Role of E-Mobility in Sustainable Urban Development for Achieving the SDG 11


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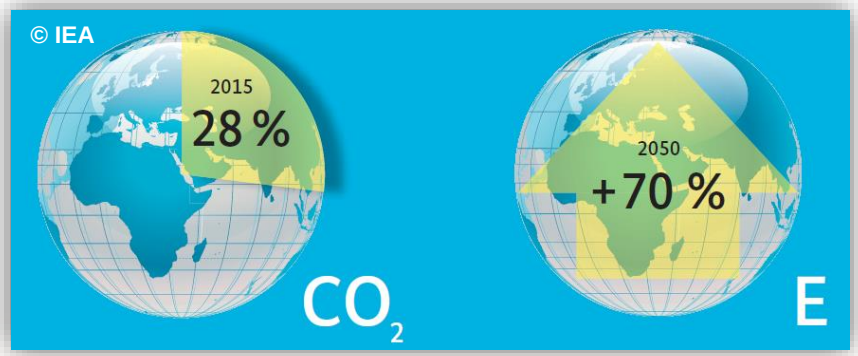
Importance of e-mobility for SDG11

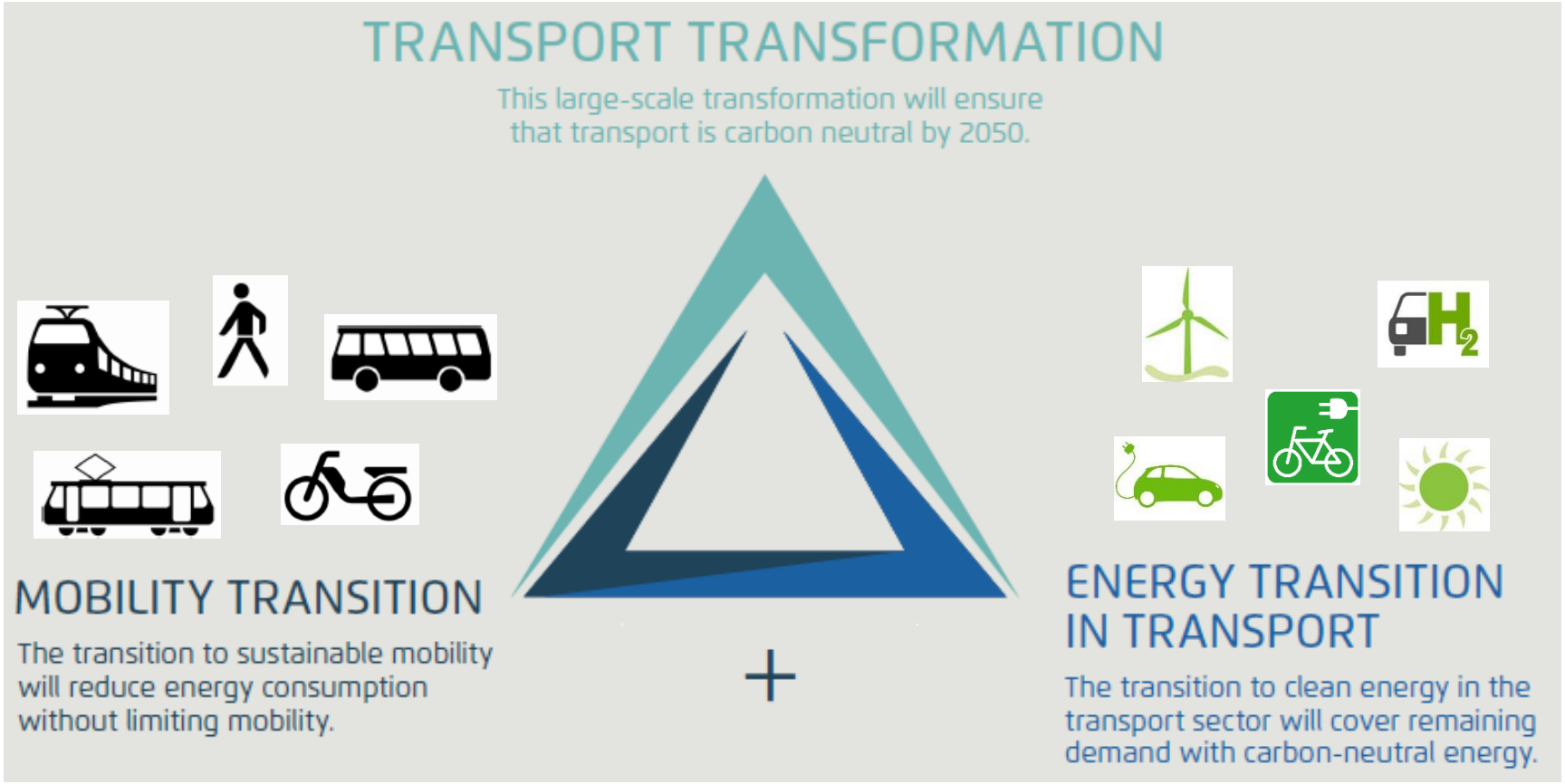
Motorization, air quality, traffic noise

Energy dependency and trade deficits



Energy consumption and GHG emissions

E-mobility is one of several pieces towards decarbonization



Source: Agora Verkehrswende

Cities are key for EV adoption!

Challenges on urban level

- Rapid motorization
- Traffic jams
- Air pollution
- Roadway noise
- Loss of street space for NMT, green places, etc.
- Safety issues

Chances for e-mobility on urban level

- Lower distances
- Efficiency benefits
- Economical benefits
- Available regulatory instruments
- Concentration of innovation driver
- New business models

Areas of implementation

rail/ tram

private cars

governmental/
company/
tourism fleets

public transport

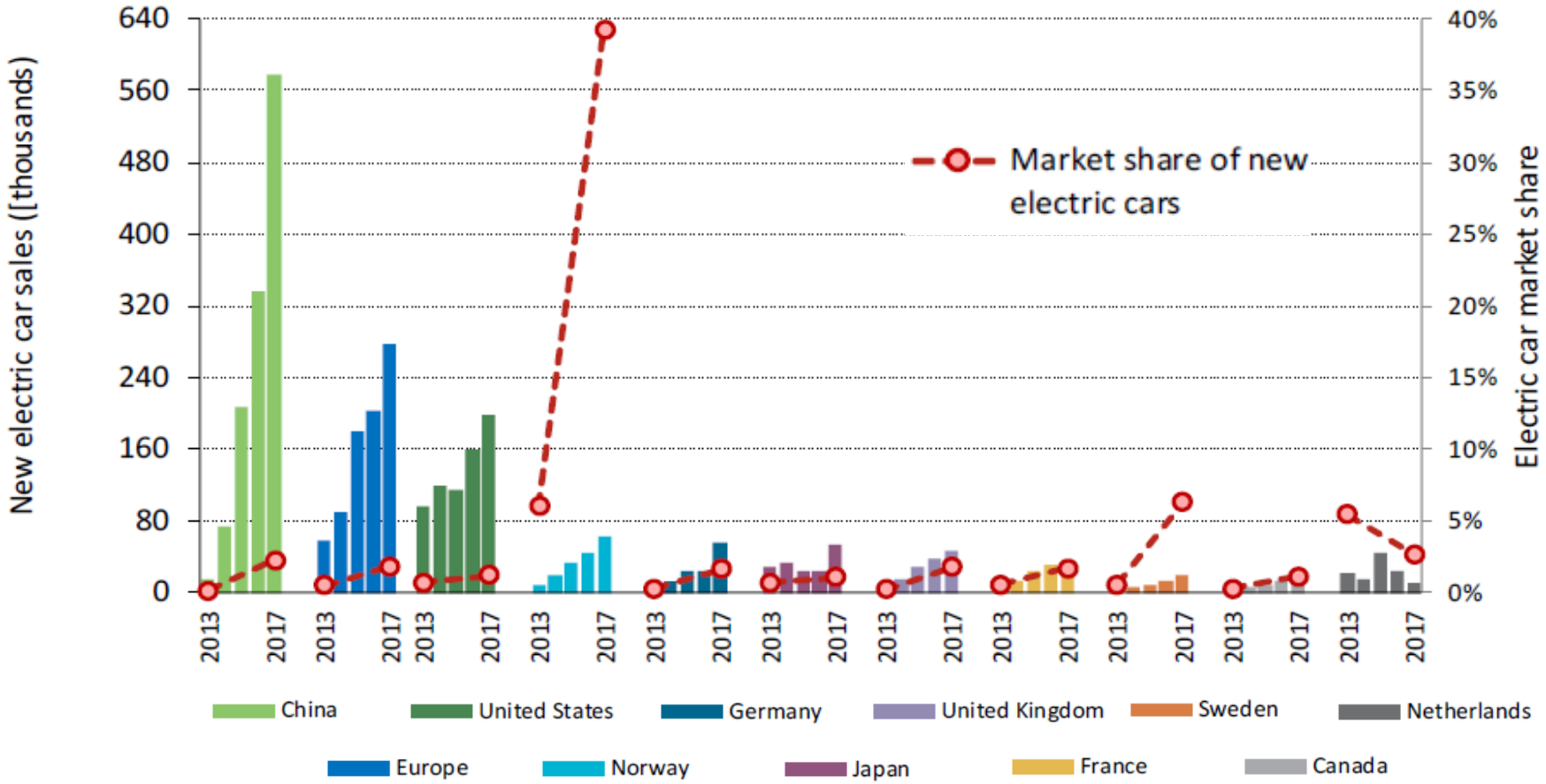
two-wheelers

three-wheelers

x-sharing/ taxi/
ridehailing

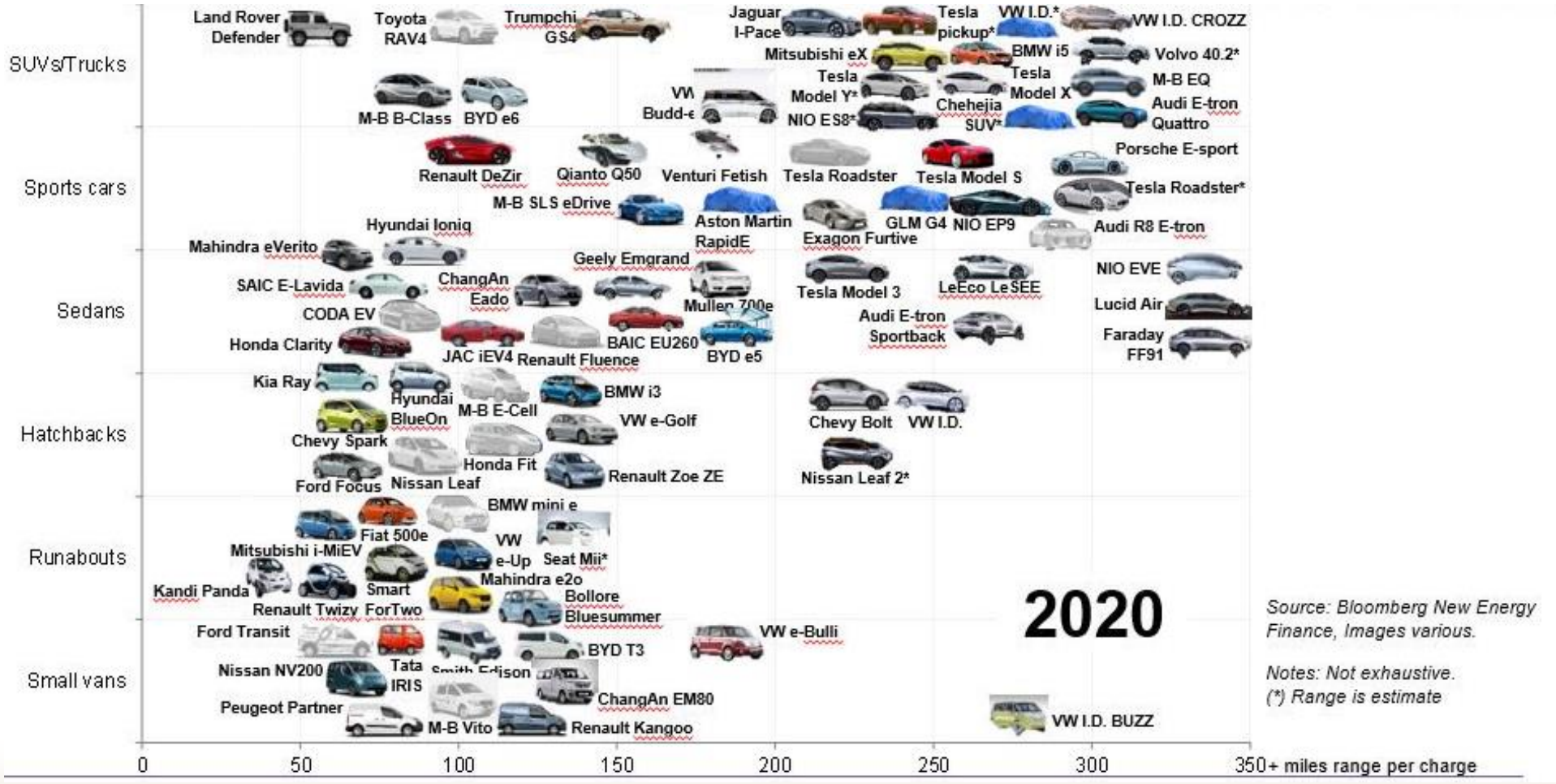
urban freight

Electric car sales and market share, 2013-2017



Source: IEA, 2018 (based on ACEA, 2018 and EAFO, 2018)

BEV model availability, 2008-2020



Europe
2,000 ebuses delivered or on order

South Korea & Japan
Prototypes

Latin America
Pilot fleets

giz Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH

China
More than 300,000 ebuses

Shenzhen first city with only electric buses (16,000 buses)

India
Manufacturers launching products

Canada
First small batches

Sub-Saharan Africa
Minibuses

North Africa
Initial projects

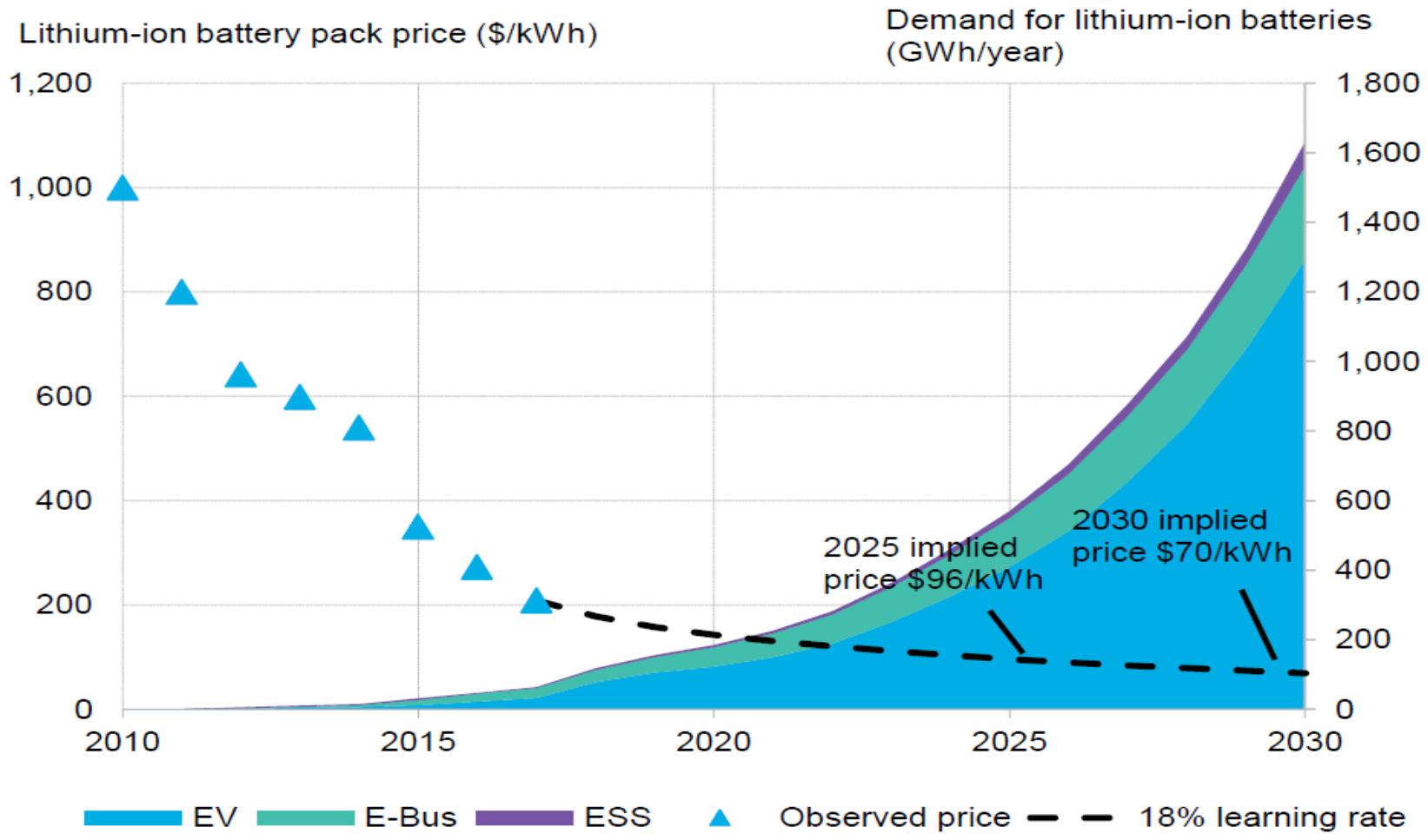
USA: around 300 ebuses in service

Russia & CIS countries
Trolleybuses with batteries

Australia & New Zealand
Trials, first orders

Source: UITP, 2017

Lithium-ion battery pack price & demand forecast



Source: Bloomberg New Energy Finance. Note: ESS is stationary energy storage applications.

Consequences for the transport sector, example public transport provider

Challenges	Opportunities
• High upfront costs (vehicles and infrastructure) • Challenging operation • New ways to procure (requirements on vehicles, equipment, operation services) • Standardization and interoperability • Reinforcing cooperation with energy provider • …	• Higher energy efficiency • Less running and maintenance costs • Renewal of operation systems can lead to more efficiency (e.g. routes, frequency) • Attractive vehicles might attract more people to public transport • Less GHG emissions, air pollutants and noise • …

Consequences for the energy sector

Challenges

- Development of charging infrastructure (location finding, technical, economical and legal requirements)
- Increasing electricity demand
- Uncontrolled charging can lead to problems in distribution grids
- Dependency on charging behaviour of the user (difference between desire and reality)
- Billing of charging current
- …

Opportunities

- Use of EVs for grid integration and storage of renewable energy (reducing load peaks, alternative to network expansion)
- Decentralised production, control and storage is becoming cheaper and smarter
- Energy security/ reduction of oil import dependency (price stability)
- Re-use of mobile batteries for stationary operations
- New business models
- …

Promotion framework for e-mobility

Promote the use of electric vehicles

National level

- Tax rebates, subsidies and other financial incentives for EVs & charging infrastructure
- Legal framework
- Norms & standards (e.g. charging, battery disposal)
- Readiness of energy sector (electricity grid, RE)
- Awareness raising in ministries, industries, etc.
- Integration in NDCs and sectoral plans, MRV framework

City level

- Development of charging network
- Integration in SUMPs
- Regulatory privileges for EVs
- Promotion of PPPs for new business models
- Education & qualification (e.g. car mechanics, technicians)
- TA to public transport provider
- Demonstration projects: electrifying high-use vehicles and fleets
- Awareness campaigns for companies, citizens

Lessons learned

1. Start no

2. Create politic and awareness

3. Develop a vision, a and an action plan for implementation of e-m (incl. steering structure)

4. Build up capacities (planners nics, electricians, etc.)

5. Initiate cooperations between energy obility sector, between public and private sector

6. Show feasibility with demonstration projects

National & municipal government

Case Norway

1990
Purchase tax exemption (up to 10.000€)

1990
No import tax

1996
Reduction on annual ownership tax

1997
Urban toll exemption

1997
Highway toll exemption

1999
Free municipal parking and reserved parking spots

2000
50% reduced company car tax

2001
No VAT tax

2005
Access to bus lanes

2008
Funding for public charging network (also fast charging)

2009
Ferry toll exemption

2011
Funding for charging stations at home

2013
Weight tax deduction for EVs

Thank you very much for your attention!

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