

# Master the Urban Mobility Transition

## Evaluating innovative sustainable mobility solutions throughout Europe

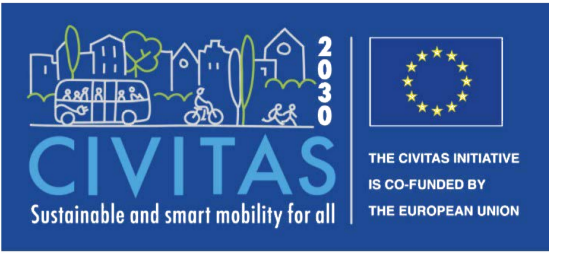
The Horizon 2020 project MEISTER, which took place from 2019 to 2021, involved the demonstration of seven novel business cases promoting sustainable mobility in the three pilot cities of Málaga, Berlin and Stockholm. IKEM conducted a comprehensive impact assessment to measure what these seven business cases imply for the economy, the environment,

society, and the energy and transport system, in compliance with the CIVITAS SATELLITE process and impact evaluation framework.<sup>[1]</sup> The methodology of the impact assessment combined an analysis of city-level and pilot-site specific indicators with business-as-usual forecasting, control site analysis, and the evaluation of end user and pilot site leader surveys.

This poster presents the keys findings of the impact assessment for each business case. A thorough presentation of the findings can be found on the MEISTER website. The more qualitative findings of the social impact of the business cases are also outlined here in more detail.



Scan to find out more about the Meister project



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MEISTER

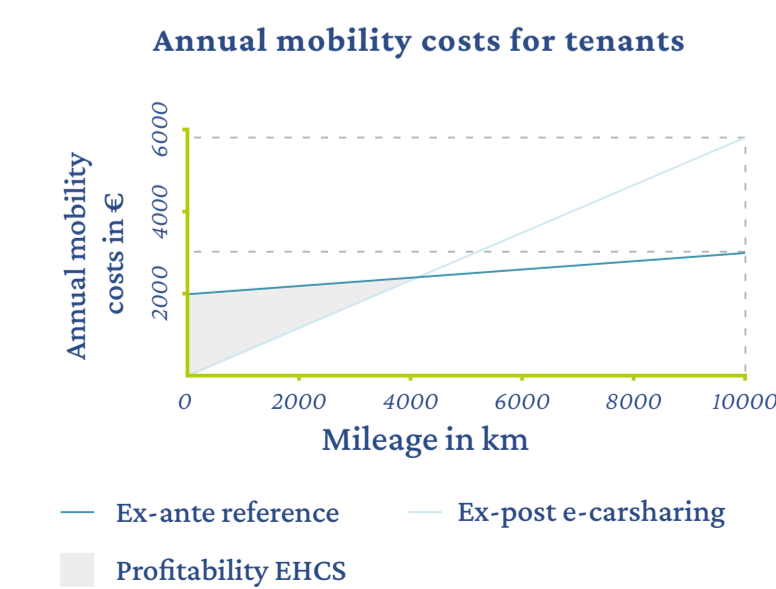
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### Economic impact

#### 1 E-carsharing as Housing Service

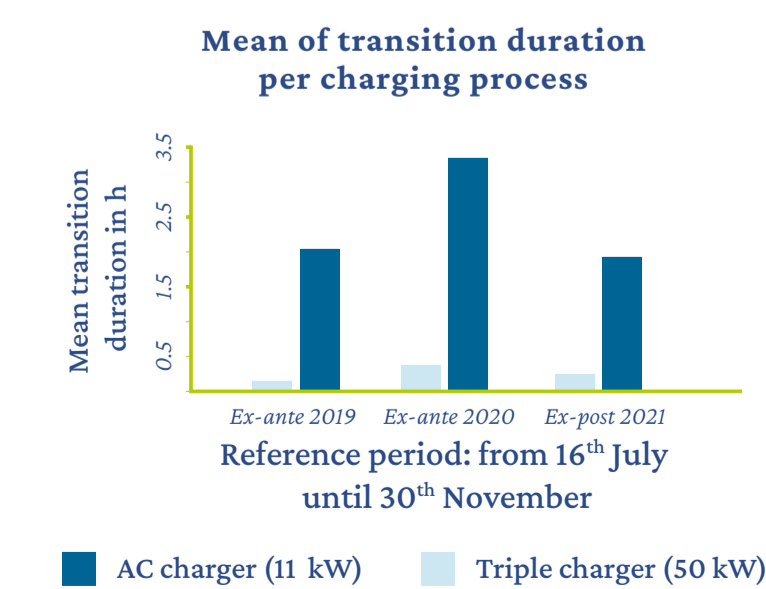
The demonstration of the business case 'E-carsharing as a Housing Service' (EHCS) clearly showed that the concept can significantly reduce the tenants' annual mobility costs for mileages up to 4,000 km per year compared to a reference scenario where their mobility needs are met primarily by private cars with a combustion engine. This relative benefit is likely to increase in the future, as various cost factors relevant to the reference scenario – such as the rental costs for parking spots – will rise in the coming years.<sup>[1][2][3][4][5][6]</sup>



### Energy and transport system impact

#### 2 Smart Park and Charge in Berlin

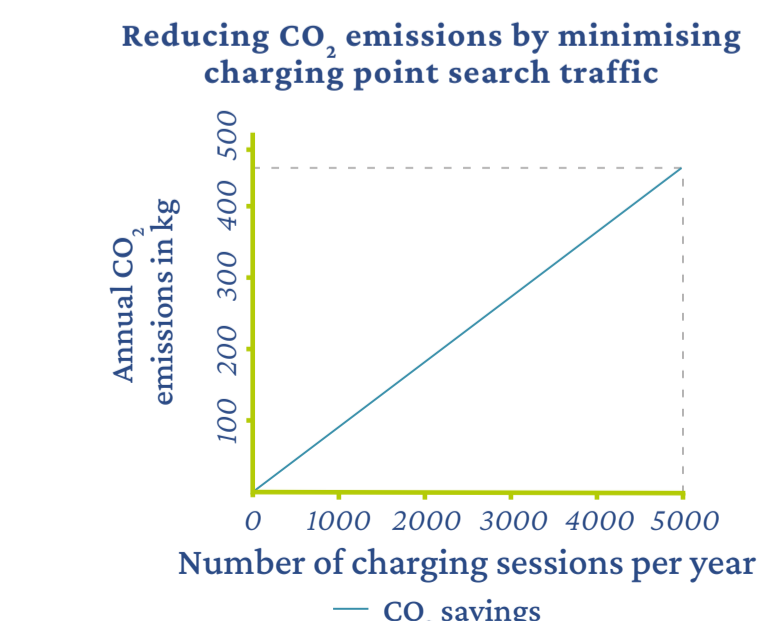
The business case 'Smart Park & Charge' in Berlin showcased the potential of reservation charging schemes to decrease the time spent by EVs at public charging points after their battery is full (transition duration). Even though the public charging landscape was distorted by a number of exogenous events during the demonstration period, the potential was verified by control site analysis and business-as-usual forecasting. Given the continuous increase in the number of newly registered PHEVs, the findings of this business case are likely to become even more relevant in the future.<sup>[1][2][3]</sup>



### Environmental impact

#### 3 Smart Park and Charge in Málaga

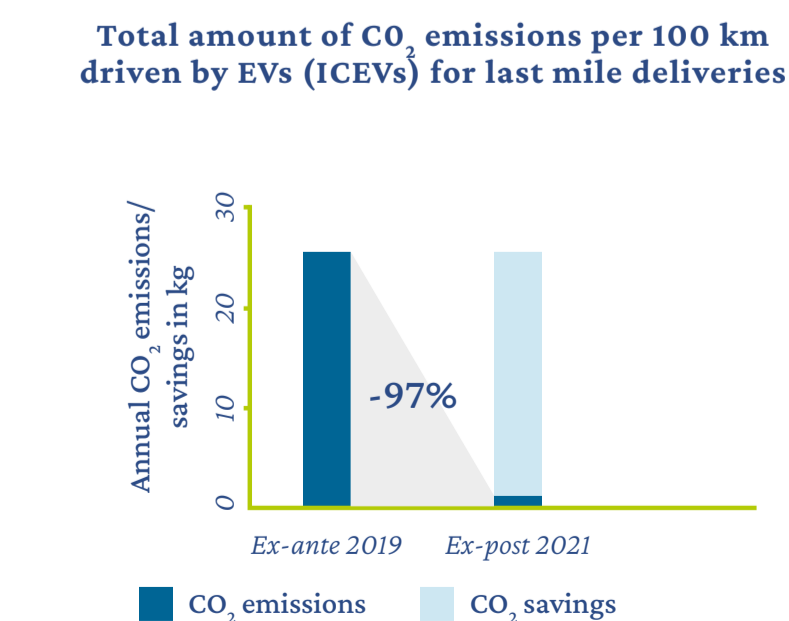
The business case 'Smart Park & Charge' in Málaga demonstrated the potential to reduce the CO<sub>2</sub> emitted by road transport by minimising charging point search traffic. The accelerating ramp-up of EVs in Spain means that the total distance covered by such traffic will rise considerably over the coming years if the network of public charging points is not adequately expanded. However, to fully exploit this potential, Smart Park & Charge solutions must be accessed regularly by a significant number of public charging point users.<sup>[1][2][3]</sup>



### Environmental impact

#### 4 City E-logistics Enabling Ultra-low Emission Hubs

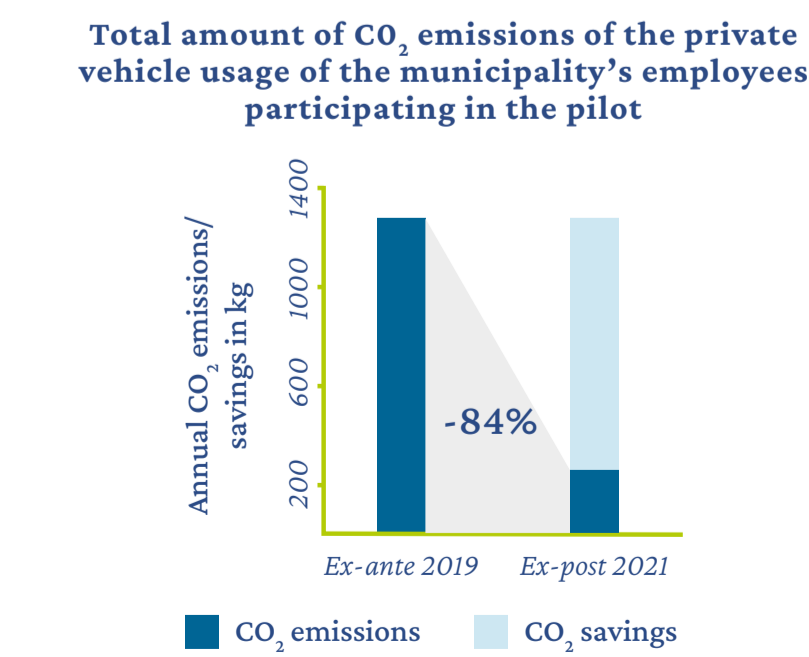
The business case 'E-logistics Enabling Ultra-Low Emission Hubs' has underlined the potential to minimise CO<sub>2</sub> emissions of last-mile delivery services per 100 km driven by ensuring that trips made by light commercial vehicles with combustion engines are completed by cargo e-bikes and small electric tractors. However, this potential – which is likely to increase due to rising demand in e-commerce – can only be fulfilled significantly if those EVs account for the lion's share of the logistics fleets' total annual mileage.<sup>[1][2][3][4][5][6]</sup>



### Environmental impact

#### 5 E-carsharing in the Municipal Fleet

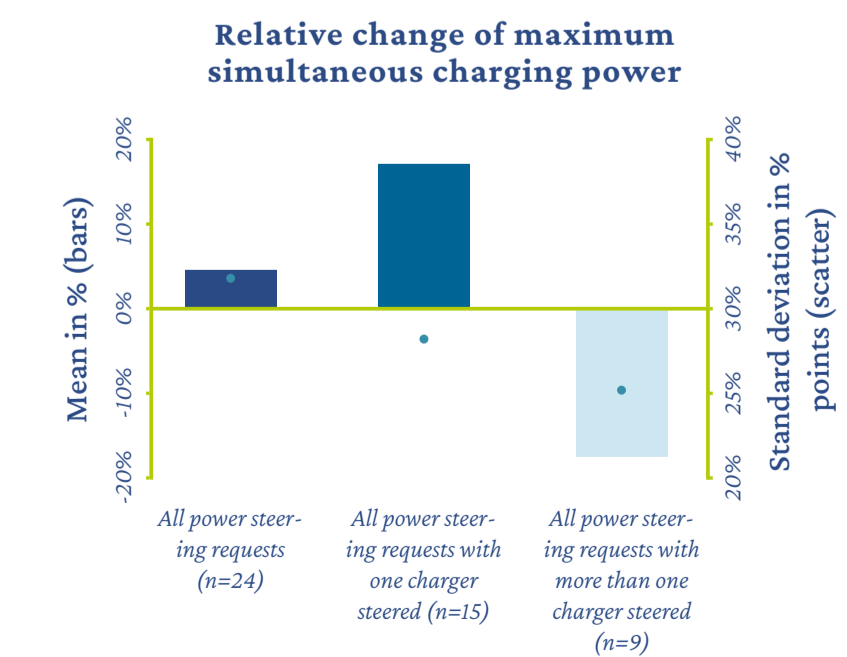
The demonstration of 'E-carsharing in the Municipal Fleet' showed the potential of the business case to decrease the CO<sub>2</sub> emissions due to private vehicle usage by municipal employees if those employees met their mobility needs with an e-carsharing car instead of a private vehicle with a combustion engine. However, to fully exploit this potential, the e-carsharing service would have to be used much more intensively.<sup>[1][2][3][4][5][6]</sup>



### Economic impact

#### 6 Smart Charging

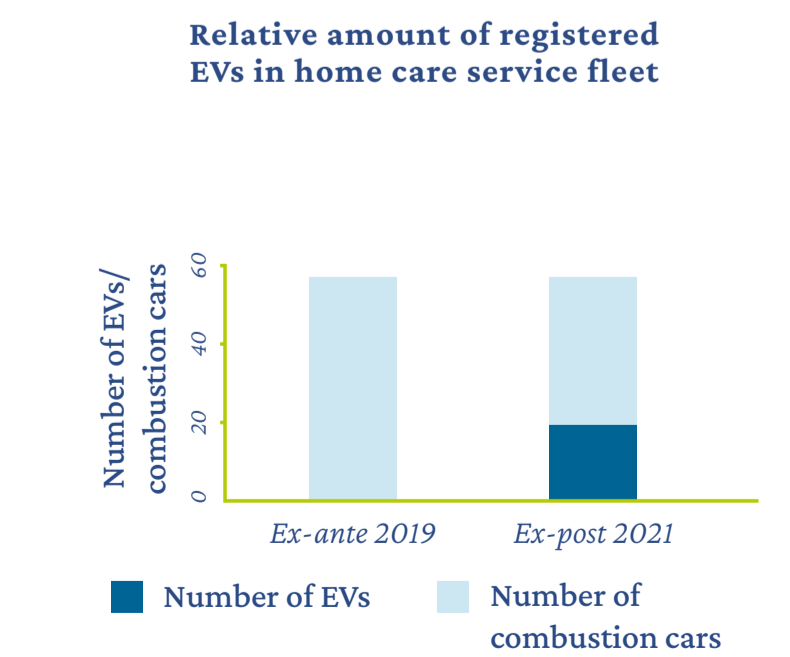
The business case 'Smart Charging' demonstrated the potential of power steering measures to reduce the maximum simultaneous charging power of charging sessions at public charging points at the grid connection level and thus contribute to decreasing the operational costs of charging stations. The potential is higher the more charging sessions are steered simultaneously, and is prone to rising in the near future as more charging sessions are run in parallel due to the market ramp-up of EVs.



### Economic impact

#### 7 Delivery of Home Care Services with EVs

The demonstration of 'Delivery of Home Care Services with EVs' showed that the business case can considerably increase the relative number of EVs within the municipal fleet, also through the electrification of vehicles operating in three shifts per day with a high daily mileage. The business case can thus boost the demand for EVs by the municipality in the long run and can be replicated flawlessly in other organisations.<sup>[1][2]</sup>



<sup>[1]</sup> D. Engels, E. de Wachter and T. Bremerich, "CIVITAS 2020 process and impact evaluation framework," CIVITAS Satellite, Brussels, 2020. <sup>[2]</sup> BavariaDirekt, "Versicherung & Kosten für Renault Clio" 15 October 2021. [Online]. Available: <https://www.bavariadirekt.de/fahrzeugdaten/faq-suche/renault/clin/s98/kilo-12-16v-75/> [Accessed 22 October 2021]. <sup>[3]</sup> ADAC, "Renault Clio in ADAC Test: So gut ist der Polo-Konkurrent," 23 March 2021. [Online]. Available: <https://www.adac.de/rund-ums-fahrzeug/autokatalog/marken-modelle/renault/renault-clio/> [Accessed 5 February 2022]. <sup>[4]</sup> Statista, "Durchschnittlicher Preis für Superbenzin in Deutschland in den Jahren 1972 bis 2021," 19 January 2022. [Online]. Available: <https://de.statista.com/statistik/daten/studie/776/umfrage/durchschnittspreis-superbenzin-seit-dem-jahr-1972/> [Accessed 5 February 2022]. <sup>[5]</sup> SpreiAuto, "Fahrzeuge im Detail - Renault ZOE," 15 October 2021. [Online]. Available: <https://sprei-auto.myriabile.de/cars/> [Accessed 16 October 2021]. <sup>[6]</sup> T. Zentlinger, "So teuer sind Stellplätze in Deutschlands Großstädten," Wirtschaftswoche, 2019. <sup>[7]</sup> C. Mayer, "In einigen Städten sind wir krass hinter den Erwartungen zurückgeblieben": Bahn-Tochter Clever Shuttle ändert Strategie radikal," Business Insider, 23 October 2020. <sup>[8]</sup> Volkswagen Newsroom, "Volkswagen und Schwarz Group to be strategic e-partners," 19 June 2019. [Online]. Available: <https://www.volkswagen-newsroom.com/en/press-releases/volkswagen-and-schwarz-group-to-be-strategic-e-partners-1096> [Accessed 5 February 2022]. <sup>[9]</sup> T. Shibayama, F. Sandholtz, A. Laa and T. Iremica, "Impact of COVID-19 lockdown on commuting - A multi-country perspective," European Journal of Transport and Infrastructure Research, vol. 21, no. 1, pp. 70-93, 2021. <sup>[10]</sup> RED ELECTRICA DE ESPAÑA, "Generación," 7 February 2022. [Online]. Available: <https://www.red.es/es/datos/generacion/no-renovables-detalle-emisiones-co2> [Accessed 7 February 2022]. <sup>[11]</sup> M. Nicholas and S. Wappelhorst, "Spain's electric vehicle infrastructure challenge: How many chargers will be required in 2030," International Council on Clean Transportation Working Papers, vol. 1, no. 5, p. 25, 2021. <sup>[12]</sup> Estado 7, "Preparation of a logistics study in compliance with the requirements of the MEISTER project," S.M.A.S.S.A. Málaga, 2020. <sup>[13]</sup> World Economic Forum, "The Future of the Last-Mile Ecosystem," Geneva, 2020. <sup>[14]</sup> M. Weiss, K. C. Cloos and F. Hellmer, "Kompromisse bei der Energieeffizienz bei Häfen bis großen Elektrofahrzeugen," Umweltwissenschaften Europa, no. 32, 2020. <sup>[15]</sup> S. Maruyama and C. Antonino, "Electric cargo cycles - A comprehensive review," Transport Policy, no. 116, pp. 178-203, 2022. <sup>[16]</sup> Euronews, "Los coches más comunes en España," 1 June 2020. [Online]. Available: <https://www.euronews.com/es/los-coches-mas-comunes-en-espana/> [Accessed 5 February 2022]. <sup>[17]</sup> AutoData, "Updated car specifications database," 5 February 2022. [Online]. Available: <https://www.auto-data.net/en/> [Accessed 5 February 2022]. <sup>[18]</sup> MotorEU, "Mitsubishi i-MiEV WLTP, MPG, Fuel consumption," 31 December 2016. [Online]. Available: <https://motor.eu.com/mitsubishi-i-miev/> [Accessed 5 February 2022]. <sup>[19]</sup> RISE Research Institutes of Sweden, "Recommendations for Charging Infrastructure in Stockholm County," Stockholm Stadt, Stockholm, 2021.