

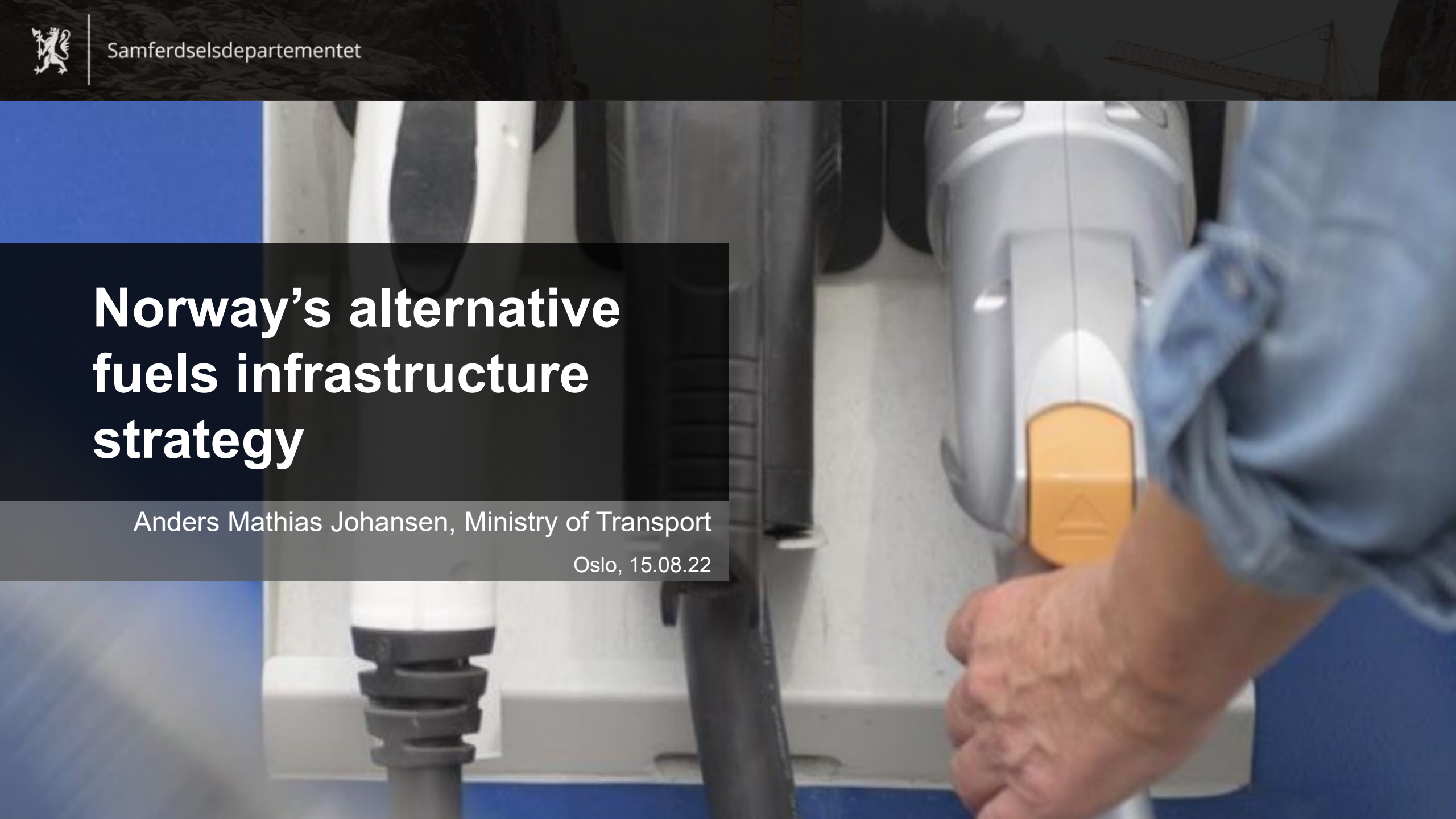


Samferdselsdepartementet

# Norway's alternative fuels infrastructure strategy

Anders Mathias Johansen, Ministry of Transport

Oslo, 15.08.22



# Current policy measures

- National Action Plan on alternative fuels infrastructure (2019):
  - Combination of a **market based approach** and **government policy actions** (mainly investment support)
  - **Government investment support** for **fast charging stations** and **hydrogen stations** before market-based solutions are in place through the state enterprise **Enova**
  - Regulation of **European standards** and **user information** (AFID)
  - Publicly available **overview/data of alternative fuels infrastructure for roads and ports** in Norway
  - Support national and European **research and innovation** programs
- EV policies of great importance, e.g.:
  - Large **tax exemptions and other user incentives** for EVs
  - **Petrol and diesel cars** have a relatively **high registration tax**
  - **Climate-related requirements** in public procurement processes



# Targets in current National Transport Plan

- All new passenger cars and light commercial vehicles sold in 2025 shall be zero-emission vehicles.
- All new urban buses sold in 2025 shall be zero emitters or use biogas.
- By 2030, all new heavy duty vehicles, 75 per cent of new long distance coaches and 50 per cent of new trucks shall be zero emission vehicles.
- The distribution of freight in the largest urban centers shall have almost zero emissions by 2030.



# New national strategy for charging infrastructure (road) in 2022

- New government platform in 2021
- Report («knowledge base» for new strategy) from Public road administration and the Norwegian Environment Agency in march 2022
- Working group consisting of 7 ministries
- Strategy will include:
  - Status/overview of current conditons
  - Evaluation of future needs
  - Policies to improve user friendliness
- Will maintain principle of market based approach



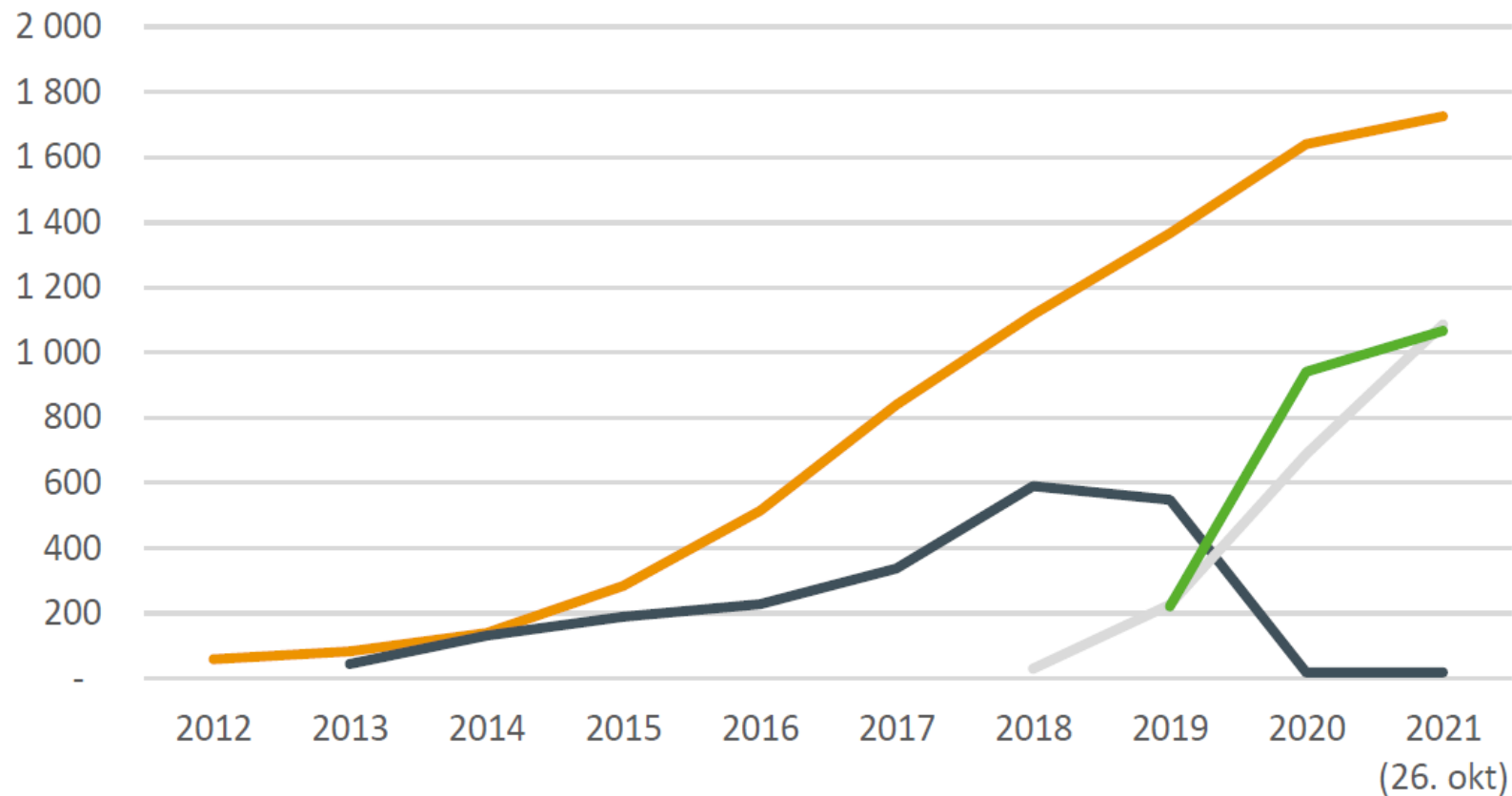


# Current electric charging infrastructure

- **4 643 high power recharging points** for LDV per 30.06.22
- **Large increase of 150+kW charges** (up to 350kW) after 2018
- **No public charging infrastructure established for HDV**
- **5-6 large charging point operators**; large number of small operators
- **Large number of small charging stations:** half with 1-5 charging points
- **7 lager hubs** (21-45 charging points)



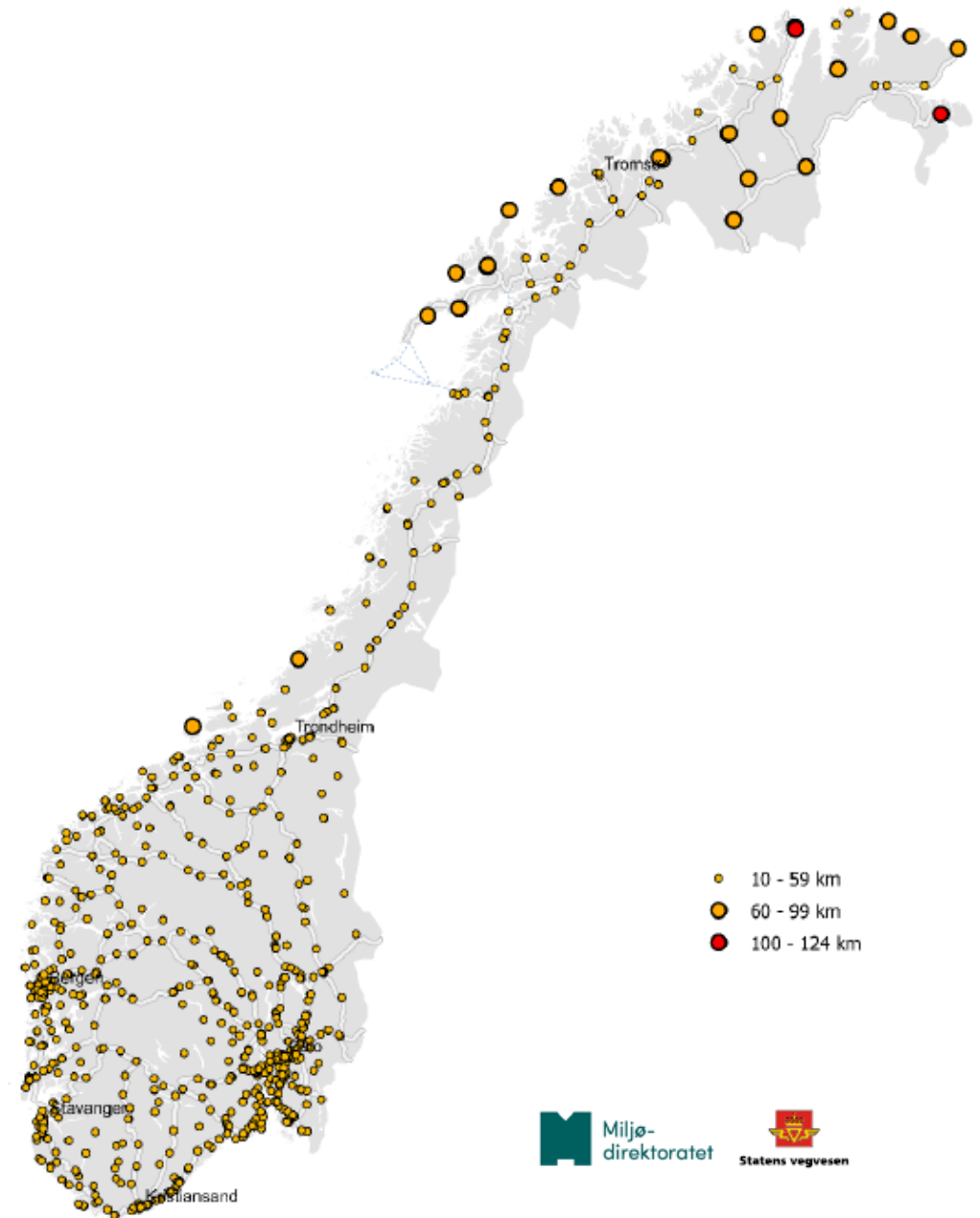
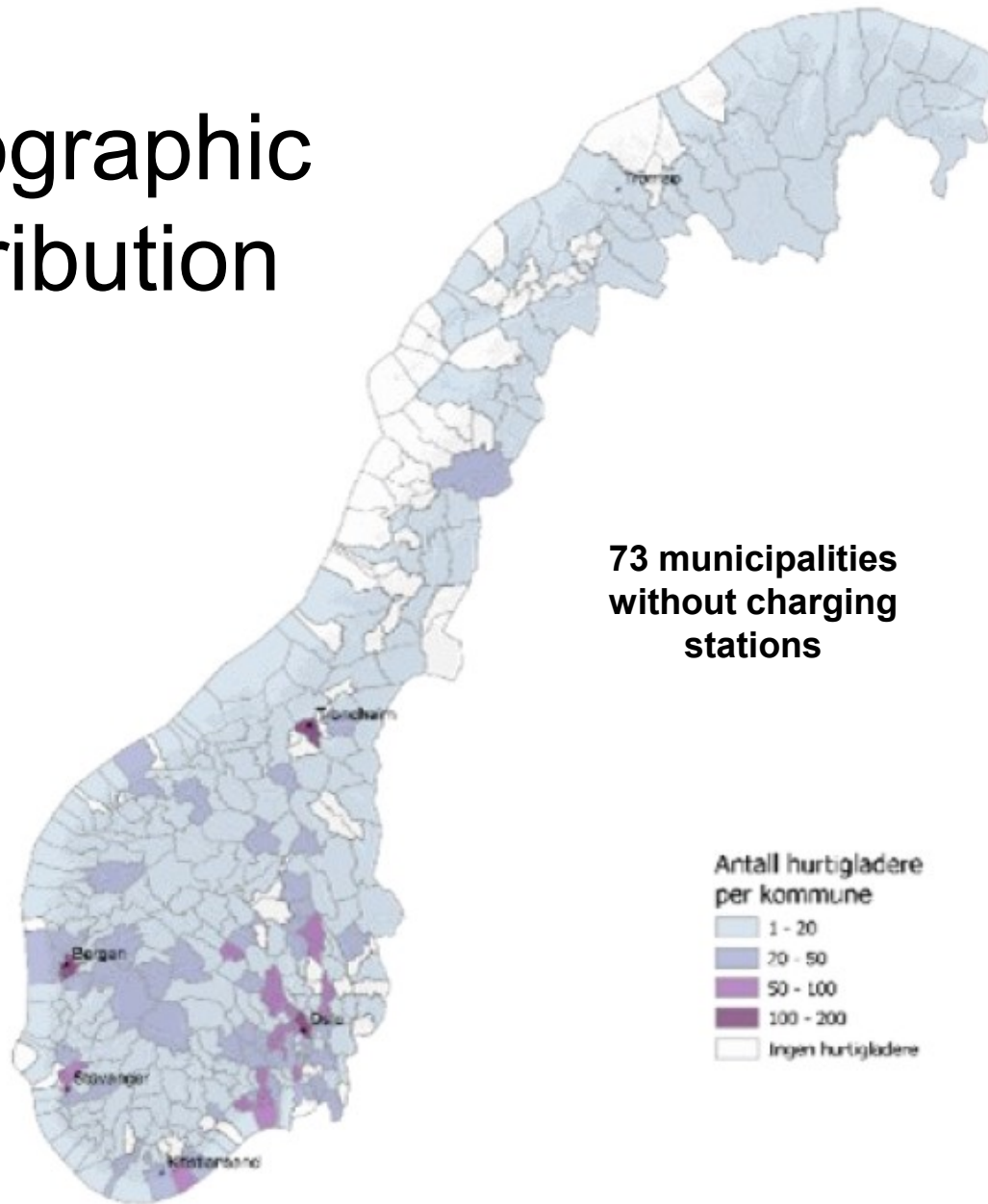
# High power recharging points 2012-2021



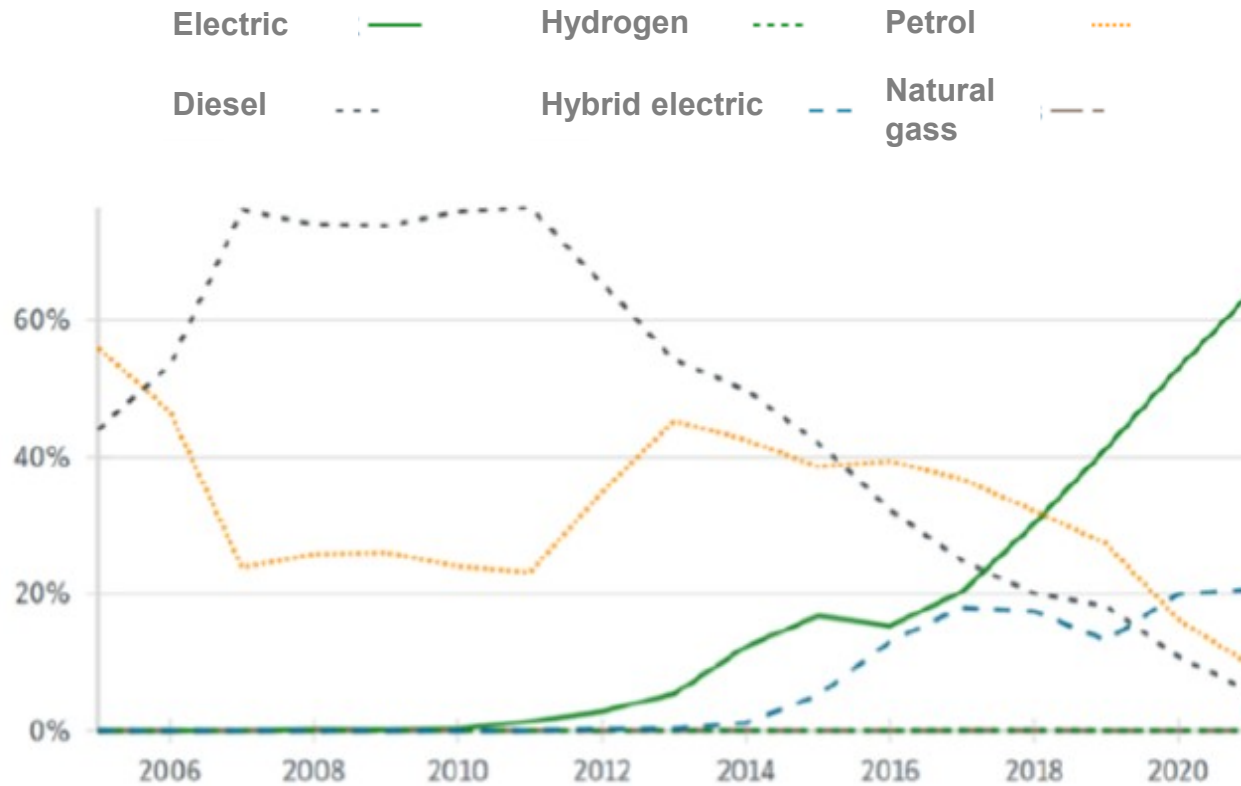
CCS/Chademo 50-149 kW Tesla 50-149 kW  
CCS/Chademo ≥ 150 kW Tesla ≥ 150 kW



# Geographic distribution



# Sale of new cars 2006-2021



## Per june 2022:

- 508 000 EVs (LDV)
- Marketshare of 79 %
- Increase of appr 10 percentage points every year since 2017



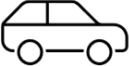


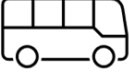
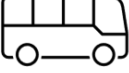
# Battery electric heavy duty vehicles estimated to be cheaper than diesel between 2025 and 2030

Totale cost ownership 2020, 2025 og 2030 relative to diesel powered heavy duty vehicles (trucks with 3 axels and 27 tonns total weight).

	2020	2025	2030
Diesel	100	100	100
FAME (biodiesel)	105	107	110
HVO (biofuel)	112	115	117
<b>BEV (battery electric vehicles)</b>	<b>134</b>	<b>103</b>	<b>91</b>
Biogass (CBG - kompr)	112	110	109
Biogass (LBG liquif)	118	116	114
FCEV (fuel cell electric vehicle)	186	148	121
Hybrid (HEV)	112	113	112
Plug-in hybrid (PHEV)	114	113	112

*Institute of transport economics (TØI rapport 18855/2021)*

# Estimated number of EVs 2021 and 2030 given nasjonal targets for new EVs 2030

<u>2021</u>		<u>2030</u>
460 000 light duty vehicles		1,7 mill. light duty vehicles
15000 light duty commercial vehicles		230.000 light duty commercial vehicles
100 heavy duty vehicles		23.000 heavy duty vehicles
55 long distant busses		2.000 long distant busses
500 city busses		9.000 city busses

# Estimated need / targets for public fast charging infrastructure LDVs

- 9.000 in 2025
- 10.000-14.000 in 2030
- Currently at **4.643**
- Est. 85 % of owners will charge at home, but need public charging on longer trips (long trips  $\approx$  20 % of total driving)
- Est. 15 % will need most (70 %) of energy from public charging
- Increase in charging speed and battery size
- 175 EVs per charger



# Main issues – targets for LDV

- **Well established marked** – no more need for government support (?)
- **Close to distance based targets in AFIR proposal** (60 km) today except certain areas on E6 in Finnmark county in the north
- **Large increase of charging points with 150 kW**
- **Need for government support given expected AFIR targets?**
- **Fleet based target: currently within target** (but hard to assess). Close to 20 % of fleet EVs
- **Charging during peak demand** during vacations
- **Availability and space** for LDCVs
- **Building / expanding where costs of access to grid is high**

# Estimated need / targets for public fast charging infrastructure HDVs

- 250 in 2025
- 1.500-2.500 in 2030
- **Currently at 0** (1 during 2022)
- Est. 40 % of ZE-HDVs will need public fast charging in 2025
- Est. 60 % of ZE-HDVs will need public fast charging in 2030
- Important with **large charging stations** with **possibility of booking**





# Main issues – targets for HDVs

- **No market** for charging infrastructure for HDV today
- **Need for government investment support** in early phase
- Will **take time before profitable** and high degree of **uncertainty**
- Depot charging – **early dialogue with first movers important** (e.g. logistics companies)
- Need of **predictability and booking solutions**
- Need of more **access to land** than LDV and preferably **HDV-specific areas**
- Need of **high power output** in order to charge during rest (700kW+?)
- **Investments in and between larger city areas, at rest areas and depot charging probably «no regret» investments**
- **Possible to reach AFIR-targets in rural areas without new policy actions?**

# Barriers – access to grid

- Processing time
  - Main barrier
  - «Up to 2 years»
- Network tariffs
  - Differences in income; fixed tariffs
  - Disproportionately high tariffs for charging stations with low / unevenly distributed demand
- Connection charges
  - High costs when establishing new or upgrading existing connection
  - Infrastructure with high demand can be unprofitable if high connection charges



Foto: Gemini.no

# Barriers – access to land

- Challenge especially in urban areas
- Estimated area capacity ca. 190 m<sup>2</sup> (440 m<sup>2</sup> total)
- Larger for HDV
- Lack of coordination (municipalities, land owners, grid companies)



# Barriers – slow / uneven market development and market distribution

- Low demand / slow development in rural areas
- Local monopolies in certain areas (but low degree of price differentiations)
- Large operators with strong connection to costumers (few drop-in costumers) may result in inefficient use of infrastructure
- High connection charges may in some cases prevent establishment of new stations even when high demand

# User friendliness – challenges

- 70 % of consumers find charging too complicated
- 88 % want better payment solutions
- CPOs want user friendliness for loyal costumers
- Hard to calculate final price and compare
- Lack of information at charging station
- Lack of static and dynamic data (operational status, availability etc.)
- Universal design



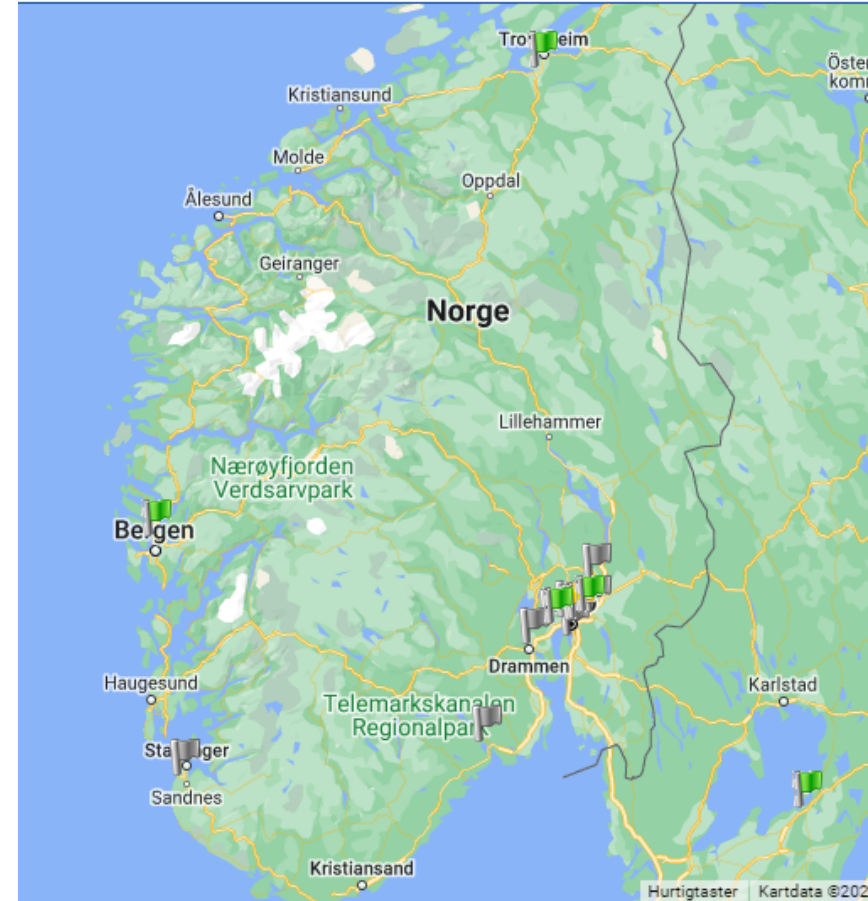





# User friendliness – main issues

- Need to regulate a common payment solution (?)
- Common rules for price information
- Ensure availability of static and dynamic data
- Facilitate roaming
- Facilitate effective use of plug&charge, autocharge, automatic licence plate recognition etc.
- Establish norms and enforce requirements for signs
- Enforce requirements for universal design
- All issues addressed in AFIR-proposal(s)

# Hydrogen

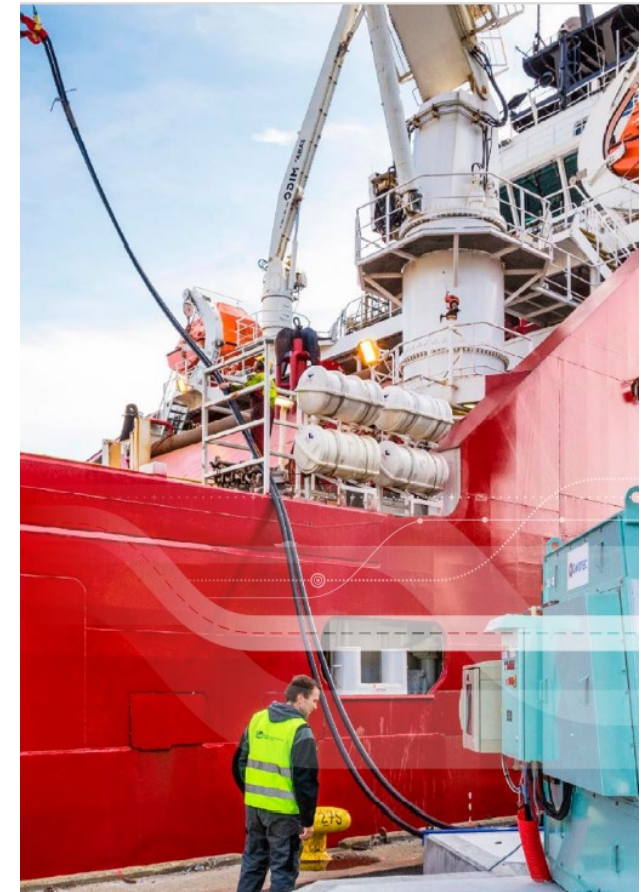
- No market for FCEVs or charging infrastructure
- Need of large scale production and infrastructure if profitable = need for cooperation across sectors and users
- Need of sufficient space (incl safety zones) = need for combine consumers
- Need of synergies



○ In Operation  ○ Planned  ○ Old Projects 

# Shore-side electricity supply in maritime ports

- Most TENT-T ports have established shore-side electric supply for container ships, ro-ro passenger ships and sea going high speed passenger crafts
- All ports with international ferries have shore-side electric supply. Not established at some of the ports for the coastal route / Hurtigruten
- Few of TENT-T ports for cruise ships have shore-side electric supply
- Coverage of electric supply facilities in TENT-T-ports for ships above 5000 gross tonnes 80 % for containerships. 85 % for ro-ro passenger ships and 25 % for cruise ships
- Need to evaluate if existing facilities will be able to cover 90 % of demand for ship categories + costs for expanding capacity



# Targets for supply of electricity to stationary aircrafts

- Mostly unproblematic
- All state owned airports have facilitated supply of electricity for stationary aircrafts at aircraft contact stands and remote stands
- All electricity supply comes from electricity grid
- Need to evaluate future need for electricity and hydrogen



Menon economics

# Milestones 2022-2024

- Finalize **new strategy for fast charging infrastructure** for LDVs and HDVs (road) during 2022
- First step: The Public Road Administration is currently evaluating in where the **demand for charging stations for HDVs** is expected to appear first and available areas of the road network
- **New white paper regarding access to power grid** (Official norwegian report published june 2022)
- New **National transport plan** spring 2024
- National **AFIR-strategy** (including maritime and aviation)