

# Electric light-weight vehicles – one for all

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- Electric multi-purpose vehicle ideal for inner city, with battery swapping system
- Super clean, light & efficient: 70% less CO<sub>2</sub> emissions, 40% more energy efficient
- Car independent cities

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**Location:** Munich, Germany

**Organisations involved:** [Green City Projekt GmbH \(GCP\)](#)

## What is the solution?

Adaptive City Mobility (ACM) is a concept with the goal of making electric mobility efficient and cost-effective, while at the same time helping reduce traffic pressure in cities. This is made possible by various innovations, such as the development of light-weight vehicles with an innovative battery exchange system, and the integration of a software-based multi-mode system, which ensures maximum utilisation of the space inside the vehicles.

This measure focuses on the implementation and demonstration of the ACM concept, which provides a new solution within the field of e-mobility and fits directly into the evolving ideas of the shared economy, urban commons, and mobility as a service. ACM is based on three innovations: an already developed new lightweight electric vehicle (maximum weight of 450 kg, L7E classification), a flexible manual battery swapping system (weighing 100 kg), and an integrated fleet management and multi-purpose sharing software enabling the maximisation of vehicle usage inside a city setting. Shared usage will reduce car ownership and long charging times will be avoided thanks to the swapping battery system.

## How does it work?

Green City Project is the organisation taking the lead on the measure. The light-weight vehicles are rented out - similar to the classic carsharing approach. In addition, the measure incorporates the multi-mode concept. That is, the use of a vehicle/fleet by different user groups (private and business car sharing). Vehicles could be used for a number of purposes, such as eco-taxis and chauffeur sectors, logistics and courier services, tradesmen, mobile nursing services, or municipal fleets. Multiple uses of the lightweight electric vehicle offers the potential for savings in densely populated urban areas. However, the intelligent networking of these groups and the multifunctional design is a crucial element of the business model.

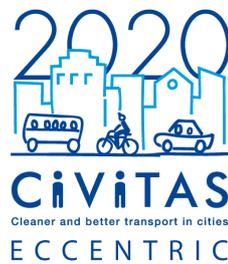
To set the system up, the necessary infrastructure needs to be put in place, such as multiple battery swapping stations to support a test fleet of up to four vehicles. Pilot drivers will be selected from diverse business areas, including business/corporate customers (B2B) and private individuals to ensure broad coverage of different user scenarios.

A theoretical business model will be created to demonstrate the feasibility of operating such a system in a city. The technological innovations (vehicle, batteries, software) will be tested by these different user groups while gathering live feedback from the drivers for evaluation purposes.

A communication and marketing strategy will also be developed for the roll-out of this innovation, along with supporting the dissemination of new mobility concepts in general.

## Expected results

Short term objectives include creating awareness of the innovation, giving real-world electro-mobility experiences to interested pilot users, and gathering feedback about the performance and the acceptance of the new vehicles along with the mobility concept. The longer-term objective is to identify the best use cases and target groups for ACM. By finding the best combination of user groups, the multi-purpose sharing concept and business model can be adapted and optimised accordingly.



THE CIVITAS INITIATIVE  
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## Business model

The business model is based on the reduction of costs through efficiency maximisation of ACM vehicles through a sharing economy and mobility as a service.

In addition to being part of CIVITAS ECCENTRIC, the project is sponsored by the German Federal Ministry of Economics and Energy (BMWi) and involves a consortium of 10 companies. The research project is also part of the technology programme 'ICT for Electromobility III: Integration of commercial electric vehicles in logistics, energy and mobility infrastructures' supported by the same Ministry. In the summer of 2015, it was chosen as one of the Lighthouse Projects of the national government.

The ACM Project officially concludes in June of 2019 with planned continued technical support until the end of the CIVITAS ECCENTRIC project in 2020. There is planned funding from CIVITAS ECCENTRIC of 443,750 euro.

## Find out more

More information about the electric lightweight vehicle (Adaptive City Mobility) available at  
<http://adaptive-city-mobility.com/>  
<https://www.greencity.de/experience/de/adaptive-city-mobility/>

## Contact details

Alexandra Bensler  
[bensler@greencity-projekt.de](mailto:bensler@greencity-projekt.de)  
Green City Projekt GmbH  
[greencity.de/experience](http://greencity.de/experience)  
Living lab area in Munich: <http://civitas.eu/eccentric/munich>