Electric vehicle adoption ljubljana

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For instance, Europe is embracing the shift to zero-emission mobility. The "fit for 55 packages" proposed by the European Green Deal aims to reduce at least 55% of GHG emissions by 2030 compared to 1990 levels7. One of the document that is part of "fit for 55" is the Alternative Fuels Infrastructure Regulation (AFIR)8 that is centred in the development of electric mobility. AFIR defines targets for minimum installed capacity in public charging stations that should be higher than 1.0 kW per per battery electric vehicle (BEV) and 0.66 KW per plug-in hybrid electric vehicle (PHEV). Considering the abovementioned, almost all internal combustion engine (ICE) vehicle sales are expected to be banned in Europe by 20359.

Considering the most recent data, Global EV sales more than doubled, driven by policy attention. It represents a global EV sales share of 8.57%, which accounts for 6.6 million units. Also, this stands current for over 16.4 million of BEVs (68%) and PHEVs (32%) on the roads. China and Europe lead the EV market, accounting for 85% of the global fleet, followed by the United States10.

Some scenarios in the literature cover different approaches to predict the future of electric mobility and sometimes consider hurdle factors like consumer behaviour in the trajectory. These range from machine-learning tools and diffusion models, which can be subdivided into stochastic and population models12. While the stochastic models are based on consumers" preferences considering the purchase decision, the population models consider the market diffusion curve or different growth rate scenarios. Nevertheless, both are less accurate for long-term predictions than the statistical model13,14.

Furthermore, the datasets described in this study include an EV forecast concerning the stock, sales, electricity demand, and the number of public charging points in the World, Europe, Portugal, Denmark, Greece, and Slovenia. The analysis is performed by growth scenarios on a five-year increment to 2050. Further, the scenarios presented in this study, if not obtained from available sources, the values for some years have been applied to the regression model, and estimated assumptions are used. Figure 1 illustrates the main steps approached for EV demand projections.

Schematic method approach.

EV Forecast is based on existing production forecasts mainly from reports by public entities and consultants, which considers market and policy targets aiming to achieve carbon neutrality for different time horizons in the context of EV4EU member countries (Portugal, Denmark, Greece and Slovenia) and worldwide. In terms

of analysis, these countries are interesting due to the cultural differences, relative position in Europe and the stage of adoption of electric vehicles.

Several reports have presented projections regarding the evolution of EVs, considering diverse aspects as follows. The input data and sources used are publicly available and described in Table 4. the data have been collected, organized and computed based on existing references. Values not available in the references have been computed using Eqs. (1) and (2).

The input data sourced from the available literature is descrived in the following paragraphs. The missing values regarding EV evolution scenarios were obtained by interpolation function for different time horizons. Figure 2 shows one EV scenario built in the case of worldwide.

IEA3 addresses three scenarios until 2030: (i) Announced pledge Scenario (IEA-APS) based on climate policy pledges up to 2030 and driven by the economic and technological development in the coming years impacting the EV market. (ii) Staded Policies Scenario (IEA-SPS) embraces current policy plans up to 2030. (iii) Net Zero Emissions by 2050 Scenario (IEA-NZE) considering the main energy-related targets of the united nations" sustainable development goals (SDGs).

Bloomberg4 assesses three scenarios by 2050: (i) Economic Transition Scenario (BBG-ETS) driven by the economic and technological development in the coming years impacting the EV market; (ii) Net Zero Scenario (BBG-NZS) analyses the main path to zero-emission in the transport sector and considers the economy a decisive factor for achieving carbon neutrality by 2050.

IRENA5,15 presents three scenarios: (i) 1.5?C scenario (IRN-PRT) pathway to reach the 1.5?C targets of the Paris Agreement through six technological avenues comprising electrification of the sectors, increasing renewable energy generation and improvements in energy efficiency in the context of the energy transition. (ii) Planned Energy Scenario (IRN-PES) is based on the energy plans established by governments besides other policy targets in this field. (iii) Transforming Energy Scenario (TES) proposes an ambitious scenario considering renewable source penetration and energy efficiency improvements.