Requirements regarding supply and funding regimes for the introduction of ERS

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ERS in a Technology-neutral Policy Environment

Summary of conclusions

- Paris Agreement ➔ Road transport will have to be completely decarbonized by 2050 – with no or very little biofuels!
- Technology-neutral policy will severely impede adoption of technologies that require additional infrastructure
- Diffusion of alternative drive solutions for HGVs touches multiple divergent objectives and thus requires a cross-sectoral governmental strategy
- ERS is promising to minimize long-term economic and environmental risks
- The aim of decarbonisation until 2050 won’t give us another 10 years for comparative technology assessment.
- Introduction of ERS is heavily dependent on political action
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Can ERS be introduced in a technology-neutral policy environment?

- Probably not ➔ Some specific policy will be needed!

... but which?

Today: Focus on vehicle operators
Outline

1. Status quo of ERS with regard to policy
2. Requirements for supporting policy
3. Possible elements of an ERS policy framework
Starting conditions
Wanted:

Measures to reach CO$_2$ targets in 2030!
Existing Regulation – more and more certainty

- $\text{CO}_2$ fleet targets for HDV are currently enacted on EU level → most important driver for vehicle electrification!
  - In 2025, 15% lower than 2019
  - In 2030, at least 30% lower than 2019 (indicative target, subject to review in 2022)
  - Similar regulation also in China, India, Japan, Canada and the United States

- More and more bans for Diesel engines in urban areas

- “Energiewende” is making electricity predictably less CO2 intensive
Systemic cost advantage of ERS in the long run

Costs: (qualitative)
Vehicle supply – some uncertainty...

- Currently: prototypes for field tests
- Vehicle manufacturers: 36 months needed for setting up series production
- Modular design of vehicles is increasingly common → pantograph etc. could be easily fitted to electric vehicle platforms
- Actual vehicle supply heavily dependent on regulation (cf. passenger car market)
Delta in total cost / km is small, but margins as well!

Exemplary comparison between diesel truck and overhead catenary truck for different countries
Shuttle traffic on ERS has advantages in the early phase

→ Which vehicle operators should be targeted primarily?
Vehicle Operators – huge uncertainty!

Will it work? I need absolute reliability.

It is hard to predict for me what I will be doing tomorrow...

None of my customers pays me for CO2 reduction.

How will the technology depreciate? I can’t bear any financial risks...

Will my truck drivers like it? I need to customize the trucks for them.

I learned that I am supposed to use intermodal transport if I want to be green...
Conditions for vehicle operators

Infrastructure roll-out

Vehicle supply

Existing regulation

Necessity of climate action

Degree of uncertainty
Requirements
Requirements for funding systems
Vehicle Operators

- Life cycle cost lower or equal to Diesel vehicles
- No additional up-front costs
- Predictability
  - Infrastructure availability
  - Cost comparison between technologies
  - Vehicle supply and maintenance
- Low complexity of funding procedure
- Transparency
Requirements for funding systems
Government

- Predictable CO$_2$ reduction
- Alignment with other sustainability goals
- Low administration costs
- Low overall expenses
- Low probability of stranded invests
- Consensus among important stakeholders
- Compliance with EU subsidy legislation
A funding system should...

- remunerate electric vehicle operation (e.g. electric v-km)
- create predictable conditions for operators over the holding period of a vehicle
- enable test of new technology for a limited time for new users
- be able to adapt to market conditions (energy prices, vehicle prices) → cf. Subsidies for renewable energy production
- cause minimum net fiscal cost in the long run
Possible funding systems
Examples of Possible Measures

- **Public investment / grants**
  - Public initiation and roadmapping of infrastructure roll-out
  - Purchase subsidy

- **Fiscal measures**
  - CO₂-dependent toll
  - Energy taxation
  - CO₂ tax

- **Regulation**
  - Continue CO₂ fleet targets
  - Zero Emission Mandate on electrified stretches?

**Essential:**

Provide transparent and reliable roll-out plan for a first phase!

Search for limited networks which can make sense even without a nation-wide roll-out!

Enable a significant group of operators to gain experience with the system!

Actively explore possible synergies with other alternative drive systems!
Possible elements of a roadmap for ERS...

Public investment / grants ...should decline in the medium run...

Fiscal measures ...should be budget-neutral in the long run...

regulation ...should offer a predictable perspective for all players!

demonstrators

Start of large-scale implementation

Basic network

2020  2025  2030  ...2050...
Thanks for your attention!

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