



**Interreg
Europe**



European Union | European Regional Development Fund

**E-mobility III: Integrating e-
mobility in territorial planning**

The role of e-mobility in urban and rural transformation



Gianluca Lentini

Project PROMETEUS (Interreg Europe 2017-2021)

Mitigating emissions from road transport (COP26)

- The transition to zero-emission vehicles (ZEV) has been approved by several Parties (states and *regions) at the COP26:

“A rapid global transition to zero emission vehicles (ZEV) is vital to meet the goals of the Paris Agreement. Road transport accounts for over 10% of GhG emissions, and the total emissions are rising faster than any other sector. We need to dramatically increase the pace of the global transition to meet our Paris Agreement goals, and to keep the limit of 1.5°C warming in reach.”

- Roadmap for the ZEV Council:

- Investments in charging infrastructures
- Shared standards and regulations on efficiency for light-duty and heavy-duty vehicles
- Stronger consensus on the pace of the transition to heavy-duty ZEV
- Ensure the ZEV transition is **truly global (geographical coverage in all its dimensions)**

“This global transition is underway, and it is accelerating. There are now 8.5 million zero emission passenger vehicles on the roads, and combined national zero emission vehicle targets now represent 41% of the global passenger vehicle market.”

<https://ukcop26.org/zero-emission-vehicles-transition-council-2022-action-plan/>

Electric vehicles have always been with us

Year 1884



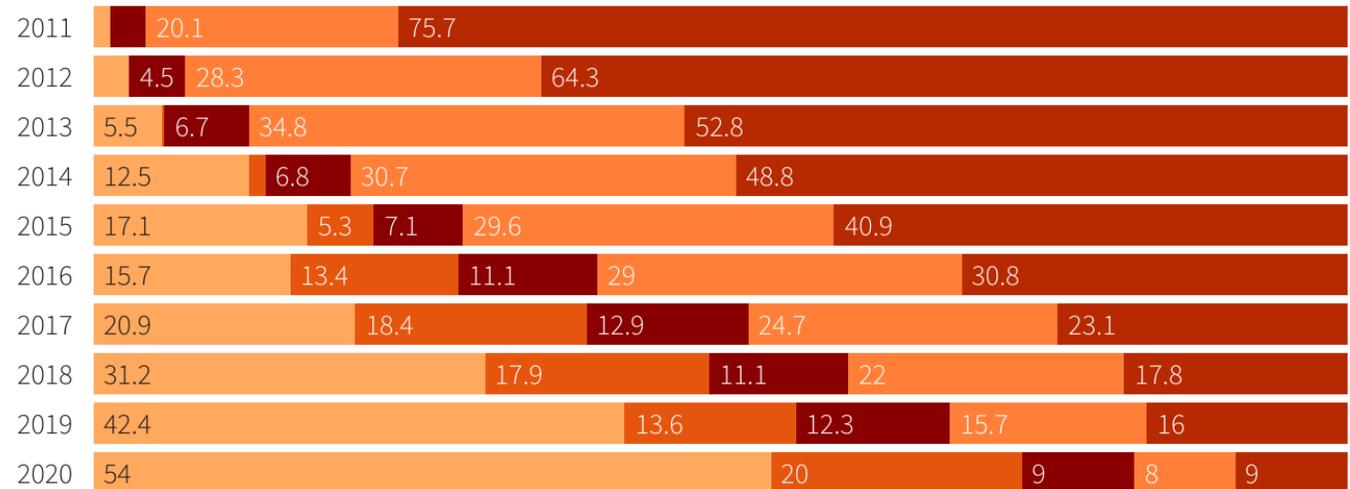
<https://www.energy.gov/timeline/timeline-history-electric-car>

Year 2020

Norway new car sales

Years 2011-2020 in percentage of market per car type

● Electric ● Plug-in hybrid ● Non-plug hybrid ● Petrol only ● Diesel only



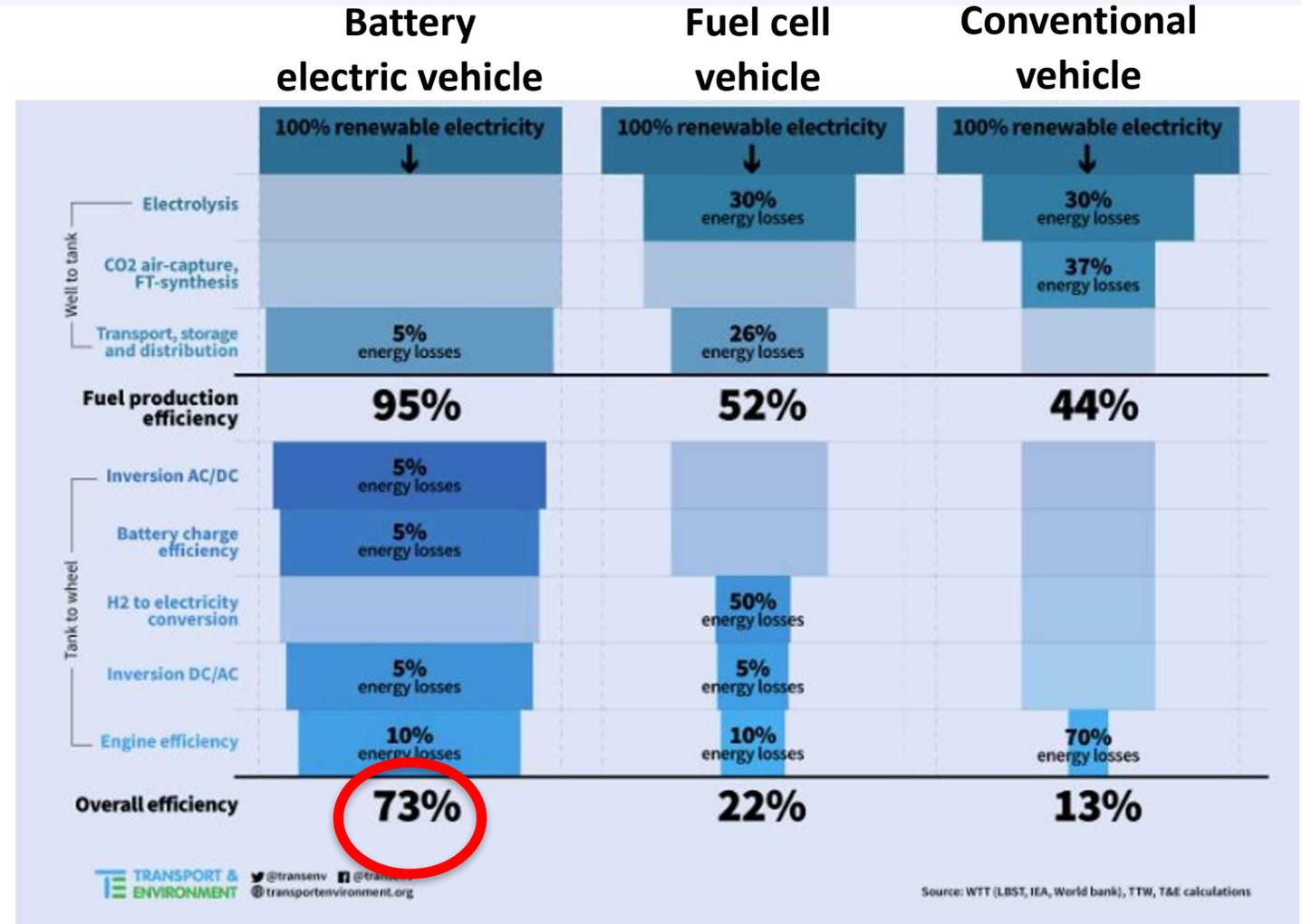
Source: Norwegian Road Federation (OFV)

<https://www.reuters.com/article/us-autos-electric-norway-idUKKBN29A0ZT>

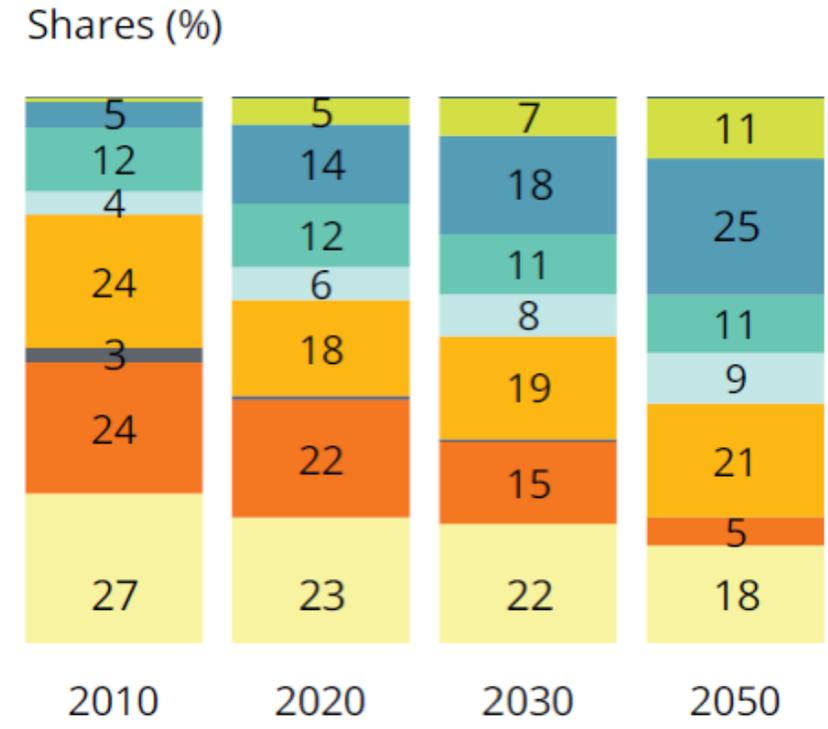
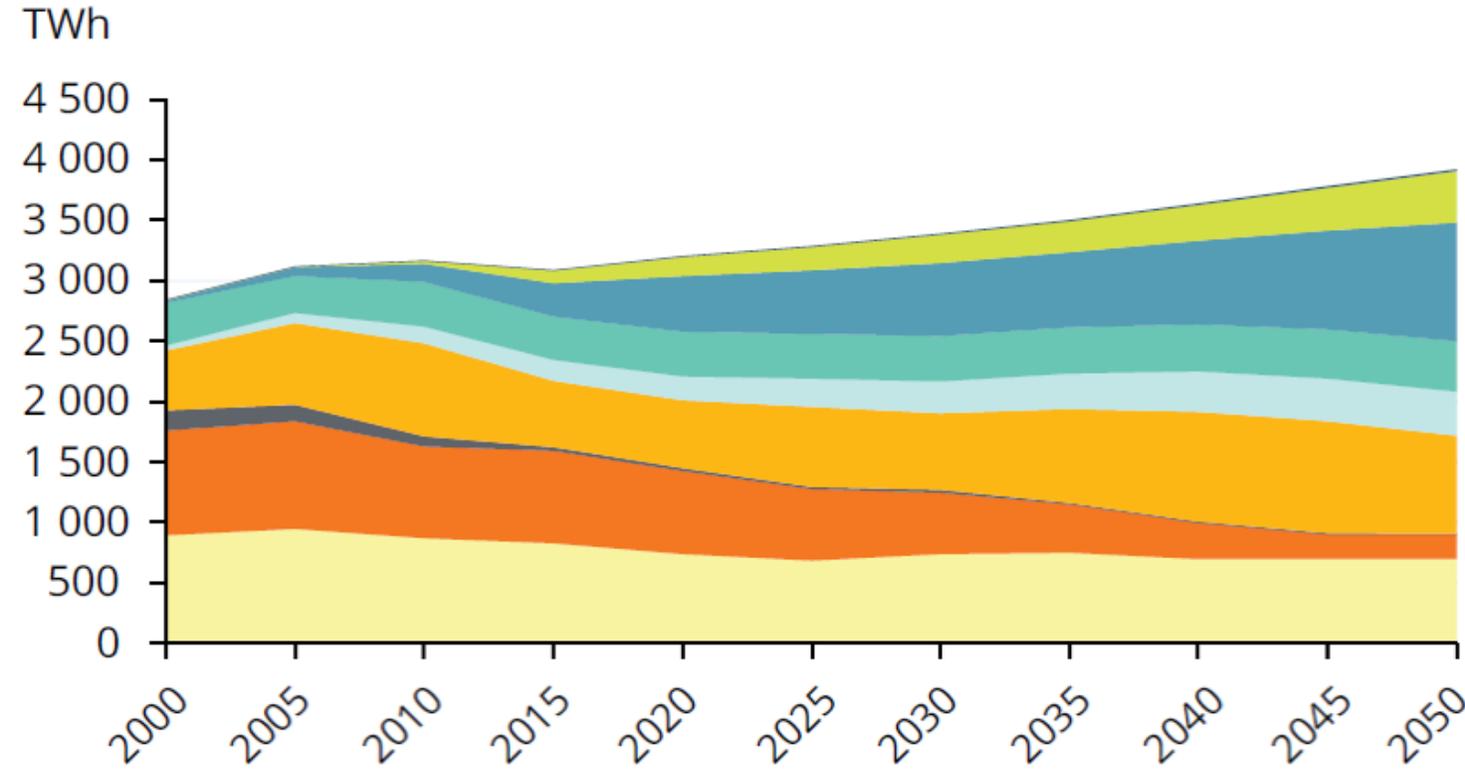
Hybrids are seen as a “transitional technology” that will eventually stand in the way of full electrification. “However it is a transitional technology that we believe is still needed because [the EV market is] still not completely mature.” Anette Berve, spokesperson for the Norwegian Automobile Federation.

E-mobility, energy production and mitigation of GhG

- Energy efficiency
- Possibility (*need!*) of using renewable energy sources
- Possibility (*need!*) of integration with electric grids.



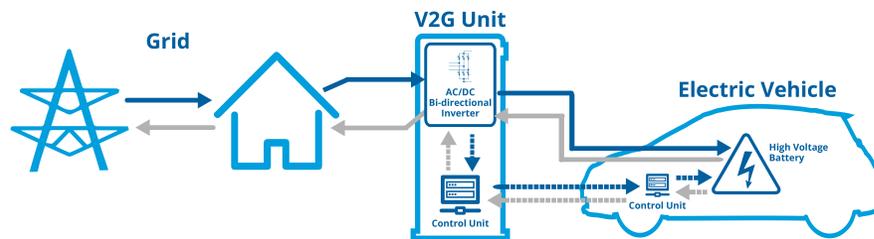
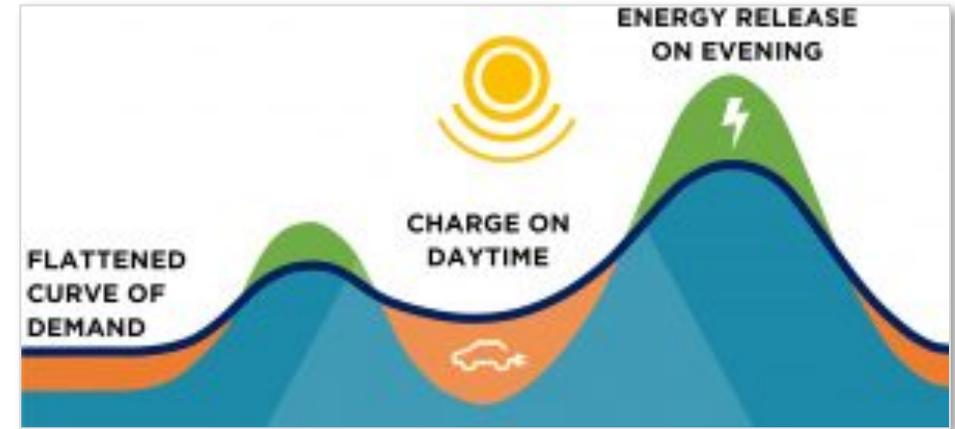
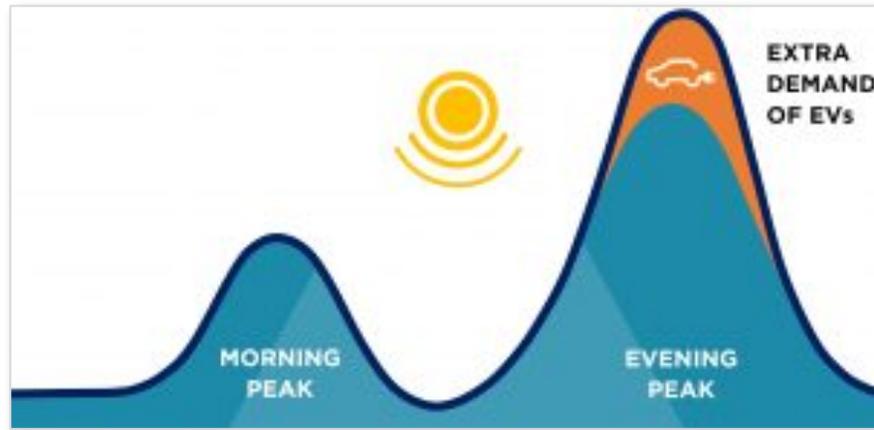
Projection in the mix of energy production in the EU



■ Nuclear
 ■ Solids
 ■ Oil
 ■ Gaseous fuels
 ■ Biomass
 ■ Hydro
 ■ Wind
 ■ Solar
 ■ Other RES

European Environment Agency
Electric vehicles from life cycle and circular economy perspectives. No 13/2018

Integration with the electric grid (vehicle-to-grid)



- **Zero Emission energy autonomy increased** (from 34 to 65% with V2G)
- **Solid decline in energy exchange with the electricity network: 45% less** compared to situation without V2G;
- Storage size **efficiency** reaches 93% with 10 kWh storage capacity.

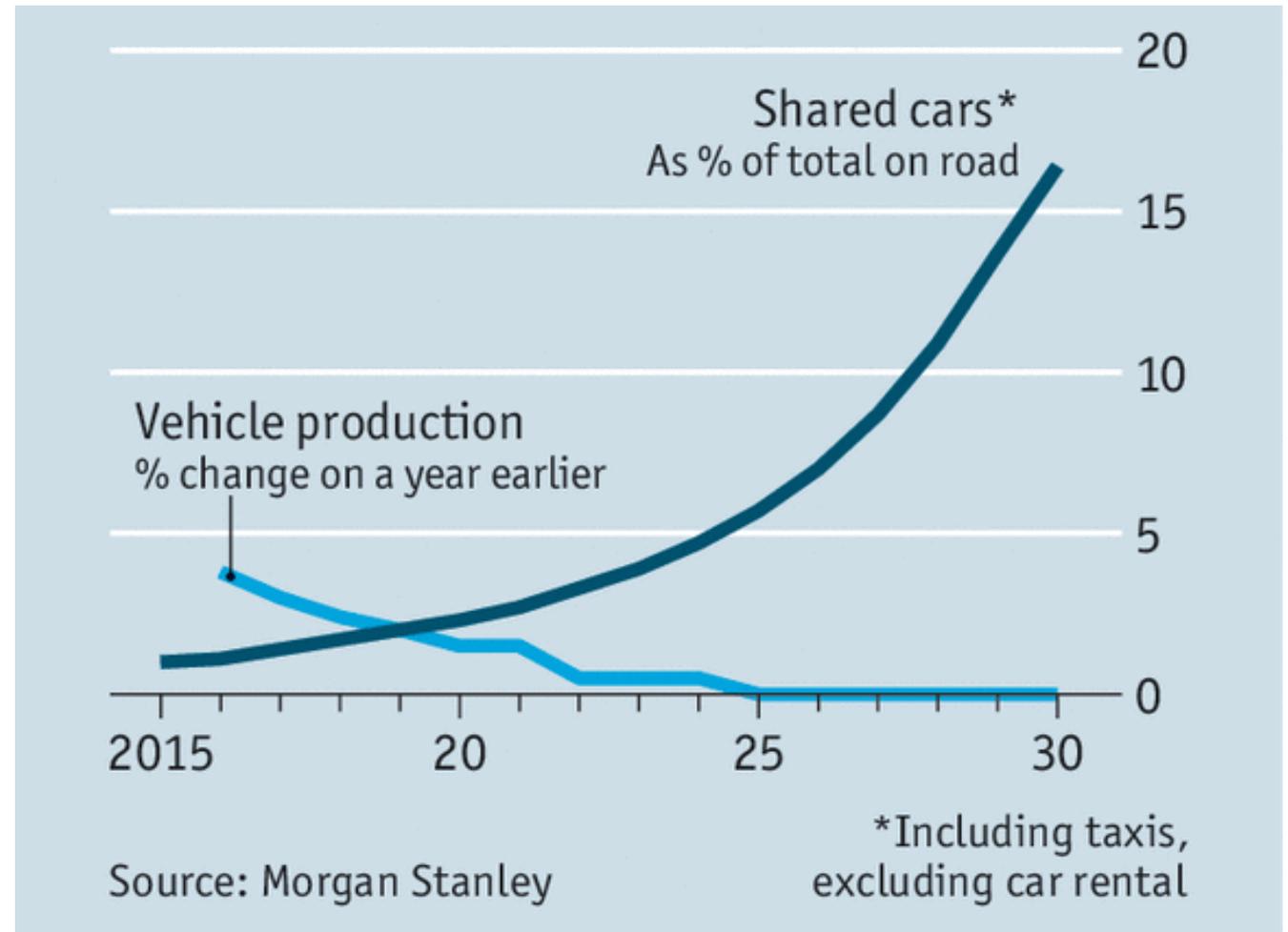
<http://www.amsterdamvehicle2grid.nl/>

Possible integrated 2050 scenario for urban areas

- **Mobility as a Service**
- **Shared (electric) Mobility**, also countering congestion and decreases GhG
- **V2G context**
- **Wider use of RES**

Key issues:

- Interoperability
- Ownership of the system
- Business models
- Capillarity
- Open platforms
- Security (of data and networks)
- ...



Economist.com

Policy Instruments, and how to enhance them

- **Policy Instruments** have to incorporate directives for electric and shared mobility (**PROMETEUS**) aiming at fostering behavioural changes while enabling a feasible (from the technical point of view) and a viable (from the financial point of view) transition. Usability is a key issue.
- **Behavioural change** can be fostered by removing obstacles (policy-wise or finance-wise), by raising awareness, by embodying an example of transition and use by Public Authorities.
- A **multilevel governance** must be fostered too:
 - ✓ Eu/International Level – standards
 - ✓ National - norms
 - ✓ *Regional – regional (development) framework
 - ✓ Local – planning



And what about rural areas?

- Transport policies have to **de-urbanise themselves**, and not consider rural areas merely as *'drive-through'* areas.
- Specific **sustainable mobility solutions are available** for rural areas (integration in urban areas' shared electric systems, creation of local shared electric systems, implementation of charging infrastructures, ...).
- Mountain and rural areas are often **net producers of RES**. The concepts of **Green Communities and Smart Villages** allow for interesting and profitable solutions for the production, availability and consumption of RES.

Grazie!



**Interreg
Europe**



European Union | European Regional Development Fund

Gianluca Lentini

Poliedra
Politecnico di Milano

Gianluca.Lentini@polimi.it



Follow us!

[linkedin.com/company/consorzio-poliedra](https://www.linkedin.com/company/consorzio-poliedra)

[facebook.com/consorziopoliedra](https://www.facebook.com/consorziopoliedra)

twitter.com/CPoliedra