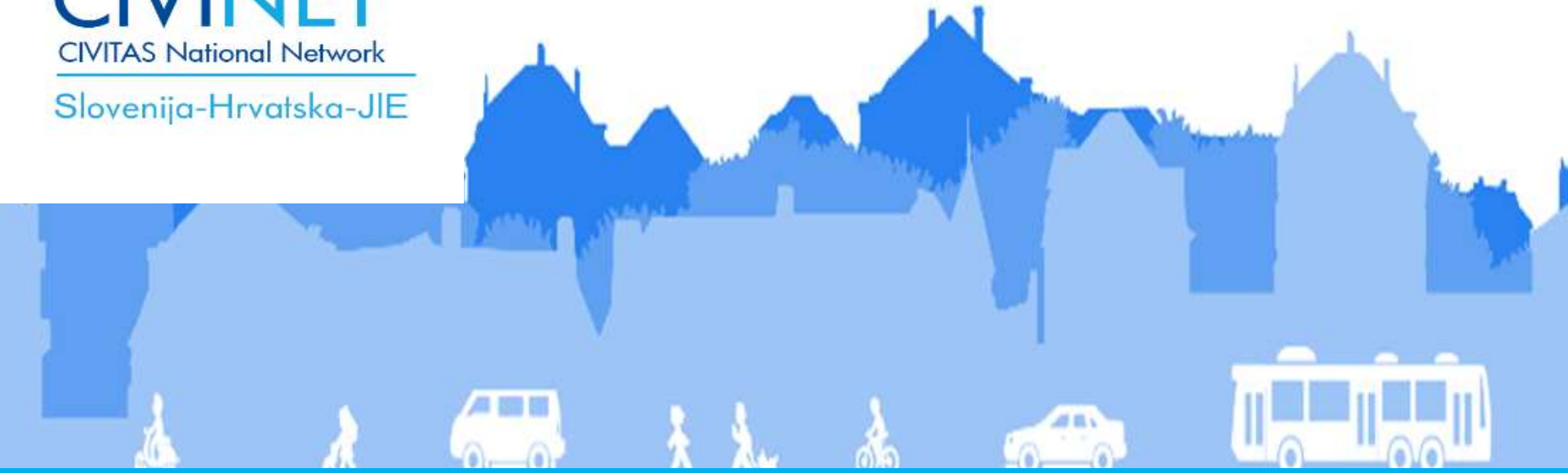
CIVINET
CIVITAS National Network
Slovenija-Hrvatska-JIE

ClimaSUM
Climate mitigation through sustainable urban mobility



# ENERGETSKA TRANZICIJA U PROMETU

**Izv. prof. dr. sc. Vedran Kirinčić**
Konzultant za energetsku tranziciju

# EVs are a HOT TOPIC

The New York Times

Jan. 15, 2021

## Electric Cars Are Better for the Planet – and Often Your Budget, Too

The New York Times

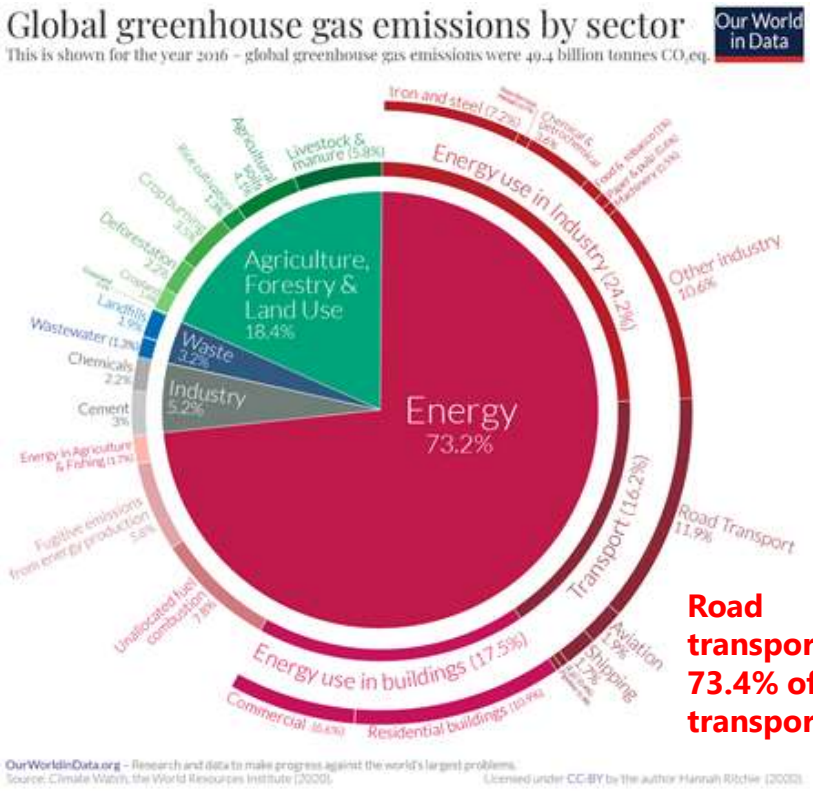
Nov. 6, 1910

ELECTRIC VEHICLES RUN AT SMALL COST; Economy and Reliability Run Results in Victory Over Gasoline Cars.

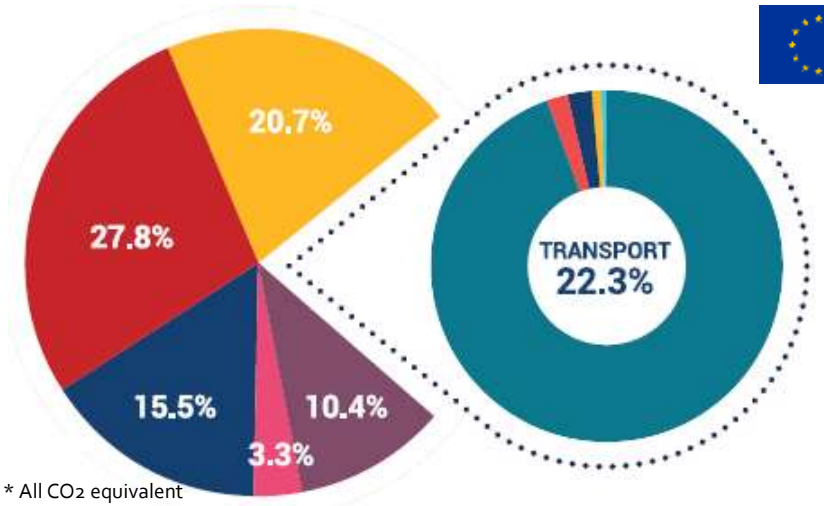
Jan. 20, 1911

ELECTRIC VEHICLES ATTRACT ATTENTION; Pleasure Cars Not Forgotten at Garden Motor Truck Show -- Record Attendance.

# GREENHOUSE GAS EMISSIONS




**Road transport 73.4% of transport**

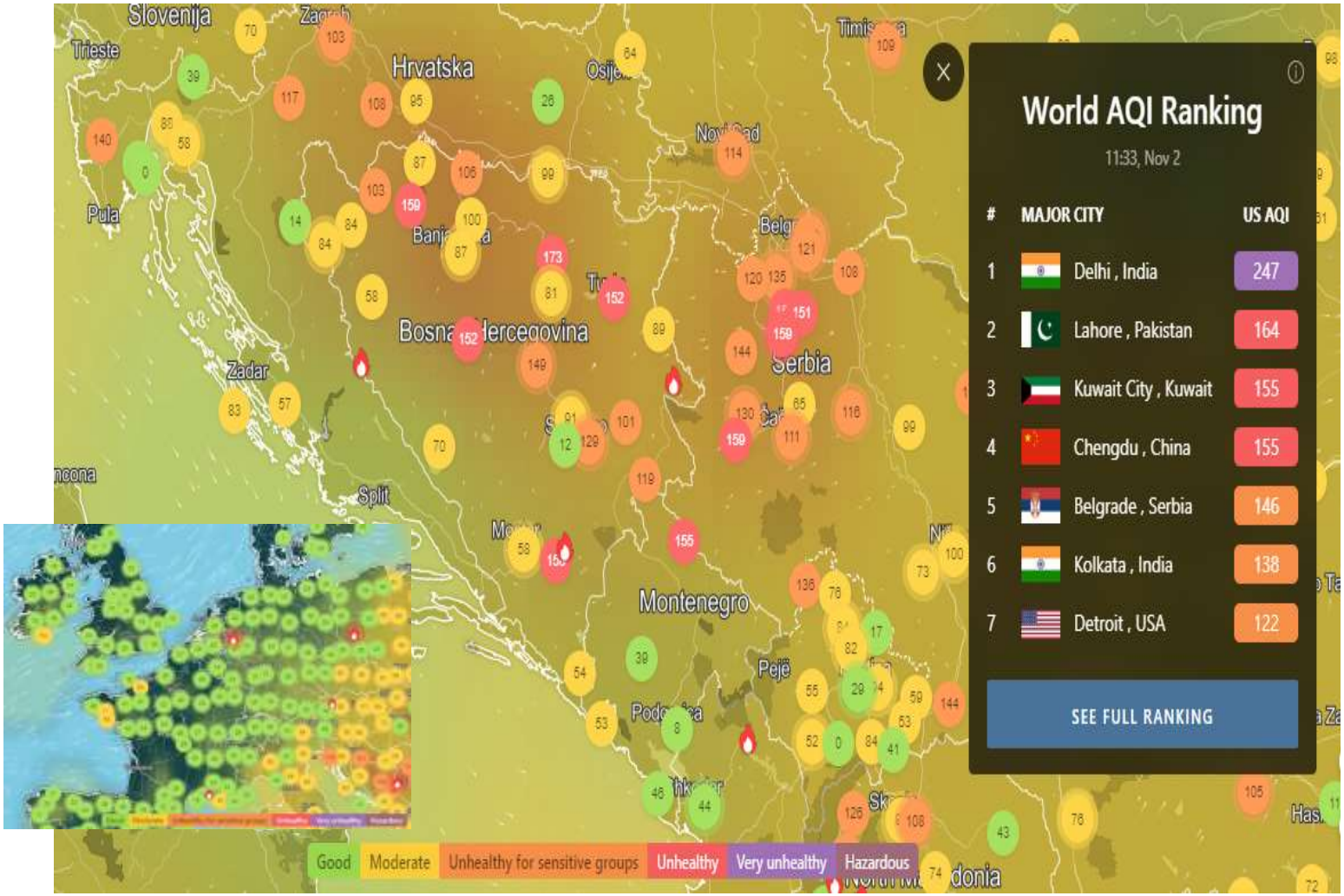



* All $CO_2$ equivalent

- ENERGY SECTOR
- INDUSTRY**
- TRANSPORT
- AGRICULTURE
- WASTE SECTOR
- OTHERS, INCL BUILDINGS

- **ROAD TRANSPORTATION = 21.1%** **94.6% of transport**
  - Passenger cars = **12.8%** **60.6% of road transport**
  - Vans = **2.5%**
  - Heavy-duty trucks and buses = **5.6%**
  - Motorcycles = **0.3%**
  - Other road transportation = **0.0%**
- **AVIATION = 0.4%**
- **WATER NAVIGATION = 0.5%**
- **RAILWAYS = 0.2%**
- **OTHER TRANSPORTATION = 0.1%**

# AIR QUALITY

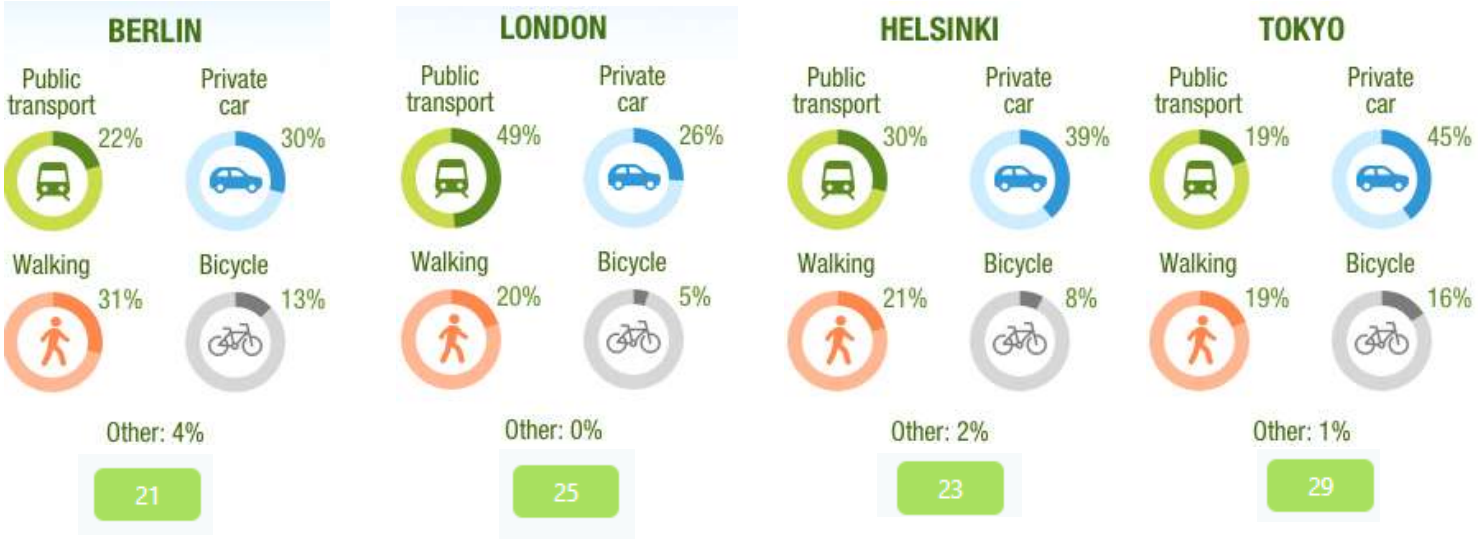



9 Sarajevo, Bosnia Herzegovina 121

11 Zagreb, Croatia 117

12 Skopje, North Macedonia 115

# HOW DO PEOPLE GET AROUND IN THE CITIES WITH THE WORLD'S BEST MOBILITY?

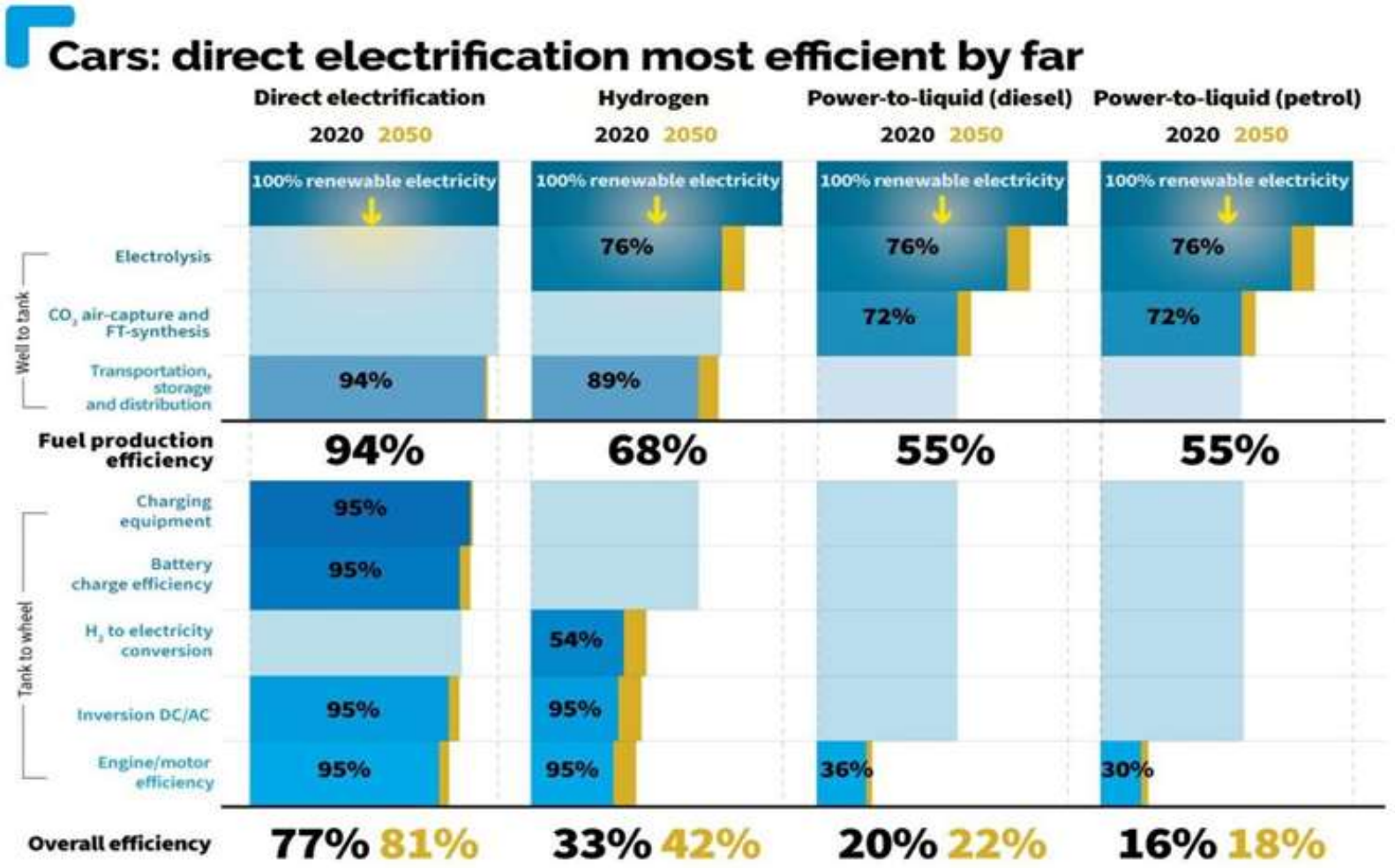



IQAir

"***A developed country*** *is not a place where the poor have cars. It's* ***where the rich use public transportation***" – Gustavo Petro, Mayor of Bogotá

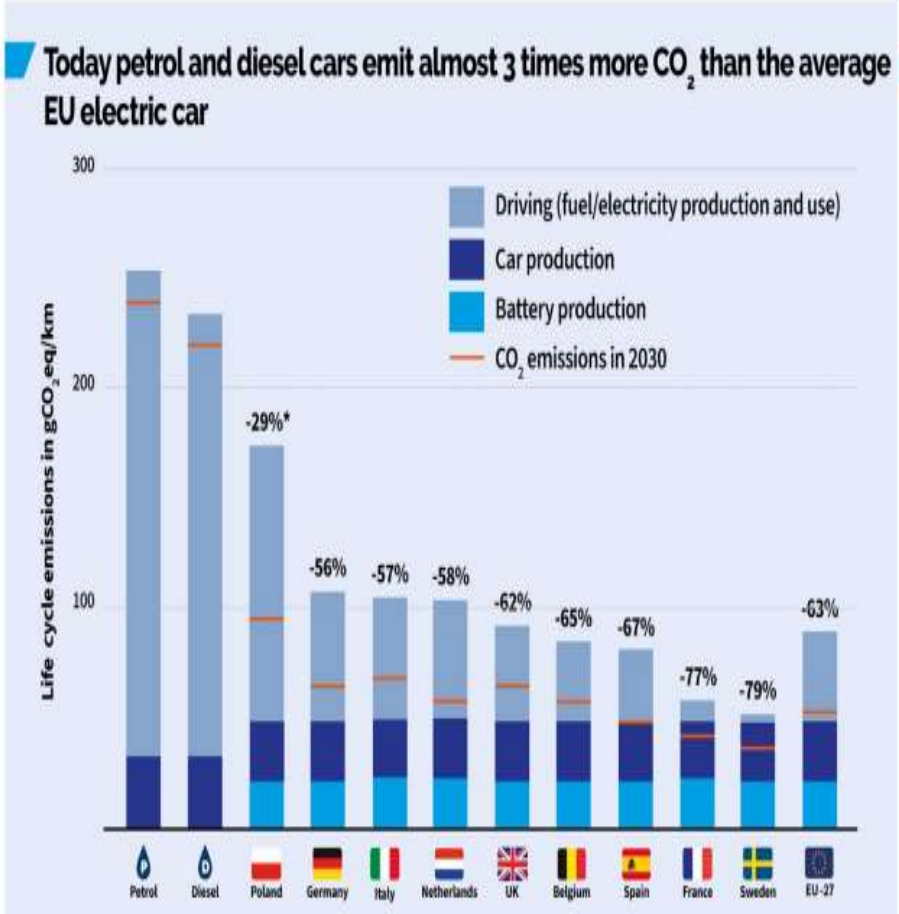
Deloitte mobility index

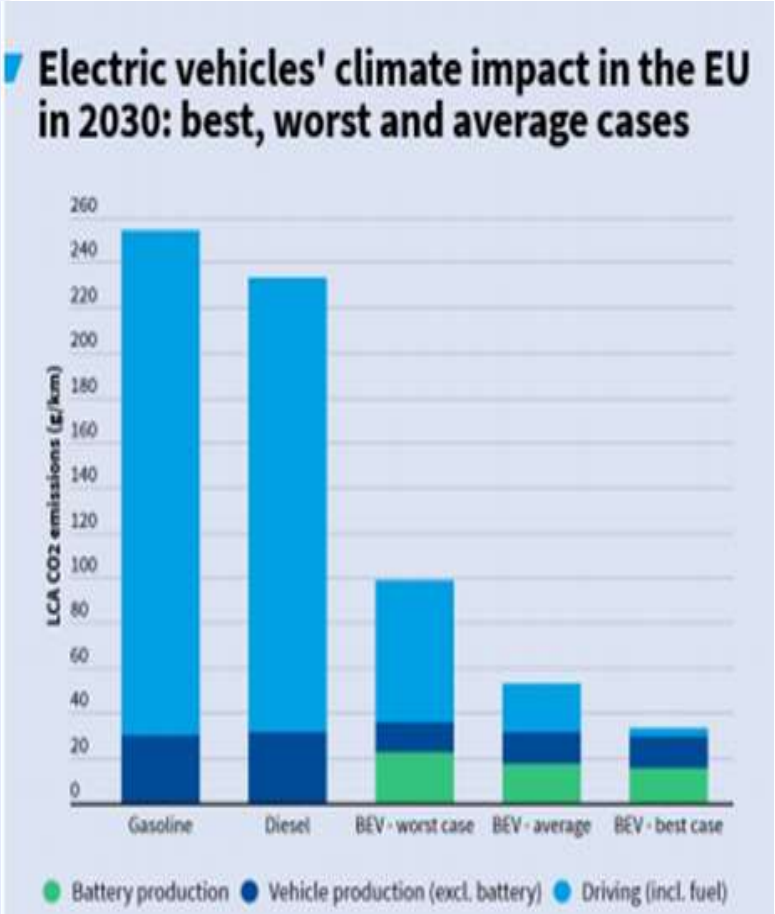
# DECARBONISATION THROUGH ELECTRIFICATION




Source: Transport & Environment

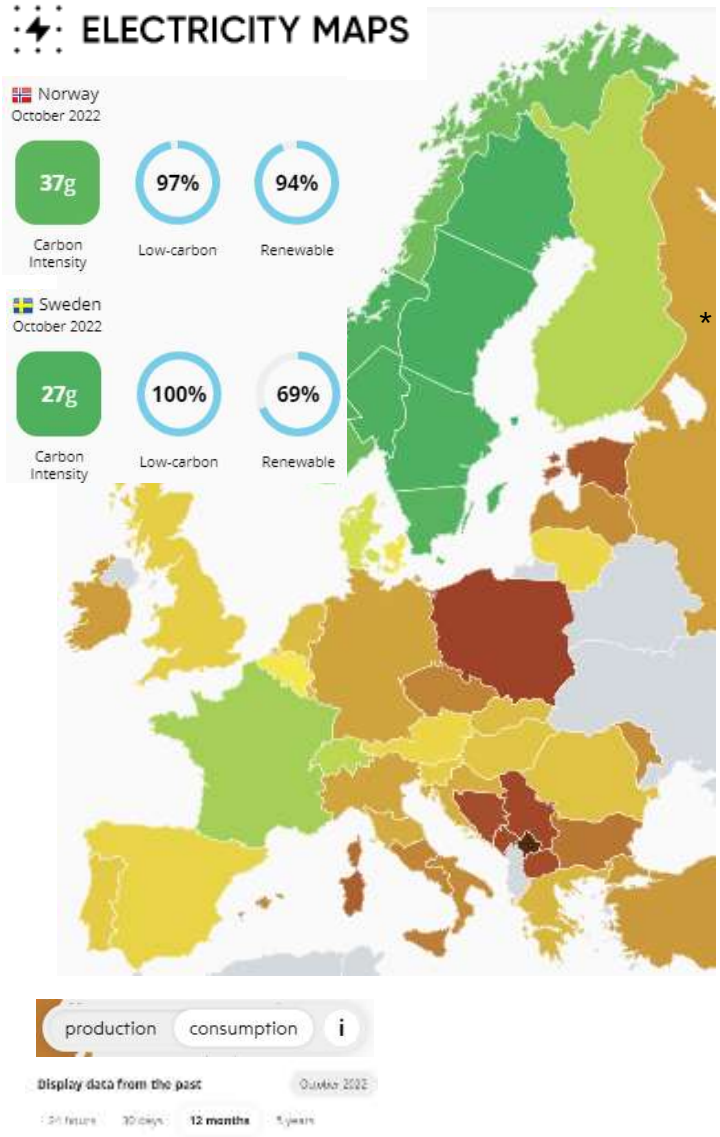
# HOW GREEN EVs REALLY ARE?



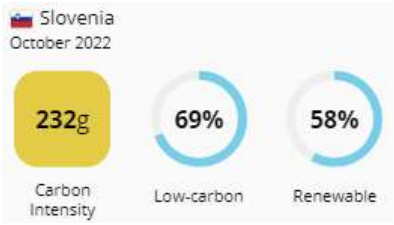




Source: Transport & Environment

# CARBON INTENSITY gCO2eq/kWh





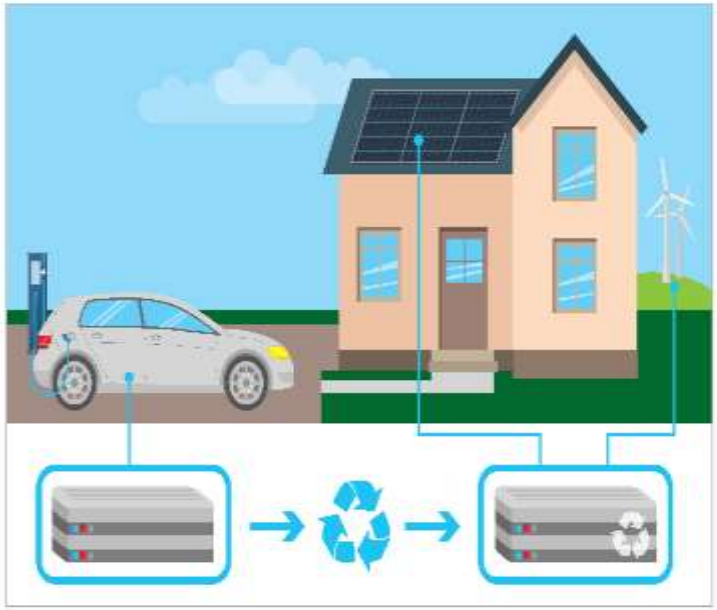




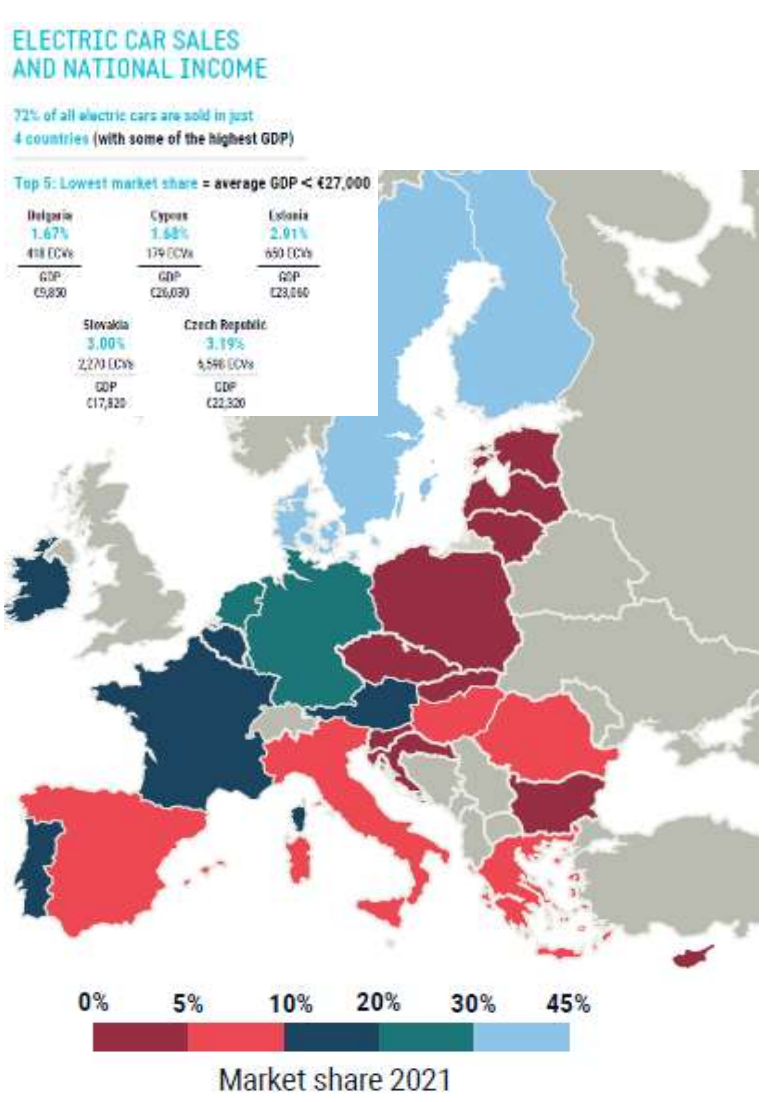


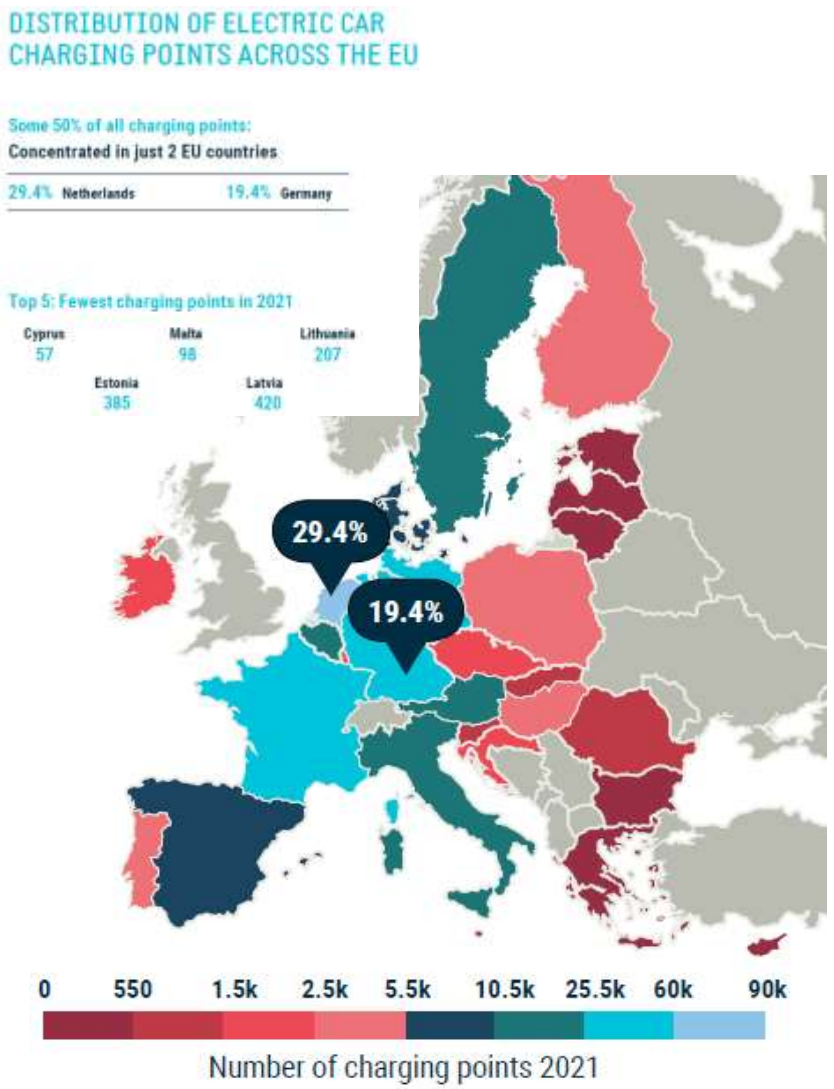


# BATTERIES SECOND LIFE

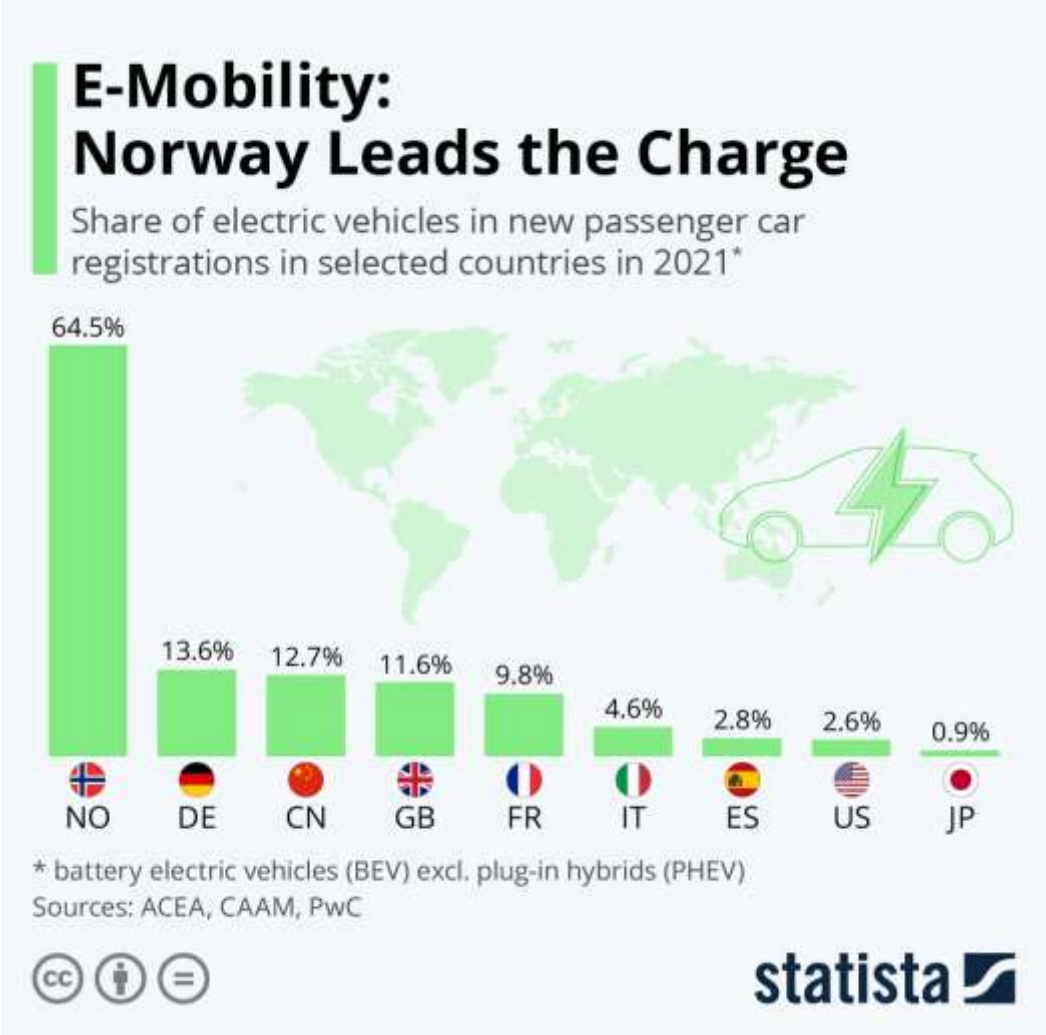
# RISK OF TWO-TRACK EUROPE FOR E-MOBILITY

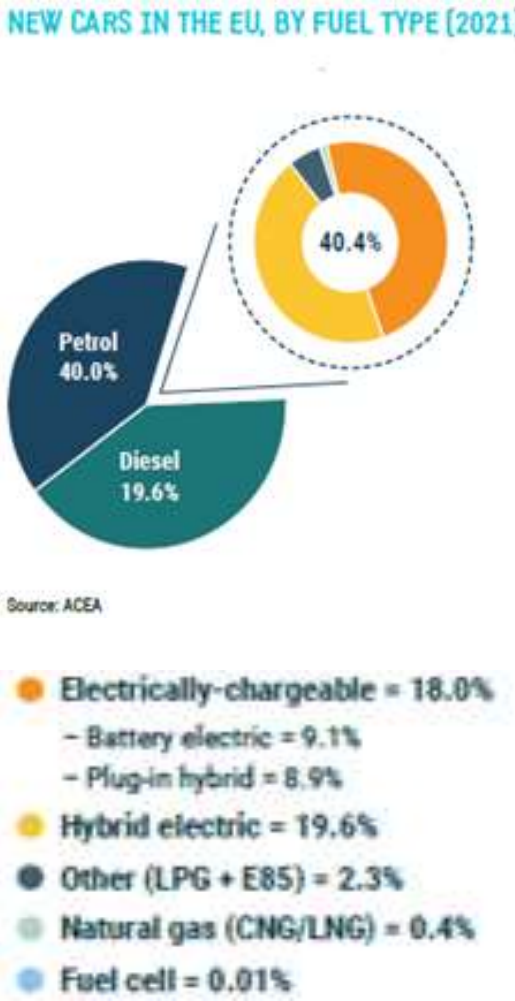



'Electric car' = electrically-chargeable vehicles (battery electric + plug-in hybrid), source: ACEA, EAFO

# NEW PASSENGER CAR REGISTRATIONS






Source: https://www.statista.com/chart/17344/electric-vehicle-share/
ACEA, MAKING THE TRANSITION TO ZERO-EMISSION MOBILITY 2021 PROGRESS REPORT

# NORWAY

**The Norwegian EV incentives:**

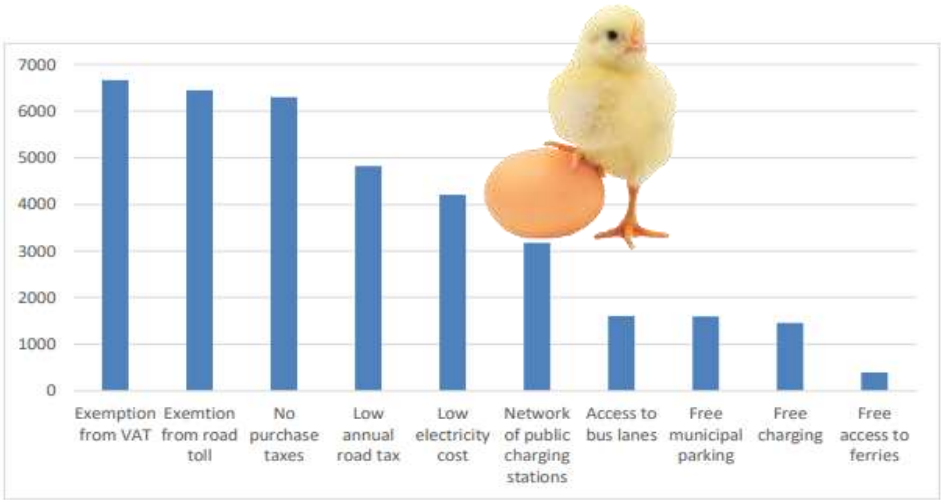
- No purchase/import taxes (1990-)
- Exemption from 25% VAT on purchase (2001-)
- No annual road tax (1996-)
- No charges on toll roads or ferries (1997- 2017).
- Maximum 50% of the total amount on ferry fares for electric vehicles (2018-)
- Maximum 50% of the total amount on toll roads (2019)
- Free municipal parking (1999- 2017)
- Parking fee for EVs was introduced locally with an upper limit of a maximum 50% of the full price (2018-)
- Access to bus lanes (2005-).
- New rules allow local authorities to limit the access to only include EVs that carry one or more passengers (2016)
- 50 % reduced company car tax (2000-2018).
- Company car tax reduction reduced to 40% (2018-)
- Exemption from 25% VAT on leasing (2015)
- Fiscal compensation for the scrapping of fossil vans when converting to a zero-emission van (2018)
- Allowing holders of driver licence class B to drive electric vans class C1 (light lorries) up to 4250 kg (2019)

"In Norway we tax what we don't want and we promote what we want, and the consumer has, in this way, actually the opportunity to make the right choice," said Christina Bu, secretary-general of Norsk elbilforening, the Norwegian EV Association.

How often do you charge? Source: Norwegian EV owner survey 2017

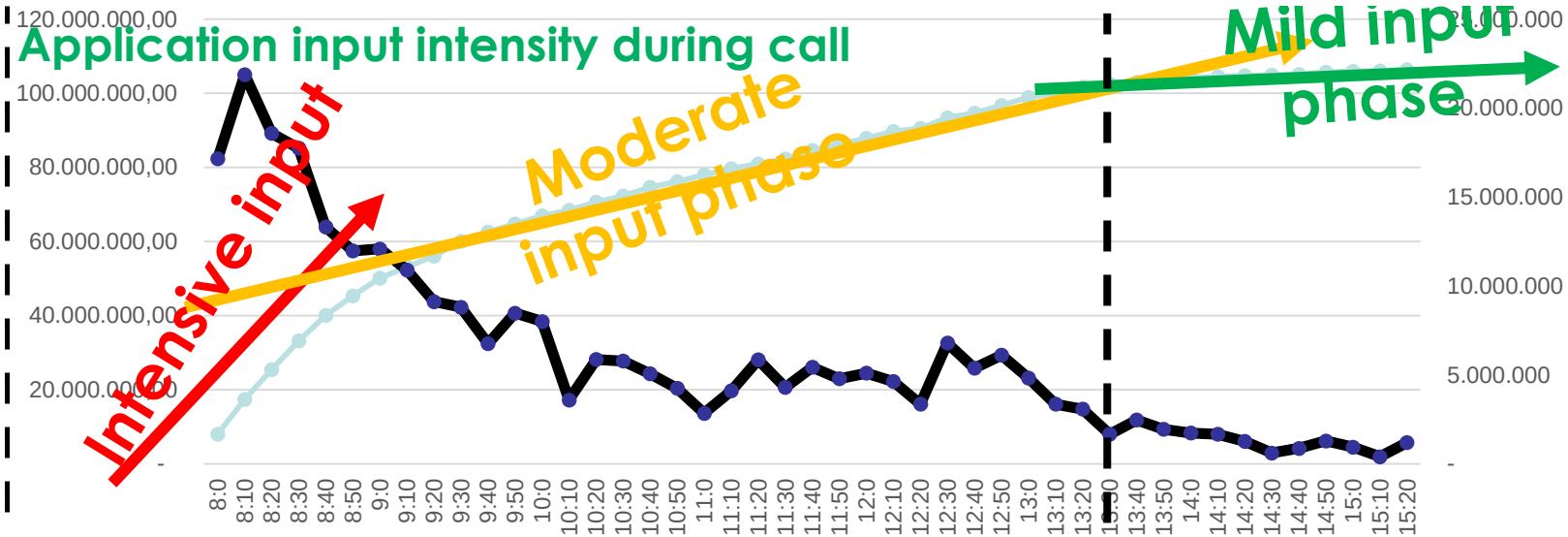
| | Detached housing | Apartment buildings |
|---|---|---|
| At home, daily or weekly | 97 % | 64 % |
| At home, monthly or never | 3 % | 36 % |
| At work, daily or weekly | 36 % | 38 % |
| At work, monthly or never | 64 % | 62 % |
| At public charging stations, daily or weekly | 11 % | 28 % |
| At public charging stations, monthly or never | 89 % | 72 % |
| At fast charging stations, daily or weekly | 12 % | 18 % |
| At fast charging stations, monthly or never | 88 % | 82 % |

Most important EV incentives according to Norwegian EV



# EV INCENTIVES IN CROATIA 2021

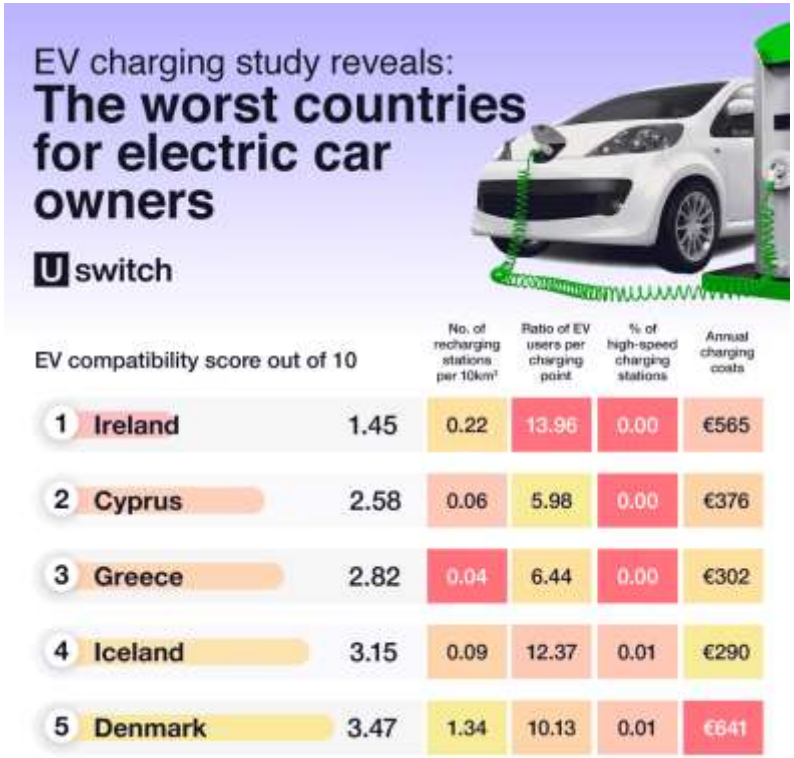
vozimoeko.fzoeu.hr




Call opened:
**10.06. at 8:00**
Call temporary closed:
**10.06. at 15:43**
Reserved funds:
**HRK90 million (€12 million)**

Reopening of call:
**24.06. at 8:00**
Call closed:
**24.06. at 9:00**
Reserved funds:
**HRK1,8 million (€0,2 million)**

# The best countries for EV owners


| | Country | No. of charging stations per 10km² | Ratio of EV users per charging point | % of high-speed charging stations | Annual charging costs | EV compatibility /10 |
|---|---|---|---|---|---|---|
| 1 | Netherlands | 24.15 | 2.80 | 0.02% | €184.59 | **8.23** |
| 2 | Croatia | 0.31 | 1.47 | 0.05% | €231.75 | **7.66** |
| =3 | Slovakia | 0.28 | 2.30 | 0.04% | €240.36 | **7.26** |
| =3 | Latvia | 0.07 | 3.40 | 0.70% | €202.17 | **7.26** |
| 4 | Hungary | 0.27 | 4.18 | 0.03% | €194.54 | **6.61** |
| 5 | Estonia | 0.08 | 5.96 | 0.17% | €190.79 | **6.45** |
| 6 | Czech Republic | 0.28 | 4.89 | 0.05% | €259.67 | **6.29** |
| 7 | Poland | 0.09 | 4.95 | 0.09% | €277.89 | **5.89** |
| 8 | Turkey | 0.03 | 2.99 | 0.01% | €164.49 | **5.65** |
| 9 | Italy | 0.78 | 5.61 | 0.06% | €444.72 | **5.57** |
| =10 | Luxembourg | 6.78 | 5.09 | 0.01% | €391.37 | **5.32** |
| =10 | Switzerland | 1.97 | 10.73 | 0.03% | €377.16 | **5.32** |

# OUR REALITY



Photos: Domagoj Puzak, HEP Elen

# EnerMOB and EnerNETMob

Interreg ADRION ADRIATIC-IONIAN

EnerMOB








Interreg Mediterranean EnerNETMob

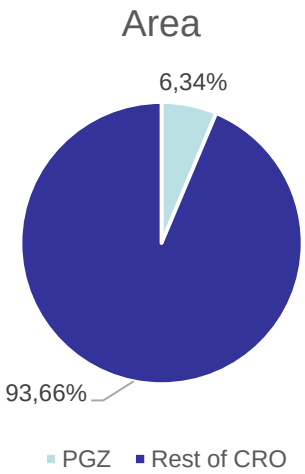
## THE ENERNETMOB PARTNERSHIP

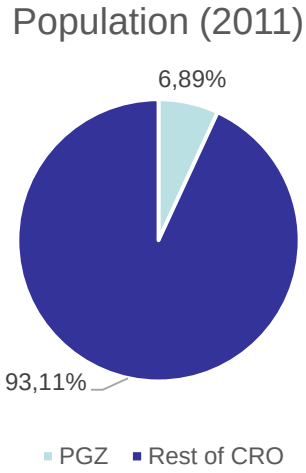

- Region of Peloponnese-Department of Management for Development Planning, (LP)
- Authority of transport in Malta
- RAM Logistica Infrastructure e Transporti s.p.a.
- Ministry of Transport, Communications and Works
- Albanian Institute of Transport
- Region of Thessaly-Department of Development and Planning
- County of Primorje and Gorski Kotar
- University of Palermo- Department of Agricultural, Food and Forest Sciences
- Regional Development Agency of Northern Primorska Ltd. Nova Gorica
- Energy and Environment Agency of Arrabida
- Free Municipal Consortium of Ragusa
- Dynamic Vision P.C, Athens
- Port of Bar Holding company
- CIMNE, International Center for numeric methods in engineering-Barcelona
- CAPENERGIES, Aix-en-Provence, France
- FORSCHUNGSGES ELLSCHAFT MOBILITAT - Austrian Mobility Research FGM - AMOR

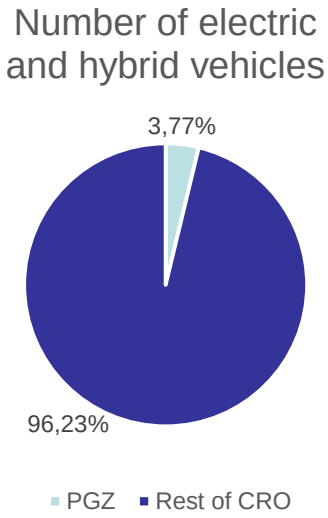
# PRIMORJE-GORSKI KOTAR COUNTY
# CHARGING INFRASTRUCTURE

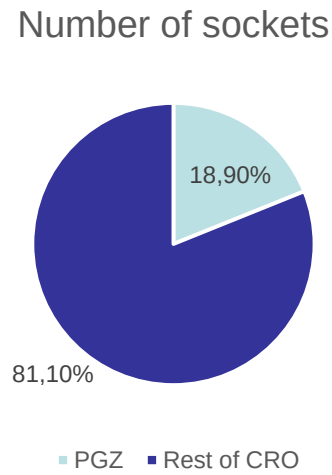

Source: ZE Mobility

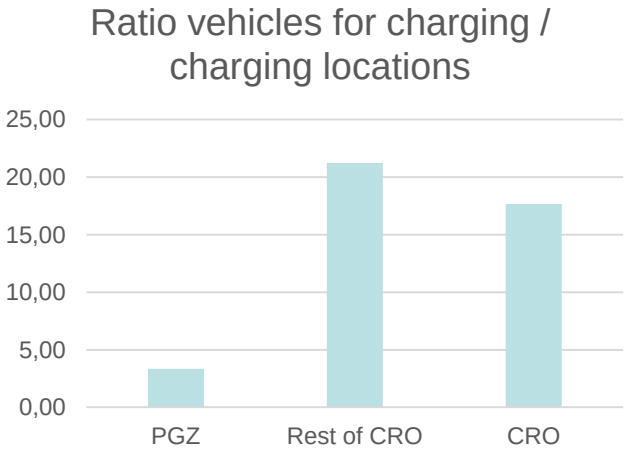
# PRIMORJE-GORSKI KOTAR COUNTY
# VS REST OF CROATIA

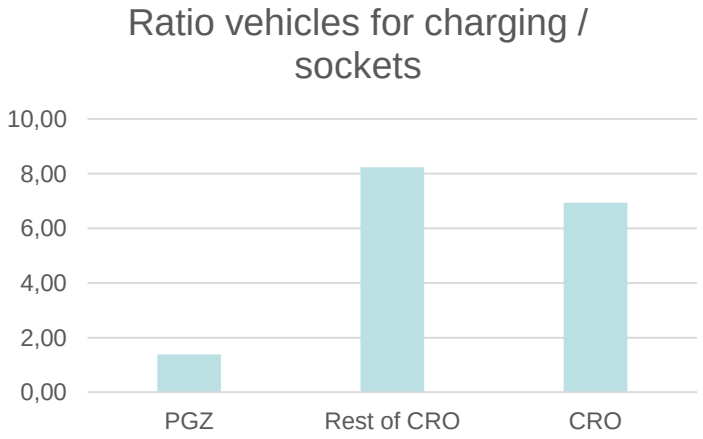


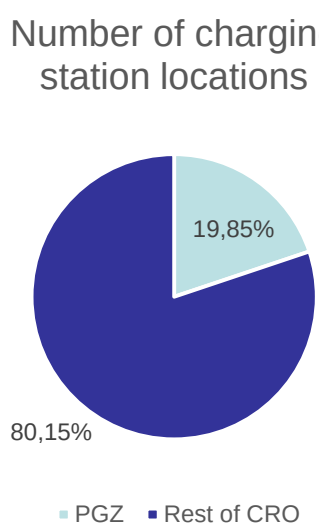



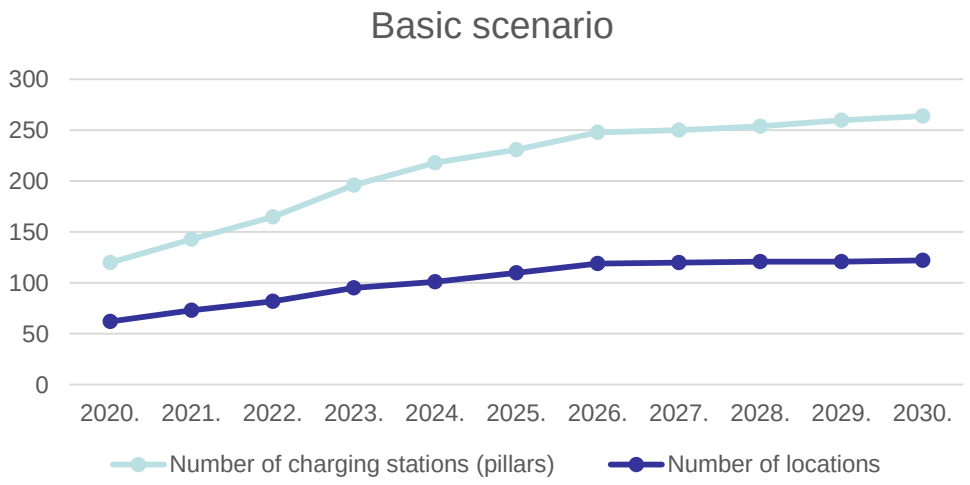



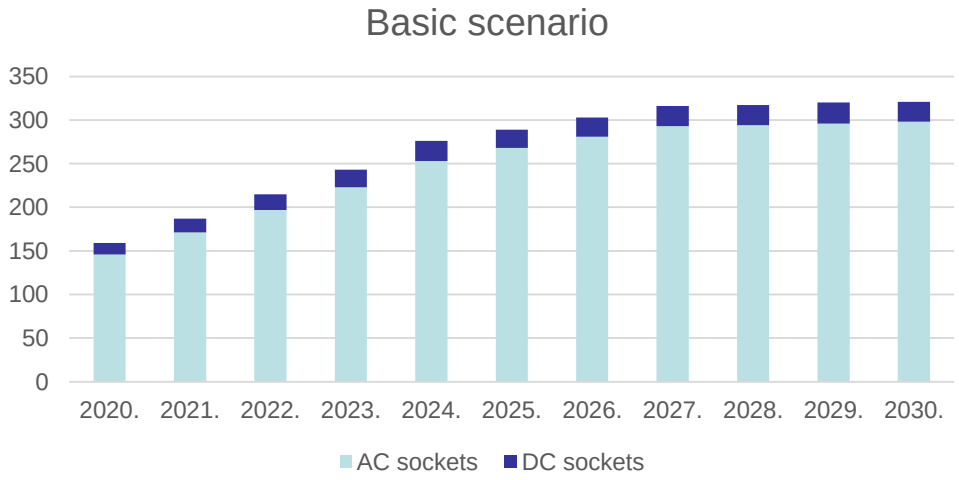




* The EU's Directive on Alternative Fuel Infrastructure – DAFI, 2014.

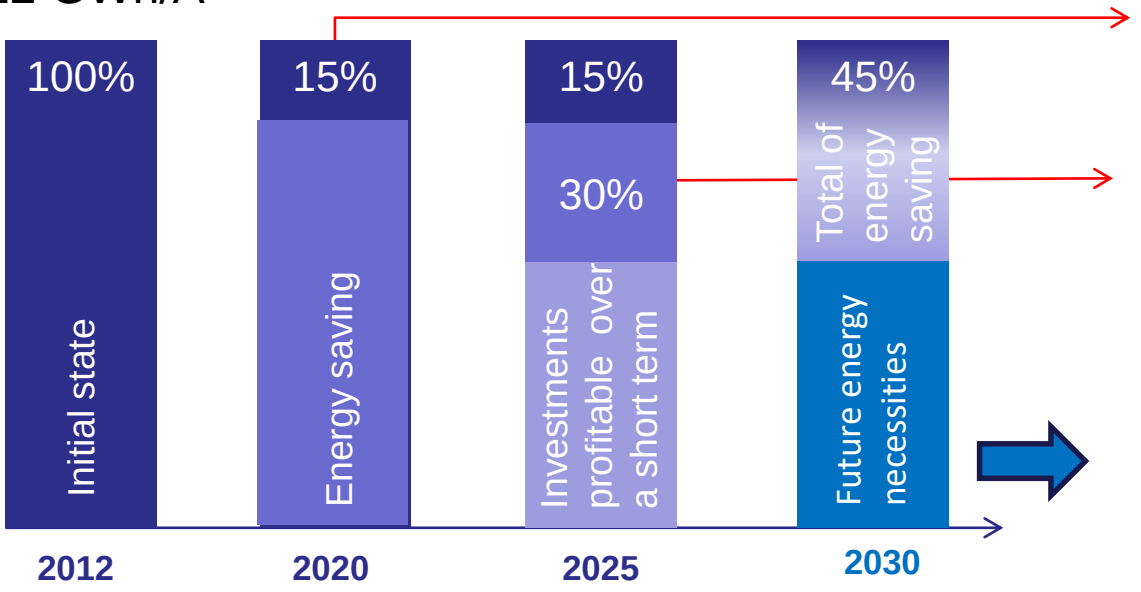
# PRIMORJE-GORSKI KOTAR COUNTY PROJECTIONS



# THE ISLAND OF KRK – 2030 STRATEGIC AIMS
## STEPS TOWARDS ZERO GHG EMISSIONS

112 GWh/A

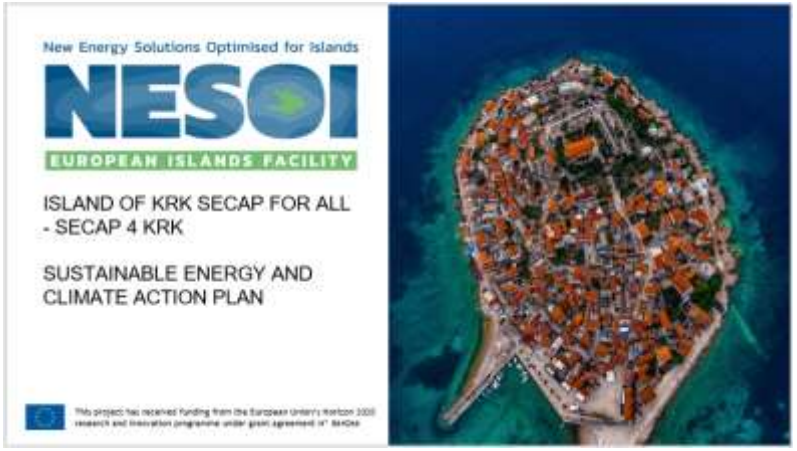



Energy saving by rising the public awareness – 15%

Economicaly profitable investments in energy efficiency – 30%

**Necessities covered by renewable sources (wind, sun, bio-mass)**

62 GWh/A

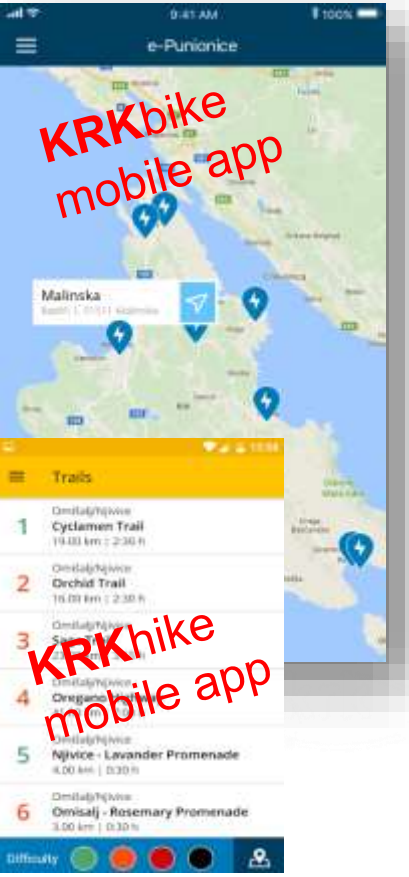




100% elektrik



Strategic documents



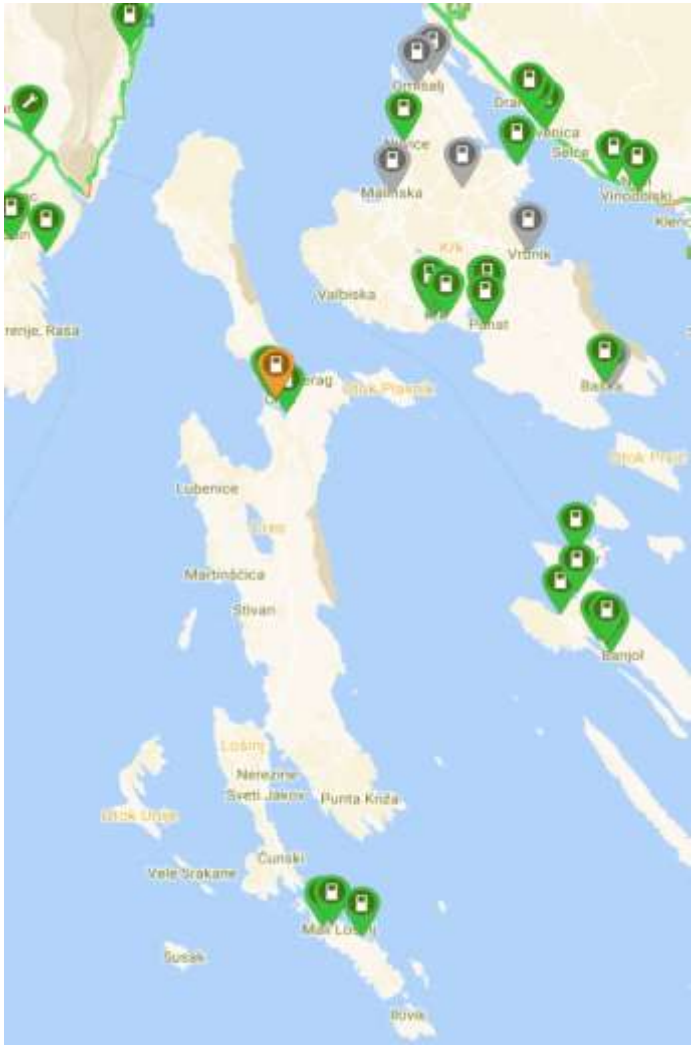

KRKbike mobile app

KRKhike mobile app




Krk energy conference

# ENERGY TRANSITION OF THE CRES-LOSINJ ARCHIPELAGO




## Transition pathways

**Electricity interconnection with mainland**

**Solar photovoltaic:**

To provide half of electricity consumption
Installation of 22.5 MW
New spatial planning for solar PV

### Buildings

- Retrofitting for energy efficiency
- Solar thermal
  Wood chips & pellets
  Air source & seawater heat pumps
- Rooftop solar photovoltaic

### Road transport

- E-bike sharing system
- Electric public vehicles
- Electric buses for public transport

### Maritime tranport

- Electric + LNG ferries
  Electrification of small boats
- Amend criteria for grants
  Adapt legislative framework

### Raise awareness among citizens

Information campaigns

# ENERGY TRANSITION OF THE CRES-LOSINJ ARCHIPELAGO







CLEAN ENERGY FOR EU ISLANDS

otra OTOČNA RAZVOJNA AGENCIJA

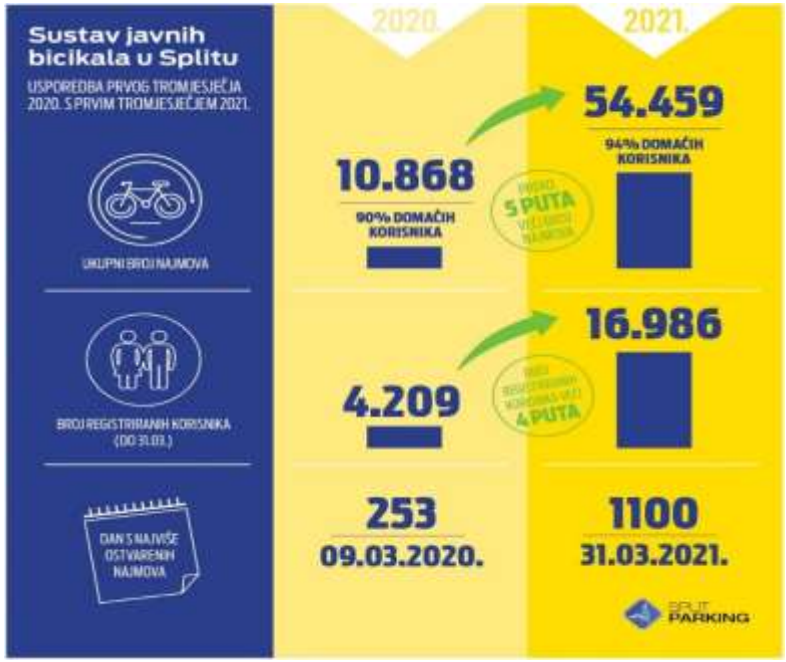
APSYRTIDES ENERGETSKA ZADRUGA

PAMETNO OTOČJE CRES-LOŠINJ

# SHARING SYSTEMS IN THE CITY OF RIJEKA




# ELECTRIC BIKE RENTALS IN THE CITY OF SPLIT




# CHALLENGES AND OPPORTUNITIES









STRUJNI KRUG https://www.strujnikrug.hr/electric-car-buying-guide/
https://www.strujnikrug.hr/ev-chargers/

enasol

ZF mobility

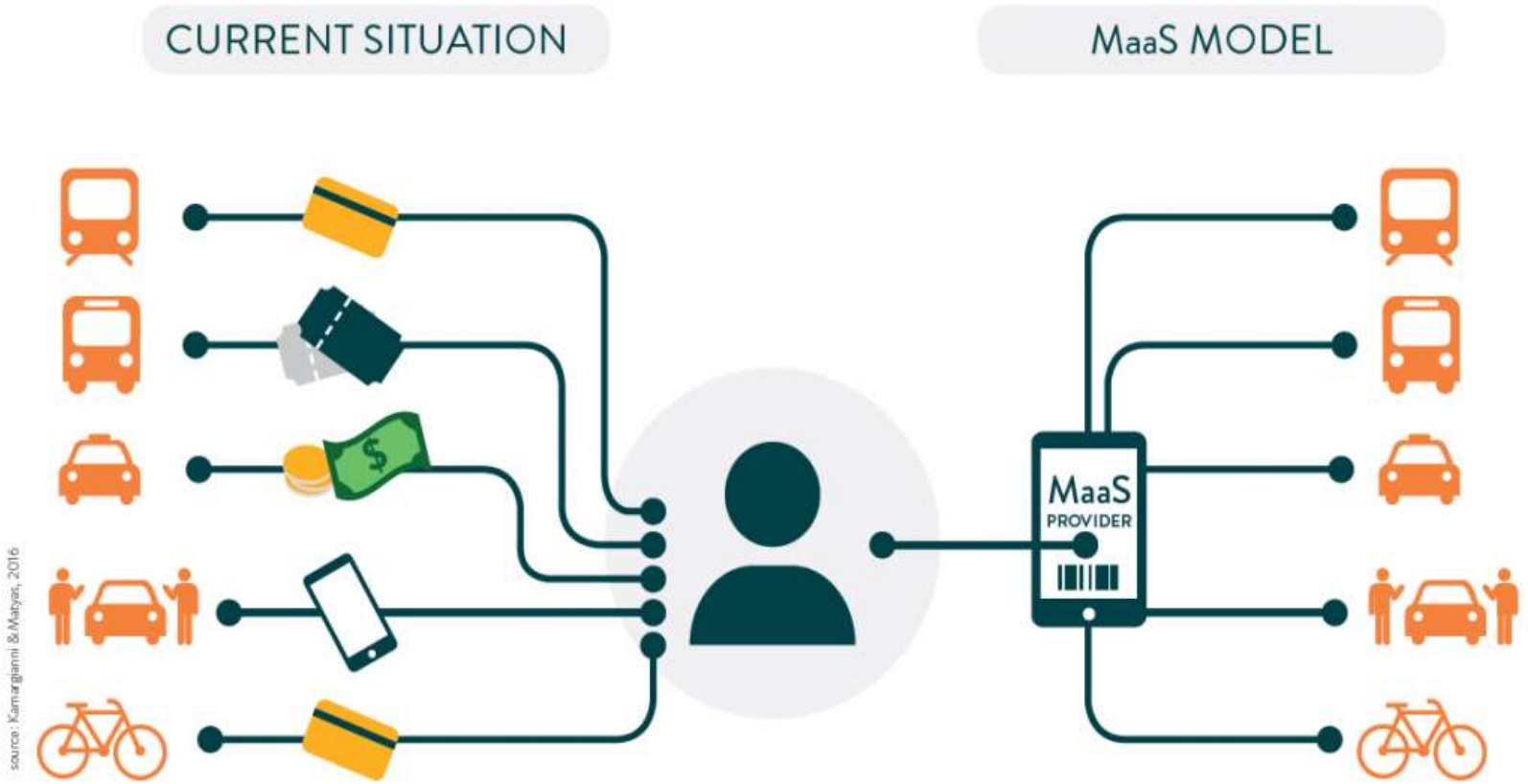
# **INNOVATIVE** INVESTMENT CONCEPTS

EUCF European City Facility

**CLI**mate - **NE**utral **M**obility **I**slands Krk-Cres-Losinj **CLINEMI**
**S**ustainable **U**rban **M**obility **A**nd **TRA**nsport Porec-Pazin **SUMATRA**

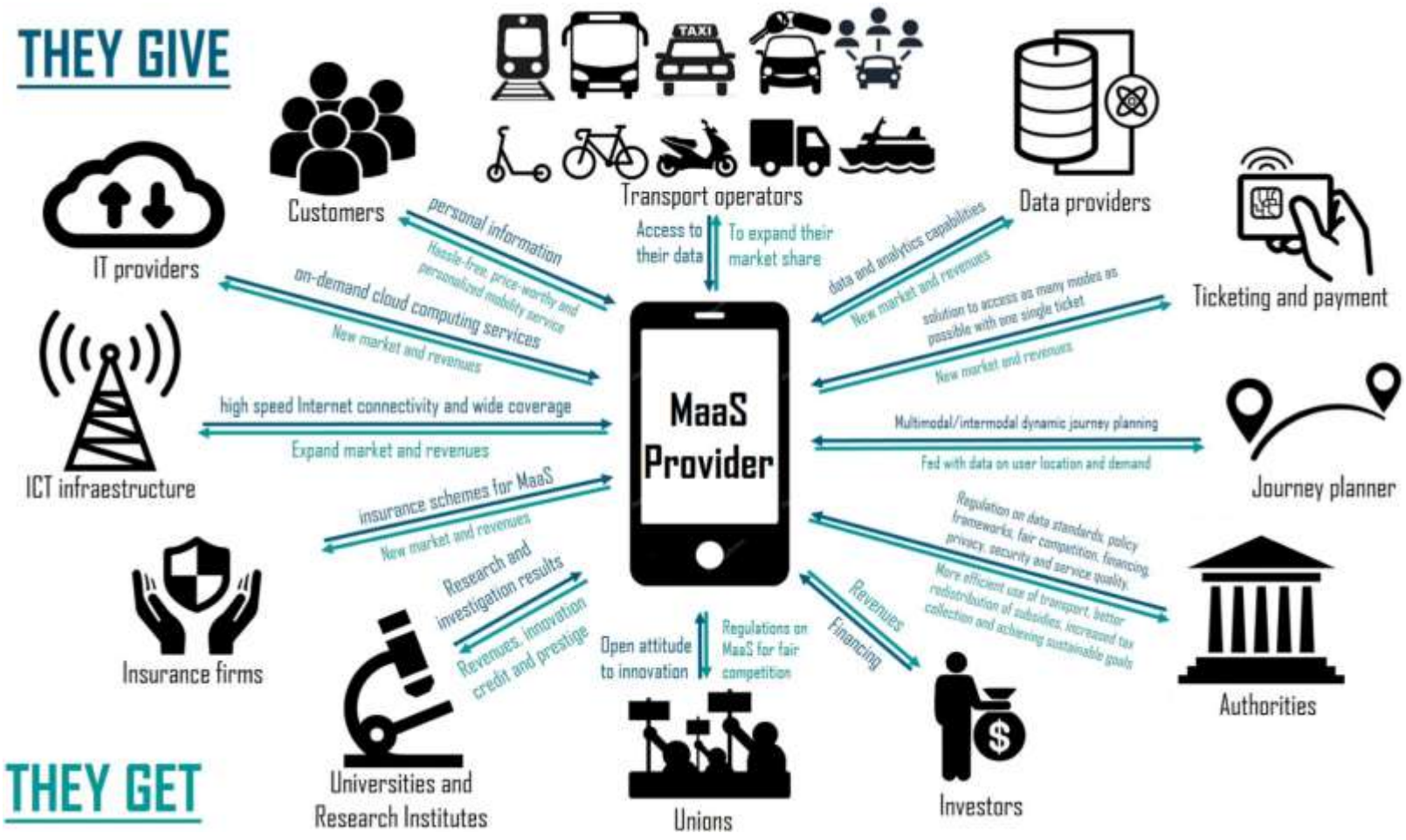
Source: https://www.volkswagen-newsroom.com/en/stories/astypalea-smart-sustainable-island-6586

# Mobility as a Service

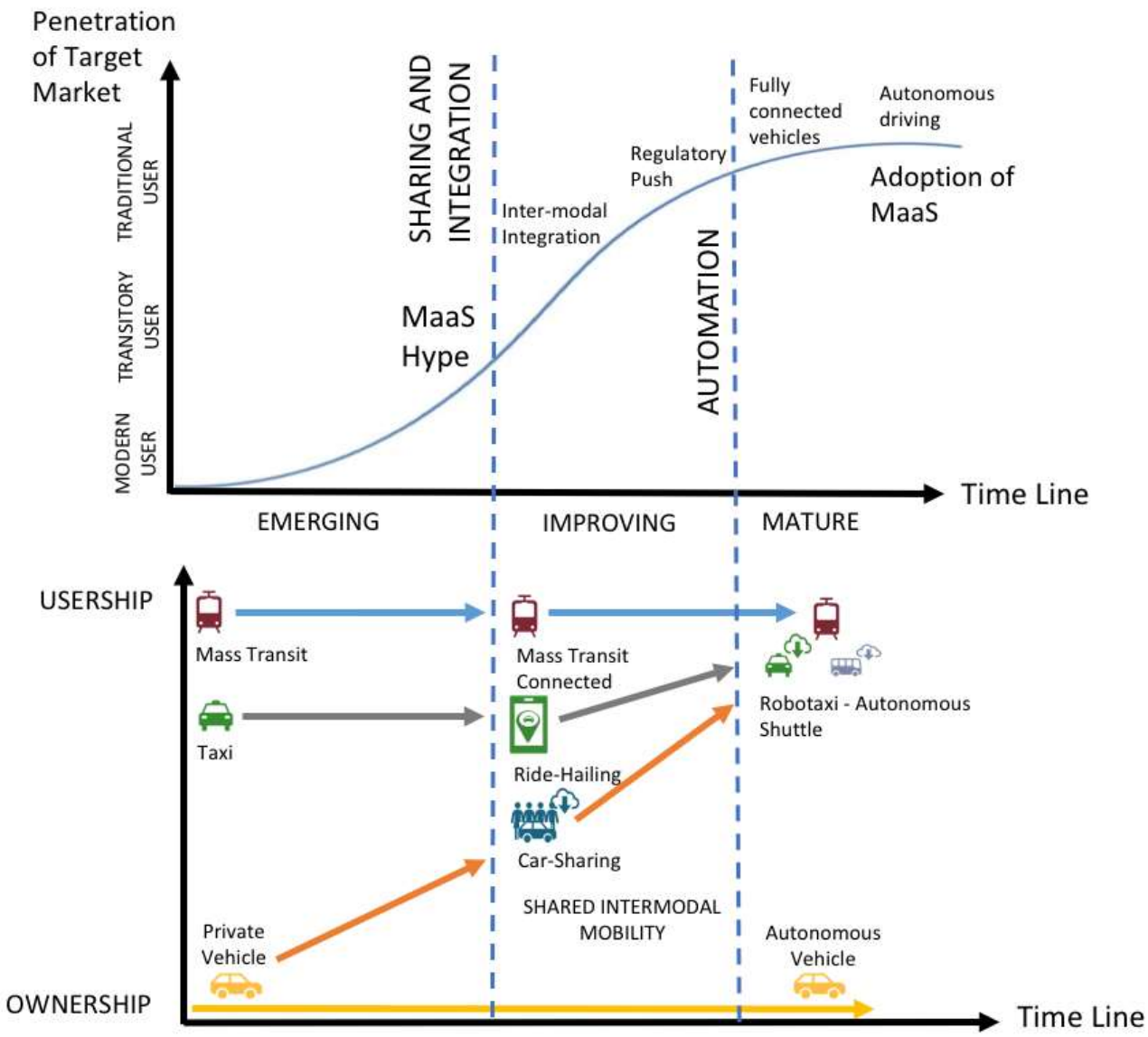



*„The key concept behind MaaS is to put **the users at the core of transport services**, offering them **tailor made mobility solutions** based on their **individual needs**."* - The European Mobility as a Service Alliance

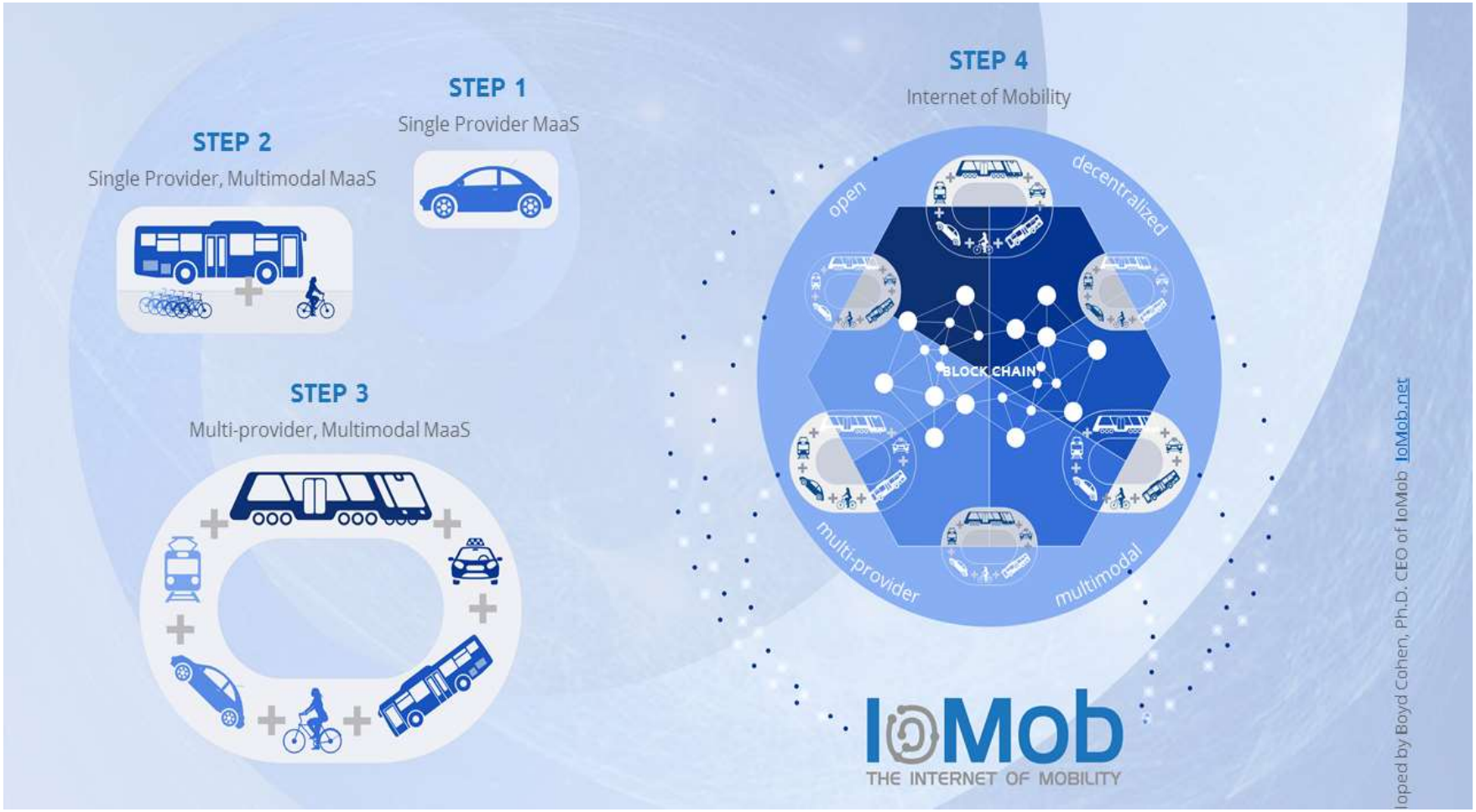
# MaaS ECOSYSTEM



# FUTURE of MOBILITY



# The INTERNET of MOBILITY



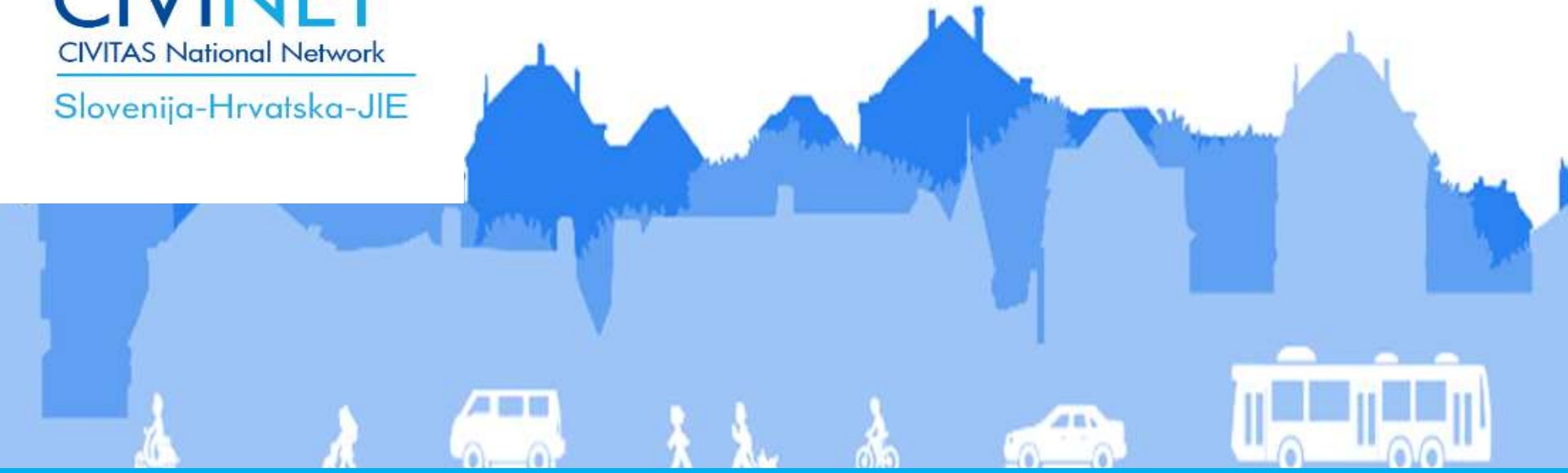

# BEYOND MaaS

# THE BILLION DOLLAR QUESTION

# WHY MATE RIMAC IS WORKING ON ELECTRIC ROBOTAXIS?

CIVINET
CIVITAS National Network
Slovenija-Hrvatska-JIE

ClimaSUM
Climate mitigation through sustainable urban mobility



# ENERGETSKA TRANZICIJA U PROMETU

**Izv. prof. dr. sc. Vedran Kirinčić**
Konzultant za energetsku tranziciju