Sustainable automobility: Croatia

Policy Review

Croatia's Recovery and Resilience Plan

Croatia's strategy encompasses a €10 billion plan, integrating €5.8 billion from Recovery and Resilience Facility (RRF) Grants and €4.2 billion in RRF loans, with national resources also contributing to the total value. The plan outlines 157 investment streams and 78 reforms, dedicating 39% of its funds to climate objectives and 20% to digital advancements. A notable €728 million is allocated for enhancing sustainable mobility. This investment focuses on modernizing railway infrastructure, deploying autonomous electric taxis equipped with accessibility features, expanding the network of electric vehicle charging stations, and introducing zero-emission vehicles and vessels, marking a significant push towards reducing environmental impact and promoting digital innovation.[1]

EV Tax Benefits and Subsidies

Croatia is actively promoting environmental sustainability within its automotive and mobility sectors through various incentives aimed at encouraging the adoption of electric vehicles. Notably, the government has eliminated excise duties and special environmental taxes for electric vehicles. Furthermore, an annual incentive scheme has been established, offering subsidies of €9,333 for battery electric vehicles and €5,333 for plug-in hybrid electric vehicles. This initiative is part of a broader strategy to enhance the appeal of EVs, including the development of infrastructure that allows drivers to charge their vehicles while waiting. As outlined in the Croatian Transport Development Strategy for the period 2017-2030, there is a clear focus on investing in more sustainable modes of transportation. Supporting these efforts, the European Investment Bank has contributed €7.7 billion since 2001 towards the country's development, aiding in the realization of these sustainable transport initiatives. [2] [3] [4] [5] [6]

Technological Advancements

While Croatia may not have a robust automotive industry of its own, it is actively searching for investors as Croatia has multiple available business zones. The country has seen a rise in the availability of EVs and charging infrastructure, with currently more than 140 active automotive companies.[7] Moreover, the country is aiming to implement Smart Cities, where technology and connectivity are used to achieve sustainability throughout the whole city.[8] Even though smart cities have been developing over the past years, research in 2022 has found that smart cities are still lacking development in public infrastructure and that they need to increase the number of bike paths.[9]

Project 3 Mobility, a Croatian company dedicated to revolutionizing urban mobility, has announced a groundbreaking collaboration with Mobileye, a global leader in autonomous driving solutions. The partnership aims to integrate Mobileye's cutting-edge technology, Mobileye Drive, into Project 3 Mobility's innovative urban mobility ecosystem.

Scheduled for a 2026 launch in Zagreb, Croatia, Project 3 Mobility's service seeks to enhance transportation in urban areas significantly. Initial testing of Mobileye's technology on Zagreb's streets is set to commence this year, focusing initially on mapping the city's streets using specially equipped test vehicles.

Following the mapping phase, the collaboration will progress to testing Mobileye's autonomous system solution, utilizing diverse test vehicles equipped with safety drivers. Project 3 Mobility is concurrently developing its autonomous electric vehicle, with a particular emphasis on creating a new vehicle platform optimized for autonomous driving. This vehicle will integrate Mobileye's Drive system for autonomous capabilities.[10]

Infrastructure Development

Infrastructure development in Croatia is essential for supporting sustainable mobility. As of 2020, the World Bank indicated that more investments were needed to improve the infrastructure in Croatia. While its road network is relatively well-developed, Croatia's railway network is highly underdeveloped, as globally it is ranked 90th, a lower ranking compared to other European countries.[11] Croatia is focusing on modernizing its railway network, with approximately 55% of the Croatian railway network relating to lines important for international transport. In 2022, the government was working on 19 large projects, with intensive works on the RH1 corridor, from the Croatian border with Slovenia to the state border with Serbia, and the RH2 corridor, from Rijeka to the state border with Hungary. Moreover, the government is also focusing on regional and local traffic lines by upgrading and electrifying existing lines and improving safety at level crossings by modernizing 50 crossings and upgrading an additional 95 crossings.[12] In February 2024, the EIB approved a €400 million loan to Croatia to invest in their railway network, complementing Croatia's investment of €2.6 billion.[13]

[1] Croatia's recovery and resilience plan - European Commission (europa.eu)
[2] CEV Technologies and SAP Fuel E-Mobility in Croatia | SAP News
[3] Electric-Vehicles-Tax-Benefits-Purchase-Incentives-2022.pdf (acea.auto)
[4] Transport Development Strategy of the Republic of Croatia 2017-2030 29-10_19.pdf (gov.hr)
[5] EIB to support Croatia in investing in green, sustainable transport projects, digitalisation and the green transition
[6] Electric-Vehicles-Tax-Benefits-Purchase-Incentives-2022.pdf (acea.auto)
[7] Automotive Industry in Croatia (gov.hr)
[8] Croatia's Cities: Boosting the Sustainable Urban Development Through Smart Solutions (worldbank.org)
[9] Assessing-Smart-City-Initiatives-A-Case-Study-of-Croatian-Municipalities.pdf (researchgate.net)
[10] Croatian Company Project 3 Mobility Enters Autonomous Driving World - Total Croatia (total-croatia-news.com)
[11] Croatia's Cities: Boosting the Sustainable Urban Development Through Smart Solutions (worldbank.org)
[12] Transforming Croatia's rail in harmony with European standards (globalrailwayreview.com)
[13] Croatia: EIB commits €400 million in green funding to modernise railways

As of 2023, Croatia has been expanding its cycling infrastructure as part of the Interreg Program "Danube Cycle Plans" partnership. With a total investment of €166.7 million for the period from 2023 to 2027, the strategy sets targets for the construction of over 850 km of additional bicycle roads alongside local, regional, and state roads. Croatia, now the 11th European country with such a strategy, aims to bridge the gap in cycling infrastructure and boost cycle tourism.[14]

EV Charging Infrastructure

Croatia is working to expand its EV charging infrastructure to accommodate the growing number of electric vehicles on its roads. As research described, the problem is not the number of charging possibilities, but rather the efficiency of the charging stations.[15] Currently, Croatia has more than 870 EV chargers, with 34 chargers per 100,000 inhabitants, significantly lower than leading EU markets. GreenWay Network plans to install over 300 ultra-fast chargers, ranging from 100 kW to 400 kW, in urban centres, tourist destinations, and along major highways, with an investment estimated at €30 million.[16]

Market Trends and Consumer Behavior

In 2022, there were 475 cars for every 1000 habitants, which is significantly lower than the EU average of 560 cars. While passenger transport with cars with a percentage of 63.8% is the lowest across the EU, the share of 25.4% of aircraft and 2.7% of seagoing vessels is the highest of all EU countries.[17]

The market for electric vehicles in Croatia is slowly growing but has not received a significant share in the total amount of cars yet. In 2022, less than 3% of new registered cars were electric cars.[18] Moreover, the average age of cars is 13,3 years, which is more than 1 year older than the European average.[19]

Public Transportation

Croatia has a well-established public transportation system, consisting of buses, trams, and ferries, particularly in urban areas. However, with only 0.1% of battery electric and 0.2% of hybrid electric buses, the government needs to make the promised investments in public transportation.[20] In 2017, the total length of the bus lines was 1,363 km, with 2,120 stops, the tram network consisted of 116 km of tracks with 210 stops and 15 daily and 4-night lines, transporting more than 200 million passengers per year.[21]

Environmental Impact

The greenhouse gas emissions related to transport in Croatia in 2021 totalled an amount of 6.26 million tons of CO2 equivalent. This is an increase of 8.62% as opposed to last year, but still below 2019 levels of 6.58 million tons.[22]

Economic and Social Implications

The shift towards sustainable mobility presents both economic opportunities and challenges for Croatia. While it stimulates innovation and creates jobs for 2,350 people in the green technology sector, it also requires significant investment in infrastructure and may disrupt traditional industries.[23] Croatia is comparable to Poland, Germany, and Sweden when looking at the one-way commuting times for employed persons.[24] This is remarkable as the smallest country of those three, Poland with 311.888 km^2, is already six times bigger, than Croatia, with only 56.594 km^2. With tax revenue from fuels at 0.65% of GDP in 2021, Croatia was significantly above the European average of 0.42% of GDP.[25]

The challenges for rural areas are social inequality, a lack of knowledge and information, a lack of full connectivity, and distance from urban centres. Advice for the transport sector would be to establish an OPEN FORUM platform where they can find information on public infrastructure, entrepreneurship, environment protection, digital public services, and sustainable mobility/transport in remote areas.[26]

Best Practices and Case Studies

One example of a case study is the “Citizen voices in the mobility dialogue” from CIVITAS.[27] This case study is based on Zagreb's mobility infrastructure and focuses on involving the citizens actively in the process of decision-making. Using surveys and general meetings, CIVITAS showed that the government should actively engage with the citizens to come up with effective mobility solutions.

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[14] First Croatian national cycling strategy set to boost cycling in the country | ECF
[15] View of Electric Vehicle Charging Infrastructure in Croatia – First-Hand Experiences and Recommendations for Future Development (journalofenergy.com)
[16] GreenWay Network to install 300 ultra-fast chargers in Croatia (balkangreenenergynews.com)
[17] Statistics – Modal split of air, sea, and inland passenger transport | Eurostat (europa.eu)
[18] Key figures on European transport – 2023 edition (europa.eu)
[19] ACEA Report-Vehicles on European roads.pdf
[20] ACEA Report-Vehicles on European roads.pdf
[21] Public Transportation - Croatia | Statista Market Forecast
[22] Croatia: annual greenhouse gas emissions of the transport sector 2021 | Statista
[23] Automotive Industry in Croatia (gov.hr)
[24] Employed persons by commuting time and country, 2019 (%)- Statistics Explained (europa.eu)
[25] Key figures on European transport – 2023 edition (europa.eu)
[26] The Challenges of Rural Areas in Croatia (europa.eu)
[27] Citizen voices in the mobility dialogue – Case study of Civitas

Moreover, Croatia can develop overall as a country by investing in R&D innovations. By taking Sweden as an example of effectively investing in businesses and start-ups focused on R&D, Croatia can enjoy economic development and increased competitiveness.

Future Perspectives and Emerging Trends

The future of the automotive and mobility industry in Croatia depends on Croatia's financial resources reserved for technological innovations. With the help of the EIB, Croatia will be able to realize sustainable public transportation. More action is needed to provide new technological advancements. According to the World Bank, an increase in national funding for R&D is needed to increase from the current level of under 1% of GDP to 3% by 2030. Besides an increased investment in railway infrastructure, the World Bank also advises that Croatia invest in Demand Responsive Transport (DRT) which is alternative public transport consisting of smaller buses without fixed schedules. Integrating those services with passenger rail operations will improve connectivity in rural areas.[28]

International Comparisons and Collaborations

Croatia has joined a European Consortium aimed at establishing a European battery value chain. The Croatian company, Rimac Automobile, is set to be the country's partner in this project, which involves 12 EU countries and is co-funded with €2.9 million. The European Commission has given its approval to the autumn set of applications under the Important Project of Common European Interest (IPCEI) mechanism. This is designed to support research, development, and innovation in the battery value chain. The integrated project's objective is to develop new battery technologies, covering everything from mining and processing raw materials, to the development of new technologies, the production of battery cells and packages, and their recycling. The project involves 42 participants from 12 member countries, who will collaborate to achieve a synergistic effect that will yield positive results for the entire EU and its citizens.
The project, which is expected to run until 2028, was jointly developed by Austria, Belgium, Finland, France, Germany, Greece, Italy, Poland, Slovakia, Spain, and Sweden, in addition to Croatia. Rimac Automobile is Croatia's direct partner in this endeavor. The member states participating in the project have been approved for €2.9 billion in state incentives, which is expected to trigger an additional €9 billion from private investors – more than triple the amount of state incentives. Nataša Tramišak, the Minister of Regional Development and EU Funds, highlighted that the project will not only have a direct impact on the automobile industry and mobility but is also expected to create 1400 new jobs by 2029. Furthermore, it will enhance the knowledge base through collaboration with faculties, including funding for graduate students and the creation of new educational programs. It will also facilitate the entry of relatively new technology firms into the battery ecosystem through the establishment of start-up incubators[29]

[28] Croatia 2030: Roadmap for a Better Future - worldbank.org)
[29] Croatia as part of the European consortium for creating a battery value chain, Rimac among friends - OIE