity projects for inclusion on Climate Emergency Action Plan (CEAP) 4 and the Net zero Action Plans: 46 learning opportunities identified with potential for application in Plymouth assessed for the Net Zero Action Plan. Pathways for learning highlighted for the 15+ opportunities that are considered to have potential for application.

Action 3: Strengthening the policy instrument: full leverage the findings of Plymouth City Council's 2050 CliMobCity, but this action couldn't be completed yet due to national planning issues; still, implementation is anticipated during the remainder of 2023 and 2024.

Jan Becker: it would be interesting to know more about charging electric boats, because in Leipzig the combination water and electric propulsion is often perceived as a non-logical combination. Perhaps Leipzig should/could learn from the Plymouth example.

Implemented actions of Thessaloniki

Changed focus targeted policy instrument because of several limitations, including a lack of management capacity, the geographic scope and especially the end-time of the instrument (2022). Therefore changed after approval by LP and JS to a Strategic and Operational Plan of the Municipality.

Action 1: Technical specifications for the elaboration of the sustainable logistics plan (SULP): the framework of Technical Specification has been developed with the collaboration with HIT, initial contacts have been made to include the development of a SULP in the "Metropolitan Strategic Plan for Sustainable Urban Development of the Region of Central Macedonia" call for funding", and part of the MoU with ThessM@II (see Action 2) is the support of the MoT by HIT in the development of a SULP.

Action 2: MoU for participation in the Living Lab ThessM@LL for real time information services for citizens (also related to the European Network of Living Labs, ENOLL): meetings have been held to define content and data exchange, the Administration of the Municipality has been informed, the MoU has been developed, officially accepted by the Municipal Council on 8 May 2023 and is formally to be signed in September 2023.

Action 3: Pilot installation of micro mobility hubs of electric sharing transport schemes: after the necessary preparatory steps, including arranging public spaces regulations and the tendered procurement of the fleet, installation & operation of the hubs, there is now a demonstration of micro mobility vehicles (with a kick off promotion of the services to the citizens of Thessaloniki in 2022).

² See appendix for more information

Action 4: MoU sign with at least one of the Universities' administration of the City Centre, part of which are targeted awareness raise campaigns for University Students' mode choice and information about its impact in the environment, the city and the individuals: after preliminary communication with professors from the Aristotle University (AUTH) and the implementation of a sustainable transport campaign, formal communication between the university and municipality, the next steps include the signing of the Climate City Contract (CCC) in September 2023 between all stakeholders of MoT ecosystem, including the universities.

Implemented actions of Bydgoszcz

Targeted policy instrument is the Regional Operational Program for the Kujawsko-Pomorskie Voivodship 2014-2020; Priority 4e "Promoting low-carbon strategies for all types of territories, particularly for urban areas, including support for sustainable urban mobility and adaptation measures having a mitigating effect on climate change".

Action 1: Draft findings report has been commented upon, also because some points were not aligned with current policies, but has been submitted; also, the report has been submitted to the SUMP of the Functional Area of Bydgoszcz (which has been adopted) and to the public transport development plan.

Action 2: Submitting technical specifications for tendering a study for micro mobility and car sharing to the municipality: the technical specifications report is in the final draft phase and will be submitted to ZDMiKP (Municipal Roads and Public Transport Authority in Bydgoszcz) in July 2023 or shortly after.

Action 3: Define technical specifications for a cycle wayfinding system and install a pilot for such a system. This Action required external funding and work. For this to work, the city has to apply for an exception of traffic signal systems to the Ministry, and also, various departments should for apply for funding. Bydgoszcz has now decided to focus on the design of the system, especially regarding the type of information to be given to the users.

Implemented actions of Leipzig

The Action Plan addresses the city's strategy "Leipzig – Stadt für Intelligente Mobilität" (Leipzig – City for intelligent mobility").

Action 1: Fast charging infrastructure on commercial properties: Opening of 5 fast charging stations at specific, company-owned sites where these companies are owned by the city. This has been conducted successfully; actually, one of the sites will be visited during Day 3 of the FDE.

Action 2: Realising charging infrastructure for carsharing: Until now, a main obstacle for sharing companies is to find space, as free available public space becomes scarce. The action is therefore aimed at dedicating public space for charging facilities and realising charging systems for shared mobility. In June last year 4 of these have been opened, with two charging points each. At the beginning of this year another 4 have been opened (again with tow charging points). The Action has been successful, and is to be expected to continue by introducing more stations.

Living Lab ThessM@LL by Josep Maria Grau Salanova

The Thessaloniki Smart Mobility Living Lab (ThessM@LL) is related to HIT/CERT and also participating in the European Network of Living Labs – ENOLL.

The ThessM@LL collects and analyses data to create added value by extracting information and knowledge from it, and providing solutions and services (data portal, big data tools, decision support systems, digital twins). Initially focused on mobility, now also on energy and environmental data on urban and peri-urban areas.

Also different solutions available, such as machine learning and AI, logistics operational modelling, simulation modelling. (see also www.smartmlab.imet.gr)

Citizens' engagement is an important aspect that can be addressed by the instruments available. Tools include a lot of modelling tools, also on different scales. These also include management, optimisation clustering and other tools and for instance a mobility dashboard.
<https://www.thessmd.imet.fr>

Services include traffic status and predictions, routing and navigation, congestion detection, and data portals (National Access Point). Target audience includes governments and authorities, but also for police services.

As an example of applications, analyses of the impacts of COVID measures (access restrictions, facility closures, travel restrictions) were done.

The Living Lab has no own, fixed funding. It works via arrangements, fixed in MoU's that define services and finances.

Regarding sustainability, the initiative works together with companies to implement traffic management initiatives and advice municipalities and other government levels on measures and strategies.

Further developments & closure

Policy Instrument Bydgoszcz by Hanna Lewandowski for Izabela Szczesik Zobek

ZIT is the integrated territorial investment, that is the territorial and financial instrument for the regional operational program. ZIT can help promoting partnerships between local municipalities. In the previous period (2014-2020) a lot of projects on sustainable mobility were cofounded by European funds. For instance in bicycle roads, tram extensions and routes, P+R systems.

In the new program the 'functional area' has been reduced to Bydgoszcz, however, a collaboration with other regions has been established.

The new regional financial instrument has 112 million Euro and additional 8 million Euro that will be used to invest in low emission rolling stock, improve the urban transportation system, and bicycle paths.

The financial instrument can fund up to 80% of rewarded projects. The investments have been pre-selected in the strategy plan; in addition to European money, it is also possible to apply for national funding. Now the pre-selected initiatives can apply for funding, and a selection mechanism is now being developed, but has to be supported by analysis, reports and data.

EUCityCalc project by Luis Costa

The 'European City Calculator Project' is to have a energy integration tool for CO₂e emissions, that not only includes mobility but also other sectors. It should be reliable, but also with a easy-to-use interface. Being an integrated model, it is and cannot be not very detailed but gives a good overview of the whole of the emission effects on various measures.

Work on CO₂e emissions is very relevant because analysis of the past learns that thus far CO₂e emissions increase, and usually 'bounce back' from crises. The model tries to bring insights about potential for CO₂e emission reductions to small and medium side city users, without that they have to worry about the modelling issues, and also without the need for consultants.

The project is based on 9 pilot cities, with EnergyCities as coordinating partners and 10 other partners, including PIK responsible for the methodologies. The energy model behind EUCityCalc includes all kinds of inputs from activities (what we do), demand/energy (what we need) food, products and materials, transport and buildings and then the emissions resulting from all this.

City questions have to be translated to model inputs, so a smart interface is needed. This is based on literature research and data analysis and translation of the findings into 'levers', arranged in specific thematic areas (such as transportation and more specifically modal split). The model now uses 'measures' as input, which are internally translated into lever settings that are used for the emission calculations. In that translation, interactions (weakening, strengthening) of measures are taken into account. Additional output provides also cost estimations, again based on available data.

Everything comes together in a web-interface, at the moment only for the pilot cities. They can see the historical emissions and expectations. Next, they can opt for different types of measures, and from that input calculations are made about future emissions – for a range of years – as well as an abatement curve/graph. Trainings to use the tool, as well as instruction videos will become available.

Luis ends with a set of personal reflections to the meeting. Contact via Bénédicte Weber (Energy Cities), benedicte.weber@energy-cities.eu

Wrap up by Arjan van Binsbergen and Ekki Kreutzberger

During 30 September and 1st October 2019 was the formal Kick Off of the 2050 CliMobCity project in Delft, of course already preceded by an intensive preparation period during which the consortium was formed, and the proposal and the final Application Form were developed.

The project continued with a successful meeting in Almeria – at the time one of the city partners in the project. All seemed promising, partners really started to work on the project.



Day 2 of the FDE:
results, discussion,
reflection

And then... COVID came. For most cities, this meant a serious disruption of daily activities, with major city resources focusing on, first, dealing with COVID and later on with recovering from the profound impacts. This severely hindered the involvement of some cities, resulting in Almeria having to disband the project and other cities encountering serious delays.

Travel limitations also resulted in discontinuing the intended series of physical Partner Meetings at partner cities, and instead we started to have on-line meetings. The change enabled to have much more meetings than originally expected and this in fact contributed substantially to the interregional learning – even if we did not have the opportunity to get familiar with some of the partner cities in person.

Eventually, the project partners stepped up their efforts, resulting in very useful project results and concrete actions and good practices.

Now we are here, in a physical meeting in Leipzig. Nearing 31 July, the end of the project and of our sustainable journey.

Many thanks to:

- Jan Becker and colleagues for the local organisation of the event;
- Brume Delaunay, Björn Weber, Josep Grau, Izabela Zobek and Hanna Lewandowski, and Louis Costa for their contributions to this FDE;
- The city representatives and partners for their contributions to this FDE, in particular John Green, Daniel Forster, Jan Becker, Hanna Lewandoski, Arkadiusz Drabicki, Pinelopi Antoniou, Georgios Papastergios, Rafail Katkadigkas, Fabian Reitemeyer;
- All the participants, in the room and online, for their interest, their expertise, their work conducted, and the fruitful discussions;

Thanks is also articulated to the management team for preparing this event: Ekki Kreutzberger (project coordinator and initiator of the project), Arjan van Binsbergen (Project and Communication manager) and Aart Hemker (Financial manager).

Outside of the minutes: The FDE is also a good occasion to thank different other people for their work contributions or their other support for understanding in the past, in particular Maria Mirtsopoulou, Maria Chatziathanasiou, Georgia Ayfantopoulou and Georg Helmecke.

The meeting of the day is formally closed, and participants are invited to join the conference dinner and the site visits of Day 3 of the Final Dissemination Event.

2050 CliMobCity - FDE DAY 3 – Wednesday 21 June

FDE Day 3, site visits in Leipzig

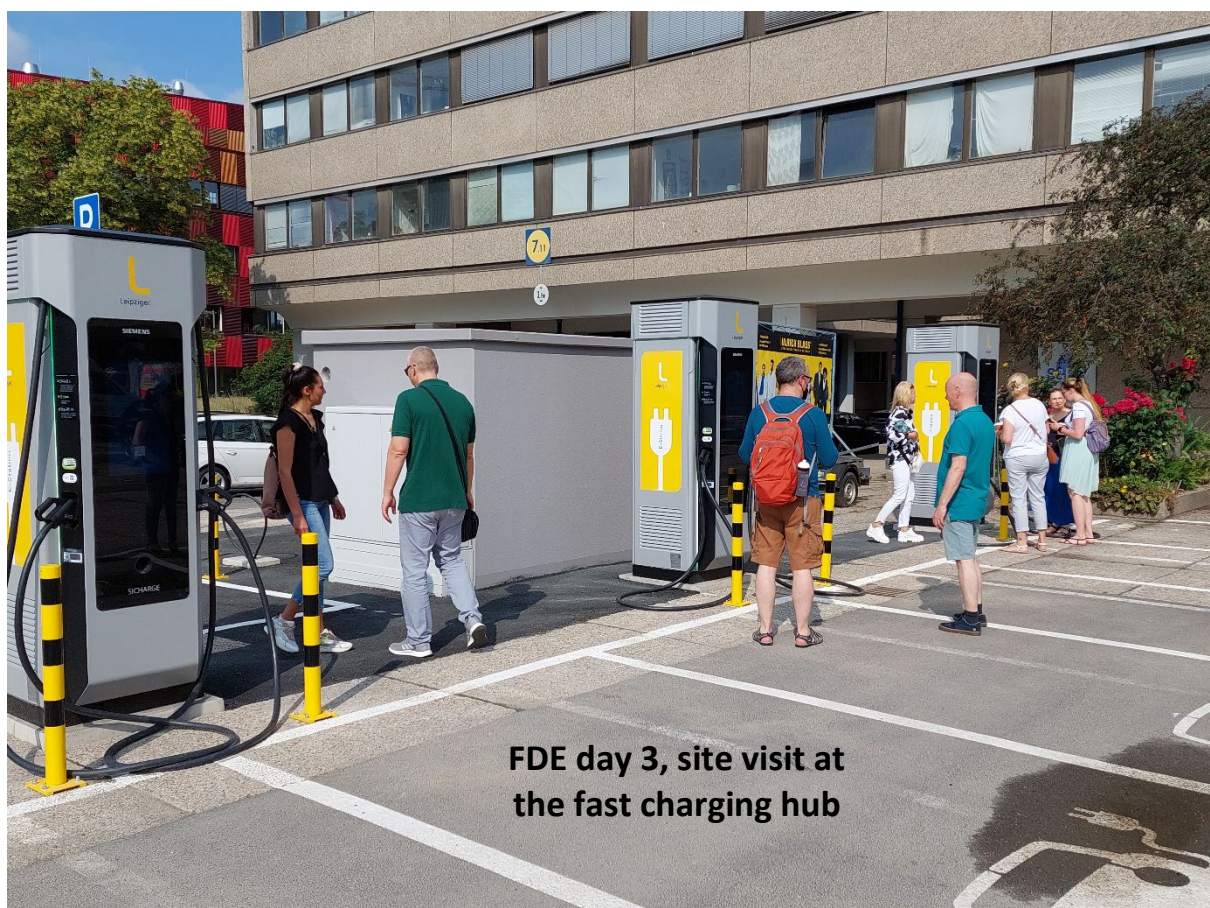
time	topic	who
9:00	Meet at city hall, start of tour	<i>13 people from all four municipalities, ZIT in Bydgoszcz, and the TU Delft</i>
	Regional train S-Bahn Centre, trip to Alte Messe area	
	Visit to fast charging hub at Alte Messe	
	Walking trip to cargo bike mobility hub (with test drives)	
	Visit to multimodal mobility station, providing E-Scooter, Nextbike, shared cars in the close proximity of a tramway stop and an S-Bahn station	

S-Bahn traversing Leipzig city centre underground

The S-Bahn traversing the Leipzig city centre via an underground connection is an impressive example of combining regional connectivity with urban accessibility. The S-Bahn is realised in a bored tunnel, deep underground, connecting two former end stations and having stations in the historical inner city without disrupting the area too much.

Fast charging hub at Alte Messe

The fast charging hub is a brand new facility for fast-charging up to 6 electric vehicles with 180kW max. each. This station required a dedicated connection to the power grid. The chargers had a relatively long production time – partially caused by global shortages of key components – and were actually assembled in Leipzig. The tedious process of getting the necessary permissions to realise the charging station in public space was bypassed by placing the stations on private terrain – albeit from a company owned by the municipality itself. The station illustrates both the complexity of realising large numbers of charging stations and the benefits of creative thinking to speed up the process.



FDE day 3, site visit at the fast charging hub

Shared Cargo Bike hub

A shared cargo bike can be hired to occasionally transport light cargo – or perhaps children. The bike is unlocked via an app and made available on basis of a pay-per-trip basis. The cargo bike parking spot is subtly marked with a configuration of seats, so to create a small meeting place.

Mobility station

The visited multimodal Leipzig Move mobility station, was actually the first of its kind in the city and has been realised already some 10 years ago, originally sporting an information annex shared vehicle reservation computer column.

The current availability of a helpful app makes the functionality redundant, so the computer screen now only displays some generic information. The hub offers a variety of shared mode options, including electric scooters, shared bikes, a shared cargo bike and shared cars and EV charging spots. The location is very close to an important tram stop as well as an S-Bahn station.

Appendix 1 – participants of FDE

Name	Partner	Day 1 19 June	Day 2 20 June	Day 3 21 June
Ekki Kreutzberger	TU Delft	Speaker	Speaker	V
Aart Hemker	TU Delft	V	V	-
Arjan van Binsbergen	TU Delft	Speaker	Speaker	V
Fabian Reitemeyer	PIK	V	Speaker	-
Louis Costa	PIK	V	Speaker	-
Jan Becker	Leipzig	Speaker	Speaker	Speaker
Benjamin Filius	Leipzig	V	V	-
Anja Hähle-Posselt	Leipzig	Speaker	-	-
Simone Ariane Pflaum	Leipzig	Speaker	-	-
PM – introduction charging points*	Leipzig	-	-	Speaker
PM – introduction mobility hubs*	Leipzig	-	-	Speaker
John Green	Plymouth	V	Speaker	V
Daniel Forster	Plymouth	V	Speaker	V
Hanna Lewandowska	Bydgoszcz	V	Speaker	V
Arkadiusz Drabicki	Bydgoszcz	Online	Speaker	-
Romana Cyranowicz	Bydgoszcz	V	V	V
Izabela Szczesik Zobek	Bydgoszcz	V	V	V
Iwone Kosmela	Bydgoszcz	V	V	V
Pinelopi Antoniou	Thessaloniki	V	Speaker	V
Georgios Papastergios	Thessaloniki	V	Speaker	V
Chrysoula Zournatzidou	Thessaloniki	V	V	V
Björn Weber (DIFU)	Leipzig	-	Speaker	-
Brume Delaunay	Interreg Europe	Speaker	V	-
<i>Online*/**</i>				
Georgia Ayfantopoulou (HIT)	Thessaloniki	V	Speaker	-
A. Kelessis	Thessaloniki		V	-
Andreas Karadakis	Thessaloniki		V	-
Athina Chontolidou	Thessaloniki		V	-
Eleni Zioga	Thessaloniki		V	-
Maria Aivatoglou	Thessaloniki		V	-
Maria Chatziathanasiou	Thessaloniki	V	V	-
Rafail Katkadigkas	Thessaloniki		V	-
Eleni Zioga	Thessaloniki		V	-
Tsara Christina	Thessaloniki		V	-
Simon Pickstone	Plymouth		V	-
Fatemeh Torabi Kochousangi	TU Delft		V	-
Marko Kapetanovic	TU Delft		V	-

* No signature / ** screenshot of participation

Appendix 2- Action Plans³

Plymouth

Targeted Policy Instrument: Subregional plan Plymouth and South-West Devon Joint Local Plan.
Investment priority 4e: Promoting low-carbon strategies for all types of territories, in particular for urban areas, including the promotion of sustainable multimodal urban mobility and mitigation-relevant adaptation measures:

- Policy SPT9 'Strategic principles for transport planning and strategy'
- Policy SPT10 'Balanced community transport strategy for growth and healthy sustainable communities'

Action 1: Mobility Hubs

The action entails delivering multi-modal Mobility Hubs across Plymouth, including EV Sites/ Rapid charge points, Car Club (shared cars, part of the EV sites) and Social Prescribing. Specifically:

- 500 electric bikes in conjunction with Beryl;
- 300 electric vehicle charging points in conjunction with Wenea Plymouth;
- Electric vehicle car club in conjunction with Co Cars;
- Electric charging for boats with Aqua Marine.

Implementation steps taken to-date⁴:

- 50 e-bike sites are operational;
- 3 EV charge point sites operational;
- 1 car club vehicle operational with users have free parking in all resident parking zones.

Impact:

- Social prescribing of e-bike use for improved health and wellbeing;
- Improved mobility opportunities when public transport not available;
- Small reduction in emissions from modal switch;
- Rapid EV charging reducing waiting times;
- Evolvement of the ideas: not everything in one hub, but distributed; now aim is to get much more hubs than originally intended.

Action 2: Assess 2050 CliMobCity projects for inclusion on Climate Emergency Action Plan (CEAP) 4 and the Net zero Action Plans

Undertake a thorough review of all presentations and notes relating to all the projects explored / showcased during the 2050 Climate Mobility City project meetings. Any projects that are assessed as having potential for inclusion in Climate Emergency Action Plan 4 (2023) taken forward for further discussion and consideration.

³ This is a compiled overview of the status of the actions as reported by the municipalities during the online project meeting on 5 June, the Partner Meeting of 19 June and the cities' presentations during the FDE on 20 June. This same appendix has also been added to the minutes of the FDE, and will in adapted form be used for the formal Action Plans Monitoring Report to JS.

⁴ 'To date' in this status overview means 19-20 June 2023; the partners agree that this is also a proxy for the status per 31 July 2023.

Implementation steps taken to-date:

- 46 learning opportunities identified with potential for application in Plymouth assessed for the Net Zero Action Plan;
- Pathways for learning highlighted for the 15+ opportunities that are considered to have potential for application.

Impact:

- Experience gained from partners and showcased projects has been important for the planning of Plymouth's Mobility Hubs project and reducing costs during implementation.

Action 3: Strengthening the policy instrument: full leverage the findings of Plymouth City Council's 2050 CliMobCity

Fully leverage the findings of Plymouth City Council's 2050 CliMobCity mobility and carbon modelling work in the forthcoming formal policy review of the Plymouth and South West Devon Joint Local Plan.

Implementation steps taken to-date:

- The formal, multi-stage Joint Local Plan process of engagement with the Joint Local Plan team officers, elected members and the public has been substantially delayed due to delayed outcome of national planning policy guidance review.
- Implementation is anticipated during the remainder of 2023 and 2024.

Impact:

- The direct impact on the policy review is not presently measurable.

Thessaloniki

Thessaloniki changed the focus of the originally (in the AF) targeted policy instrument because of several limitations, including a lack of management capacity, the geographic scope and especially the end-time of the instrument (2022).

Therefore, the focus has changed to the Strategic and Operational Plan of the Municipality, after approval by LP and JS.

Action 1: Technical specifications for the elaboration of the sustainable logistics plan (SULP)

A Sustainable Urban Logistics Plan (SULP) will organize the Urban Freight Transport and Distribution system of the city and increase its efficiency and effectiveness in terms of sustainability, as it is responsible for an important percentage of the fuel based vehicle kilometres within the city and congestion, and therefore CO₂ emissions and audio and visual annoyance for the citizens.

Implementation steps taken to-date:

- Framework of Technical specifications developed with the collaboration of HIT;
- In March 2023, initial contacts to include the development of a SULP in the "Metropolitan Strategic Plan for Sustainable Urban Development of the Region

- of Central Macedonia” call for funding.
- Part of the MoU with ThessM@ll (see Action 2) is the support of the MoT by HIT in the development of a Sulp.

Impact

- Overall, the Action serves as a first step towards the implementation of a Sulp.
- Increased staff capacity, first attempt to gather relevant information.
- Accompanies MoT and HIT in their participation in DISCO project (HORIZON EUROPE), working towards co-designing, deploying, demonstrating, evaluating, and replicating innovative, inclusive, hyperconnected and data-driven urban logistics and planning solutions; DISCO will push the smooth coordination among the mobility and urban planning departments of the city with the overall target of achieving a harmonized integration of Sulp in Sump and the EU Mission "Net Zero cities" (NZC) city target for climate neutrality by 2030.
- Development of Sulp described as an action in NZC Mission Action Plan.

Action 2: MoU for participation in the Living Lab ThessM@LL for real time information services for citizens (also related to the European Network of Living Labs, ENOLL).

The signing of the MoU will be used for activating city’s participation in THESSM@LL in order to be part of the Living Lab ecosystem among other local stakeholders, and to connect to the European Network of Living Labs (ENOLL). Also for using THESSM@LL data and activities towards: Traffic and mobility improvement and integration, Measures validation, Citizens’ engagement and behavioural change, and Data-driven decision making for sustainable mobility.

Implementation steps taken to-date:

- Meetings held to define content and data exchange.
The meetings were held with the Mayor counsellor, Staff members, and HIT representatives. During the meetings the framework of the MoU has been developed, with content upgraded to environmental data exchange apart from mobility data to support the City to climate neutrality transition.
- Administration of the Municipality informed: Recognition of the necessity of collaboration;
- Kick-off promotion during EMW 2022: introduction of Living Lab services to Thessaloniki’s citizens;
- Development of the MoU: draft version under consultation with MoT departments for approval and final acceptance;
- Official acceptance by the Municipal Council on 8th May 2023 (ΑΔΑ [6XYΨΩΡ5-ΦΧΕ](#));
- Final MoU to be signed September 2023.

Impact

- Collaboration Impact: Data supply from MoT to the Living Lab with a proper utilization of Mobility and Environmental data generated by MoT's fleet, buildings, and equipment, and empowering the Living Lab with valuable data for analysis and insights through monitoring of KPIs.
- Encouraging environmental-friendly mode choices/citizens’ information: services developed by the Living Lab to promote sustainable transportation options for the citizens;

- Enhanced effectiveness of future mobility and climate projects: data-driven decision-making for improved planning and implementation of mobility and climate projects, and more effective use of the financial resources available for future projects.
- Supporting [DISCO Project](#) (Horizon Europe): MoU supports MoT and HIT as DISCO partners, Co-design, deployment, demonstration, evaluation, and replication of innovative, inclusive, hyperconnected and data-driven urban logistics and planning solutions.
- Supporting SULP development (Action 1): exploring solutions for urban distribution problems through the development of a SULP.
- Listed as an initiative to European Net Zero Cities (NZC) Action Plan: MoU as part of the EU Mission NZC Action Plan, supporting MoT in the transition to climate neutrality, and contributing to the overall sustainability goals.

Action 3: Pilot installation of micro mobility hubs of electric sharing transport schemes

This action is part of Thessaloniki's final scenario for 2030 time horizon that was developed in the 2050CliMobCity project and more specifically with the BaU scenario and modal shift pillar. It is a totally accompanying and supporting measure to the bike infrastructure implementation and to the shared electric mobility introduction.

Implementation steps taken to-date:

- Preliminary Steps, including contacting and aligning partners;
- Planning procedures for the identification of the best locations for the installation of 2 micro mobility hubs;
- Arranging public spaces regulations;
- Tender notice for the procurement of the bicycle - scooters and the appropriate infrastructure;
- Procurement of the fleet, installation & operation of the hubs;
- Demonstration of micro mobility vehicles
- Kick off promotion of the services to the citizens of Thessaloniki in the framework of the European Mobility Week 2022.

Impact

- Promotion of Alternative Means of Transport by providing easy access to sharing scooters and safe parking for private scooters in public spaces;
- Benefits for Local Population: energy for e-scooter charging generated from renewable sources (solar energy), so resulting in a reduction of Greenhouse Gases (GHG) emitted from urban transport modes;
- Valuable data collected during the pilot: KPIs determined that allow measuring the performance, effectiveness and impact of the hub; part of these KPIs are policy-maker oriented, intended to capture spatio-temporal patterns related to trips and assist in policy making (e.g. average trip length and travel time);
- The pilot helps to understand in depth the most relevant aspects of the operation of the docks and help contribute to the adoption by citizens of the electrified micro-mobility vehicles.

Action 4: MoU sign with at least one of the Universities' administration of the City Centre, part of which are targeted awareness raise campaigns for University Students' mode choice and information about its impact in the environment, the city and the individuals.

City's universities are important stakeholders for the city's transition to climate neutrality. Raising awareness with students about sustainable transport choices could change behaviour in a more sustainable direction. The initial plan to signing the MoU is replaced with signing the Climate City Contract in the framework of European Commission Mission NZC in which MoT participates. The CCC aims for climate neutrality, to be achieved including all sectors and sources within city's boundary, including emissions from combustion of fossil fuels for all vehicles and transport. Sustainable Mobility is a priority action. The CCC is developing through collaborative and co-creative process within the city's ecosystem, aims to integrate and accelerate action across all sectors and governance levels.

Implementation steps taken to-date:

Overview of the steps taken:

- Preliminary Communication with professors from the Transport Systems Research Group and the Transport Engineering Laboratory of Aristotle University AUTH, one of the universities in Thessaloniki;
- Dissemination of information and implementation of a campaign during EMW 2022 (invitations sent to a large number of AUTH students via emails): bicycle rides for public engagement and familiarization with active mobility in collaboration with Cycling Agency of Thessaloniki, Innovative T-shirt fashion creation contest: "Mix, Match and Move!" with Private Sponsorships to give sustainable transport awards to the winners.
- Official communication and collaboration established through an official letter (from Deputy Mayor of MoT to Vice Rector for Research and Lifelong Learning of AUTH);
- Thematic Workshop organized on campus with the participation of students on May 5th, 2023, held within the framework of the European Commission's Mission NZC; during this event there was a discussion on sustainable mobility issues on campus and in the municipality, fresh ideas for mobility actions integrated into the City Action Plan were recorded aiming for an increased mode choice awareness for university students.
- Future steps include the signing of the Climate City Contract (CCC) in September 2023 between all stakeholders of MoT ecosystem, including the universities.

Impact

- Mobilization of stakeholders, citizens and private companies, resulting in awareness raising;
- Increase of staff capacity in mobilizing stakeholders and in the integrated approach;
- First official collaboration between MoT and AUTH in terms of sustainability;
- CCC to be signed in September 2023.

Bydgoszcz

The targeted policy instrument is the Regional Operational Program for the Kujawsko-Pomorskie Voivodship 2014-2020; Priority 4e "Promoting low-carbon strategies for all types of territories, particularly for urban areas, including support for sustainable urban mobility and adaptation measures having a mitigating effect on climate change".

The Action Plan will support the above aims by identifying specific actions, contributing towards:

- improving the efficiency of urban transport and freight system
- promotion of sustainable and integrated transport and land use planning
- promotion of alternative transport schemes by installing the appropriate infrastructure in the urban space

- raising the citizens' awareness of sustainable and climate-friendly mobility choices.

Action 1: 2050 CliMobCity contribution report for the Bydgoszcz Spatial Development Masterplan

The Action entails to produce a contribution report from the 2050 CliMobCity Bydgoszcz project towards the Spatial Development Masterplan (SUiKZP), which is currently being updated in consultation process.

The CliMobCity project team can support the above co-creation process with a series of recommendations based on the CliMobCity analytical works for long-term spatial planning of Bydgoszcz City and SUiKZP amendment proposals.

Implementation steps taken to-date:

The findings report has been submitted, and is awaiting the response of the spatial development unit; albeit the informal collaboration was great, there seems now to be some kind of formal hesitation because the agency observes that the scenario analysis is not a formal policy; this finding is actually quite relevant to report (in terms of interregional learning). It is also important to distinguish between 'experiments' and 'policy stances'

The report has also been submitted to the SUMP of the Functional Area of Bydgoszcz (which has been adopted) and to the public transport development plan.

Impact

The direct impact of the Action is raising awareness of the potential of spatial planning as an instrument for influencing mobility.

Action 2: Submitting a technical specifications for tendering a study for micro mobility and car sharing to the municipality.

The Action is to provide a document formulating the technical specifications for an eventual "Feasibility study into the micromobility and car-sharing development in the City of Bydgoszcz" - clearly outlining the objectives, methods and expected outcomes.

In the future, such a study will eventually yield a high-quality and insightful research and policy material, effectively supporting the Municipality in facilitating the micromobility and car-sharing development in Bydgoszcz.

Implementation steps taken to-date:

The technical specification report is drafted in collaboration with the Spatial Planning Department of the Bydgoszcz Municipality and the Road and Public Transport Department of the Bydgoszcz Municipality, and is in the final draft phase.

The final technical specification will be submitted to ZDMiKP in July 2023 or shortly after.

Impact

The technical specification will be the basis for tendering a study for micro mobility and car sharing to the municipality that will give insight into the potential of these concepts for

contributing to the challenges of reducing CO₂e emissions from the mobility system as well as for improving other mobility indicators.

Action 3: Define technical specifications for a cycle wayfinding system and install a pilot for such a system.

The Action is a pilot development of wayfinding and signposting elements dedicated for cyclists in the Bydgoszcz central area. These are inspired by analogous solutions present in Dutch, Danish or German cities. Its objective will be to improve the perceived attractiveness of cycling and pave the way towards wider enrolment of dedicated cycling wayfinding system. Given the (relatively short timeframe of this action, only a limited scope of monitoring and evaluation analysis will be viable.

Implementation steps taken to-date:

This Action required external funding and work. For this to work, the city has to apply for an exception of traffic signal systems to the Ministry, and also, various departments should for apply for funding. Bydgoszcz has now decided to focus on the design of the system, especially regarding the type of information to be given to the users.

Impact

The (revised) action would result in a set off specifications for a cycle wayfinding system that could help to smoothen the implementation of such a system; the system itself would increase the attractiveness of bicycling as a transport mode.

Leipzig

The Action Plan addresses the city's strategy "Leipzig – Stadt für Intelligente Mobilität" (Leipzig – City for intelligent mobility"). The strategy strives for environmentally friendly mobility - electricity from renewable energies - fewer particulate matter emissions, CO₂, noise emissions, sustainable transport development and fewer cars through (e-)car sharing per inhabitant. Additional, part of the strategy is to provide alternative mobility offers such as shared taxis, car sharing (e.g. Clever Shuttle, DriveNow) that respect the individual mobility wishes of citizens as an answer to the mobility requirements of a growing city Presentation of Leipzig as a modern city with a future. This all aiming at securing and developing Leipzig as a sustainable business location - as a prerequisite for services of general interest and prosperity - retaining technology-leading automobile manufacturers and promoting energy and mobility services, and striving for an attractive investment, work, start-up and living location.⁵

Action 1: Fast charging infrastructure on commercial properties

Getting fast charging, high-power infrastructure realised can be tedious due to the reluctance of private parties to provide such facilities (in a situation that relatively few cars can use the full capacity), the high demands on the energy provider as well as the lengthy procedures within the city administration itself to get permission to realise these facilities in public space.

In order to be able to move more quickly, the idea was to introduce these chargers on the

⁵ Vorlage IV-DS-03289 Leipzig Stadt der intelligenten Mobilität

property of a (city-owned) real-estate company in the area of the former trade fair, currently a kind of campus for Biotech companies.

Implementation steps taken to-date:

The contract to hand over the space from local real estate service provider for handcraft companies (LGH) and the contracts between LGH and Stadtwerke Leipzig have been prepared and signed. The charging stations have been were installed starting from March 2023.

In total, the city aims at opening 5 fast charging stations at specific, company-owned sites where these companies are owned by the city.

Impact

This has also been successful. Here also, procedures and processes have been established, enabling faster procedures for future implementations. Also, the installation shows the determination of the city to advance with Stadt für Intelligente Mobilität and to comply with the climate goals.

Action 2: Charging infrastructure for carsharing

More and more (ICE) cars must be replaced by BEV cars. This is not only desired by the government, but also by car sharing companies because of the lower total cost of ownership/operation as well as because preferences of the users. Until now, a main obstacle for sharing companies is to find space as fee available public space becomes scarce. The action is therefore aimed at dedicating public space for charging facilities and realising charging systems for shared mobility.

Implementation steps taken to-date:

The arrangements of allocating public space and dedicating this space for charging facilities (the chargers itself and parking spaces for charging of shared vehicles) have been made, and indeed in June 2022 4 charging facilities have been realised and at the beginning of 2023 another 4. The implementation of charging stations for electric carsharing cars is finished. Now in total eight new stations with two charging points each are build.

Impact

The Action has been successful, and is to be expected to continue by introducing more stations. The most important impact is that the procedures and processes needed to realise these chargers have been developed and tested, so more of such facilities can now be realised. An indirect effect is that the action shows to the citizens and companies that concrete actions are taken to work on the CO₂e reduction goals.