

## Charging infrastructure for e-vehicles

### Smart solution 11

Alternative fuel-driven vehicles for decarbonising and better air quality

### Measured impacts

42

Tons CO<sub>2</sub> reduction annually in Cologne

68

Tons CO<sub>2</sub> reduction annually in Barcelona



### Stockholm, Cologne & Barcelona

#### Technical partners

##### Stockholm

Fortum

##### Cologne

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## What is it?

Charging facilities that offer rapid charging points which allows for an almost empty battery to be fully charged in less than 30 minutes, and normal charging stations where the batteries are charged at low current for a longer period of time - usually overnight. These can be used by multiple user-groups including private vehicles, taxis, and car-sharing services.

## What did GrowSmarter do?

The project introduced five rapid charging points in Barcelona and one in Stockholm. A further eight normal charging points were installed at Valla Torg in Stockholm. A total of 10 charging stations (each with 2 charging points) using green electricity from renewables were installed in the project area in Cologne (see factsheet 42: 'Mobility stations').

In addition, an innovative form of Vehicle-to-Building charging was demonstrated in Barcelona (factsheet 38).

The charging points installed had different characteristics:

Barcelona

- Only fast charging stations were installed
- Located on public land and operated by municipality
- Free to use chargers - mainly used by taxis

Stockholm:

- Normal charging stations in residential areas
- Fast charger owned by private partner on public land
- Fee on fast charger – mainly taxis and couriers

Cologne:

- Users register for service
- Car-Sharing part of mobility stations
- Free to use chargers

## Lessons learnt

Installation of chargers on publicly-owned land is more complicated than on private land. Owning both land and electricity grid connection allows for installing charging infrastructure more rapidly. Clear agreements about complex issues such as data management, maintenance, costs and revenues are important.

It is important to find new ways of accounting for measures which may not have obvious economic benefits, but offer benefits related to reduced CO<sub>2</sub>, noise, etc. Evaluation of charging behaviour shows that drivers with access to chargers at home or work tend to use these for long charging periods. On-street charging is characterized by shorter periods.

## Upscaling & replication potential

Incentives such as free parking for electric vehicles, or free electricity, may help stimulate markets but must form parts of coherent long-term strategies for sustainable urban mobility. European cities are rapidly upscaling and replicating charging solutions as the electric vehicle fleet grows.

The charger location strategy has to depend on whether public land or private land will be used.



## How did the measure work?

### Technical feasibility

All of the types of charging facilities in GrowSmarter are possible to install without major difficulties. The capacity of the local electric grid and finding suitable locations are the main challenges.

### Economic feasibility

The economic feasibility of this solutions is dependent on the local regulation and uptake of e-vehicles.

### Replication potential

Possible to replicate in cities which aim for a better integration of e-mobility services. Local aspects should be taken into account, such as, for example the available electric grid capacity on the selected locations.