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OF ZAGREB

FACULTY OF
MECHANICAL
ENGINEERING
AND NAVAL
ARCHITECTURE

DEPARTMENT
OF ENERGY,
POWER AND
ENVIRONMENTAL
ENGINEERING



Uloga dekarboniziranog transporta u energetskoj tranziciji

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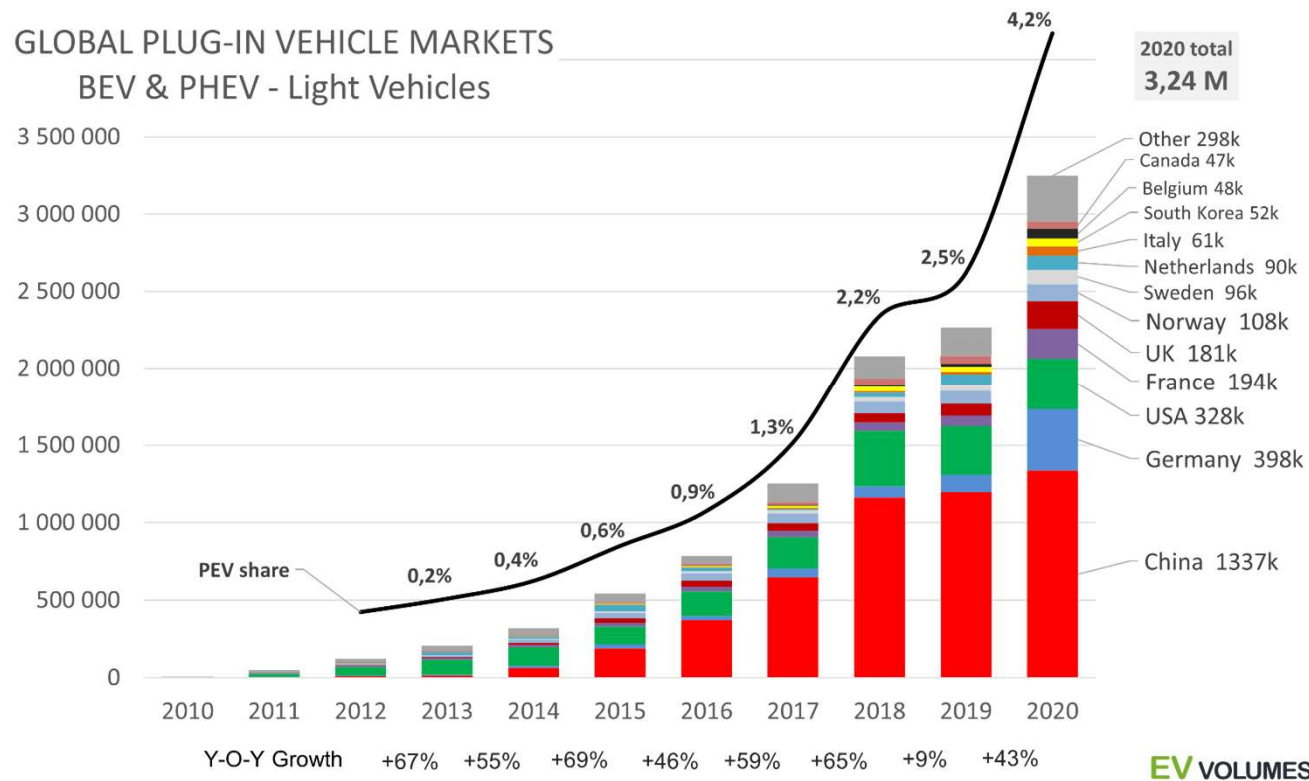


FSB



Elektrifikacija transporta je počela

GLOBAL PLUG-IN VEHICLE MARKETS
BEV & PHEV - Light Vehicles



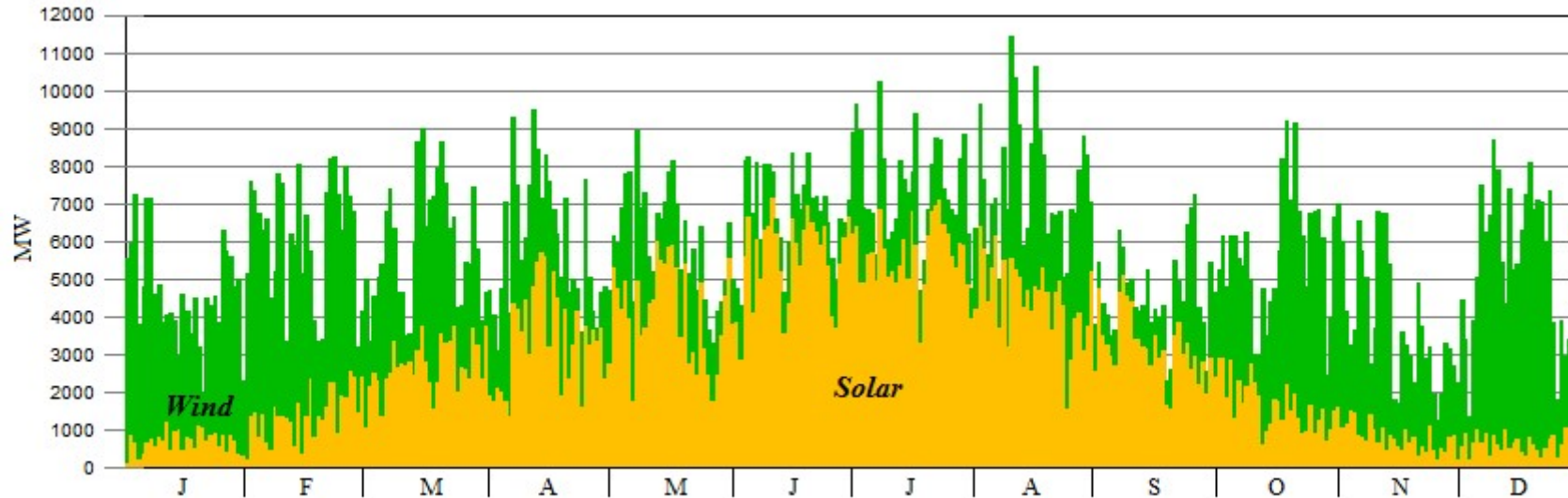
Global light
vehicles sales in
2020

- 3.2 mln EV
- 76 mln total
- 4.2% global sales
- 43% EV sales growth
- 20% cars sales fall

EU: 10.5% EV

HR: 2% EV

Vjetar i solar su varijabilni izvori



➤ Kako rješavamo problem varijabilnosti vjetra i solara?

- Više mrežnih interkonekcija
- Fleksibilizacija termoelektrana
- Povezivanje veleprodajnih tržišta
- Integracija energetske sektora: struja, grijanje, hlađenje, transport, voda, vodik i električna goriva – power-to-X
- Dedicirano skladištenje električne energije



Demand response – power-to-X

- 20th century energy systems: supply follows demand
- 21st century energy systems: demand follows supply -> smart energy systems





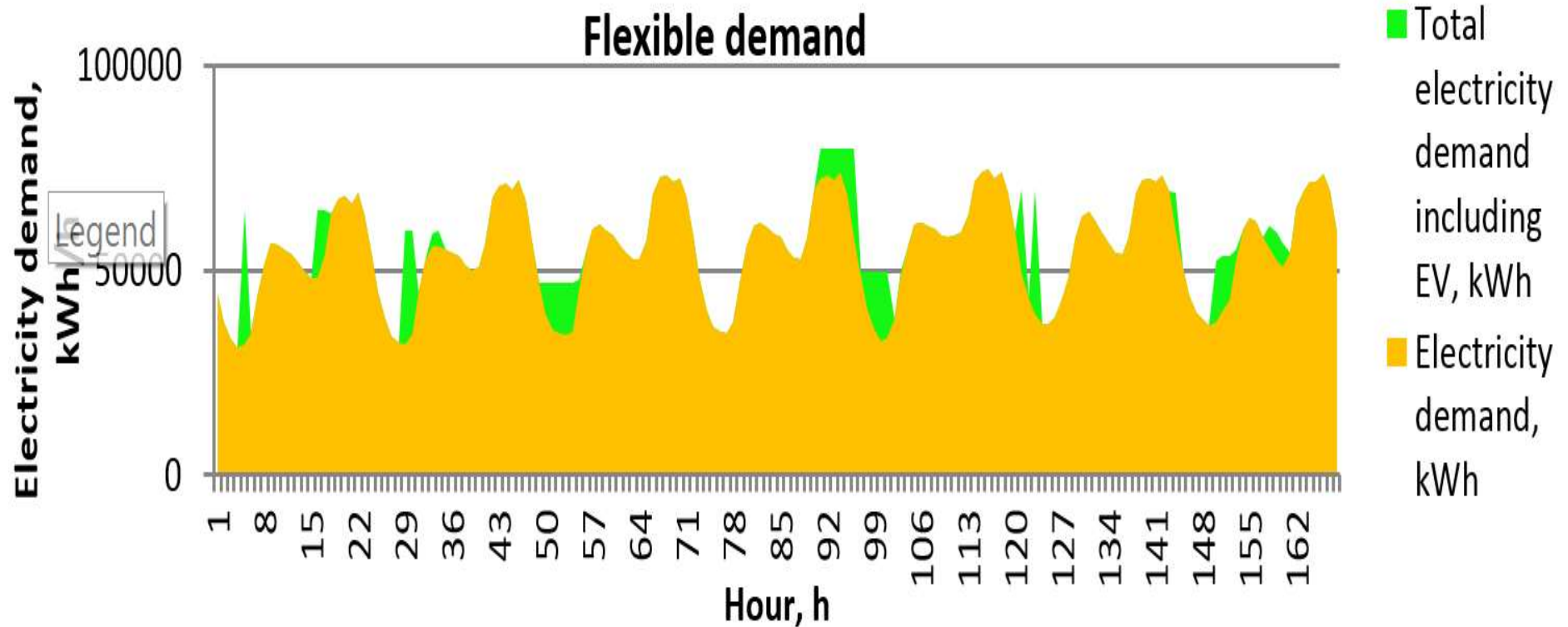
Demand response – power-to-transport

➤ Electromobility

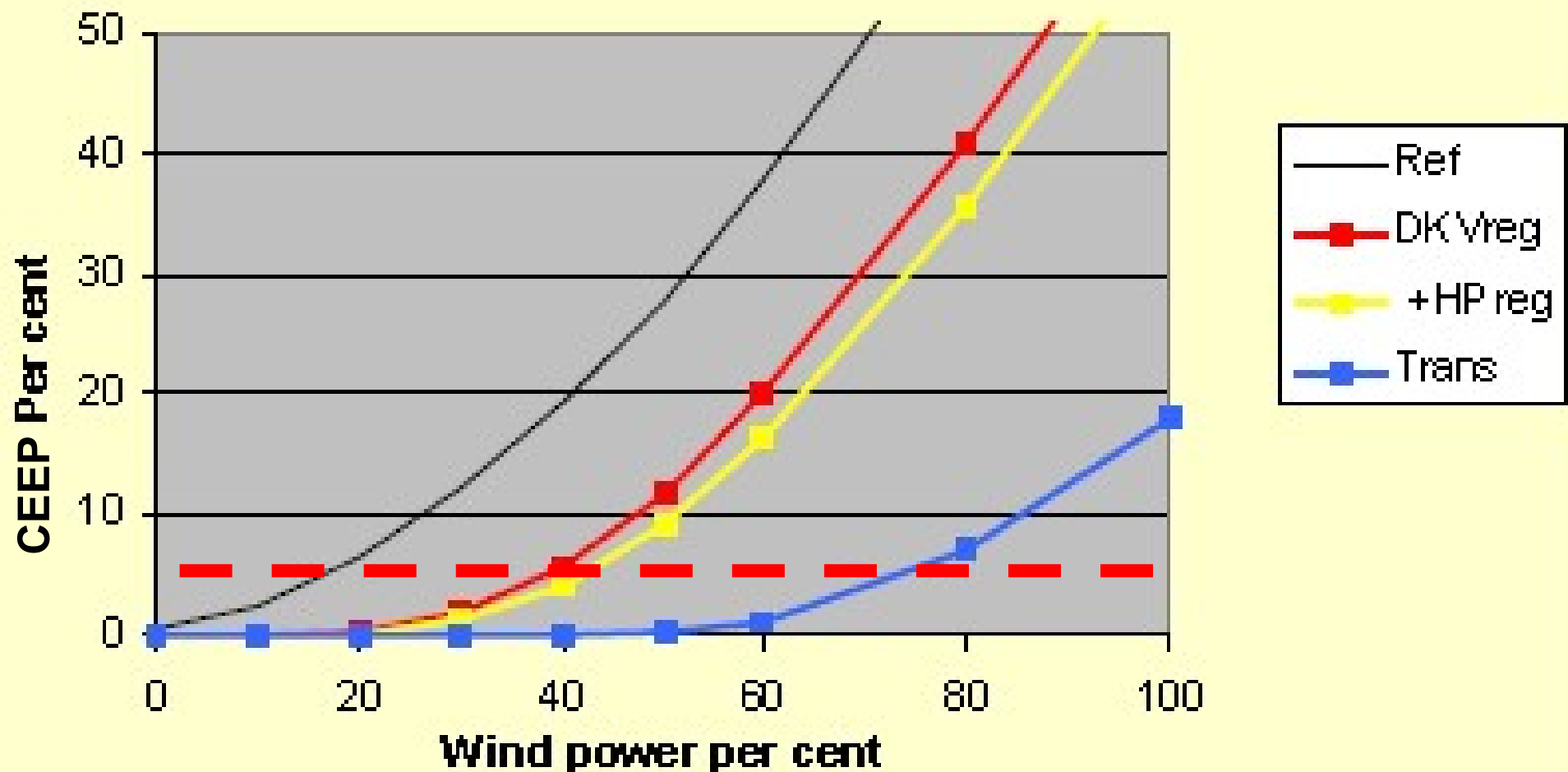
- Only personal cars and short distance utility vehicles, 3.2 mln PHEV and BEV sold in 2020
- If RESe 80% reduction of primary energy
- Fast charging 70 kW – huge problem if left uncontrolled, ex AT, 4 mln cars arrives home, plugs in – 280 GW (14 GW installed cap)
- Smart charging – market based, smoothing the demand



Smart charging



Surplus Electricity Production Including grid-stabilisation





Kako najbolje puniti – integracijski pogled

- Automobili su parkirani 96% vremena
- U bilo kojem trenutku max 25% auta su na cesti
- 90% dana auto ide do 100 km
- Pametni punjač na svakom parkiranom mjestu
- Brzi punjači uglavnom na magistralnim cestama

Road transport

