

Electrification of road traffic

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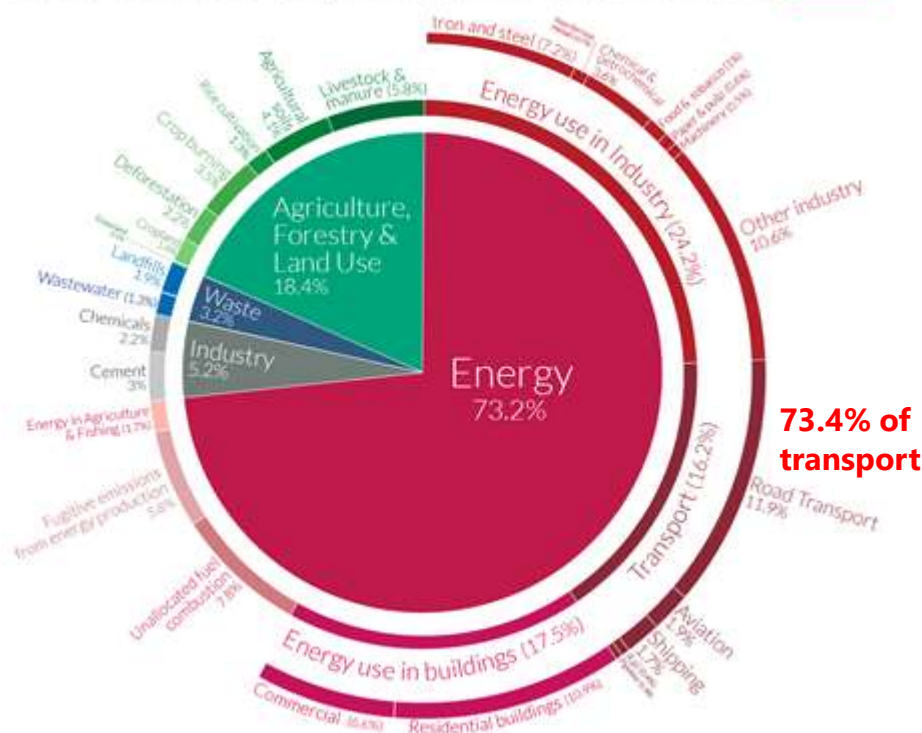
Greenhouse gas emissions

Global

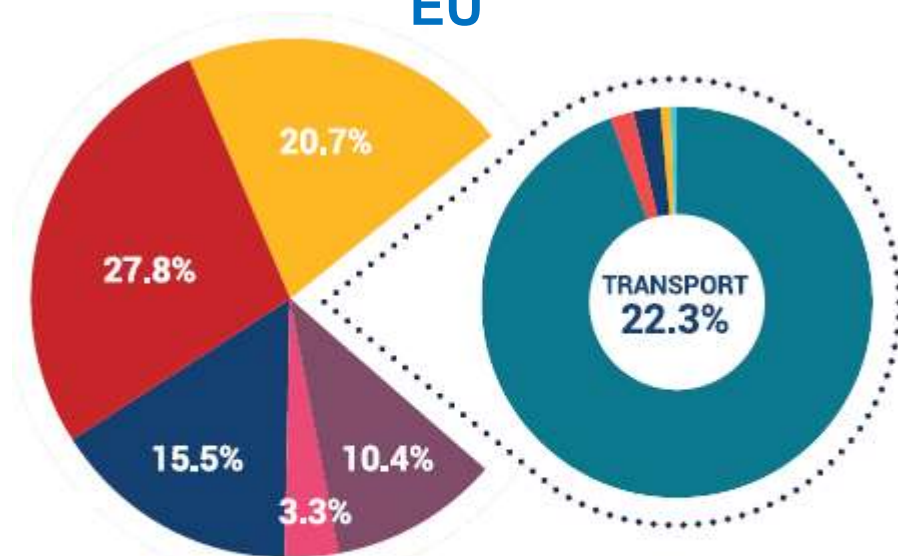
Global greenhouse gas emissions by sector

This is shown for the year 2016 – global greenhouse gas emissions were 49.4 billion tonnes CO₂eq.

Our World
in Data



EU



* All CO₂ 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%

Source:

<https://ourworldindata.org/ghg-emissions-by-sector#licence>

https://www.acea.be/uploads/publications/ACEA_10-point_plan_European_Green_Deal.pdf

Decarbonising the Road Transport

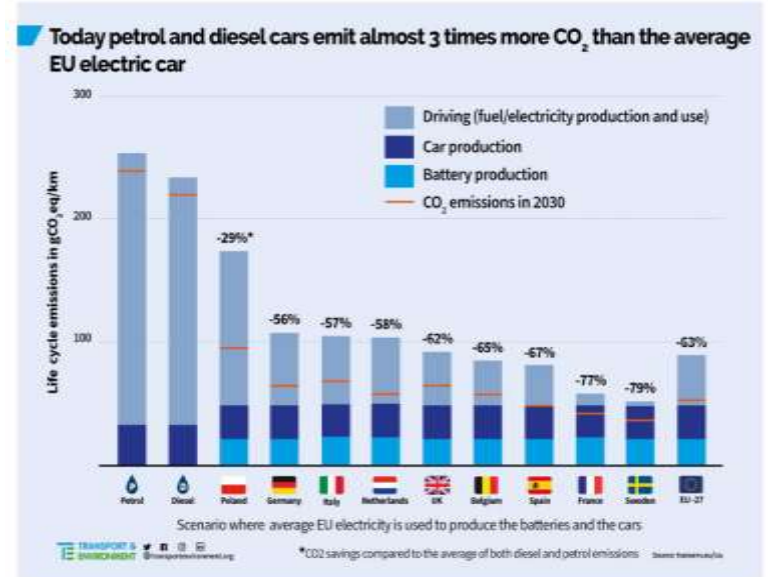
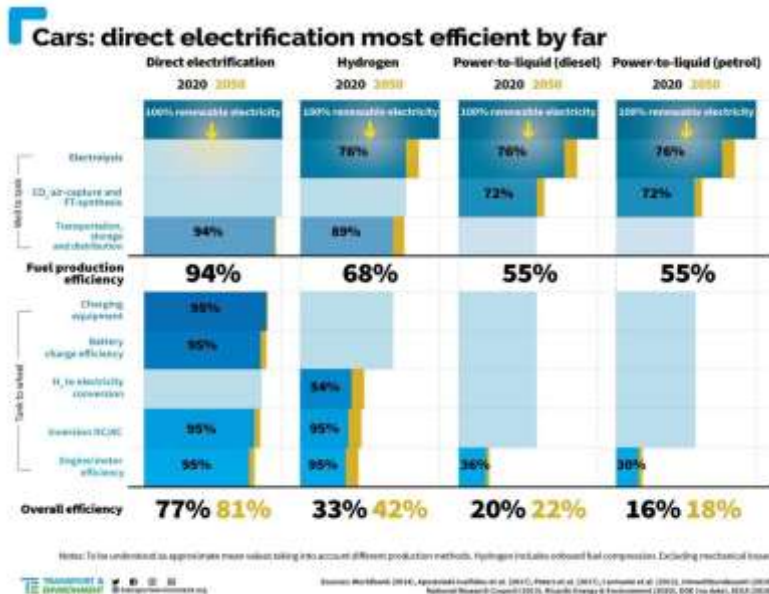


Figure 4: Lifetime CO₂ emission savings from electric cars in key EU countries

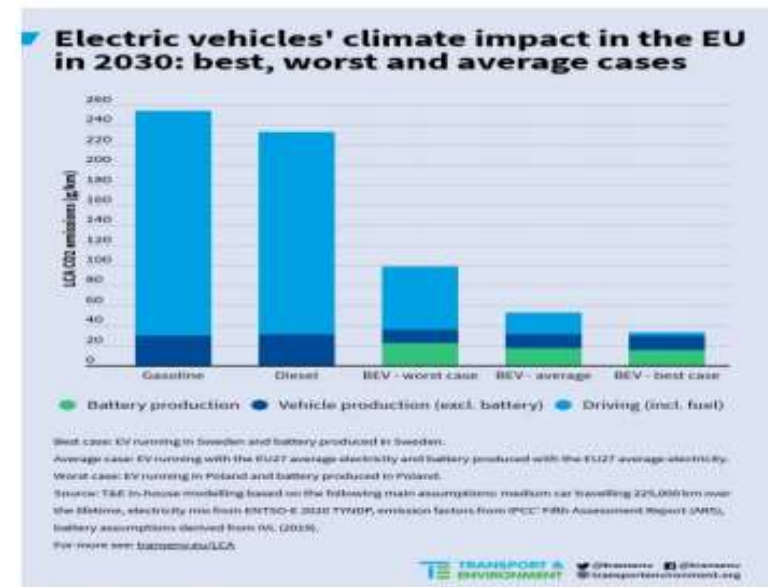
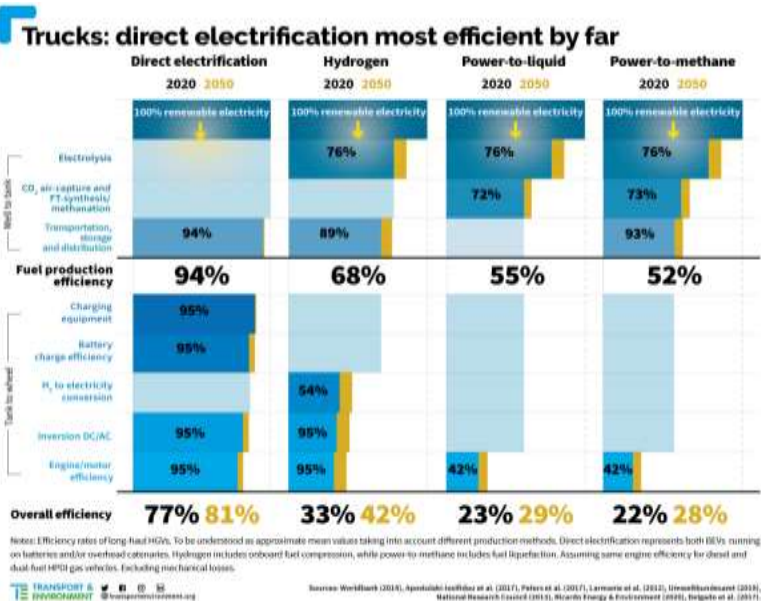


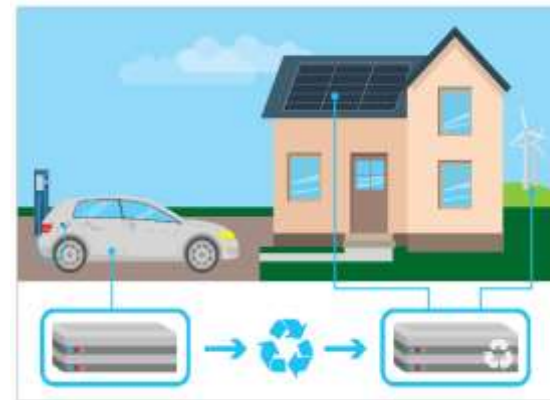
Figure 7: Lifetime CO₂ emissions of an electric car in 2030

Lifetime raw material consumption: EV battery vs petrol car



Source: Transport & Environment, From dirty oil to clean batteries - Batteries vs. oil: as systematic comparison of material requirements, 2021
https://www.transportenvironment.org/sites/te/files/publications/2021_02_Battery_raw_materials_report_final.pdf

Batteries second life



Source: <https://link.springer.com/article/10.1007/s12398-020-00273-x>
<https://ec.europa.eu/jrc/en/science-update/li-ion-batteries-second-life-energy-storage>

Norway

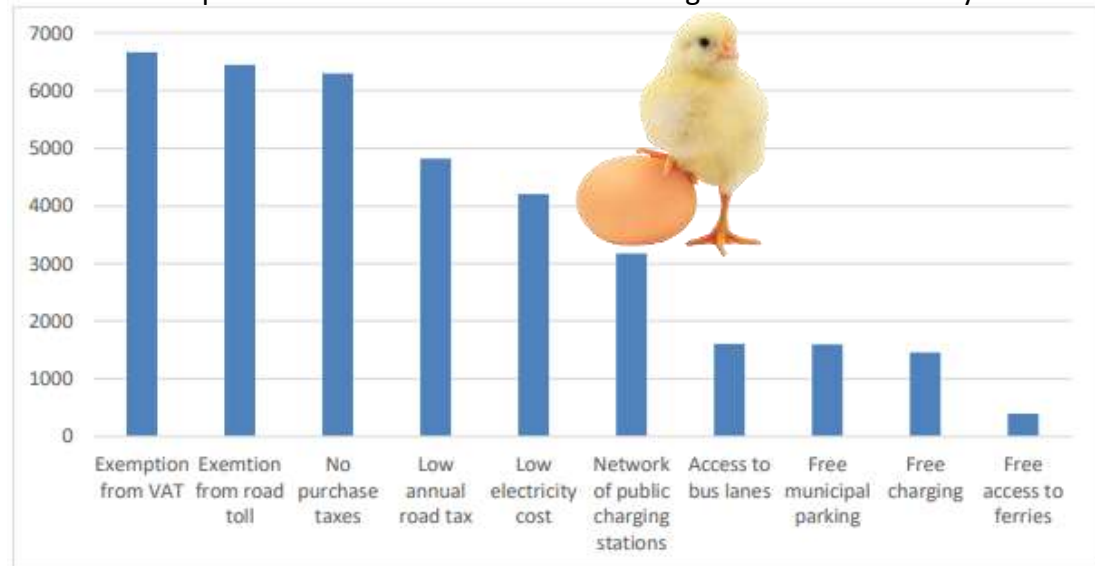
The Norwegian EV incentives:

- 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)

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 owners. Question: Select the 3 most important EV incentives. Source: Norwegian EV owners survey 2017



Source: Norwegian EV policy

<https://elbil.no/wp-content/uploads/2016/08/EVS30-Charging-infrastructure-experiences-in-Norway-paper.pdf>

Real time tracking of available funds on the EPEEF website



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:

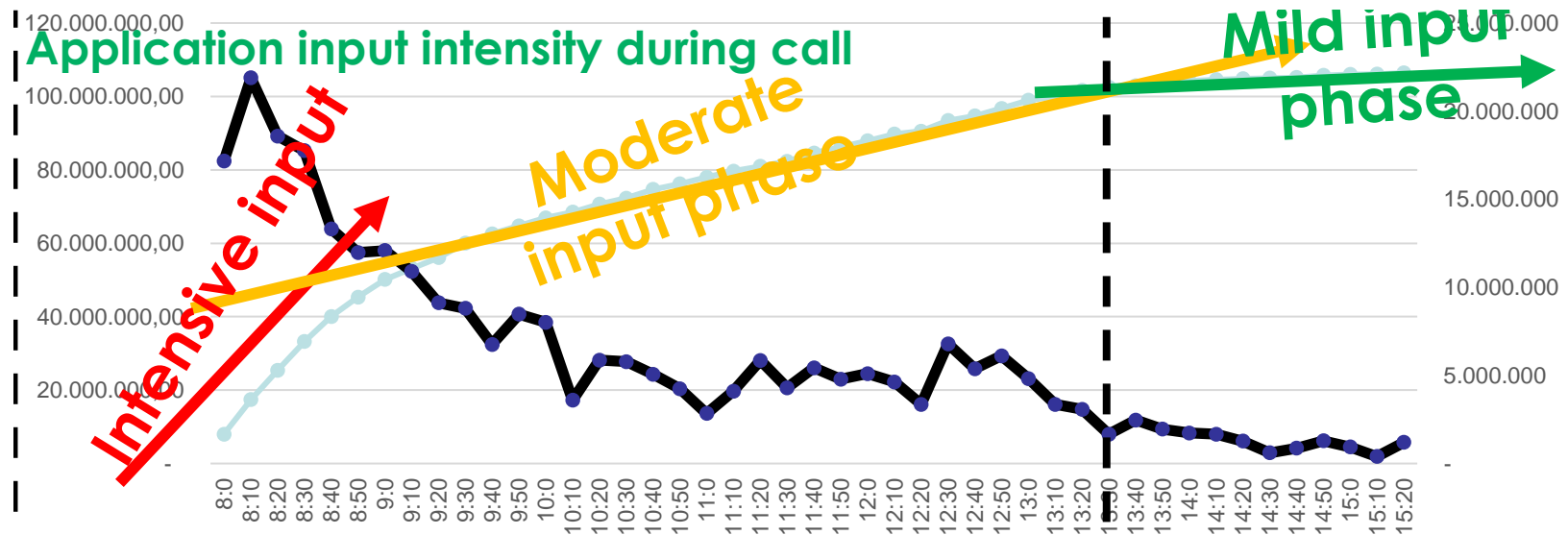
24.06. at 8:00

Call closed:

24.06. at 9:00

Reserved funds:

HRK1,8 million (€0,2 million)

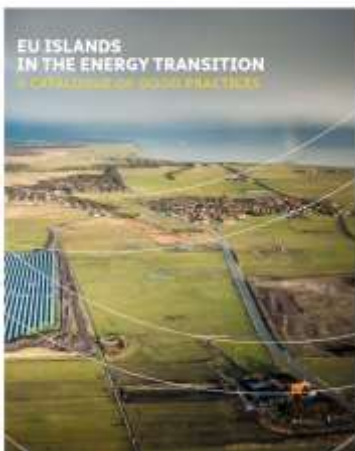
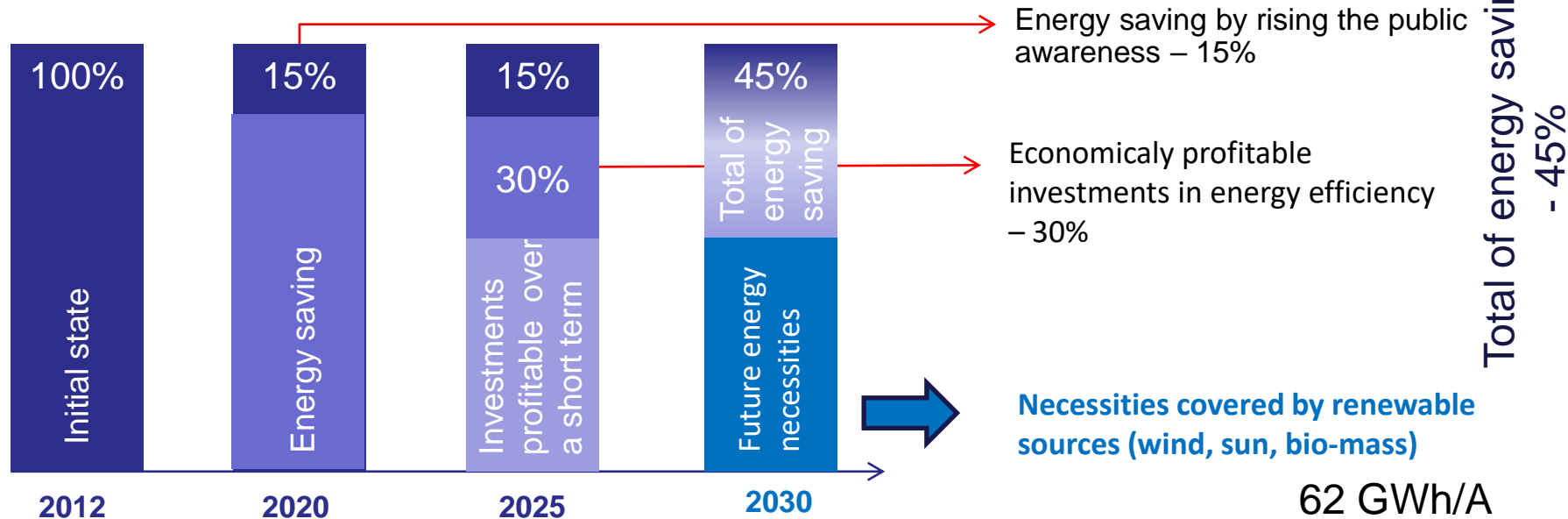


The island of Krk – 2030 strategic aims

Steps towards zero GHG emissions

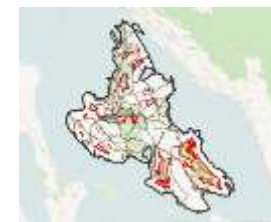
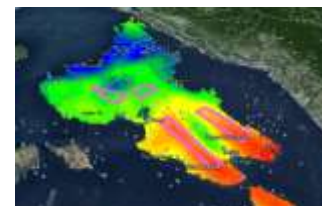


112 GWh/A



Source: “Interdisciplinary strategy of zero emissions for integrated development of the island of Krk”, igr AG, Ponikve Eko Otok Krk, Croatia, 2012.

Wind



Solar

SUMP – Sustainable Urban Mobility Plan

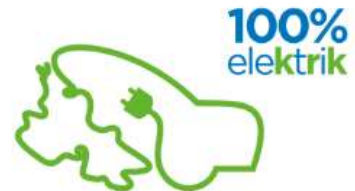
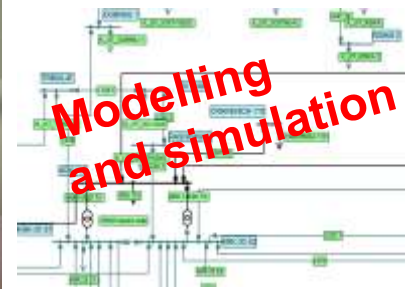
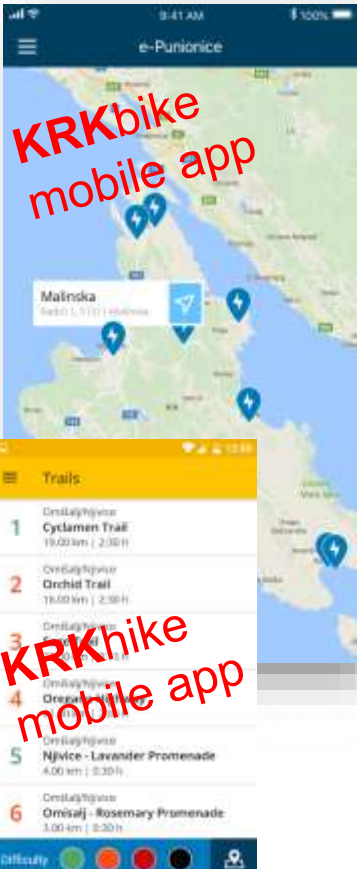
INTERDISCIPLINARY STUDY OF
ELECTROMOBILITY AT THE ISLAND OF KRK
AND THE MOBILE PHONE APPLICATION

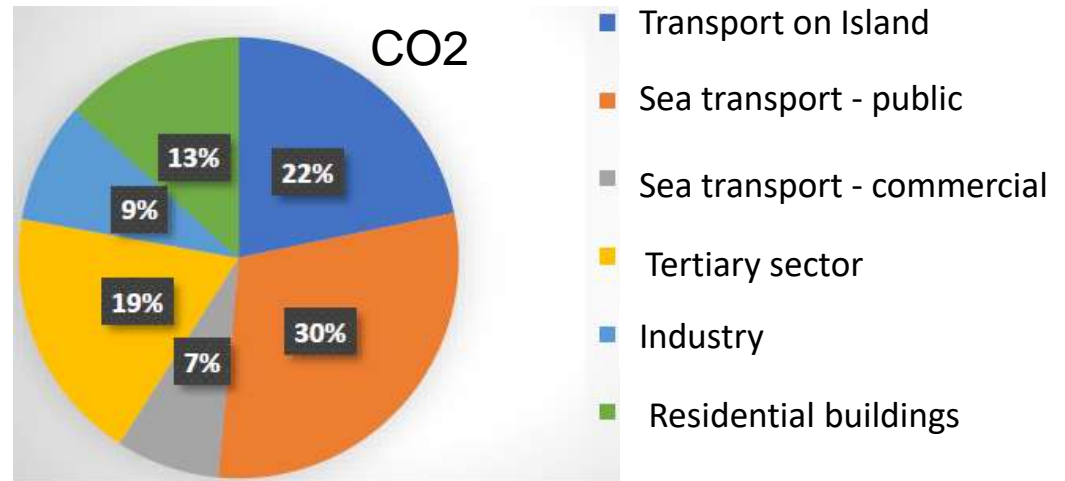


SHARING SYSTEM STUDY AND
MARKETING STUDY FOR
ELECTRIC VEHICLES ON THE ISLAND OF KRK



SHARING SYSTEM
ON THE ISLAND OF KRK
MANAGEMENT PLAN





	Final Energy Consumption in 2018 [MWh]	CO ₂ [tonne]
Electricity	59,666	9,427
Heating	54,683	2,548
Transport to & from	33,000	8,811
Transport on Island	22,862	6,440
Industry	506	135
TOTAL:	170,717	27,361

Source: Plugshare, TRANSITION PLAN TOWARDS CLEAN ENERGY – CRES - LOSINJ ISLANDS https://euislands.eu/sites/default/files/2019-11/CRESLOSINJ_FinalTransitionAgenda_20191118.pdf

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 transport



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-Lošinj archipelago



Challenges and opportunities



Matt Sertić pokrenuo projekt od 1,65 milj. kn. Nakon industrije čipova u
Snaak dovodi i automobilitu



Control your Parklio™ Smart Parking Barrier via a Parklio™ App.

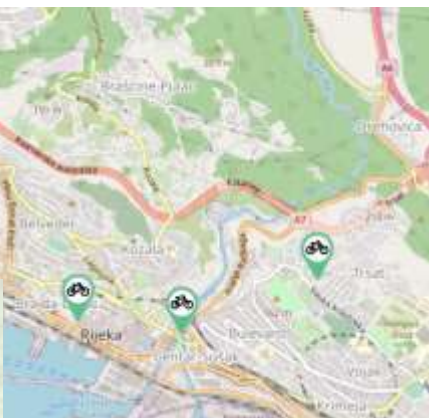




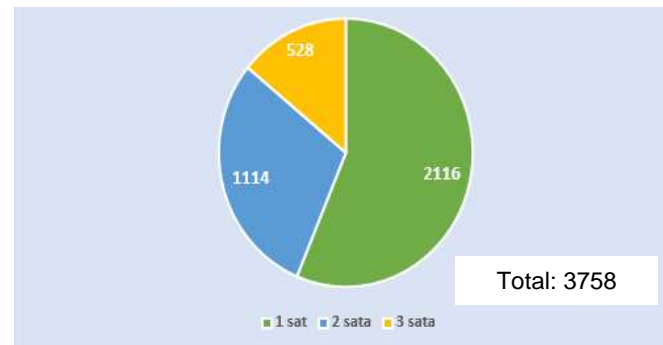
eBike-sharing system City of Rijeka



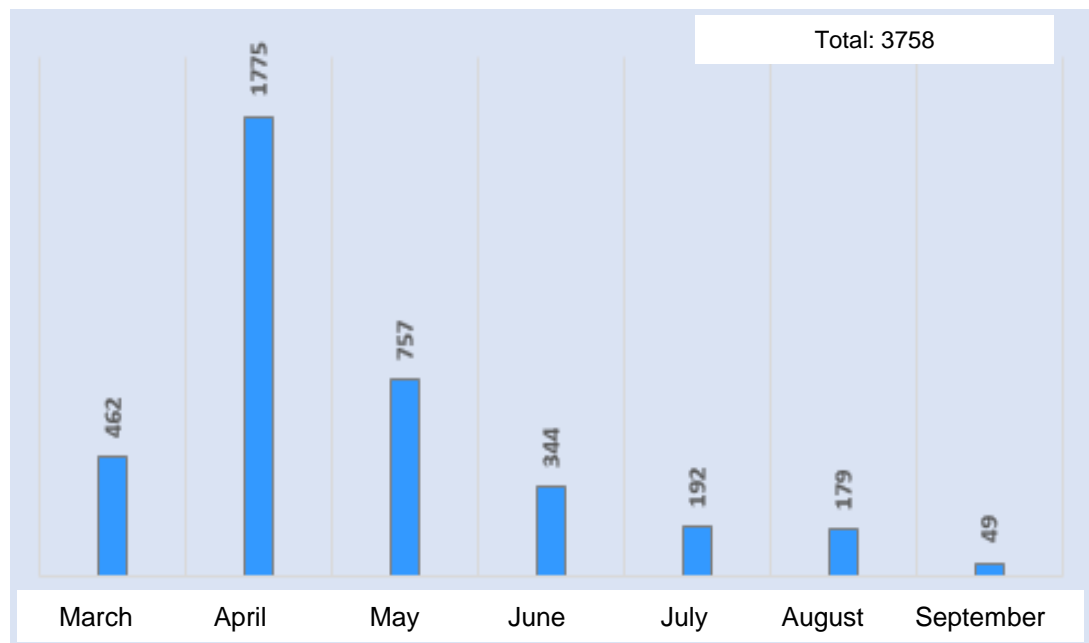
4 locations
28 e-bikes
1,5 Eur/h



Use of e-bikes by tariffs (hours)



Number of sessions in 2020

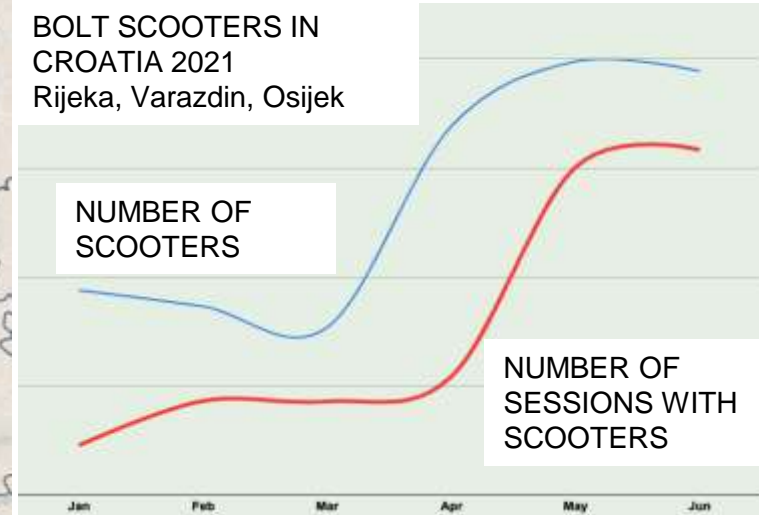




The fast, affordable way to ride.



BOLT SCOOTERS IN
CROATIA 2021
Rijeka, Varazdin, Osijek

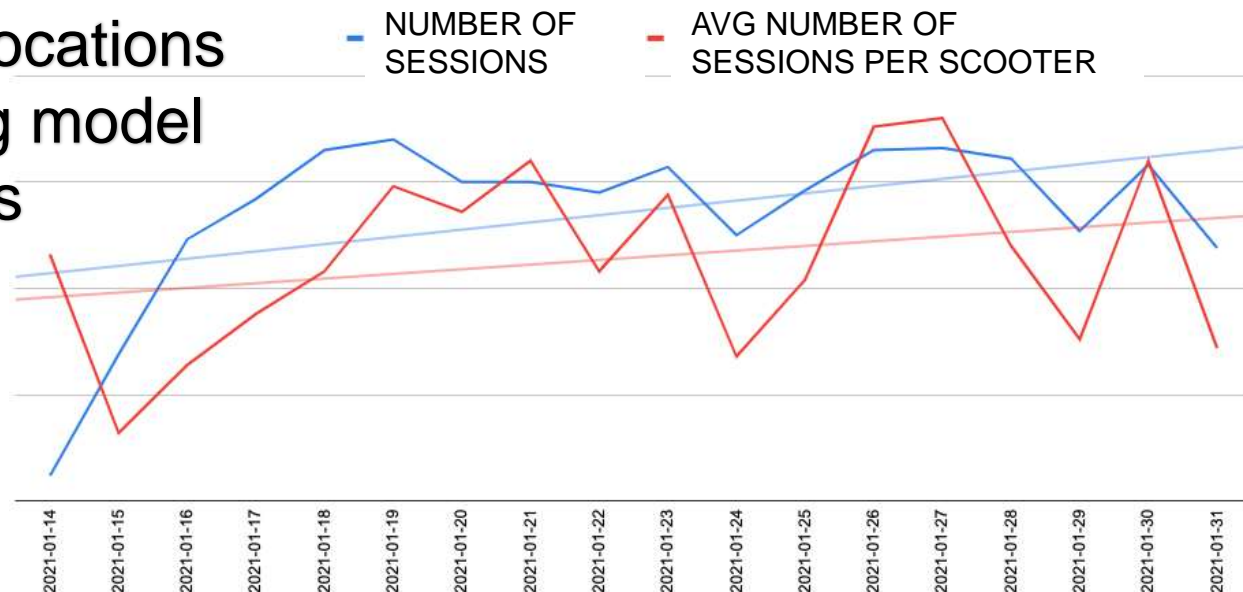


Bolt electric scooter rentals

City of Rijeka



10 starting locations
Free floating model
200 scooters
0,1 Eur/min

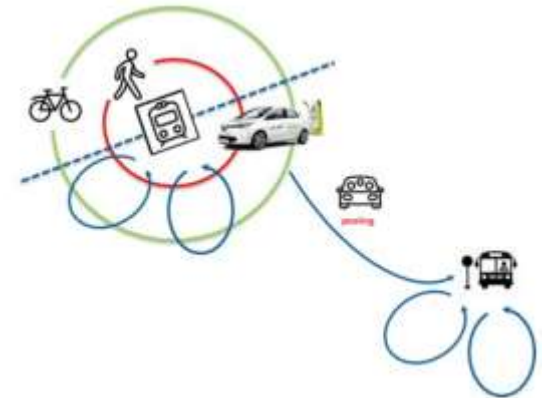
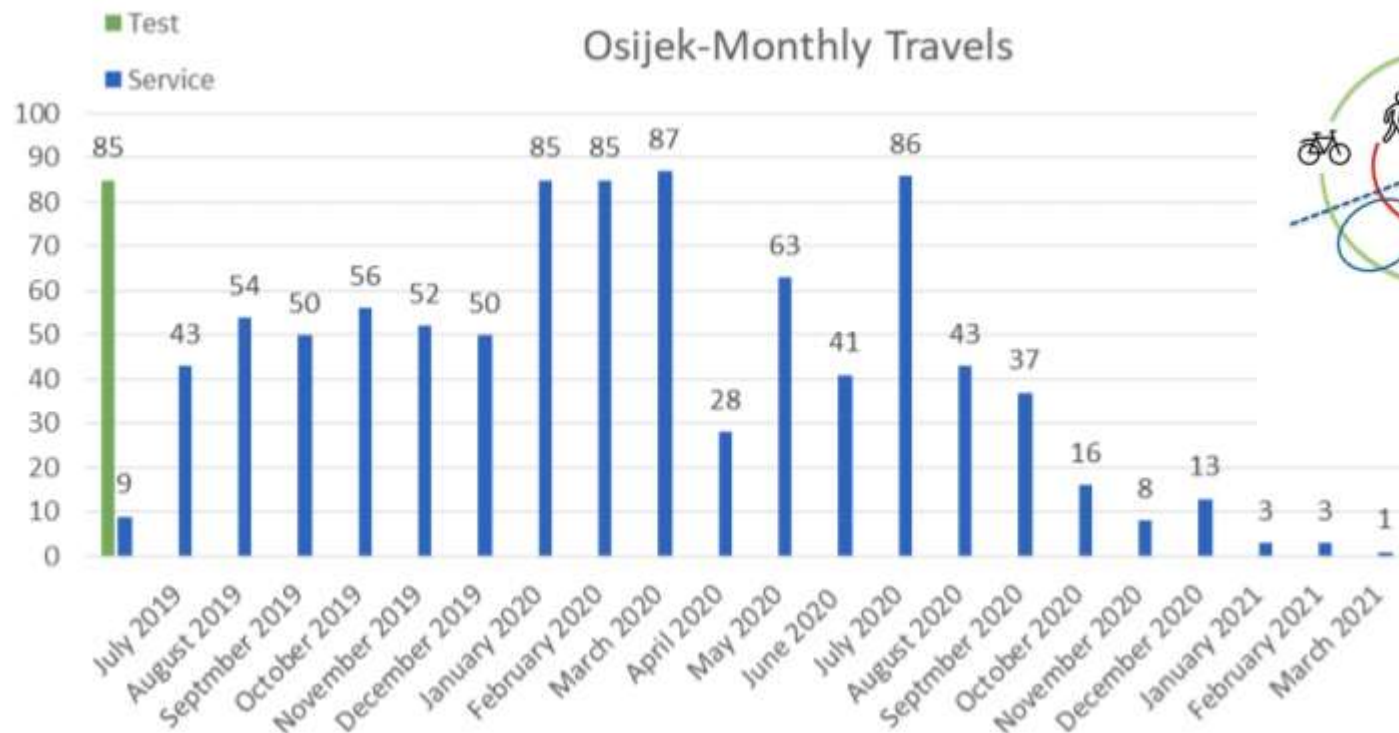


electric bike rentals - City of Split



280+ bikes
50+ stations



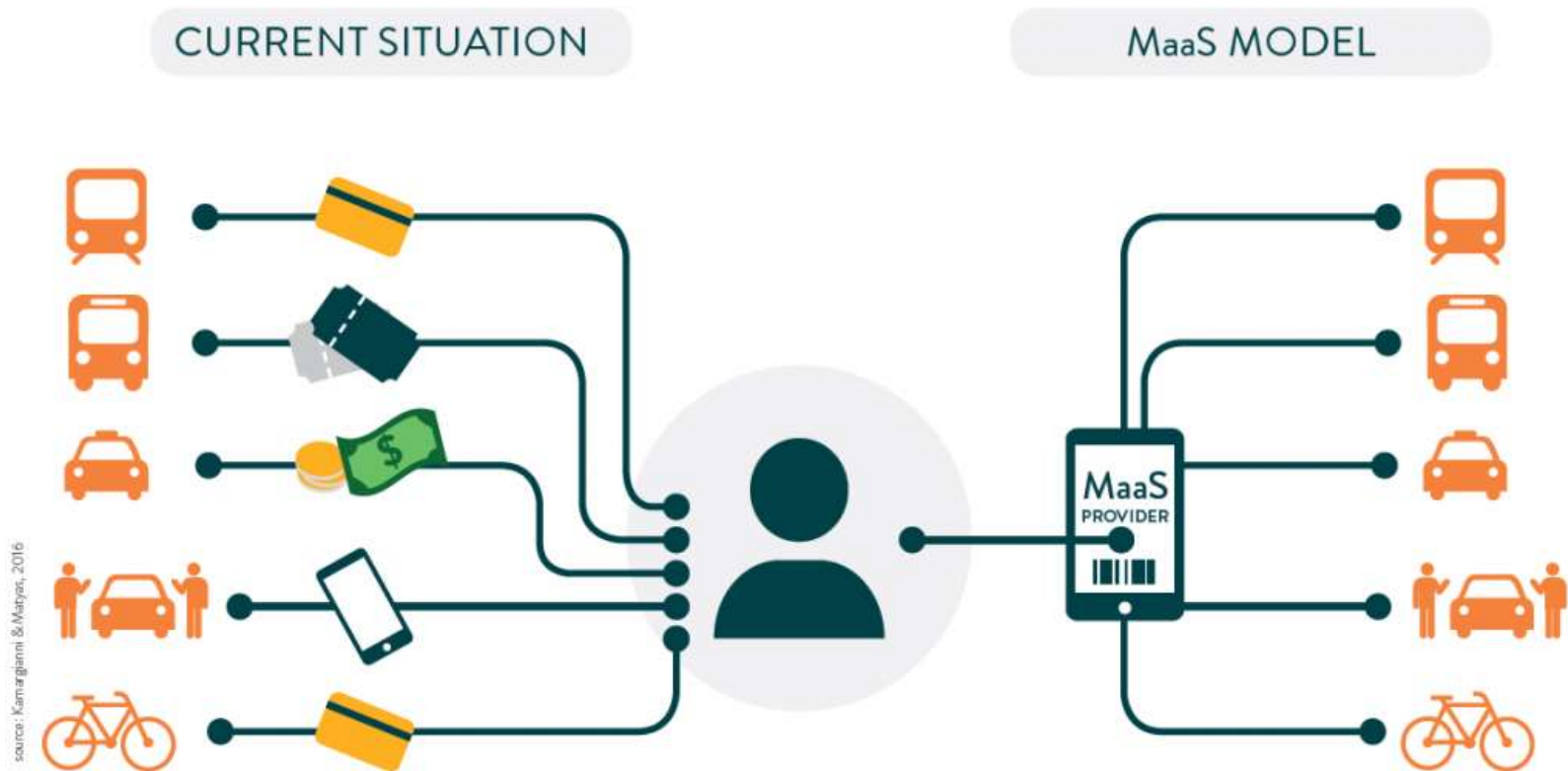


<http://www.i-sharelife.eu/en/news/>

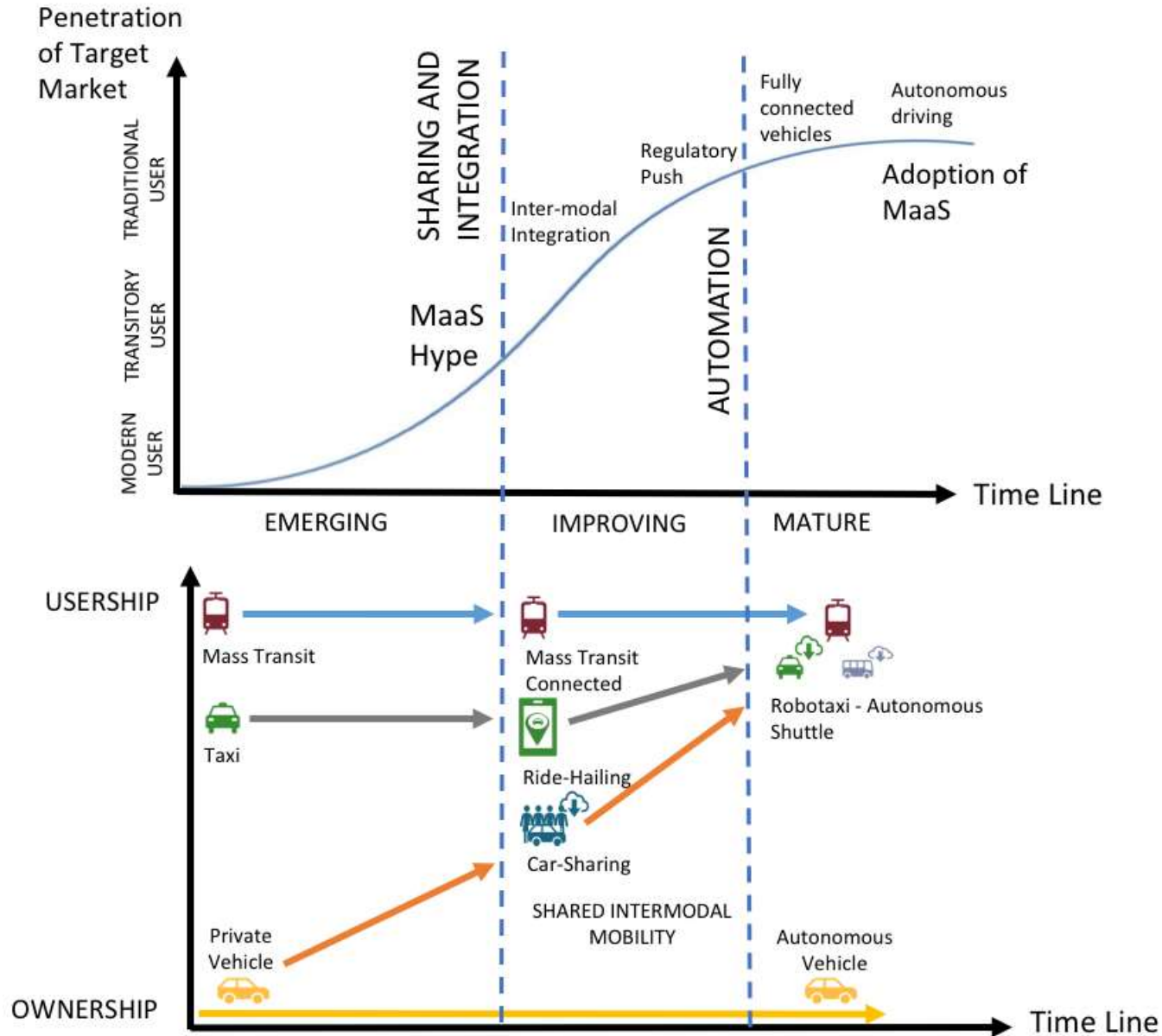
<http://www.i-sharelife.eu/wp-content/uploads/2021/05/5-OSIJEK-BROCHURE-EN.pdf>

Mobility As A Service - MaaS

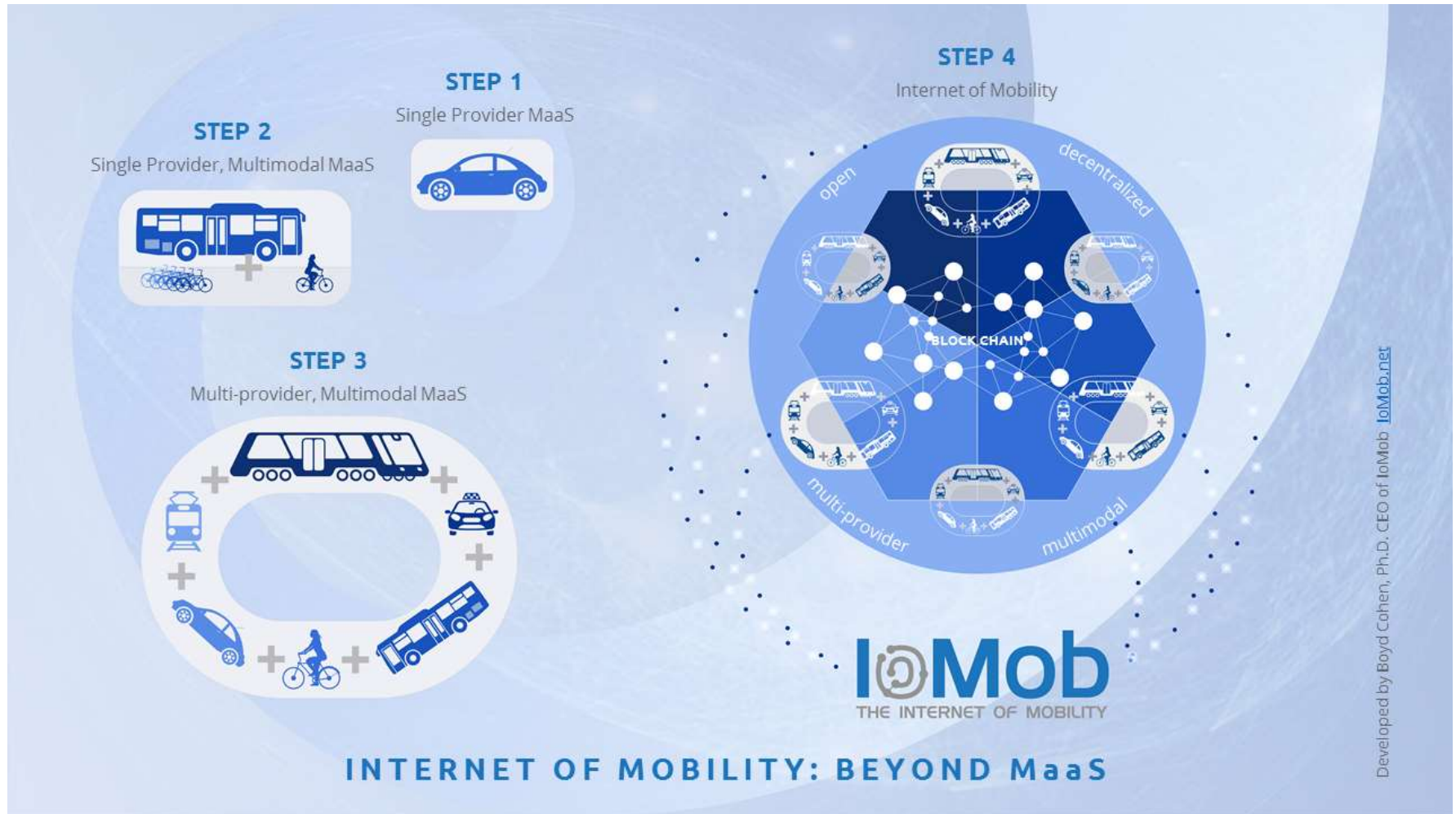
„The key concept behind MaaS is to put **the users at the core of transport services**, offering them **tailor made mobility solutions** based on their **individual needs**. This means, for the first time, easy access to the most appropriate transport mode or service will be included in a bundle of flexible travel service options for end users.” [The European Mobility as a Service Alliance](#)



Future of mobility



Future of mobility



Why Mate Rimac is working on electric robotaxis

*„...electrification will not change anything concrete. The real revolutionary change will not be brought by electric cars. Smartphones have changed our lives, and we can expect the same in the future with cars: **changing mobility will change our lives...** Market change refers to vehicle ownership as well as autonomy. In such a scenario, people will no longer buy or own cars, but will use them and pay only when needed.” – Mate Rimac, conference Auto2030*



Mobility & Transport Arena

Free webinars

Woom www.woom.zone #GreenArena 4. besplatni webinar

10.12.2020.
1:00 PM - 3:00 PM CET

"ODRŽIVI PROMET I EMOBILNOST KAO NOVI KONCEPT U ENERGETICI I PROMETU"

Moderator:
Doc. dr. sc. Vedran Kirinčić, Tehnički fakultet Rijeka

Panelisti:
Željko Purgar, poslovni savjetovanje, Željko Purgar s.p.
Domagoj Puzak, Tem za e-Mobility HEP-Grupe
Tin Koren, voditelj marketinga, Stručni krug usluga vozila EV
Igor Ban, E-Mobility Manager, TSG Croatia, Praxis d.o.o.

Panelisti:
Vedran Kirinčić
Željko Purgar
Domagoj Puzak
Tin Koren
Igor Ban

Medijski partneri: STRUČNI KRUG, ecoportal, BIAKON TIS, ENERGETSKI PORTAL, SPORENO, sdovnes

Woom www.woom.zone #Mobility&Transport Arena 1. besplatni webinar

17.02.2021.
2:00 PM - 3:30 PM CET

"Zašto nam je potrebna reVolucija u mobilnosti i transportu"

Moderator:
Doc. dr. sc. Vedran Kirinčić - Tehnički fakultet Rijeka

Panelisti:
Dr. sc. Duško Radulović - SENSUM
Dr. sc. Ivan Güttler - Državni hidrometeorološki zavod
Dr. sc. Bruno Židov - Energetski institut Hrvoje Požar
Nevena Đukić - Energetski portal

Panelisti:
Vedran Kirinčić
Duško Radulović
Ivan Güttler
Bruno Židov
Nevena Đukić

Medijski partneri: STRUČNI KRUG, ecoportal, BIAKON TIS, ENERGETSKI PORTAL, SPORENO, sdovnes

Woom www.woom.zone #Mobility&Transport Arena 4. besplatni webinar

26.05.2021.
2:00 PM - 3:30 PM CET

"FLOTE ELEKTRIČNIH VOZILA - USPAVANI DIVOVI ELEKTROMOBILNOSTI"

Sponzor:
ADRIA P.A.

Panelisti:
Zvonimir Stojić - Corporate Fleet and Technical Means Coordinator, Atlantic Group
Paolo Brusich - savjetnik za Mjuno kupce i koordinatore rabljenih vozila, Adria P.A.
Dean Filipović - Key Account Manager, General Logistics Systems Croatia d.o.o.
Doc. dr. sc. Vedran Kirinčić - Tehnički fakultet Rijeka - moderator webinara

Panelisti:
Zvonimir Stojić
Paolo Brusich
Dean Filipović
Vedran Kirinčić

Medijski partneri: STRUČNI KRUG, ecoportal, BIAKON TIS, ENERGETSKI PORTAL, SPORENO, sdovnes

Woom www.woom.zone #Mobility&Transport Arena 2. besplatni webinar

07.04.2021.
2:00 PM - 3:00 PM CET

enasolAuto - investicijska prilika u energetskom sektoru Hrvatske

Panelisti:
Predrag Šeotović - direktor enasolAuto Startupa
Milan Horvat - FIMA, financijski savjetnik Enasola
Moderator:
Doc. dr. sc. Vedran Kirinčić, Tehnički fakultet Sveučilište u Rijeci

Panelisti:
Predrag Šeotović
Milan Horvat
Vedran Kirinčić

Medijski partneri: STRUČNI KRUG, ecoportal, BIAKON TIS, ENERGETSKI PORTAL, SPORENO, sdovnes

Woom www.woom.zone #Mobility&Transport Arena 3. besplatni webinar

12.04.2021.
2:00 PM - 3:30 PM CET

"Jedinice lokalne i područne (regionalne) samouprave kao pokretači tranzicije u mobilnosti i transportu"

Panelisti:
Gordana Lalić - Grad Poreč-Parenzo, CEO gradskog poduzeća Parenium d.o.o.
Martin Bučan - viši savjetnik, Splitko-dalmatinska županija
Ivan Ivanković, dipl. ing. el., pomoćnik pročelnika za energiju i klimu, Grad Zagreb, Gradski ured za gospodarsku, energetska i zaštitu okoliša
Doc. dr. sc. Vedran Kirinčić - Tehnički fakultet Rijeka - moderator webinara

Panelisti:
Gordana Lalić
Martin Bučan
Ivan Ivanković
Vedran Kirinčić

Medijski partneri: STRUČNI KRUG, ecoportal, BIAKON TIS, ENERGETSKI PORTAL, SPORENO, sdovnes

Woom www.woom.zone #Mobility&Transport Arena 6th free webinar

11.06.2021.
10:00 AM - 12:00 PM CET

BUSINESS WOOD DAY
Regionalni događaj u suradnji s lokalnim i državnim tijelima

"SUSTAINABLE SOLUTIONS FOR COASTAL AND MARITIME MOBILITY"

General partners:
Maritime Center of Excellence
Lürssen Design Center Kvarner

Panelisti:
Hari Bezić, PhD - President of the Croatian Chamber of Economy - County Chamber Rijeka
Guido Piccoli - CEO, Alstom
Teuta Duletić, mag.ing.nav.arch., MBA - Managing Director, Maritime Center of Excellence d.o.o., Lürssen Design Center Kvarner d.o.o.
Kristijan Pavlič - Chairman Of The Board, ACI d.o.o.
Vedran Kirinčić, PhD - Faculty of Engineering, University of Rijeka - moderator

Panelisti:
Hari Bezić
Teuta Duletić
Kristijan Pavlič
Vedran Kirinčić

Medijski partneri: STRUČNI KRUG, ecoportal, BIAKON TIS, ENERGETSKI PORTAL, SPORENO, sdovnes

Woom www.woom.zone #Mobility&Transport Arena 5. besplatni webinar

09.06.2021.
11:00 AM - 12:00 PM CET

"ELEKTRIFIKACIJA TRANSPORTNOG SEKTORA"

Panelisti:
Predrag Šeotović - direktor enasolAuto Startupa
Zvonimir Perko - voditelj projekata, Regionalna energetska agencija Šteter
Tomislav Uroda - direktor, IRI
Matija Vajdić - Programme Manager, PMO, Energetski institut Hrvoje Požar
Doc. dr. sc. Vedran Kirinčić - Tehnički fakultet Rijeka - moderator webinara

Panelisti:
Predrag Šeotović
Zvonimir Perko
Tomislav Uroda
Matija Vajdić
Vedran Kirinčić

Medijski partneri: STRUČNI KRUG, ecoportal, BIAKON TIS, ENERGETSKI PORTAL, SPORENO, sdovnes

Woom www.woom.zone #Mobility&Transport Arena 7. besplatni webinar

23.09.2021.
2:00 PM - 3:30 PM CET

"NAPREDNI FLEET MANAGEMENT SUSTAVI"

Panelisti:
Miloš Jauković - predsjednik za komercijalne poslove, Delphos, Srbija
Milan Petrović - osnivač i direktor, M5 Consulting, Srbija
Đuro Jendrijević - viši stručni suradnik u proizvodnji, Hrvatska žutina, Hrvatska
Ranka Rodić - registrirani direktor projekata, Mobilis, Hrvatska
Doc. dr. sc. Vedran Kirinčić - Tehnički fakultet Rijeka - moderator

Panelisti:
Miloš Jauković
Milan Petrović
Đuro Jendrijević
Ranka Rodić
Vedran Kirinčić

Medijski partneri: STRUČNI KRUG, ecoportal, BIAKON TIS, ENERGETSKI PORTAL, SPORENO, sdovnes

Electrification of road traffic

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