



Session V. Case study CROATIA

Transport sector decarbonisation measures from the newly developed Update of the Integrated National and Climate Plan (NECP) for Croatia

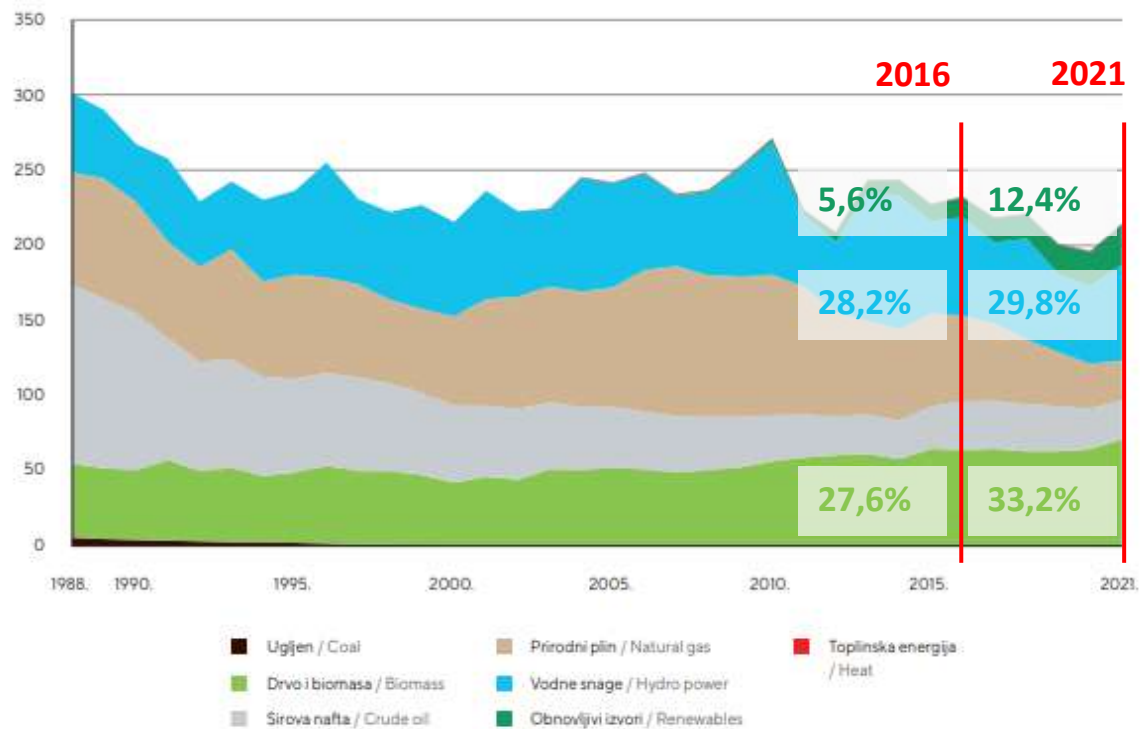
Tbilisi, Georgia

Matija Vajdić

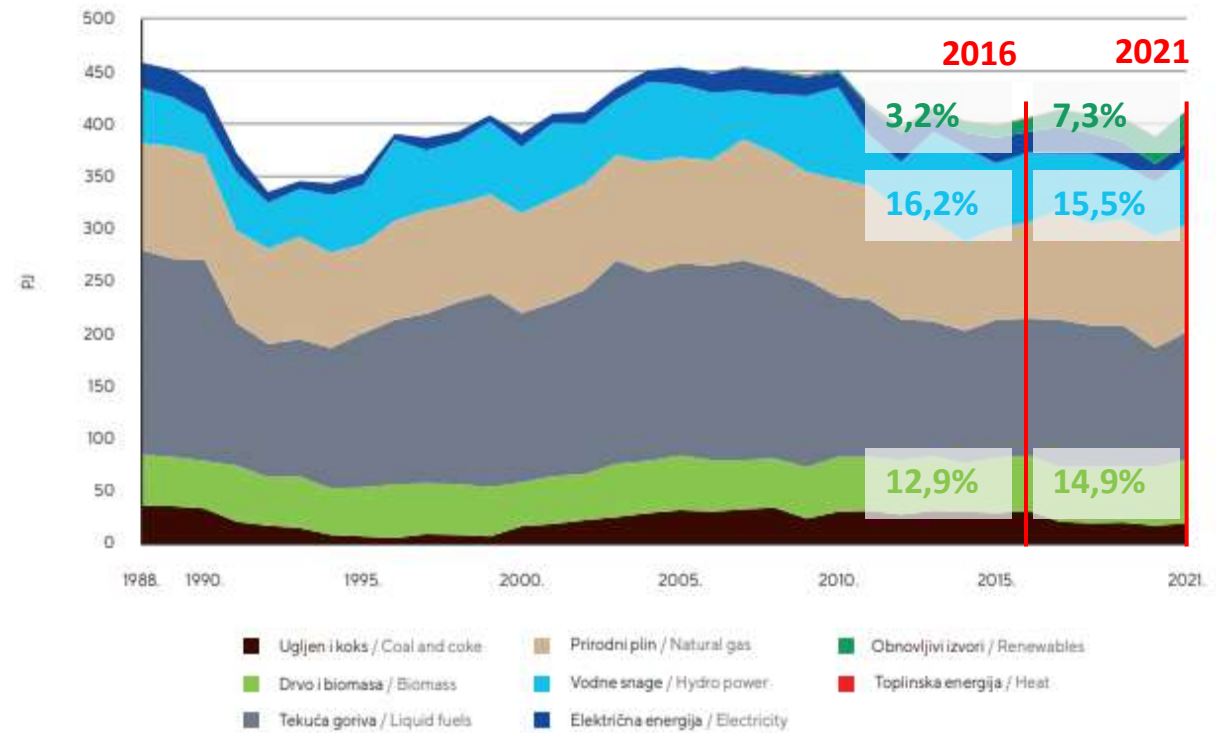
21 November 2023

RES in Croatia

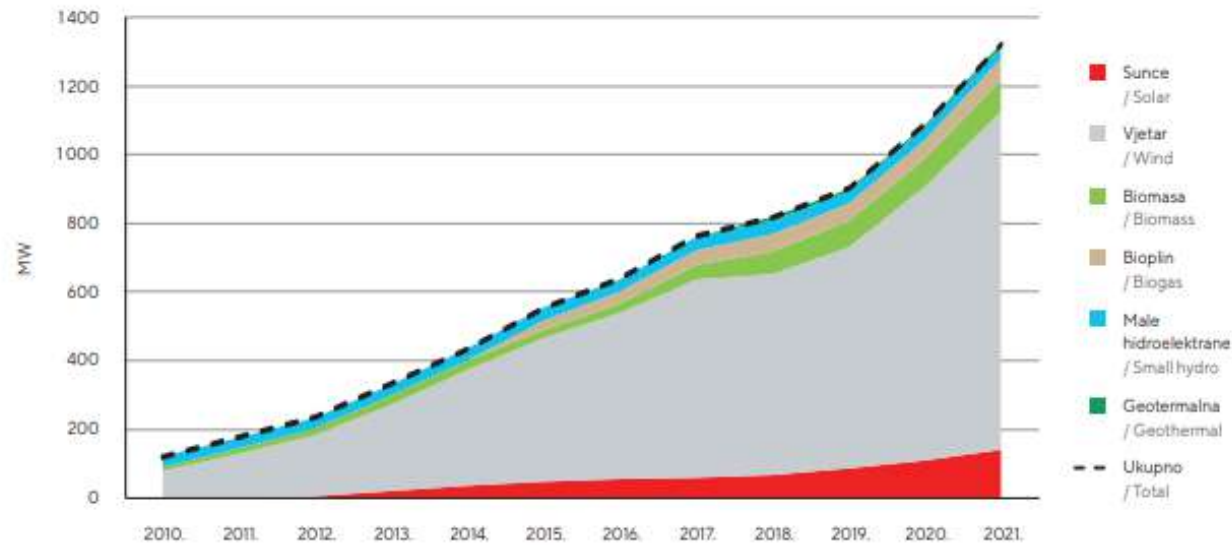
Primary energy production



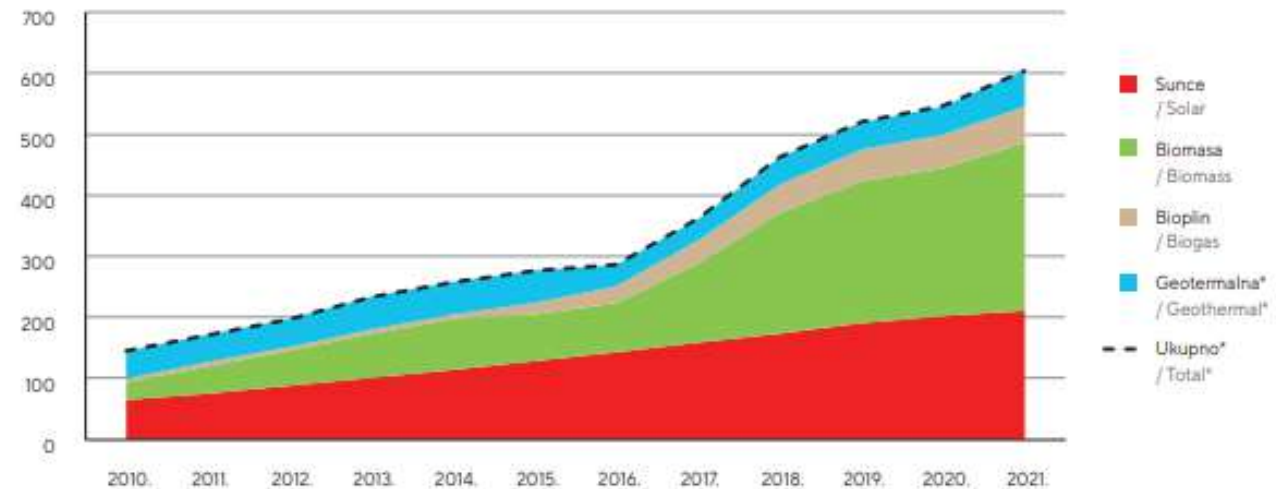
Energy consumption



RES in Croatia – MW



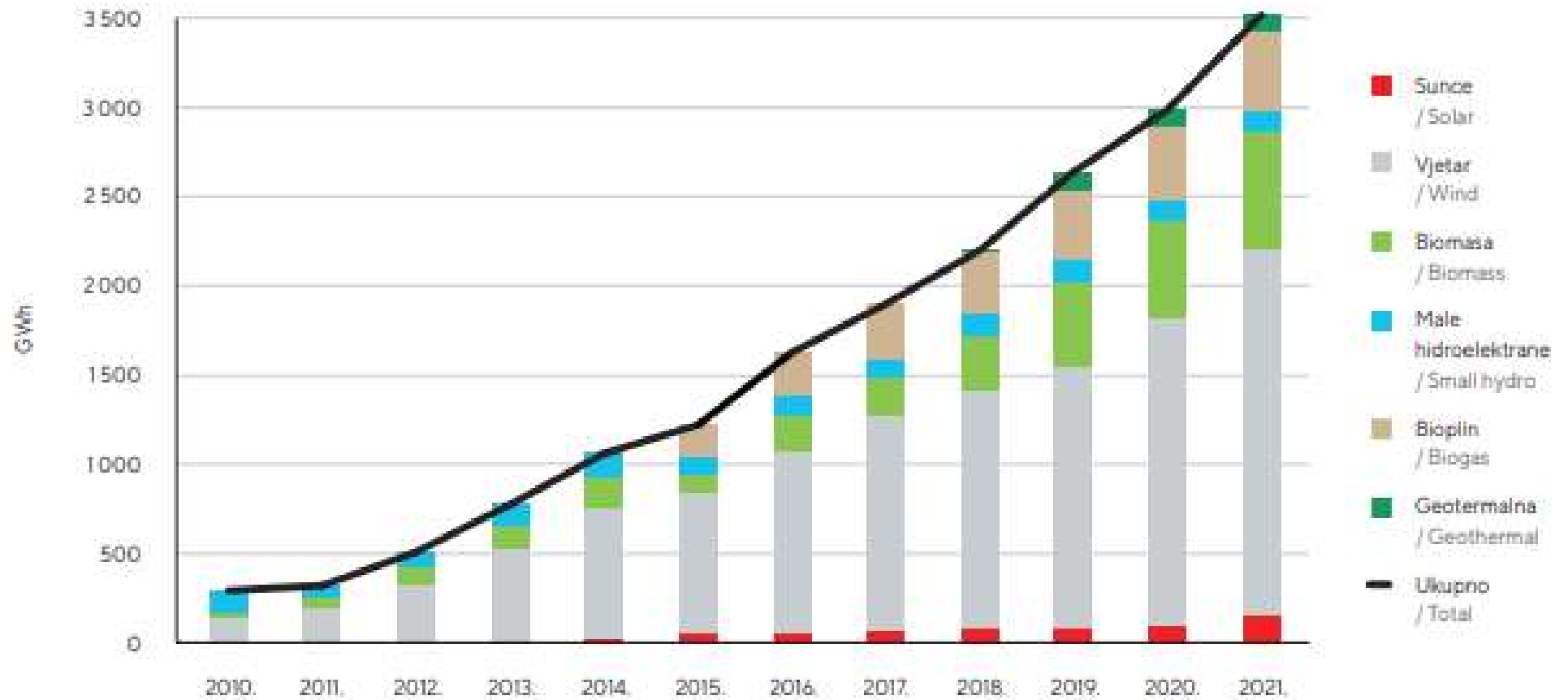
Slika 8.1.2. Instalirani kapaciteti za proizvodnju električne energije iz obnovljivih izvora energije u Hrvatskoj / Figure 8.1.2. Installed capacities for RES-E generation in Croatia



* geotermalna toplinska energija za grijanje prostora / geothermal heat for space heating

Slika 8.1.1. Instalirani kapaciteti za proizvodnju toplinske energije iz obnovljivih izvora energije u Hrvatskoj / Figure 8.1.1. Installed capacities for RES-H generation in Croatia

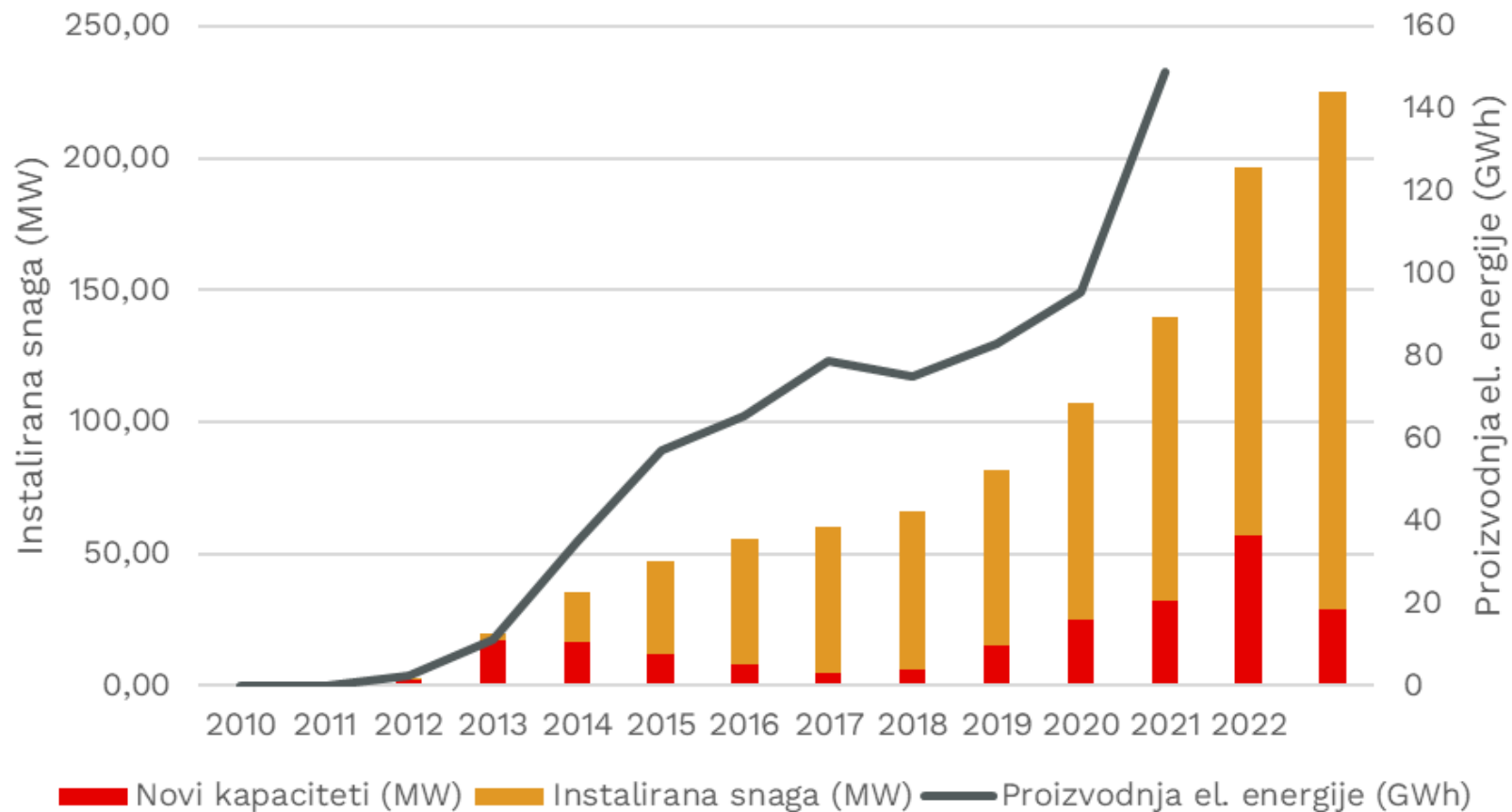
RES in Croatia – GWh



Solar energy in Croatia

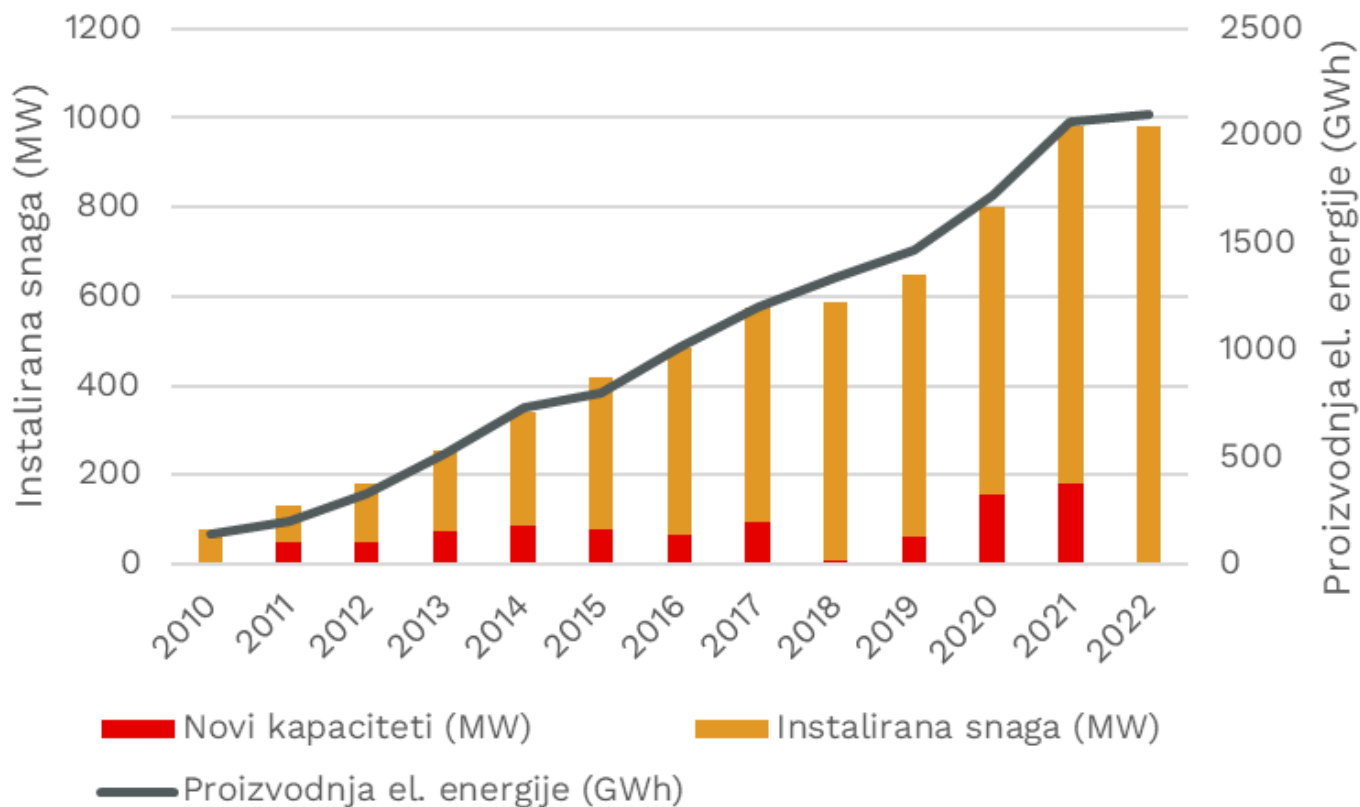
- Solar heating
 - ca. 210 MWt
 - mostly small systems
 - steady growth
- PV
 - ca. 190 MW until the end of 2022
 - today, around 500 MW
 - growth depends on the legal framework

Razvoj tržišta FN sustava u Republici Hrvatskoj



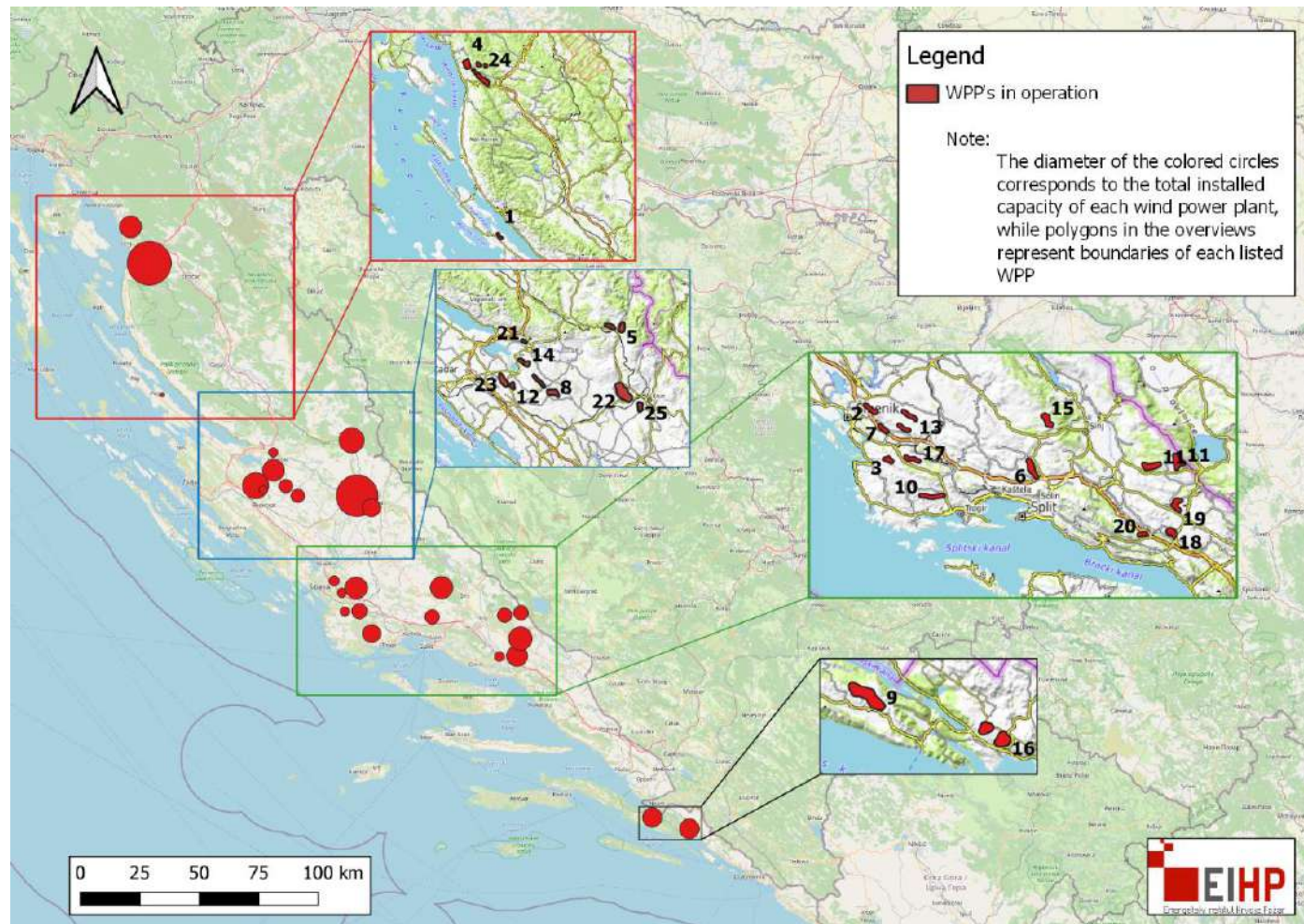
Wind energy in Croatia

Razvoj tržišta vjetroelektrana u Republici Hrvatskoj

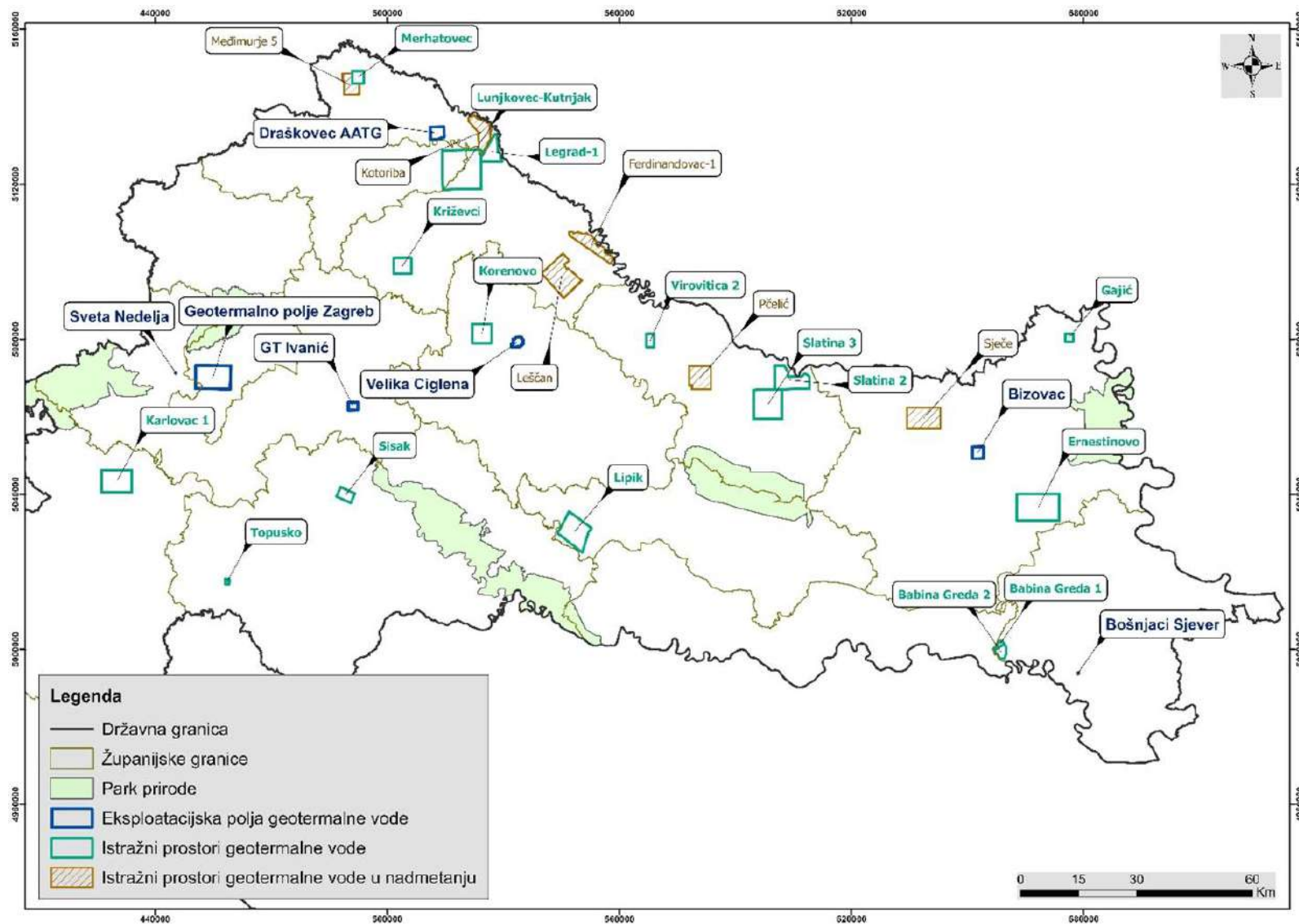


- 980 MW by the end of 2022
- 1-2 projects per year (around 85 MW/annually)
- Most recent WPPs are fully on the market (no feed-in/premium incentives needed)
- Around 150 MW are being installed by the end of 2024

Wind energy in Croatia



Geothermal energy in Croatia



— National Energy and Climate Plan (NECP)

- EU countries' 10-year National Energy and Climate Plans for 2021 – 2030
- **Five dimensions of energy union:**
 - Decarbonisation
 - Energy efficiency
 - Energy security
 - Internal energy market
 - Research, innovation and competitiveness
- Drafted by 31 December 2018 / Assessment and recommendations by EC published in June 2019 / final NECP by 31 December 2019 / progress report **every two years**
- By 30 June 2023, **draft NECP updates** were submitted

NECP

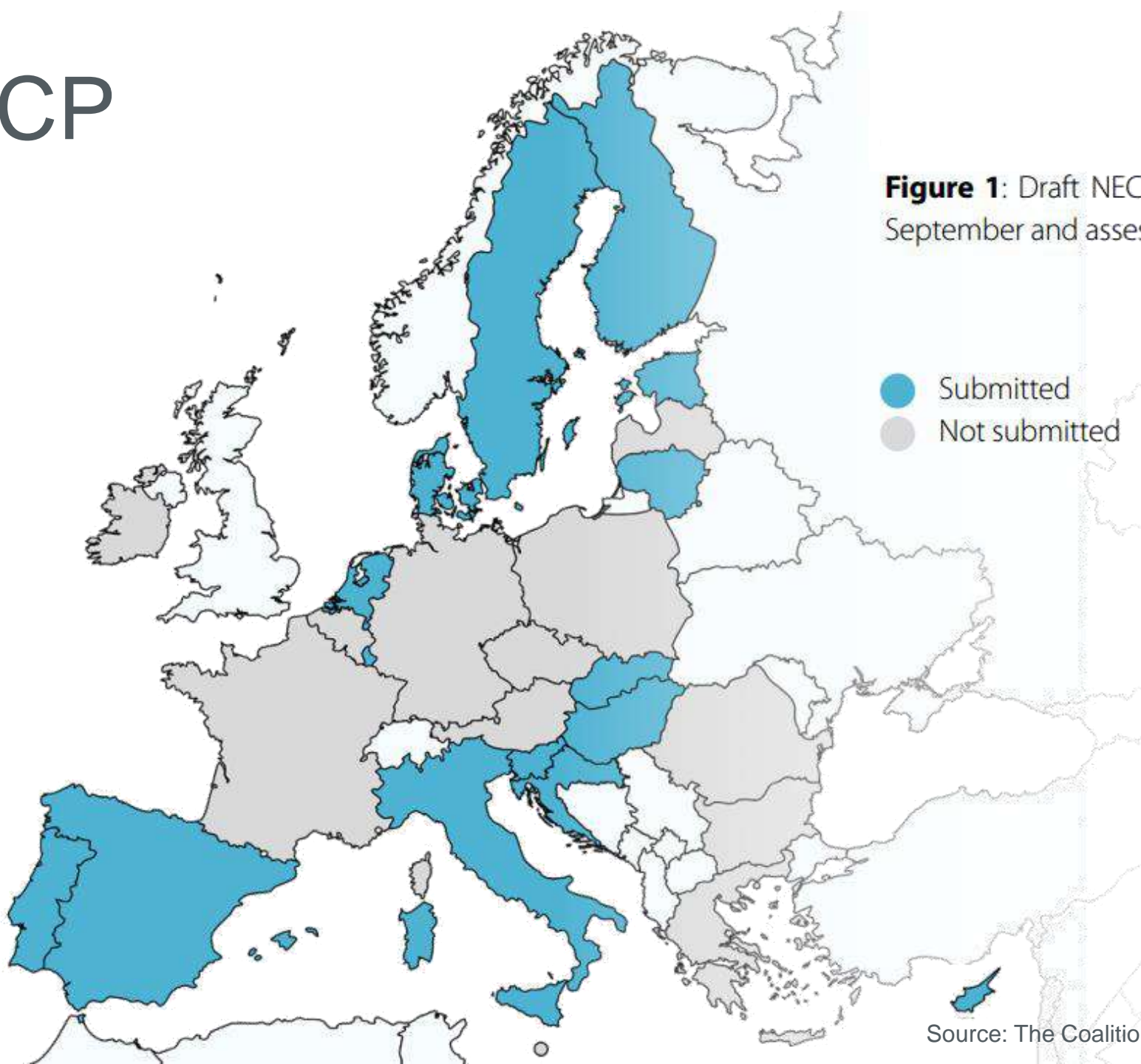
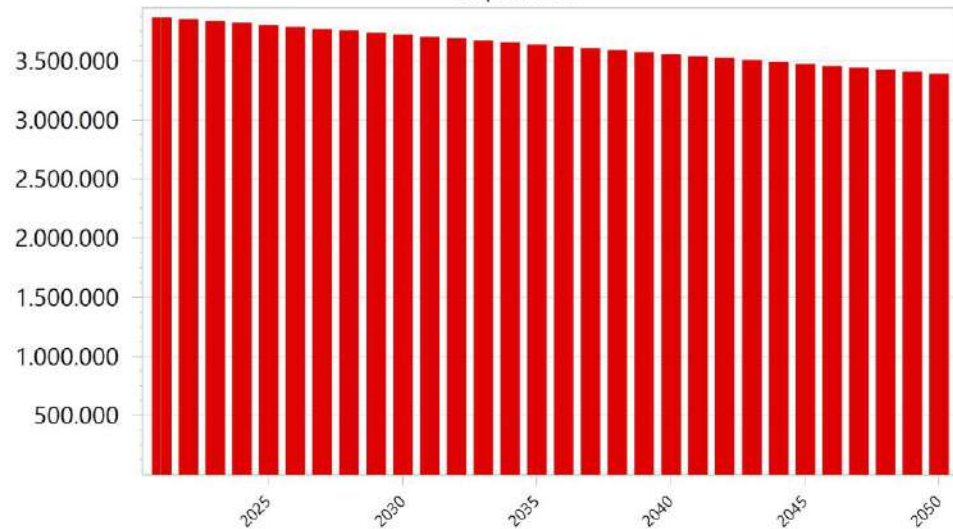


Figure 1: Draft NECP updates submitted on the 30th of September and assessed by this report

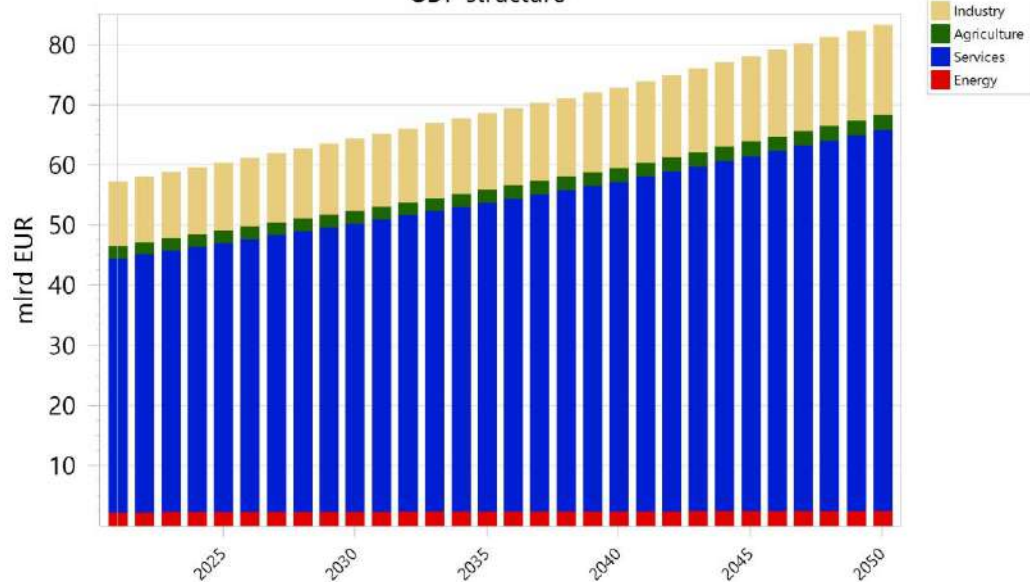
- Submitted
- Not submitted

NECP inputs

Population

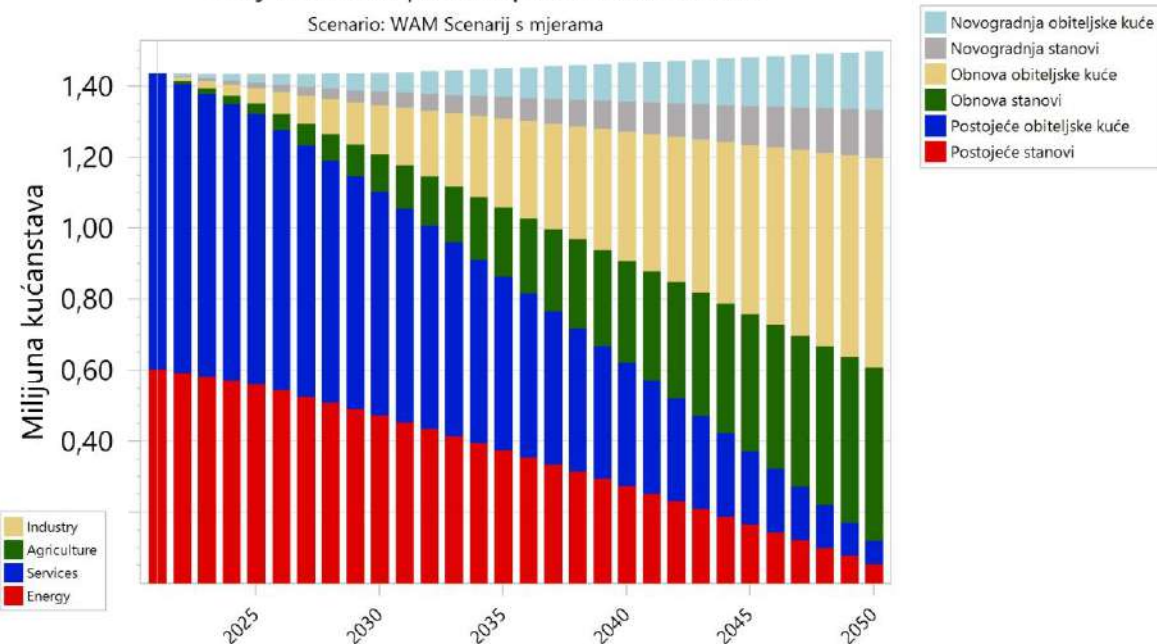


GDP structure



Broj kućanstva prema tipu i statusu obnove

Scenarij: WAM Scenarij s mjerama

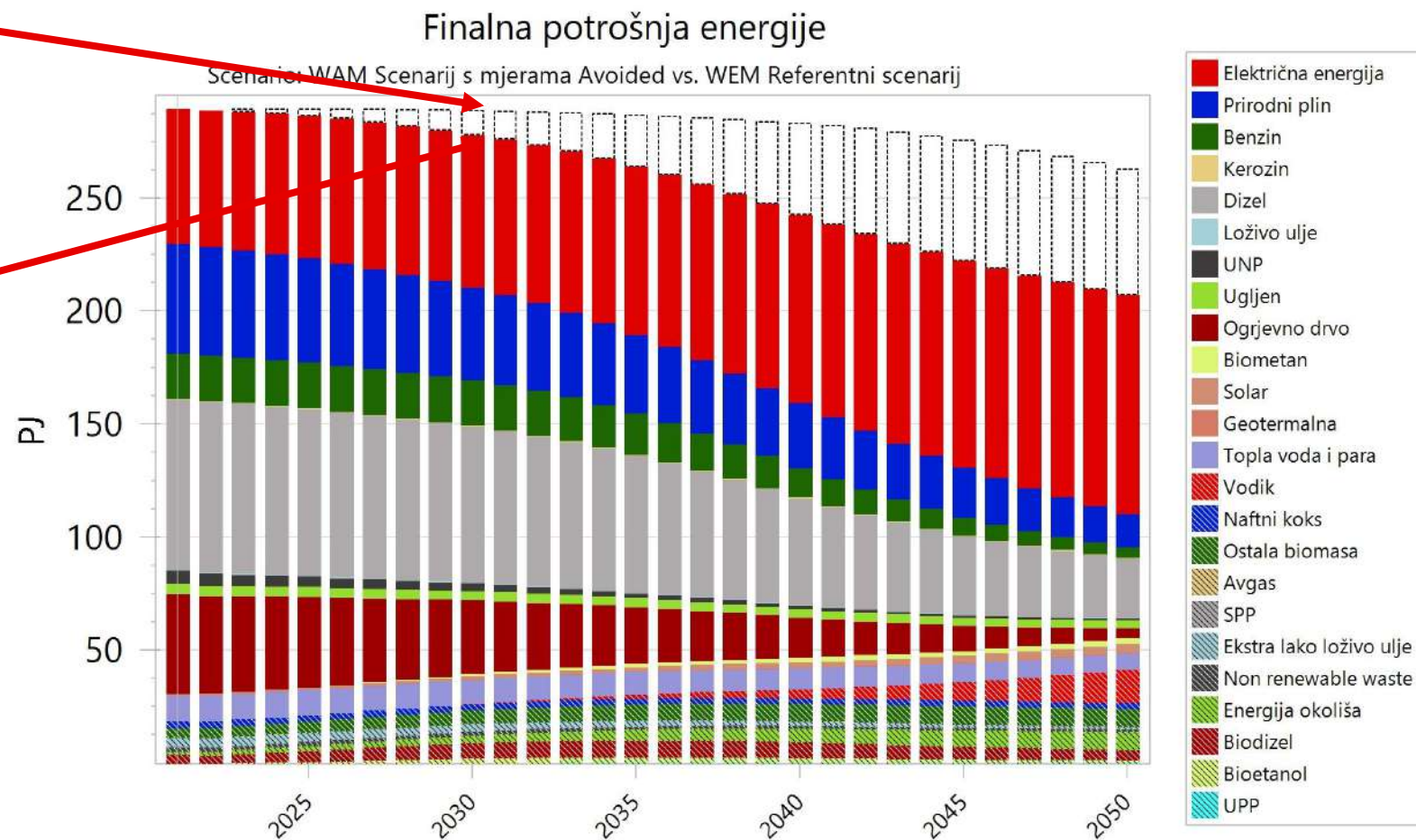


Final energy consumption

WEM 2030
288,75 PJ

WAM 2030
277,84 PJ

Additional 10,91 PJ
until 2030
(WEM vs. WAM)



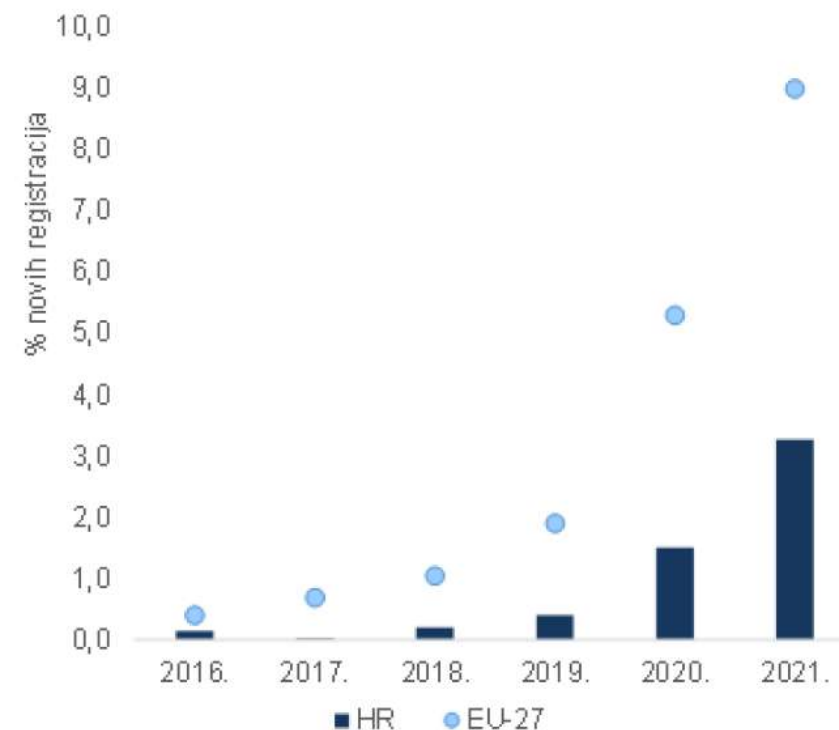
NECP transport sector measures

- TR-1 Regulatory instruments to promote a cleaner transport system
 - Regulatory measure, parafiscal measure
 - Aim is to encourage changes in the transport system that will reduce environmental pollution and achieve a more sustainable transport system
 - The application of regulatory instruments such as regulations, standards, and taxes that will encourage the use of low-emission vehicles and increase the use of public transport, pedestrian and bicycle paths

NECP transport sector measures

- TR-2 Programme for co-financing the purchase of new alternative fuel vehicles and the development of alternative fuel infrastructure in road transport
 - Financial measure
 - Various co-financing mechanisms will be defined for the purchase of vehicles of all categories with alternative energy sources
 - The minimum degree of market uptake will be defined by the revision of the National Policy Framework for the Establishment of Infrastructure and the Development of Alternative Fuel Markets in Transport by 1st January 2024

Grafikon A5.4.: Tematsko područje – Mobilnost: Udio vozila s nultim emisijama (% novih registracija)



(1) Vozila s nultim emisijama (osobni automobili) uključuju baterijska električna vozila (BEV) i vozila na gorivne ćelije (FCEV).

Izvor: Europski informativni portal za alternativna goriva

— NECP transport sector measures

- TR-3 Improving the public transport system and promoting sustainable integrated transport
 - Financial measure, information and organizational measure
 - to promote the sustainable development of urban transport systems through the optimization of freight transport logistics and intelligent management of public parking areas, the introduction of platforms for integrated passenger transport, the introduction of car-sharing systems in cities, the introduction of low-emission zones in cities, the introduction of public urban bicycle systems and the construction of associated cycling infrastructure, intelligent traffic management

NECP transport sector measures

- TR-4 Encouraging the development of energy-efficient maritime transport and inland navigation
 - Financial measure
 - the measure encourages constructing an onshore electricity supply system for seagoing ships and inland waterway vessels.
 - the measure also envisages encouraging the construction of publicly available stations for the supply of hydrogen, ammonia and / or liquefied natural gas to seagoing ships and / or inland waterway vessels

NECP transport sector measures

- TR-5 Encouraging the development of energy-efficient rail transport
 - Financial measure
 - establishes the objective of constructing an appropriate number of stations for the supply of electricity or hydrogen from electric trains with a battery storage system and from hydrogen-powered trains on sections of the basic and comprehensive TEN-T network whose electrification is not possible for technical or cost reasons
 - Introduction of new battery-powered trains for passenger transport by rail on non-electrified railways and construction of stable energy connections for battery charging in accordance with the Program for encouraging the construction of infrastructure for alternative fuels in the Republic of Croatia

NECP transport sector measures

- TR-6 Encouraging the development of energy-efficient air transport
 - Financial measure
 - to reduce greenhouse gas and pollutant emissions, the electricity supply should replace the consumption of liquid fuel in airports
 - All aircraft in the commercial transport function should be able to use the external electricity supply while parked at exits or at positions away from terminals at TEN-T airports
 - to build infrastructure for the electricity supply of stationary aircraft and infrastructure for the supply of preconditioned air

NECP transport sector measures

- TR-7 Developing a low-carbon fuel market
 - Financial and regulatory measure
 - increasing the share of RES in transport by 2030 through the development of the market for low-carbon fuels and achieving the planned share of fuels produced from renewable energy sources in final energy consumption in transport
 - amendments to the relevant laws and by-laws based on the Renewable Energy Directive
 - The measure also implies the creation of a long-term sustainable supply chain of biomass and the construction of a bio-industrial complex designed to produce advanced biofuels with negative net greenhouse gas emissions

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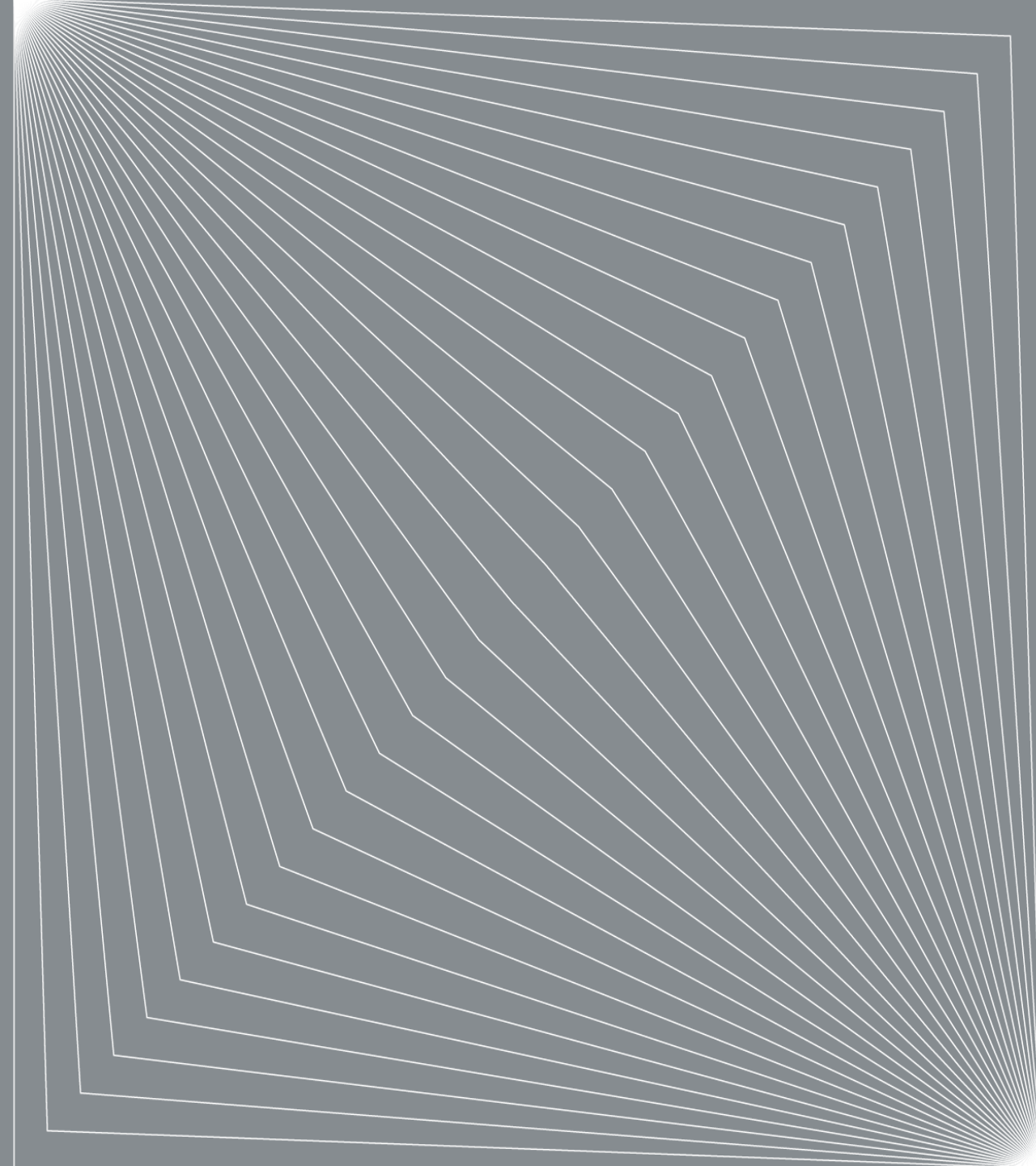
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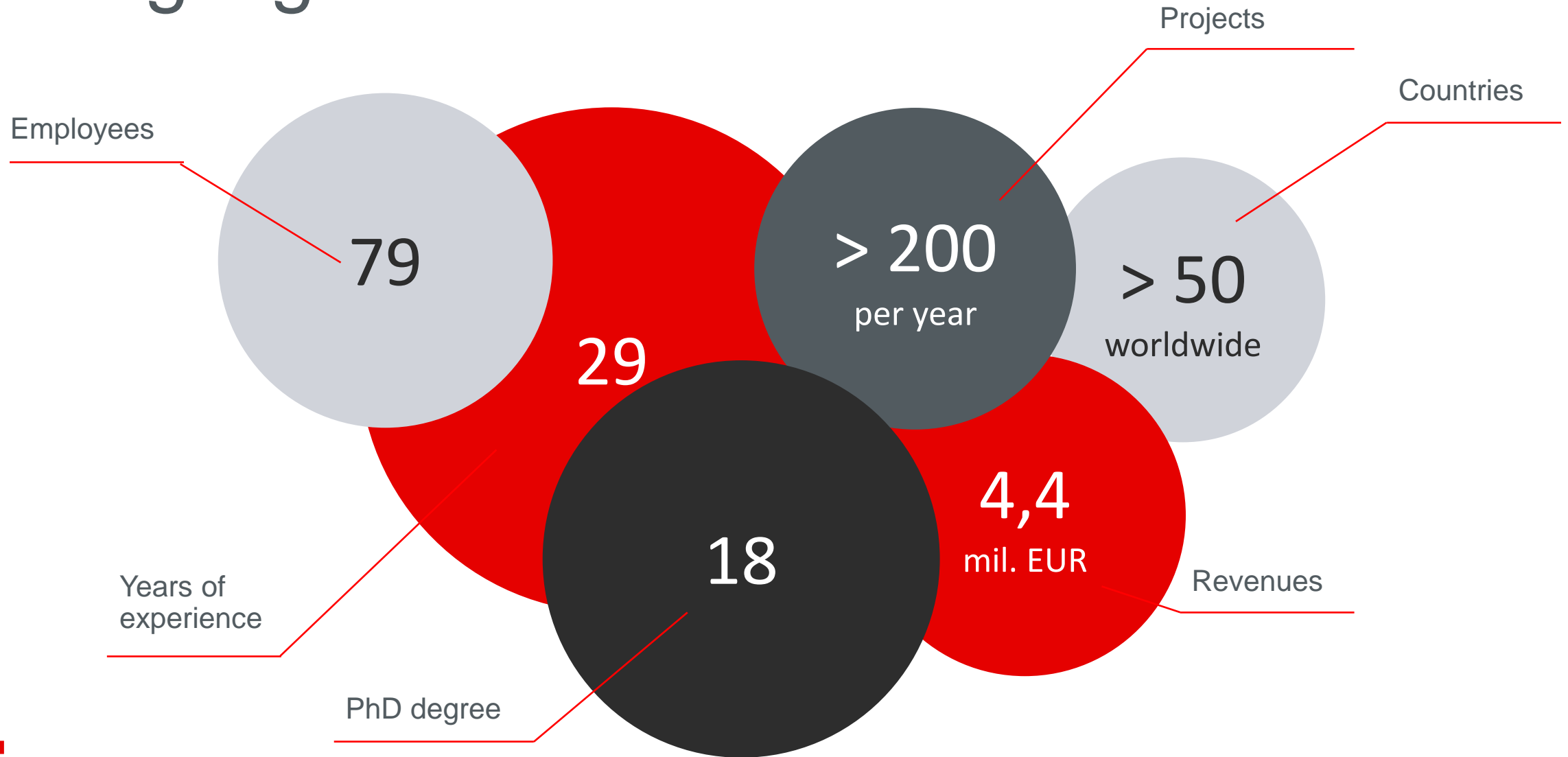


About us

- Energy Institute Hrvoje Požar (EIHP) is an institution owned by the Republic of Croatia, self-financed by providing services to the public and business sectors.
- Our activities include:
 - Implementing scientific research in the energy field
 - Providing professional support to public authorities
 - Providing advisory services in the domestic and international markets



Highlights



Areas of Activity



Energy balance and statistics

Energy production and markets

Renewable energy, climate and environmental protection

E-mobility

Energy and climate planning

Power grid planning and development

Energy regulations and economics

Energy efficiency

Global Clients



Energy Companies

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NAF d.d.

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HRVATSKA

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macedonia

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kostt

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JP "Komunalno Brčko" d.o.o.
Brčko distrikt BiH
JP "Komunalno Brčko" d.o.o.
Brčko distrikt BiH

EP

JP ELEKTROPRIVREDA
HRVATSKE ZAJEDNICE HERCEG BOSNE d.d. Mostar

BH-GAS

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НОС ВИH

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