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Background

The transition to EVs is expected to significantly impact electricity demand, with estimates suggesting a 40% increase in electricity consumption by the transport sector.

Alternative projections are even more ambitious, indicating that electricity demand from transport could increase three to four times by 2035, and up to five or six by 2040, compared to 2024 levels. The electric car fleet in Latvia is projected to reach between 28,000 and 45,000 units by 2030.

Methodology

Systems Thinking approach has been applied to analyze the development of EV charging infrastructure in Latvia in the present study, offering a holistic perspective for identification of leverage points for interventions towards smooth transport electrification.

Findings from non-scientific sources such as infrastructure reports, national policy documents, utility company initiatives, and market pricing were systematically assessed and categorized.

Visual results

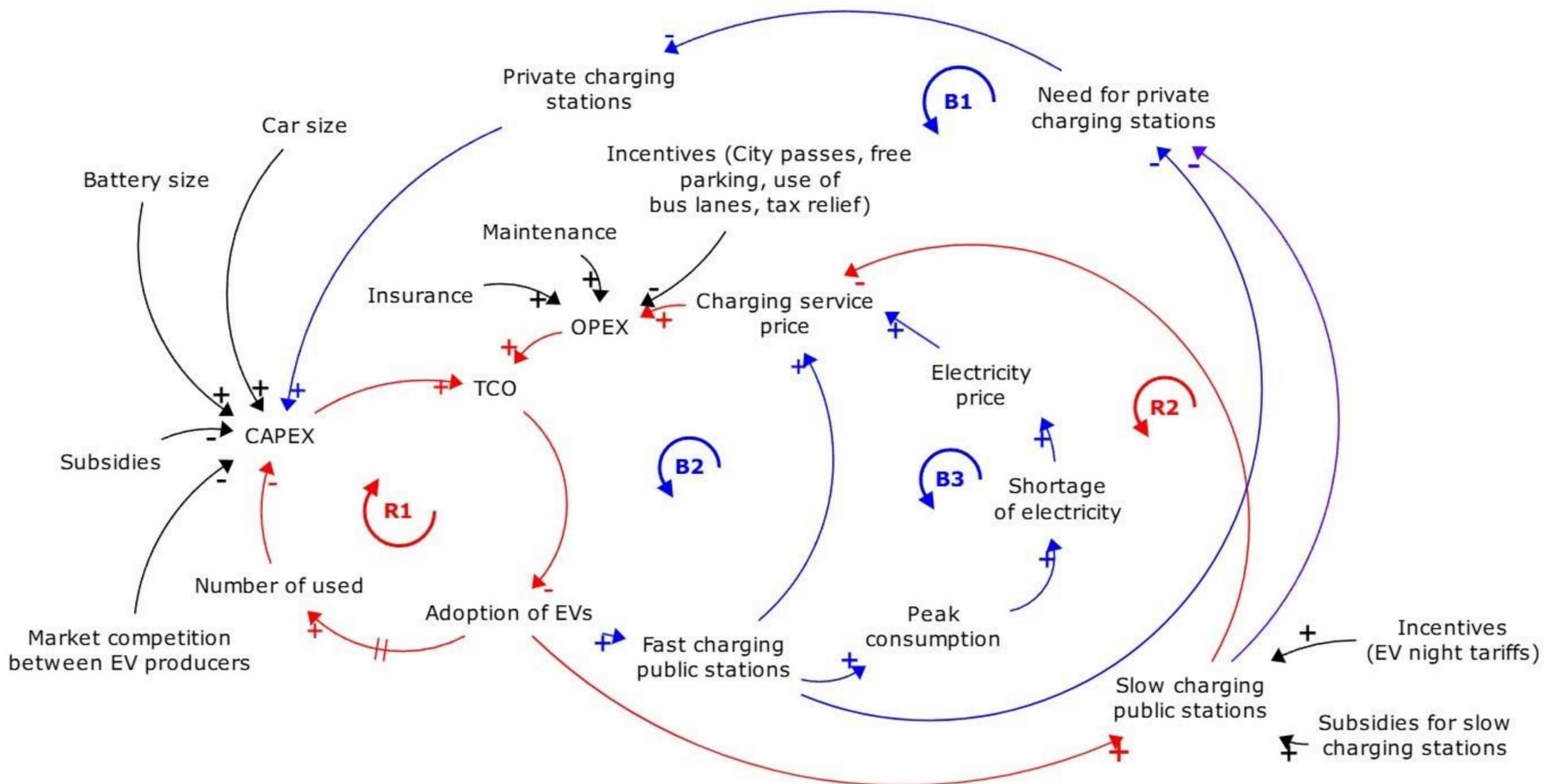


Table – Key Factors affecting EV Charging Infrastructure and Load Distribution in Latvia

Key Factors affecting	Substation Constrains	New Substations	Public AC charging	Public Price Comparison	Vehicle Profile	Available Grid Capacity (AC)
Key Findings	5x 110kV s/s have only 1 transformer	4x 110kV s/s are considered	ST project for 2060 slow chargers' grid connections	AC Charging vs DC €0.39/kWh vs €0.47/kWh	Average age of passenger car is 15.5 years	Bisuciems 29MW, Purvciems 22MW, Grizinkalns 21MW
Implications for Analysis	Risk under peak EV load	Reinforcement of grid nodes	Load demand gradual growth	Cost-sensitive users likely to choose slow overnight charging	Load influenced by more frequent low-powered charging	Determines where AC EVCI can scale quickly without reinforcement

Conclusion

In this research it is seen that Public AC EV Charging in Latvia could severely impact a broader EV adoption in a positive way, parallelly avoiding load peak creation in the grid. Riga, the Capital of Latvia, should be the first main location of such implementation, since the targets stated in governmental plans are very ambitious. It has a share of 47% of EV registrations at the moment and around ~1/3 of the population in the country. Several commuter districts already have required grid capacities for ensuring wide AC overnight charging service at the densest places of residents.