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Introducing electric mobility in Latvian municipalities: results of a survey

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Abstract

Electric mobility is a key technology towards the decarbonization of the transport sector. However, before achieving high rates of market penetration of electric vehicles several important barriers must be overcome. The aim of this research was to collect first experiences with electric vehicle use in a municipal fleet in Latvia. It was done through a survey designed for public authorities granted financial support for electric car purchase within a State support programme. The survey consisted of three groups of questions describing: (1) technical data of vehicle fleet; (2) user habits and attitudes, and; (3) motivation of the municipal authorities in switching to electric vehicles. Particular attention was paid to analysis of existing barriers for electric vehicle use and estimation of the necessary improvement rate to overcome these barriers. Respondents rated the lack of charging infrastructure and high initial cost as the two most significant delaying factors for electric vehicle use. Based on the responses, a price reduction by half would result in a notable reduction in the existing price barrier. Meanwhile in case of infrastructure, consumers are much less willing to accept any nuisance and require unrestricted access to the charging infrastructure in order to no longer consider the lack of it as a barrier.

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1. Introduction

A shift to electric mobility is a key strategy for achieving the ambitious transport decarbonization goals outlined in the European Commission's White Paper [1]. Today, there are around 200,000 electric vehicles and 63,250 plug in hybrid electric vehicles in Europe [2]. The International Energy Agency has estimated that the stock of electric passenger vehicles could reach 2 % of the total passenger cars on the road or 20 million by 2020 [3].

Although providing considerable environmental benefits, the introduction of electric mobility (and alternative fuel vehicles in general) is a great challenge. Various barriers, including technical, financial, institutional and administrative, political and legal, as well as physical, delay a wider application of sustainable transport [4].

Public bodies are acknowledged to be an important driver to achieve energy end-use efficiency [5]. Introducing electric mobility in the public sector could fulfill an exemplary role, contribute to overcoming the existing barriers (e.g., social acceptance) and stimulate market transformation towards a low-carbon society. Moreover, electric mobility can contribute to electric load shifting, integration of intermittent renewable energy sources and CO₂ emission reduction in Latvia through vehicle-to-grid systems as shown by [6, 7]. Therefore this research focuses on the public sector vehicle fleet. The goal of this study is to evaluate the first steps to introducing electric mobility in Latvian municipalities.

Electric mobility is at its early stages of development in Latvia. It is mainly limited to the use of electric public transport (trams and trolley buses) in the three largest Latvian cities by population (Riga, Daugavpils and Liepaja) and electric passenger railway lines. The market penetration of electric cars has been rather slow. The number of electric vehicles was 10 in 2013, 15 in 2014 and 188 in 2015. The increase in 2015 compared to the previous year was the result of a State support programme. The programme provided subsidies for electric vehicle purchase and charging infrastructure development both in the public and private sector. In total, 112 projects with a total number of 208 electric cars received grants, financial support in the range of 35 – 85 % of capital costs. Within this study, the experience with the use of electric vehicles by participants of the programme was collected. This was done with the help of a survey designed to collect users' opinions and attitudes to the new electric cars.

2. Methodology

The survey consisted of 21 questions grouped in three sections. The first group of questions dealt with technical data on municipal vehicle fleets including electric vehicles. The second group of questions was designed to clarify user habits and attitudes towards electric vehicles. The third group of questions was targeted to understand the motivation of municipalities to participate in the State support programme, and also evaluate the existing barriers to a wider penetration of electric vehicles. The survey consisted of open questions, multiple choice questions and Likert scale questions.

A request to complete the survey was sent via e-mail to 55 public bodies (municipality administrations, universities, public utilities, etc.) which were granted State support for electric vehicle purchase. The invitation was sent to responsible persons in the municipality development departments. Three options to complete the survey were proposed:

- Via an online submission form using visidati.lv;
- By filling the survey form in an electronic or printed document version;
- Via a teleconference.

After the initial call, results from 16 municipalities, local government authorities and public establishments were received. In order to increase the number of respondents, a reminder was distributed via e-mail and by phone. As a result, completed questionnaires were received from 24 respondents (44 % of all) of the 55. 15 answers were received electronically, 8 answers were collected from the online system and one answer – via a teleconference.

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