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Norwegian Public Roads  
Administration



Electric Infrastructure for Goods Transport



# Research on Low Carbon Emissions - Road Transport in Norway

CEDR workshop on Electric Roads,  
Berlin 14.03.2016

Gina Ytteborg, Head of R&D and Innovation NPRA



# NTP 2018-2029

Plangrunnlag fra Avinor, Jernbaneverket, Kystverket og Statens vegvesen



# GHG Emissions from transport 2014

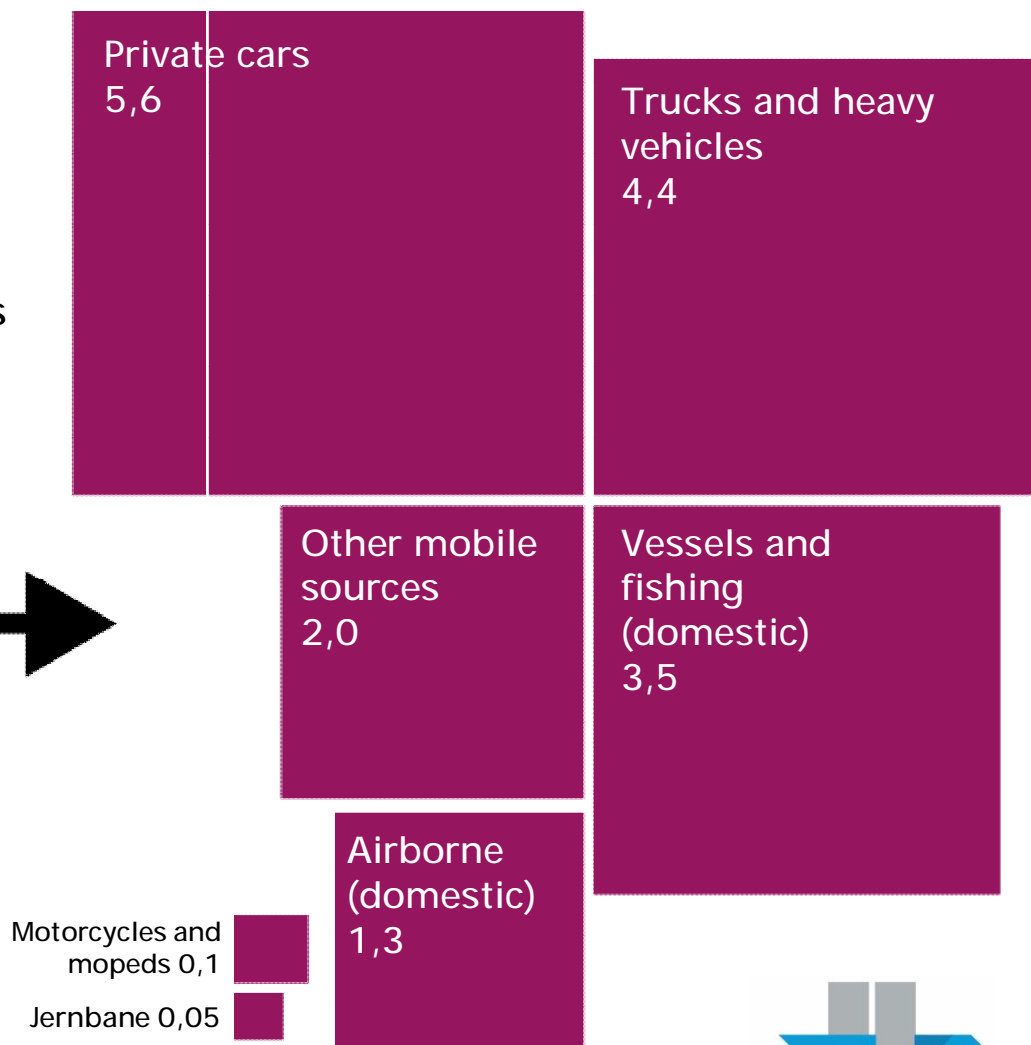
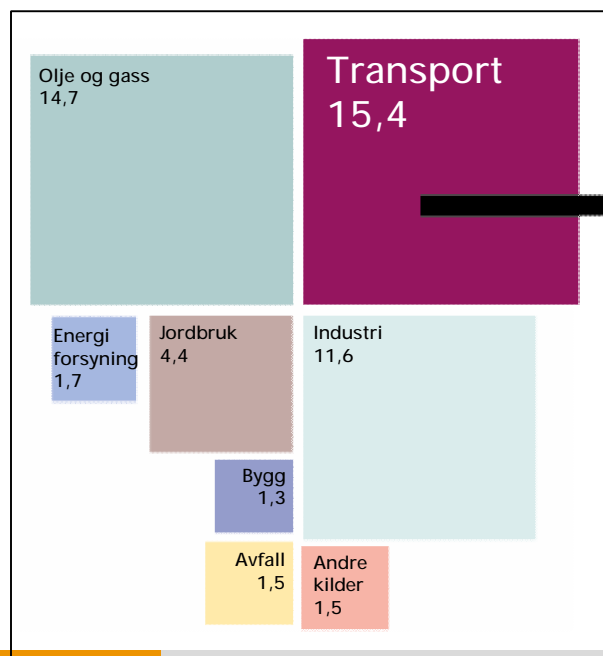


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Emissions to air (mill.  
tonnes  $\text{CO}_2$  -eqv.)

Kilde: Miljødirektoratet 2016

Total greenhouse gas emissions  
in Norway



## Klimastrategien i NTP:

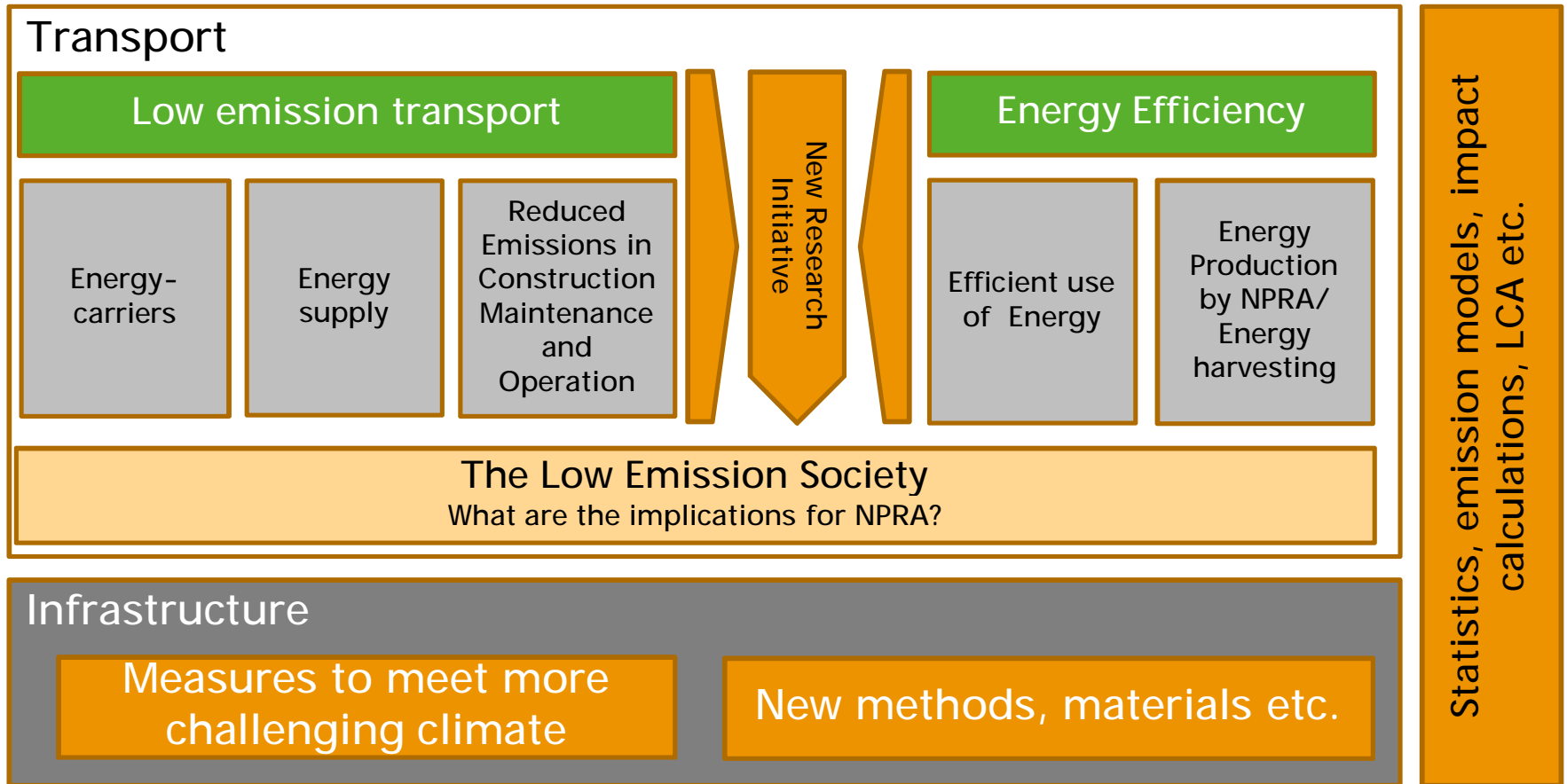
### Mål for vegsektoren:

- From 2025 skal nye privatbiler, bybusser og lette varebiler være nullutslippskjøretøy
- Innen 2030 skal nye tyngre varebiler, 75 prosent av nye langdistansebusser, 50 prosent av nye lastebiler være nullutslippskjøretøy
- Innen 2030 skal varedistribusjonen i de største bysentra være tilnærmet utslippsfri i tråd med EUs ambisjon
- Offentlige etater skal i størst mulig grad benytte biodrivstoff, lav- og nullutslippsteknologi i egne og innleide kjøretøy og fartøy
- I 2050 skal transporten være tilnærmet utslippsfri/ klimanøytral
- Nye ferjer og hurtigbåter skal bruke biodrivstoff, lav- eller nullutslippsteknologi



## Research and Development

# R&D Program Area Energy and Climate Change



# The ELinGO project

- A concept analysis to study how a climate friendly technology for freight transport on road can be developed
- [ELinGO English-HD](#)



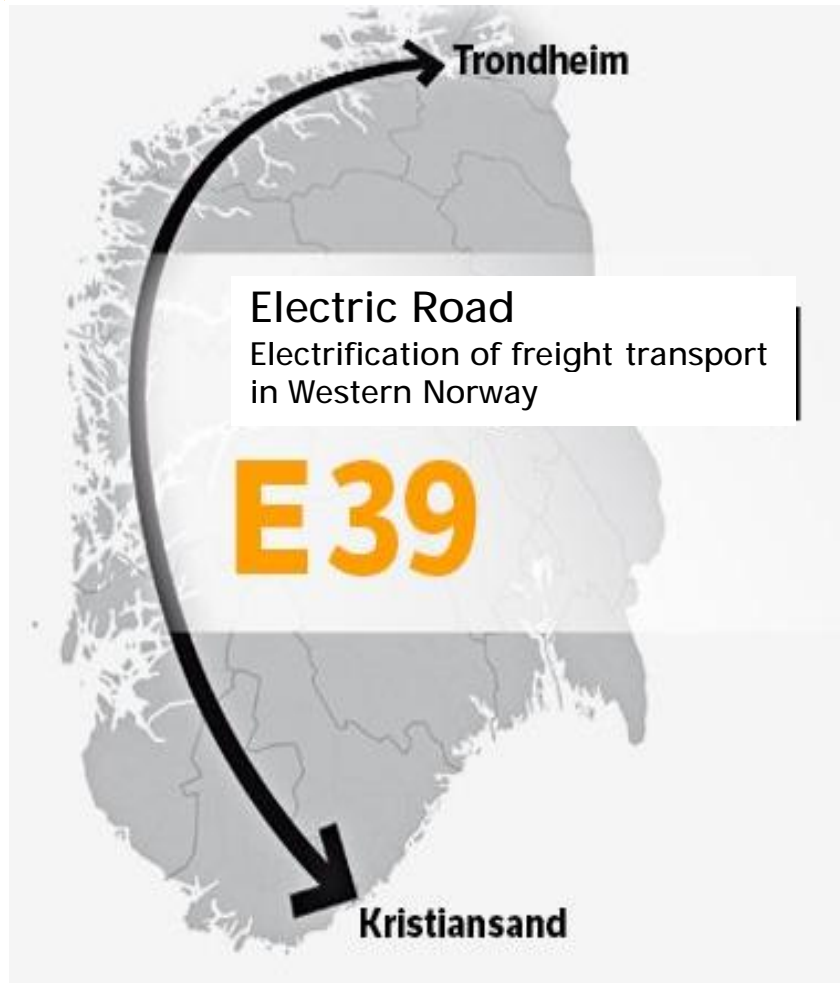
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## E39 – “the road of the future”



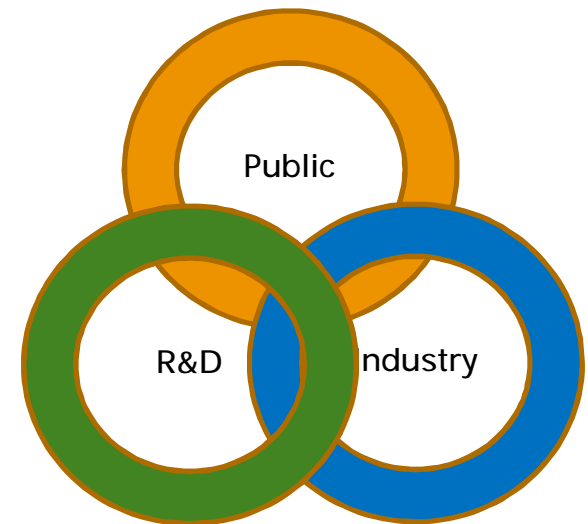
*To meet the national climate objectives, electrification of the road transport is needed on most of the infrastructure (i.e. use of batteries or hydrogen).*

*Biofuel will be important ....., but the production will be limited, and priority of use should be given to areas where electrification is hard to obtain (i.e. aviation).*



## Partners

- Project owner
  - NPRA
- R&D
  - SINTEF
  - NTNU
  - UiS
  - IRIS
  - The Norwegian Research Council
- Industry
  - Volvo Trucks
  - Lyse Energy
  - Siemens
  - NHO Logistics and transport
  - Miles Ahead



International network  
Trafikverket i Sweden  
CEDR  
EU projects





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## Work package 2\*: Technology development

- Design/development of technical concept
  - Evaluation of different technologies for transfer of electricity in motion
  - Energy storage needs onboard the vehicles
  - Bidirectional energy transfer between vehicle and infrastructure
  - Vehicle and infrastructure integration
- Possible small scale demonstration project

Time: May 2016- October 2017

WP1\* is project management



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## Work package 3: System model for the energy infrastructure

- Looking at relevant transport stretches in order to assess requirements regarding
  - Effect
  - Power
  - Electricity grid

Time: June 2016– June 2017



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## Work package 4: Economy and Society

- Costs for road electrification, with E39 as a case
- Life Cycle Analysis
- Economic analysis in line with general principles of transport economics

Time: July 2016– February 2018



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## Work package 5: Road map for implementation

- Value chain
- Business models
- Planning of pilots and demonstrations

Time: January 2017- May 2018



# NPRA – new roles and responsibilities?

- Merging road and energy infrastructure?
  - Legal framework
  - Ownership
  - New challenges regarding safety and security
  - Electric infrastructure – a new discipline in road construction?



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Broad international cooperation and commitment is needed to meet the climate challenges.

We know that new green technologies will play an important role in the future road transport.

Thank you for your attention!