



**uemi
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E-Mobility Solutions

Electric Taxis



**Wuppertal
Institut**

UN HABITAT
FOR A BETTER URBAN FUTURE



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Urban Electric Mobility Initiative (UEMI) was initiated by UN-Habitat and the SOLUTIONS project and launched at the UN Climate Summit in September 2014 in New York.

UEMI aims to help phasing out conventionally fueled vehicles and increase the share of electric vehicles (2-,3- and 4-wheelers) in the total volume of individual motorized transport in cities to at least 30% by 2030. The UEMI is an active partnership that aims to track international action in the area of electric mobility and initiates local actions. The UEMI delivers tools and guidelines, generates synergies between e-mobility programmes and supports local implementation actions in Africa, Asia, Europe and Latin America.

SOLUTIONS aims to support the exchange on innovative and green urban mobility solutions between cities from Europe, Africa, Asia and Latin America. The network builds on the SOLUTIONS project and brings together a wealth of experience and technical knowledge from international organisations, consultants, cities, and experts involved in transport issues and solutions.

The overall objective is to make a substantial contribution to the uptake of innovative and green urban mobility solutions across the world by facilitating dialogue and exchange, promoting successful policy, providing guidance and tailored advice to city officials, fostering future cooperation on research, development and innovation.

SOLUTIONS_UEMI supports urban mobility implementation actions that contribute to the Paris Agreement and the New Urban Agenda.

Sustainable energy and mobility can make positive contributions to a number of policy objectives, nationally and locally. In particular in cities there is a great potential to create synergies between for example safety, air quality, productivity, access and climate change mitigation. A UEMI resource centre will provide opportunities for direct collaboration on projects focusing on sustainable urban mobility and the role e-mobility can play in it. The UEMI will pool expertise, facilitate exchange and initiate implementation oriented actions.

UN-Habitat, the Wuppertal Institute & Climate Action Implementation Facility jointly host the resource centre for the Urban Electric Mobility Initiative, aiming to bridge the gap between urban energy and transport and boosting sustainable transport and urban e-mobility.

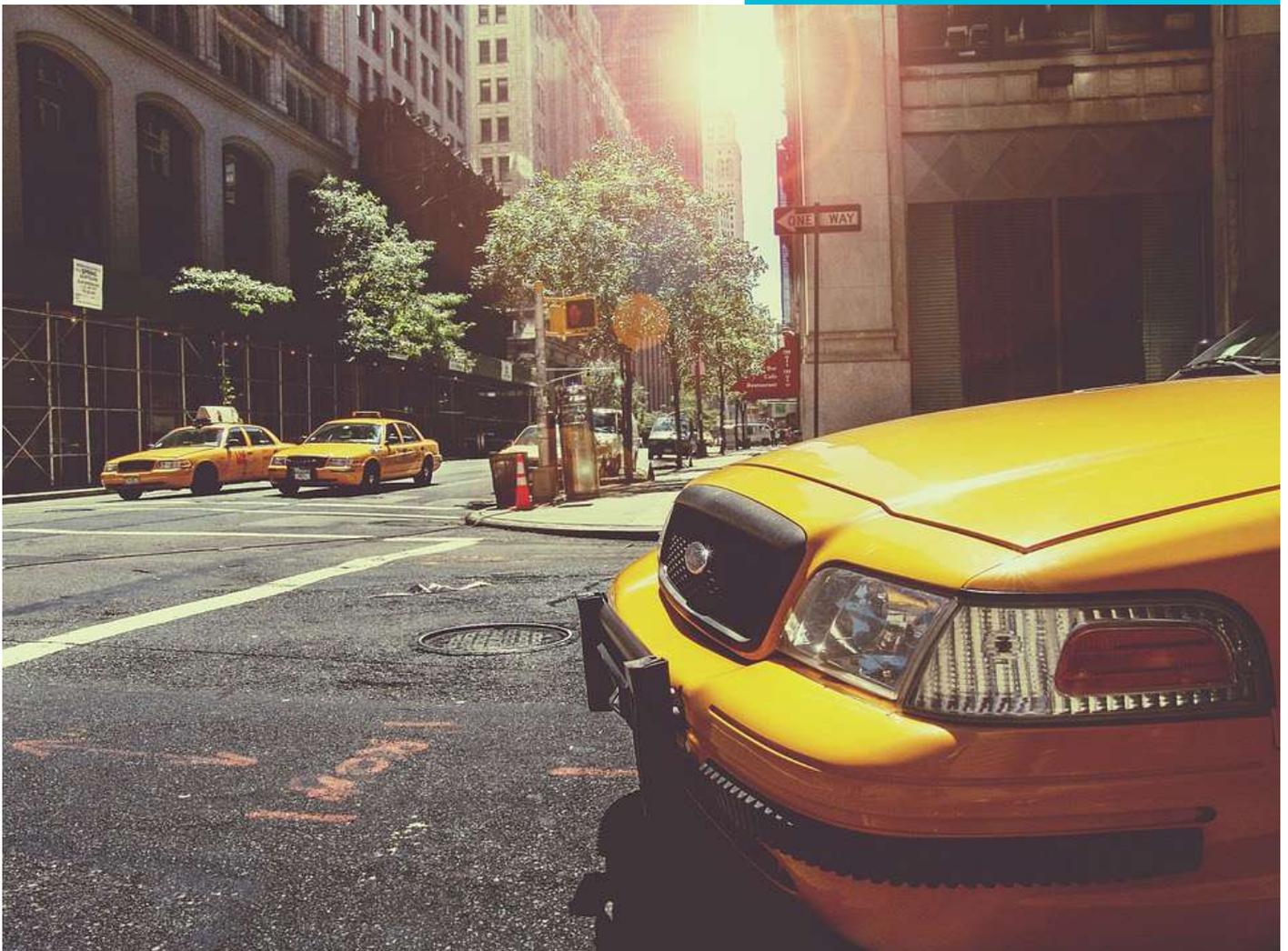
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Aims

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In brief

Gasoline- or diesel-powered vehicles cause severe problems. They pollute the air, emit greenhouse gases, produce noise and consume increasingly expensive fossil fuels. Electric vehicles (EVs) are a promising alternative that can address these problems and contribute to a sustainable transport system.

Taxis are highly visible in cities and switching the fuel on which they run can raise awareness of how electricity can be an alternative to fossil fuels. They can serve as role models and bring consumers and customers into closer contact with the technology.

Results

EVs offer several advantages compared to gasoline or diesel vehicles:

- Zero exhaust emissions – EVs do not produce any exhaust emissions during operation
- Reduced noise pollution – As EVs generate no propulsion noise, these vehicles are very silent at low speeds (usually below 30 km/h).
- Increased independence from fossil fuels – A variety of resources can produce electricity, including renewable sources (solar, wind, geothermal heat, water).
- Reduced greenhouse gas emissions – EVs can help mitigate the effects of climate change. This potential is highest if the electricity comes from renewable sources.

Technical & financial considerations

High prices, and immature supporting infrastructure and service facilities are currently stopping the taxi industry from using EVs. Local governments need to actively improve the framework conditions for electric taxis and encourage taxi operators to use them. Due to charging requirements, the daily operating time of electric taxis is usually lower than regular taxis. In addition, the limited battery capacity causes electric taxis to lose some long-distance customers.

As EVs may need up to 8 hours to fully charge, this can be problematic for taxi drivers and businesses as they might need a vehicle to operate 24 hours a day, or according to unpredictable schedules. With taxi drivers only earning money when the vehicle is being used, and because EVs have a limited range,

In brief

Results

Technical & financial considerations

EVs may not be for them.

To minimise these disadvantages, it is important to create a good network of quick-charging points. Swapping batteries can also reduce the problem of long charging times, and taxi operators can use the method if their electric taxi fleet consists only of a specific model, or models using the same batteries.

Innovative business models can reduce up-front costs for taxi operators. For instance, several vehicle manufacturers can offer the option to buy the vehicle and rent or lease the battery. A third party can also function as battery provider. This business model is recommended especially in the case of battery swapping.

Policy/legislation

Local governments can support electric taxis by providing financial incentives such as subsidies or low-cost loans for investments in vehicles or infrastructure. They also need to coordinate the development of charging infrastructure. In China, for example, due to its franchise system for the taxi industry in cities, local governments have a strong control over taxi operations. Initially, cities can also reduce charges or introduce free licences for electric taxis. Operating taxis in certain areas, which are very sensitive to noise or local air pollution, can be restricted to electric taxis. In the long-term, licences might be only attributed to EVs.

Institutions

In addition to the traditional taxi industry, vehicle manufacturers and charging infrastructure providers can be important stakeholders in introducing a local electric taxi fleet. Vehicle manufacturers might provide third party funding for charging stations and service facilities, as taxis are an important market.

Charging infrastructure operators might function as battery providers in a battery-renting system. Taxi drivers and service staff should be trained in handling EVs.

Policy/legislation

Institutions

Context

The city of Singapore in south-east Asia has a growing population and is experiencing related transport issues, such as pollution, noise and congestion. Many people use the public transport system, while some trips need to be flexible and done individually with one of the 27,700 taxis in the city. Some 15% of all trips in Singapore are by taxi.¹

In action

Electric taxis in Singapore need a flexible charging time because the vehicles need to be available for 24 hours. They also need to provide air conditioning, which does not consume additional energy that limits the distance vehicles can travel. New electric models can have a range of up to 350 km and manufacturers have reduced the charging time to only 90 minutes.² However, more data on real-life conditions is needed to properly assess how the electric vehicle fleet is operating.

Results

More EVs will force the government in Singapore to develop and expand the EV charging infrastructure quicker. Developing an electric taxi fleet will also generate more data that can improve the production of electric taxis, and improve urban infrastructure and consumer behaviour.

1 Sensor-Technik Wiedemann, EVA: An intelligent electric taxi for tropical megacities, <https://www.sensor-technik.de/en/applications/224-eva-an-intelligent-electric-taxi-for-tropical-megacities.html>.

2 BYD, BYD to launch fleet of 100 electric taxis in Singapore by first quarter of 2017, Singapore, 2016.

Case Study: Singapore's Electric Taxis

In action

Results



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More Information

Implementing
Partners



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