



ERF's view on energy efficiency road transport in the EU

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The Danube Region Transport Days – Ljubljana 28 & 29 November 2022

The European Union Road Federation (ERF)

- Non-for-profit organisation, coordinating the views and representing stakeholders in the field of the EU road infrastructure sector
- Based in Brussels – founded in 1998
- Platform of dialogue and research on road mobility issues
- ‘The Voice of the European Road’

ERF Membership

➤ 70 Members:

- National Road Associations
- Academic and Research sector
- Test centres and notified bodies
- Corporate and Industry (road construction and equipment)

ERF Activities

- 4 major programmes
 - Road Safety
 - Sustainability
 - Road Asset Management and Financing
 - Intelligent Roads and Smart Mobility

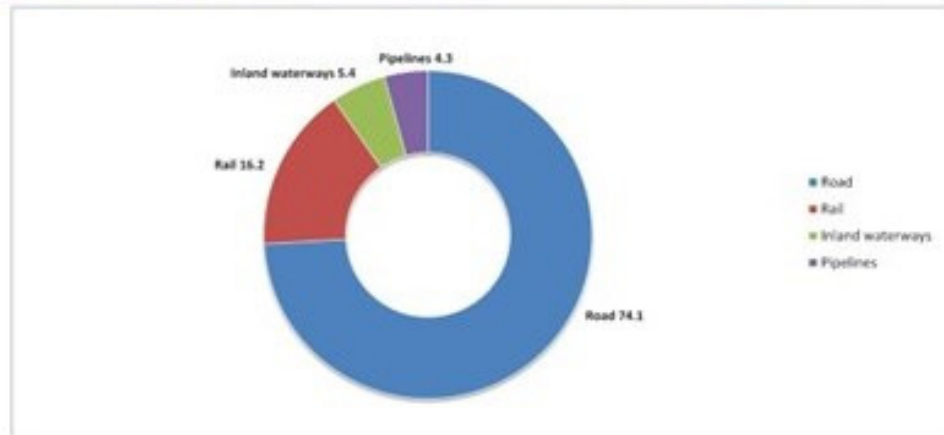
- Dedicated internal working groups

- Participation to European projects



Roads and Transport

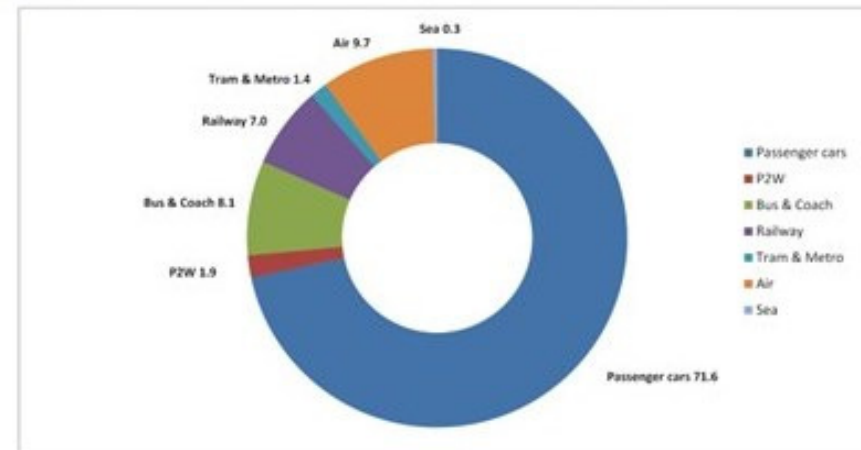
5.4 Inland transport modal split in EU 27, 2019 (% of tkm)



Source: EC

Freight

6.3 Passenger transport modal split in EU 27, 2019 (pkm in %)



Source: EC

Passenger

How to make road transport energy efficient

➤ Act on 3 main pillars:

- The driver
- The car
- The infrastructure



Acting on the road user's behaviour

- Speed reduction
- Eco-driving attitude
 - Mandatory or voluntary trainings for professional truck drivers
 - Truck platooning
 - Smoother driving behaviour (anticipation, planning)
 - Digital services, connected / autonomous vehicles
- Consider alternatives
 - Car pooling, public transport, multimodality, soft mobility



Acting on the vehicle

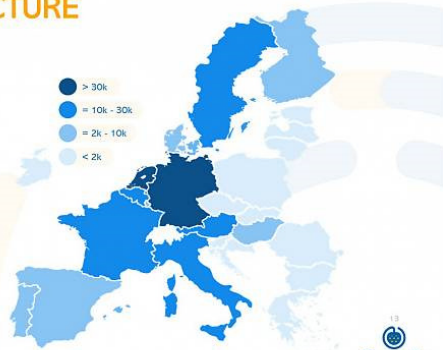
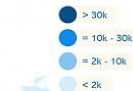
- Consider alternatives to car use
- Alternative fuels: electricity
 - End of sales of new cars with internal combustion engine in the EU as from 2035
 - Availability of charging stations – large disparities between EU countries
 - Equity in the national distribution of charging points (urban vs rural)

PUBLICLY ACCESSIBLE CHARGING INFRASTRUCTURE THROUGHOUT THE EU

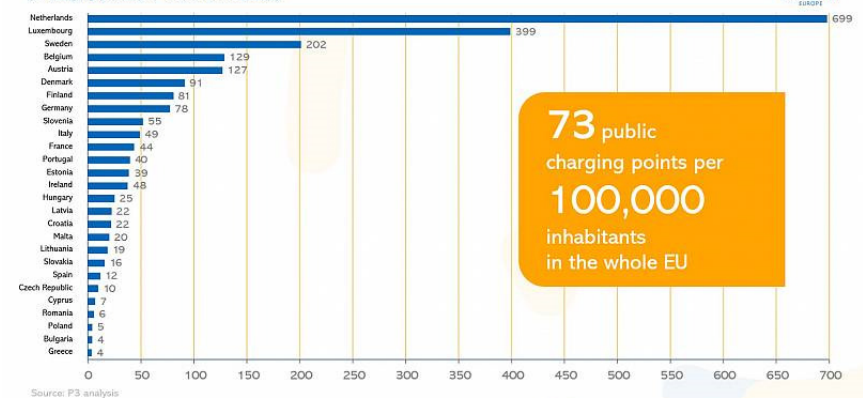
More than 365,000 publicly accessible charging stations in the European Union today.

While there are 73 charging points per 100,000 inhabitants in the entire EU, this is very unevenly distributed across countries and only eight countries surpass this ratio (all in the DACH, BeNeLux and Nordics).

More than 80% of the public charging infrastructure is in the Netherlands (122,000) and Germany (65,000).



Installed Public Charging Infrastructure per 100,000 Inhabitants per Country in EU-27
[in charging points per 100,000 inhabitants]

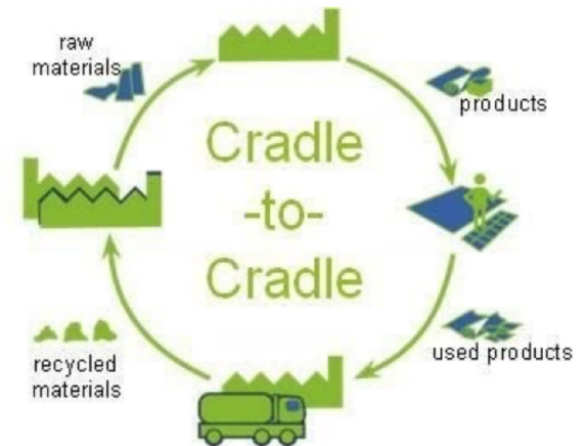
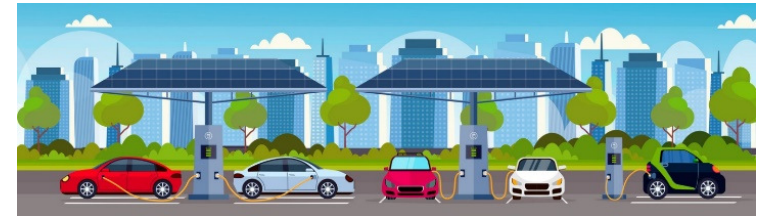


73 public charging points per 100,000 inhabitants in the whole EU

Acting on the vehicle

➤ Alternative fuels: electricity

- Cost of vehicles (social equity)
- Costs of electricity now and in the future
- Cost of implementation of the charging infrastructure – who will pay?
- Future production capacity (+ 20 to 25% in 13 years)
- Future sources of production
- Is the ‘full electric option’ finally greener?
 - Life-cycle assessment (cradle to cradle)
 - Raw materials (rare earths and critical metals)
 - Dependence on production countries
 - Production and use
 - Recycling, re-use, disposal



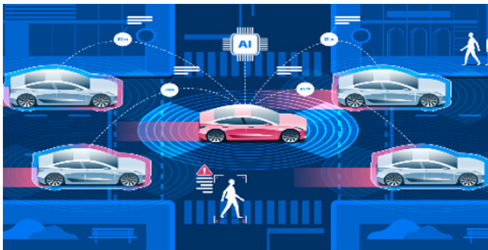
Acting on the vehicle

- Consider alternatives to car use
- Alternative fuels: hydrogen
 - Number of hydrogen filling points in the EU: 136 (end of 2021)
 - Geographical concentration (mainly Germany)
 - Speed of development
 - High implementation cost per charging station – who will pay?
 - Production of hydrogen: **blue** and **green** hydrogen – what is the real ecological impact?
 - Costs of the hydrogen vehicles (social equity)
- Maybe need to consider a mix of different energies



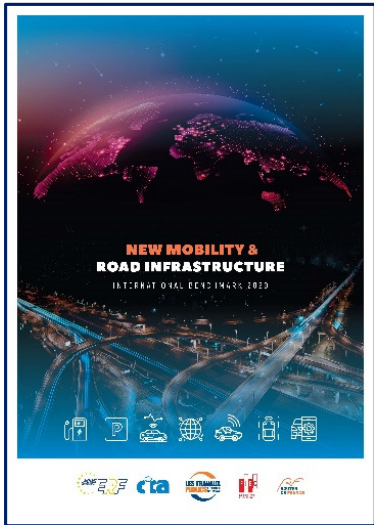
Acting on the infrastructure

- Roads are at the core of mobility
- Emergence of new mobility patterns and behaviours already identified before Covid-crisis
 - Connected and autonomous mobility
 - Electric and carbon-free mobility
 - Urban soft and active mobility



Acting on the infrastructure

- 2 different Benchmark studies carried out by the ERF and some partner organisations
 - March 2019 to August 2020: analysis of 20 countries worldwide
 - Before and during Covid pandemic
 - After pandemic: 11 European countries, focusing on the National Recovery and Resilience Plans



<https://drive.google.com/file/d/1eoXffXHbTRqSL2xGqZ9XzpwkzX3HcXxm/view?usp=sharing>



<https://drive.google.com/file/d/1avbibtu1d0LjOmCoKoJx5n73nBL1ecsp/view>

Future Mobility and new rules

- Decisions of banning fossil fuel vehicles in a near future
- Consequences of increased pressure by transport users and citizens
 - Decarbonation
 - More shared mobility – less vehicle ownership
 - More integrated mobility with all modes
 - Connectivity
- Minimal reference to road infrastructure, in particular for maintenance, preservation, adaptation, improvement and elimination of bottlenecks



Consideration of usage of the road infrastructure

- A better maintained road contributes to the reduction of vehicle consumption and GHG emissions ^{(1) (2)}

	Fuel consumption gap (%)
Reference: infrastructure with good surface condition (low IRI*)	N/A
Degraded infrastructure (high IRI) - low speed	~ + 4 à 6%
Degraded infrastructure (high IRI) - high speed	~ + 10%

* *International Roughness Index*

(1) Spanish Route Association, Análisis de la relación entre el estado de conservación del pavimento, el consumo de combustible y las misiones de los vehículos, 2018.

(2) M. Sime et al, "WesTrack Track Roughness, Fuel consumption, and Maintenance Costs", Tech Brief published by Federal Highway Administration, Washington, DC, 2000.

Recommendations

- Road infrastructure is a massive economic and social asset (EU: > 5 M km)
 - It requires sufficient investment for:
 - Maintenance
 - Preservation
 - Improvement
 - Quick adaptation and flexibility (proven during and after Covid crisis)
 - Resilience
 - Long-term vision from road owners and operators
 - In line with the ecological transition
 - For all road users (traditional and connected)



Thank you for your attention !



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