

Baltic States eMobility

Outlook based upon experience

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Digital City Limited



History

- Latvia and Estonia both started activities relating to electromobiity in 2009
- 2011 was first stage of concrete plans
 - Feasibility study commissioned in Latvia and tender in Estonia
 - Environmental pressure
 - Innovation opportunities
 - Desire to lead



Perceived advantages of electric?



Vision for going Electric?

- Sustainability benefits:
- Economic benefits:
- Political benefits:

Perceived sustainability benefits

- Possibility to present Baltic states as forward thinking and progressive
 - “Green thinking” and decrease of CO2 footprint
Improves image internationally
 - Knowing the economical effect of “green actions” is one of the crucial components for sustainable activities
 - Being among the first brings a lot of positive media attention
- Provide showcase demonstration for new vehicle technology and infrastructure with the goal of supporting sustainable transports



Expected EV choice by 2015



anCharge



Perceived economic benefits

- Total cost of ownership
- Governmental incentives
- 'Sweet-spot' EV applications

Total cost of ownership

- Current capital cost up to 2 times more than Internal Combustion Engine (ICE) vehicles
- Running costs on average are 80% less than ICE vehicle
- Current total cost of ownership currently 20% above ICE vehicles for average user - without governmental support
- Possibility for EVs to be more economic than ICE vehicles in specific applications (typically city usage, high milage and off-peak electricity loading)



Government incentives

- Latvian programme launched by Ministry of Environmental Protection & Regional Development using KPFI financial instruments for purchase subsidies
- Fiscal incentives such as free vehicle tax, free parking
- Non-fiscal incentives such as use of A lanes

Political benefits

- European Union strategy 20/20/20
 - Until year 2020. decrease CO2 emissions by 20%.
 - In Riga transport represents 37% of CO2 emissions
- EU Roadmap to a Single European Transport Area:
 - Decrease ICE vehicles in cities by 50% until year 2030.
 - By year 2050 stop ICE usage in cities completely



Envisaged challenges to EV introduction in introduction

- Standardisation / Interoperability
- Electrical network reinforcement
- New technology / user experience
- Baltic market OEM support



Actual economic experience

- Cost/benefit analysis for electrification justification was thwarted
 - Energy cost from charging stations is typically 5 time higher than home usage rate
 - Session charging in Estonia and Latvia is €5.00 for average of 7.2kW (Estonia)
 - AC charging in Latvia based upon time and energy typically costing around €0.60, five times higher than domestic
- Incentives that were rejected
 - Free parking in cities for EVs
 - No use of A lanes by EVs
 - Rejection of tax concession to EV business users
 - No on-going financial support towards capital cost of EVs
 - No assistance or subsidies for home chargers



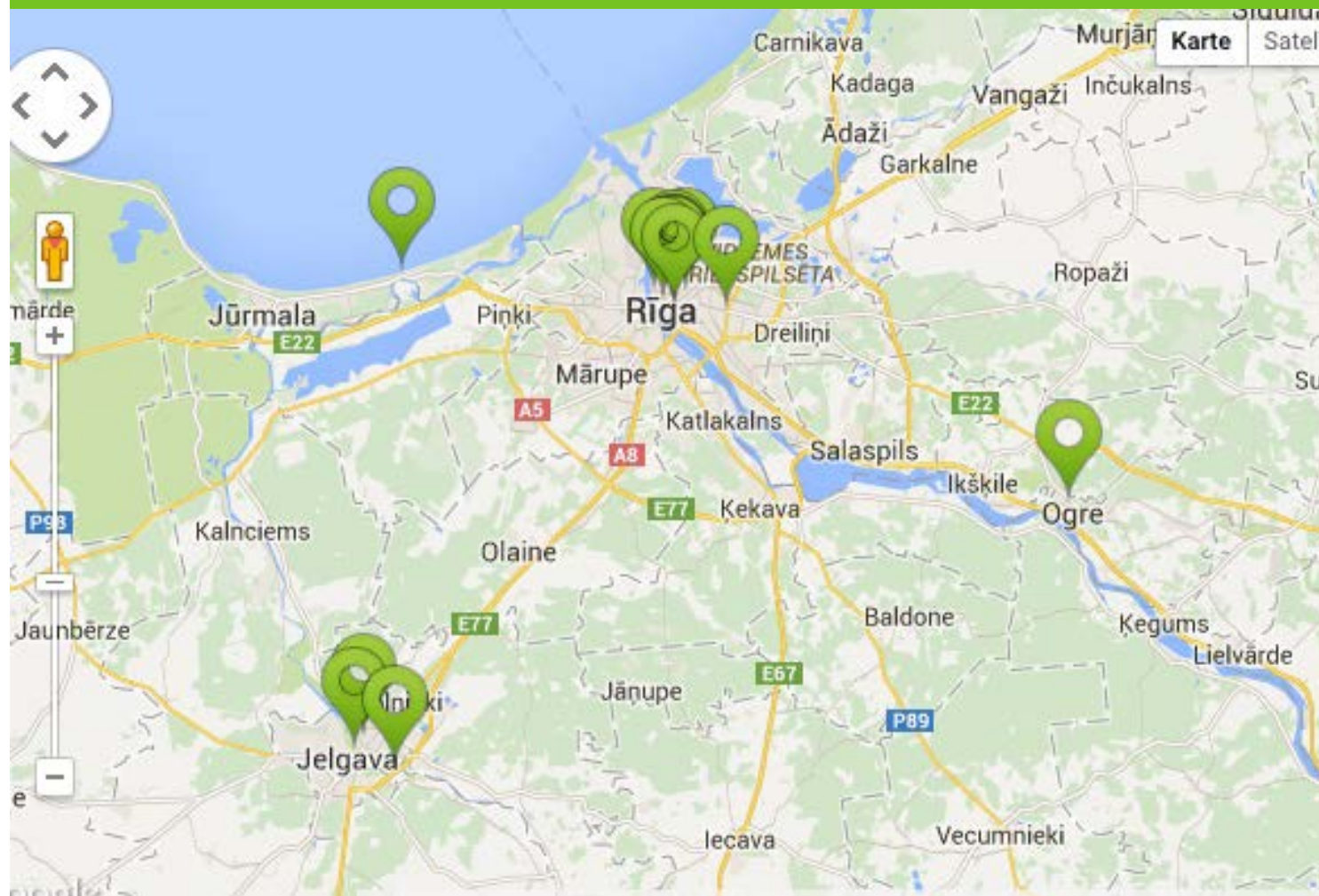
Actual infrastructure experience (Latvia)

- €5 million from KPFI programme resulted in:
 - Nine EV charging stations (two DC and seven AC)
 - Approximately 200 EVs purchased with 50% subsidy (250 EVs and PHEVs)
 - No charge point management system
- OEM rejection based upon inadequate infrastructure
 - Renault
 - Daimler
 - Ford

Actual infrastructure experience (Estonia)

- Approximately seven million euro from carbon credit sales programme resulted in:
 - 165 EV charging stations (all DC and AC)
 - More than 1,000 EVs purchased with 50% subsidy (1,070 EVs and PHEVs by end December 2014)
 - Charge point management system provided by ABB
- OEM support based upon robust infrastructure
 - Renault

Map of Latvia's EV charging stations (14)



Map of Estonia's EV charging stations (165)



Summary of requirements for sustainable industry development

- Re-instatement of purchase subsidies
- Soft incentives, such as free parking and use of A lanes
- Charging infrastructure to enable normal vehicle utility
- Democratic pricing for energy
- Charge Point Management System

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