



# How we cut ferry CO2-emissions by 90 %

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Hordaland county council

## The regional level

The Hordaland County Council is responsible for county policies within:

- Secondary education
- Culture and sports
- Transport and communications
- Dental health
- Economic development and regional planning



# Climate and Energy Plans

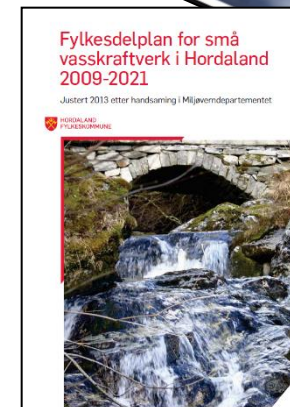
Climate Action Plan Hordaland 2010 – 2020 (June 2010)

Climate Action Plan Hordaland 2014 - 2030 (June 2014)

## Themes in Climate Plan:

- Vision, goals, possibilities for action
- The climate challenges
- Energy production
- Buildings
- Land use and transport
- Business and technology
- Climate Adaptation

Regional Plan Small Hydro Power Plants 2009-2021 (dec. 2010)



# Annual Climate Action Programmes



2010-2011	2012	2013	2014	2015	2016
78 measures	63 measures	55 measures	36 measures	28 measures	34 measures

# Annual Climate Action Programme - Political Decision



## Climate budget

2012: 2,945 mill NOK = 396 320 euro

2013: 2,989 mill NOK = 396 830 euro

2014: 3,034 mill NOK = 364 488 euro (per 24th of June 2014)

**+ 5,000 mill NOK = 600 000 euro, earmarked Infrastructure electrical cars**

2015: 3,880 mill NOK = 485 000 euro

**+ 5,5 mill NOK = 687 500 euro, earmarked for bying el-cars in own adm.**

2016: 3,5 mill NOK = 437 000 euro (proposal by Chief Executive Officer)

**+ 2 mill. NOK = 240 000 euro, no earmarking**

**2017: 5,5 mill NOK = 500 000 euro + 5 mill = 10,5 mill NOK**

**2018: 10,5 mill NOK proposed**

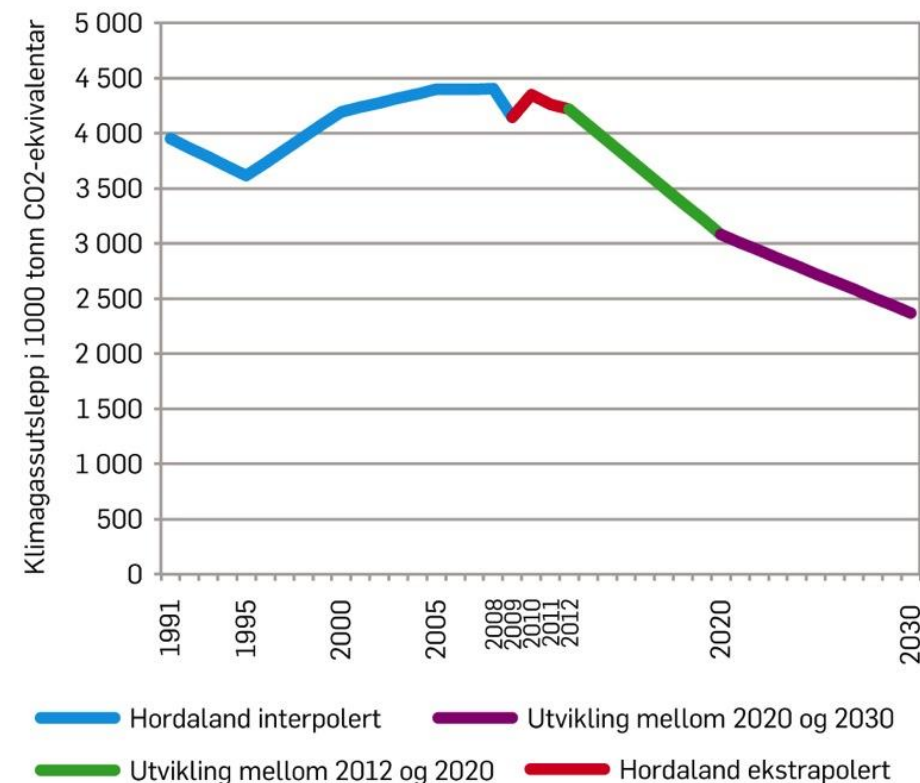
# LAND USE AND TRANSPORT - GOALS

## Land Use

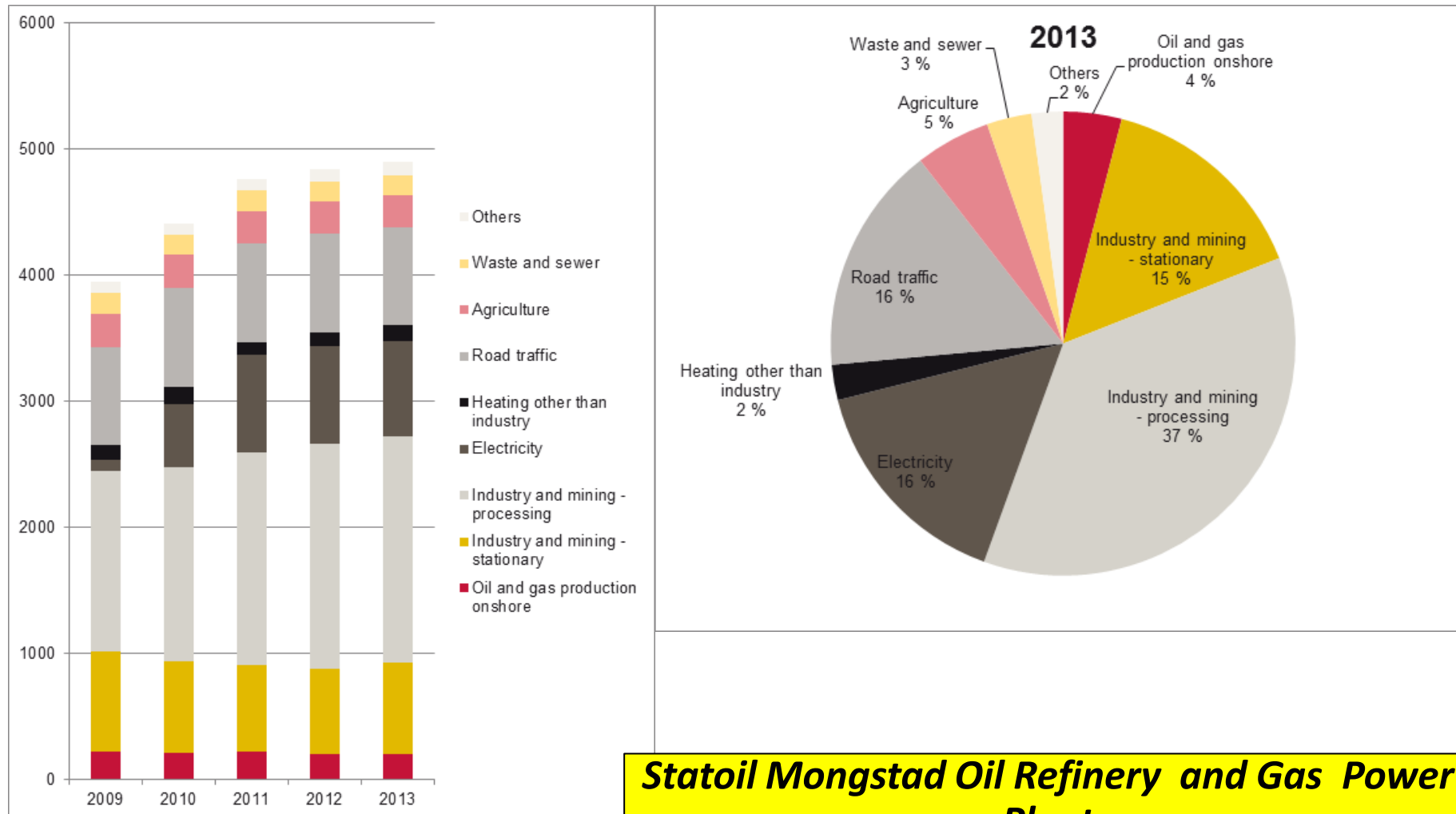
The pattern of housing development in Hordaland shall reduce the need for transport, encourage shorter journeys and more environmentally friendly travel, and prevent the destruction of valuable areas.

## Transport

Compared with 1991 levels, greenhouse gas emissions from road traffic in Hordaland shall be reduced by 20% by 2020 and by 30% by 2030. Total greenhouse gas emissions from mobile sources shall be 30% lower in 2030 than in 1991. This also applies to Hordaland County Council.



# GHG emissions from Hordaland

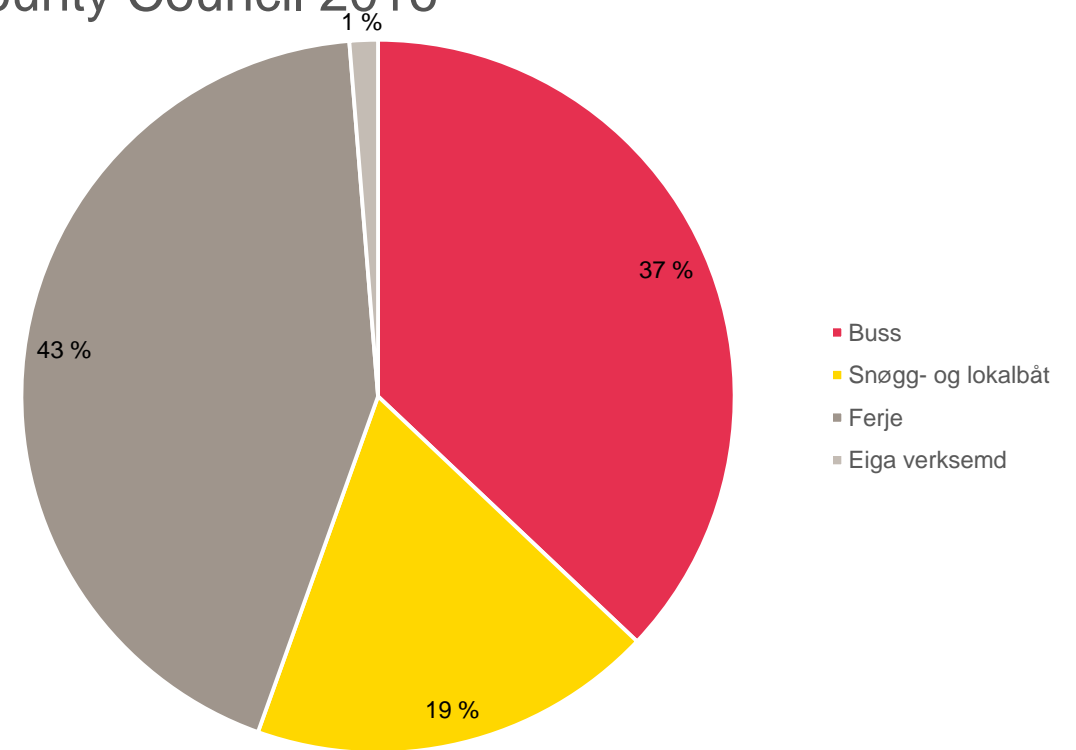


**Statoil Mongstad Oil Refinery and Gas Power Plant**  
**Largest singular Norwegian emitter**

# Hordaland county council own CO2-emissions



- CO2-emissions influenced by Hordaland County Council 2016





INSPIRED BY

# World first battery electric car ferry Ampere M/F



- 1040 kWh batteries
- Bus Voltage: 1000VDC



# Electric ferries can be profitable



- Of the 180 ferries that cross the Norwegian fjords, it is financially feasible to convert 84 of the ferries to battery power and 43 ferries to hybrid operation.
- This equates to over 70 percent of the Norwegian ferry fleet.

# Hordaland county council are responsible for 17 of 19 ferry connections in the county – world biggest low-emmission ferry tender.



- All 17 ferry connecton in new tender in 2016 by county council
- Minimum 55 % CO2-cut and minimum 25 % energy cut to compete on contract.
- Additional 15 % for more CO2- cut and 15 % more additonal energy cuts. 70 % price



## 4 ferry operators won contracts with zero/low emission tech

- Rutepakke 1 Fjord1 AS. **87 % CO2 – cut, 60 % energy cut**
  - > Leirvåg-Sløvåg
  - > Fedje-Sævrøy
  - > Hufthamar-Krokeide
  - > Husavik-Sandvikvåg
  - > Hatvik-Venjanaset
  - > Halhjem-Våge
  - > Langevåg-Buavåg
- Rutepakke 2 Fjord1 AS. **90 % CO2-cut and 65 % energy cut**
  - > Jektavik-Nordhuglo-Hodnanes
  - > Skjersholmane-Ranavik
  - > Gjermundshamn-Varaldsøy-Årsnes
  - > Jondal-Tørvikbygd
- Rutepakke 4 Wergeland AS. **88% CO cut, 65 % energy cut**
  - > Masfjordnes-Duesund
- Rutepakke 5 : Boreal Sjø AS **92 % CO2-cut, 74 % energy cut**
  - > Skånevik-Matre-Utåker
  - > Kvanndal-Utne
  - > Utne-Kinsarvik
- Rutepakke 3: Norled **86 % CO2-cut, 58 % energy cut**
  - > Klokkarvik-Lerøy-Bjelkarøy-Hjellestad,
  - > Fjellbergsambandet

# The ferry tender

- Cuts 40 % of the CO2 emissions the County Council can influence
- Cuts 51.000 tons CO2
- Equals 6 % of all road emissions in Hordaland



**Pining for cleaner air in the Norwegian fjords - BBC News**

Diesel-powered ferries are big polluters, so could electric engines be a cleaner option?

[bbc.com](http://bbc.com)

## 3 battery-hybrids start to operate within next 12 months



- First new electric ferry start to operate on Halhjem- Austevoll 01.01.2018. (130 cars)
- Second starts on same connection 1. 07,2018 (120 cars).
- 3rd starts also 01.07.2018 on Husavik – Sandvikvåg (38 cars).
  
- 10 minutes charging time

# Aluminium ferry on Halhjem - Våge



- The new ferries will put in operation from 2018 to 2020.
- Picture showing bigger sister-ship of Ampere M/F and will be operating on Halhjem – Våge (120 cars and 12 semitrailers)
- 88 meters long, built in aluminium. Built for full battery operation but biodiesel-generator as back-up). Delivery autumn 2018.



## Some build by norwegian yards ex Havyard i Sogn og Fjordane



- Leirvåg–Sløvåg (120 PBE)
- Fedje–Sævrøy (40 PBE)
- Hufthamar–Krokeide (To ferger - totalt 230 PBE)
- Husavik–Sandvikvåg (38 PBE)
- Hatvik–Venjaneset (105 PBE)
- Halhjem–Våge (120 PBE)
- Langevåg – Buavåg (40 PBE)





- County gets 40% of charger costs from ENOVA (177 millions nKr).
- Shipowner can apply for grants from the Nox-fund for businesses.
- New ferry-contracts are still much more expensive by todays contracts with up to 40 years old diesel ferries.



## Norway taking leader role in clean shipping



- **More than 50 electric ferries will be in service on the fjords around Norway by the end of 2020**
- **First mass introduction of electric car ferries in world will be in Hordaland the next years**
- **The electric and electric-hybrid ferry technology is fully transferable to other ship segments**
- **Each ferry would save about a million litres of diesel per year, helping to reduce energy costs by 60% or more**

# National price for best local climate measure 2016 - KS and Zero foundation



# Grants to master thesis on climate – relevant for the County Council Climate plan – up to 10.000 Nkr



## Tilskot til masteroppgåver på klima

I 2017 vil Hordaland fylkeskommune dele ut inntil 15 tilskot á kr. 10 000 til dei som vil skrive masteroppgåve på klimafeltet.

Hordaland fylkeskommune kan gjennom Klimaplanens handlingsprogram 2017 gi støtte masteroppgåver på klimafeltet. Gjennom tiltaket vil vi styrkje samarbeidet med forskingsmiljøa i Hordaland, medverke til auka kunnskap og utvikle betre klimatiltak. I 2017 vil vi dele ut inntil 15 tilskot á kr. 10 000.

## Kven kan søkje

Alle studentar som skal ta mastergrad på klimarelevante tema i Bergen.

## Krav til søknaden

- › Tittel på oppgåva
- › Kort skildring av innhald og mål
- › Kva relevans oppgåva har i høve til klimaplanen/ handlingsprogrammet/anna klimarelevant tema
- › Budsjett – kva studenten ønskjer å bruke pengane til (t.d. datainnsamling, studiereise, deltaking på konferanse, anna)
- › Namn og personopplysningar på søkjar, adresse, bankkontonr.
- › Søknaden skal vere på maks to sider
- › Merk søknaden med: «Masteroppgåve klima Ref. 2017/14199»
- › [Søknadsskjema](#) (Word-skjema)

## Send søknad

Merk søknaden med "Masteroppgåve klima Ref. 2017/14199". Send det til [hfk@hfk.no](mailto:hfk@hfk.no)

Søknadsfrist 15. oktober

[Søknadsskjema](#)



Tale Halsør

[Send e-post @](#)

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Hordaland is the world leading region in electric cars. The county council has given grants to 30 fast charging stations.

