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Summary evaluation e-NV200 'Power to Amsterdam' project

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Based on the Dutch summary (June 2015)

Project team Amsterdam University of Applied Sciences

Susanne Balm – project leader
Jop Spoelstra – researcher
Leigh van Holstein – student
Thijs Moser – student
Wouter van Kollem – student

Contact information

Amsterdam University of Applied Sciences
Hogeschool van Amsterdam | Domein Techniek
Weesperzijde 190 | 1097 DZ Amsterdam
Postbus 1025 | 1000 BA Amsterdam
E: s.h.balm@hva.nl | T: 06-2115771
W: www.hva.nl/urbantechnology
W: www.hva.nl/logistiek-elektrisch

Introduction “Power to Amsterdam”

In the Netherlands, the automobile manufacturer Nissan has initiated a unique project to stimulate the uptake of electric vehicles (EV) for commercial usage. This project is called “Power to Amsterdam” and started by the end of 2014. In the project, Nissan has enabled entrepreneurs in the region of Amsterdam to drive the full electric e-NV200 for a period of 6 to 12 months. After this period, the participants can decide whether to purchase/lease the vehicle or to return it to Nissan. The e-NV200 can be used for passengers (max. 7 persons) and as van (loading space of 4,2 m³). The aim of the project is to increase the experience with EV. This is important from both a public (i.e. decrease air and noise pollution) and private perspective (increase EV sales) as well as to enhance knowledge in this field.

Target groups

The participants of the project differ in terms of their (logistics) operations, products and services for which they use the vehicle. We distinguish three types of participants in the “Power to Amsterdam” project:

- 1) Entrepreneurs with a logistics aspect: services and/or freight transport
- 2) Taxi drivers
- 3) A provider of paratransit services to elderly and disabled people/children

Role of Amsterdam University of Applied Sciences

The Amsterdam University of Applied Sciences has been involved in the project to monitor the experiences of the participants and to give recommendations for the further roll-out strategy of Nissan and the use of supporting (policy) measures. Data was gathered through online questionnaires (response of 79), telephone and face-to-face interviews.

Results: two determinant factors

The experiences and attitudes towards EV differ greatly between the type of entrepreneurs and sectors. There are two factors that seem to play a great role in this. First, the degree to which entrepreneurs aim to act environmentally and/or socially responsible. This determines the degree to which the benefits of EV (i.e. zero emission, quietness, and green image) positively influence the acceptance and decision making process. Second, the degree to which trips can be planned and take place within a relatively concise geographic area. This determines the degree to which entrepreneurs – in contrast to conventional vehicles – can operate with a limited range.

These two factors explain the positive experiences of the provider of paratransit services. The use of EV can be planned from their control room, fosters their social image and give them a benefit in tender procedures. The attitude towards EV is different among independent taxi drivers. Many of the taxi drivers have the assumption that the use of EV reduces their revenues because 1) long (beneficial) trips can no longer be carried out at all times and 2) because they lose working time during charging. When we look at the entrepreneurs that used the e-NV200 as van for services and freight transport, we see the most positive experiences among entrepreneurs that operate in an environmentally conscious market or for which sustainable transport is part of their business plan.

EV privileges as reward

The introduction of EV privileges by local authorities, such as exemptions from parking prohibitions or car-free zones, will lead to efficiency gains and/or cost reductions for EV users, and hence, can improve the business case of EV. However, when the continuation of these policy measures on the long term is not guaranteed, the privileges will be less effective to convince non EV users to drive electric. Nevertheless, EV privileges seem to be also important, as they serve as symbolic reward for the organization that has already invested in EV. The aim to act environmentally friendly and the wish to being recognized for this, clearly plays a great role in the adoption of (freight) electric vehicles.

SWOT analyses

For each of the three target groups, a SWOT analysis is presented in Table 1 to Table 3. It shows the positive aspects with regard to the adoption of EV, from within (*strength*) and outside the organization (*opportunity*), as well as the challenges from within (*weakness*) and outside the organization (*threat*).

Table 1 SWOT analysis: van for services and freight transport

VAN USED BY ENTREPRENEURS	
Strength	Weakness
<ul style="list-style-type: none"> When used intensively in the city, the operational costs are lower than the costs of conventional vehicles. Quite and clean transport improves the image of the entrepreneur as compared to the polluting and noisy image that freight vehicles have. The vehicle drives comfortable. 	<ul style="list-style-type: none"> Range is not sufficient for entrepreneurs that operate at a regional level. Ad hoc and irregular pattern of deliveries hinder entrepreneurs to plan differently for EV. Procurement costs are relatively high and many entrepreneurs are not familiar with TCO. The end receiver/customer is barely aware of, driven by or directly benefited from sustainable urban freight.
Opportunity	Threat
<ul style="list-style-type: none"> Compatibility with sustainable business values (corporate social responsibility/sustainable procurement) Zero emission policy objectives of city authorities and European Commission create more attention and promotion for EV. Within a large vehicle fleet, or with shared charging and parking infrastructure, EVs can be used and charged more flexible (<i>smart charging</i>) 	<ul style="list-style-type: none"> Trend of same day and 24 hour delivery: demanding customers and competitive markets limit entrepreneurs to postpone their services and/or plan beforehand. Developments of clean vehicles using fossil fuel or other sustainable power sources such as hydrogen. Accessibility of charging infrastructure, when EV adoption increases rapidly.

Table 2 SWOT analysis: taxi

TAXI MARKET	
Strength	Weakness
<ul style="list-style-type: none"> When used intensively in the city, the operational costs are lower than the costs of conventional vehicles. The vehicle drives comfortable, this is also experienced by customers. 	<ul style="list-style-type: none"> Limited range makes it no longer possible to carry out all long (and beneficial) trips. Reducing the use of air-conditioning and heating to save energy, can have a direct negative impact on customers' comfort. When taxi drivers act independently, there is little flexibility (and motivation) to exchange trips.
Opportunity	Threat
<ul style="list-style-type: none"> The taxi market is moving towards more sustainable transport (e.g. Taxi Electric) Giving preference to electric taxi's at certain (popular) taxi parking spots. Cooperation between taxi entrepreneurs will allow more flexible usage of EV. 	<ul style="list-style-type: none"> Fast charging infrastructure in cities faces various challenges (e.g. w.r.t network capacity and the business model) which slows down/hinders the roll-out.

Table 3 SWOT analysis: paratransit services

PARATRANSIT SERVICES FOR ELDERLY AND DISABLED	
Strength	Weakness
<ul style="list-style-type: none"> • Possibility to plan trips beforehand • Possibility to plan EV vehicles according to the trip characteristics (the control room personnel should be trained and have sufficient information though) • Sustainable vehicle is compatible with social character of the organisation • Personnel available to charge vehicles before/after usage 	<ul style="list-style-type: none"> • The higher entrance (due to battery location) is not suitable for elderly, disabled and children • The range is not sufficient to use the vehicle the whole day • Reducing the use of air-conditioning and heating to save energy, can have a direct negative impact on customers' comfort.
Opportunity	Threat
<ul style="list-style-type: none"> • EV can be a competitive advantage in tender procedures with sustainability criteria • Privileges for zero emission vehicles (e.g. to use the bus lane) can stimulate the uptake 	<ul style="list-style-type: none"> • Uncertainty to invest in EV because of relatively short tender period and relatively long payback period of EV

Follow up questions

The uptake of EV is influenced by instrumental, environmental and symbolic attributes¹. Follow-up questions are raised for each of the three type of attributes (see Table 4):

- **Instrumental attributes:** functional advantage of EV
- **Environmental attributes:** degree to which EV has positive/negative consequences for the environment
- **Symbolic attributes:** image and status obtained from using EV

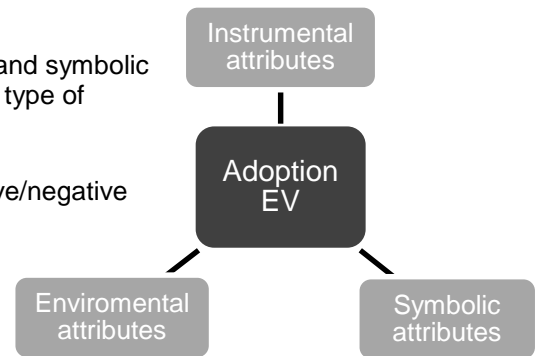


Table 4 Follow up questions

Attribute type	Follow up research questions
Instrumental (functional advantage)	<ul style="list-style-type: none"> - How can the range (either by technical innovations or changes in usage) be increased? - How can the TCO (Total Cost of Ownership) approach be disseminated to fleet decision makers in clear, understanding and convincing language? - What are the requirements of public charging infrastructure to facilitate the uptake of EV for services and freight transport? - How can fast charging infrastructure for taxi and paratransit services be developed?
Environmental (consequences for the environment)	<ul style="list-style-type: none"> - How can the zero emission ambition of city authorities and the European Commission, as well as its urgency, be disseminated to entrepreneurs, citizens and visitors of the city?
Symbolic (image and status)	<ul style="list-style-type: none"> - How can the (end-) user of services and products be driven by sustainable transport in the selection of suppliers? (making sustainable transport a competitive advantage). - Which (policy) measures give EV users a competitive advantage, stimulates the purchase of (more) electric vehicles and are also maintainable on the long term?

¹ Keizer, K., Noppers, E. H., Steg, L. (2015). De onderschatte rol van symbolische attributen in de adoptie van elektrische auto's. *Tijdschrift Vervoerwetenschap*, pp 25-30.