



Port of Oslo

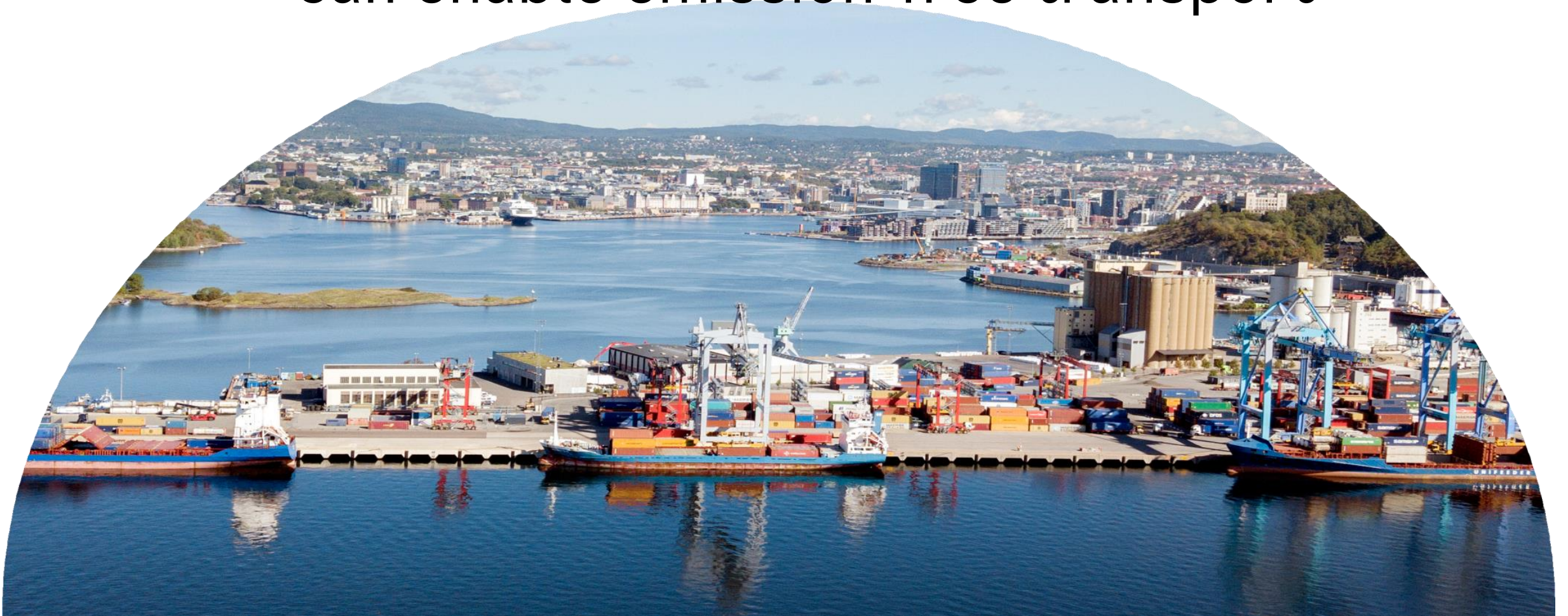
# Environmental Status 2020 and improvements 2021 and 2022

Heidi Neilson  
Head of Environment  
The Port of Oslo - Norway





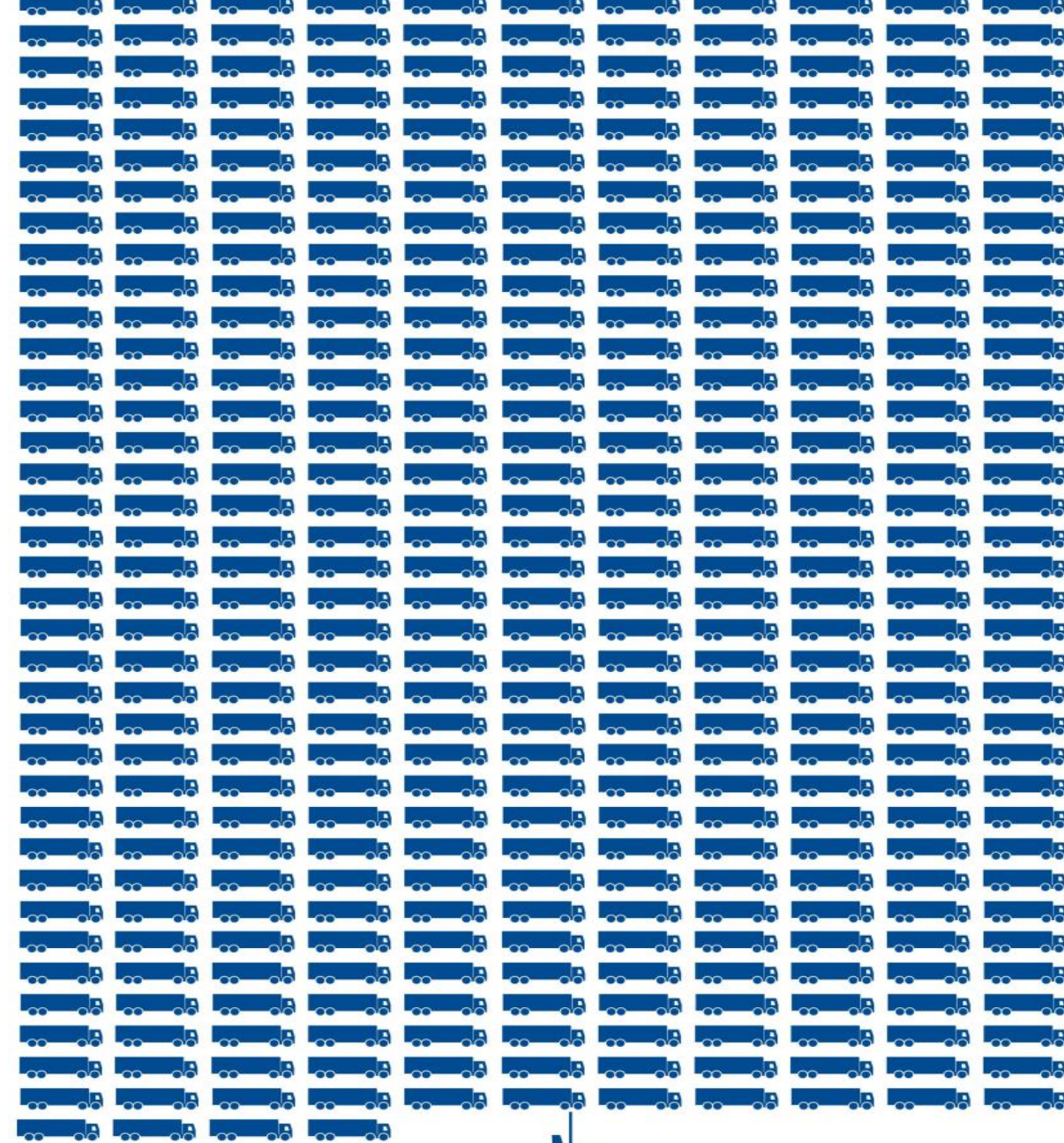
# The City Port in Oslo can enable emission-free transport





# Energy efficient mode of transport

- ▶ **1 ship**
- ▶ Or 400 semitrailers on the road from Europa
- ▶ **1 ship**
- ▶ Or 10 km que on the roads into Oslo City



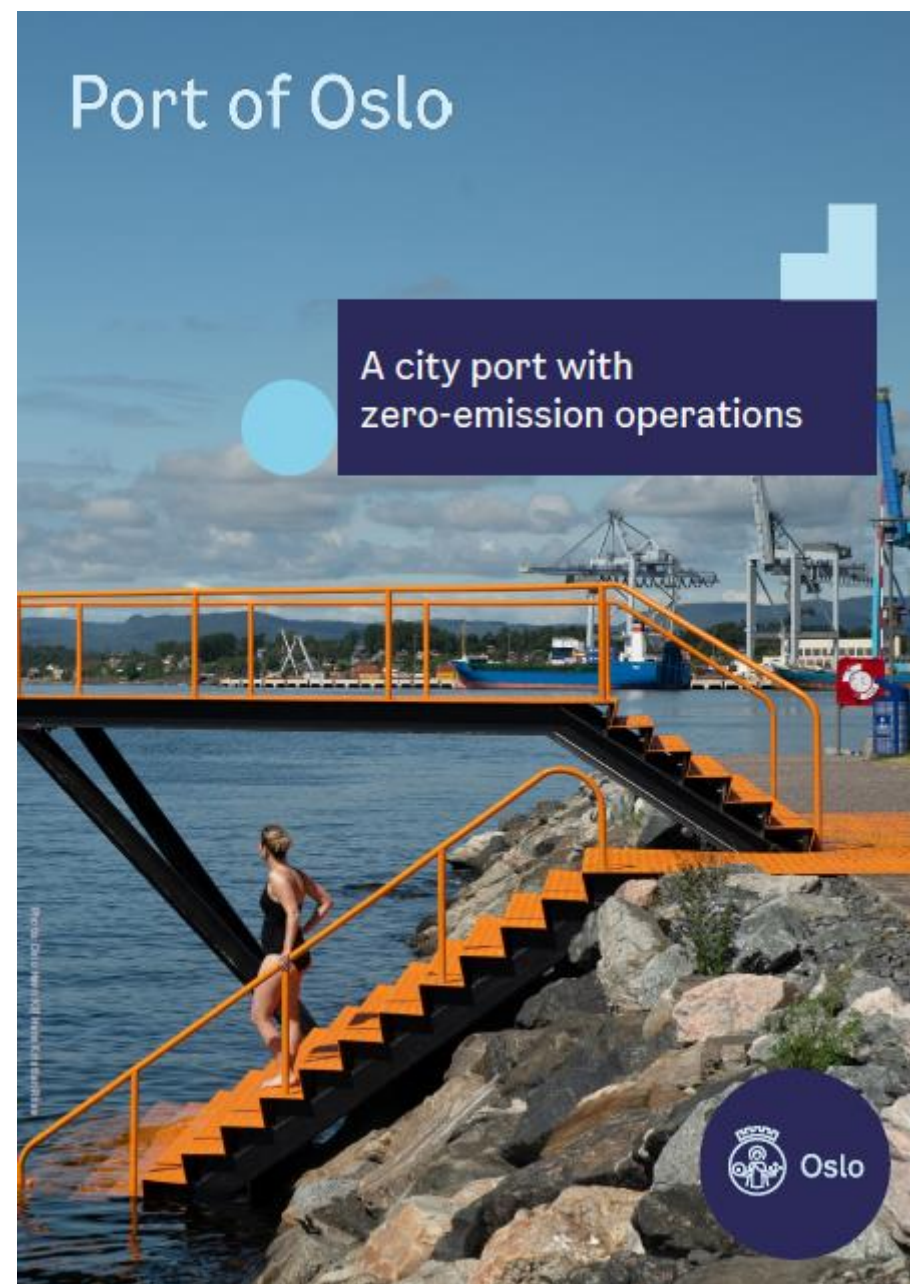
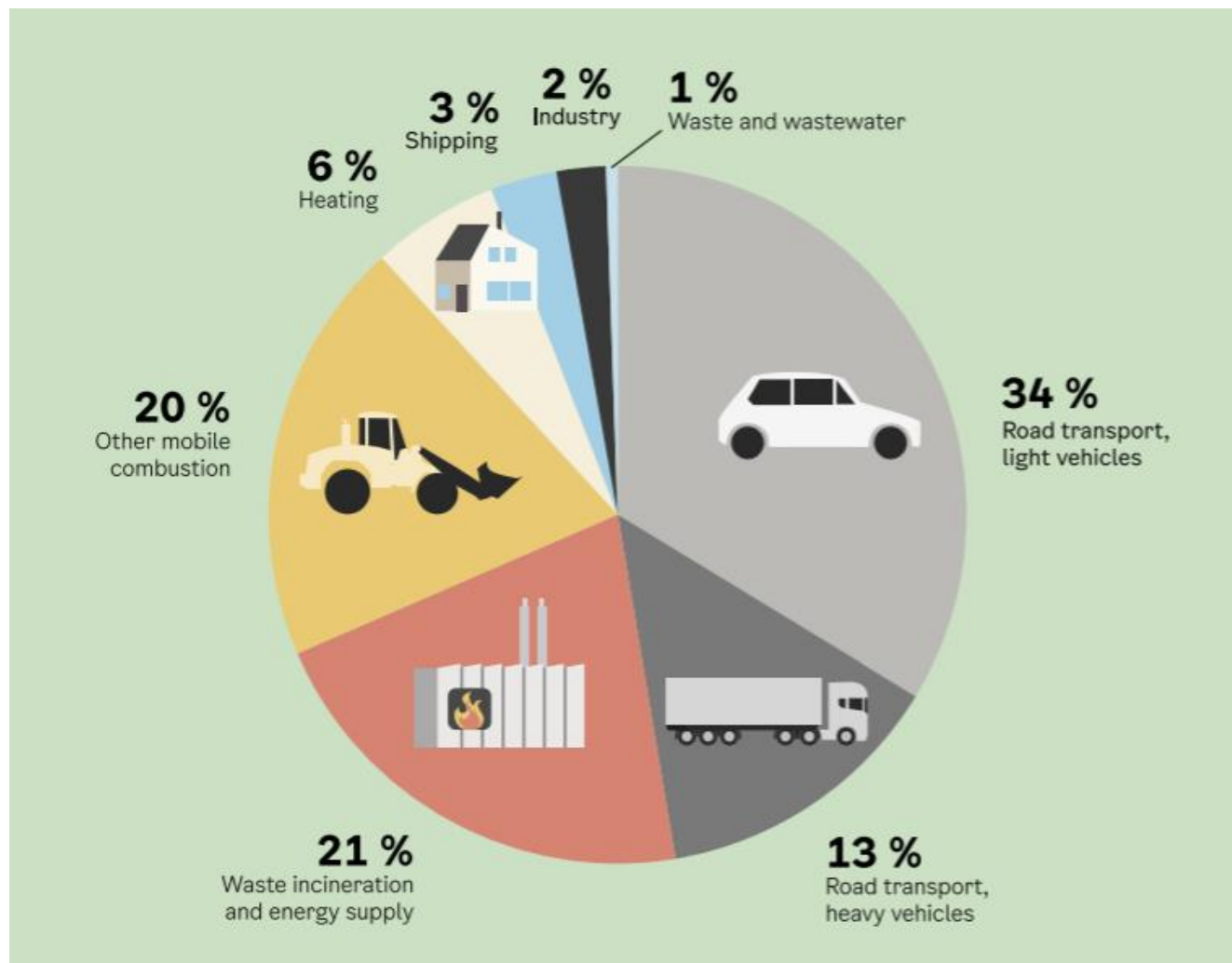
Et vanlig containerskip som seiler inn Oslofjorden erstatter cirka 400 semitrailere på hovedveiene mot Oslo. Hvis disse trailerne kjørte i kø, ville køen være omtrent 10 km lang. Skipet og trailerne er vist i samme målestokk.



Oslo

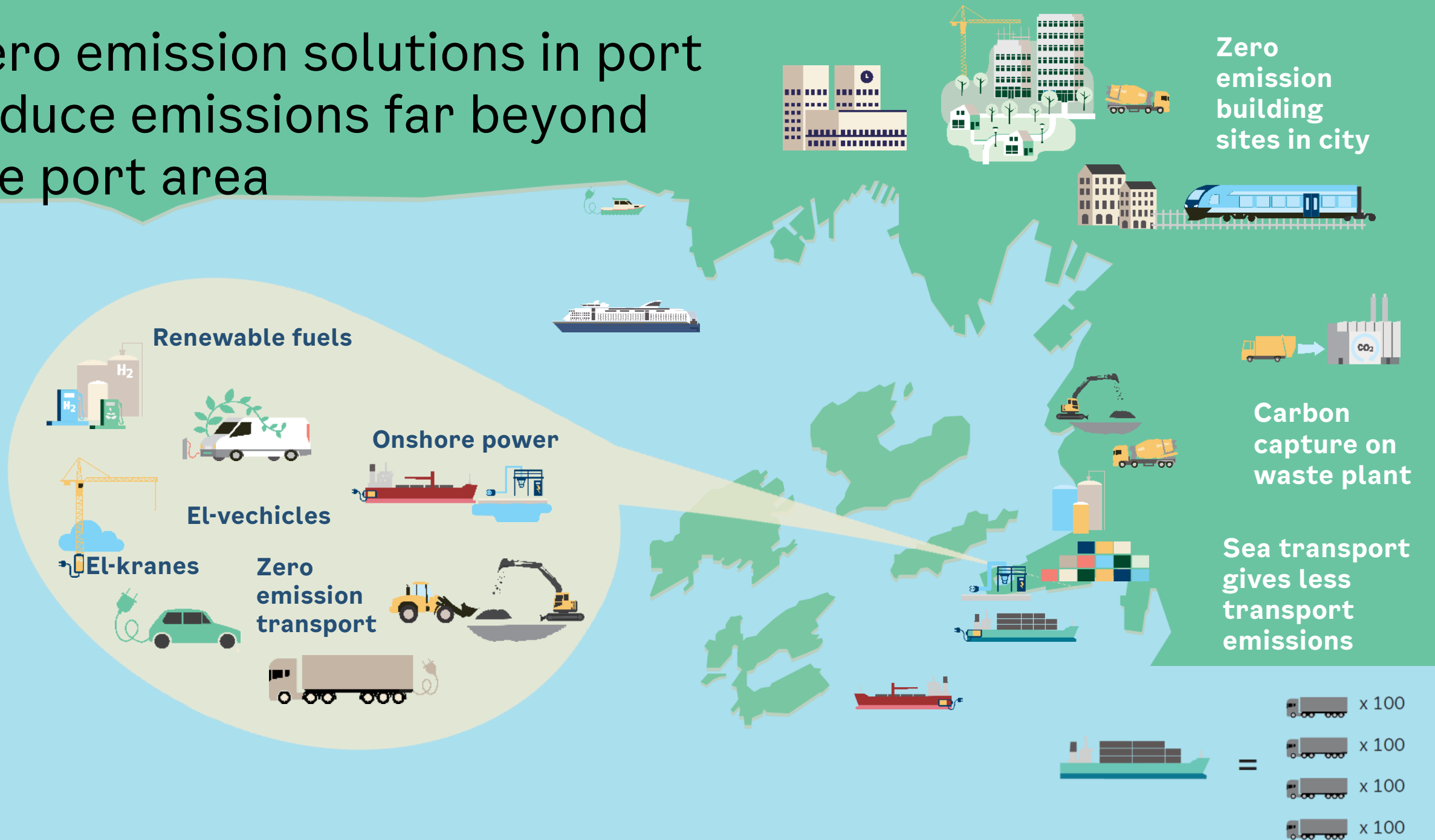


# Sources of GHG emissions in Oslo





# Zero emission solutions in port reduce emissions far beyond the port area



# The sustainable future in transport is electric





# Shore power – high voltage – DFDS & Color Line

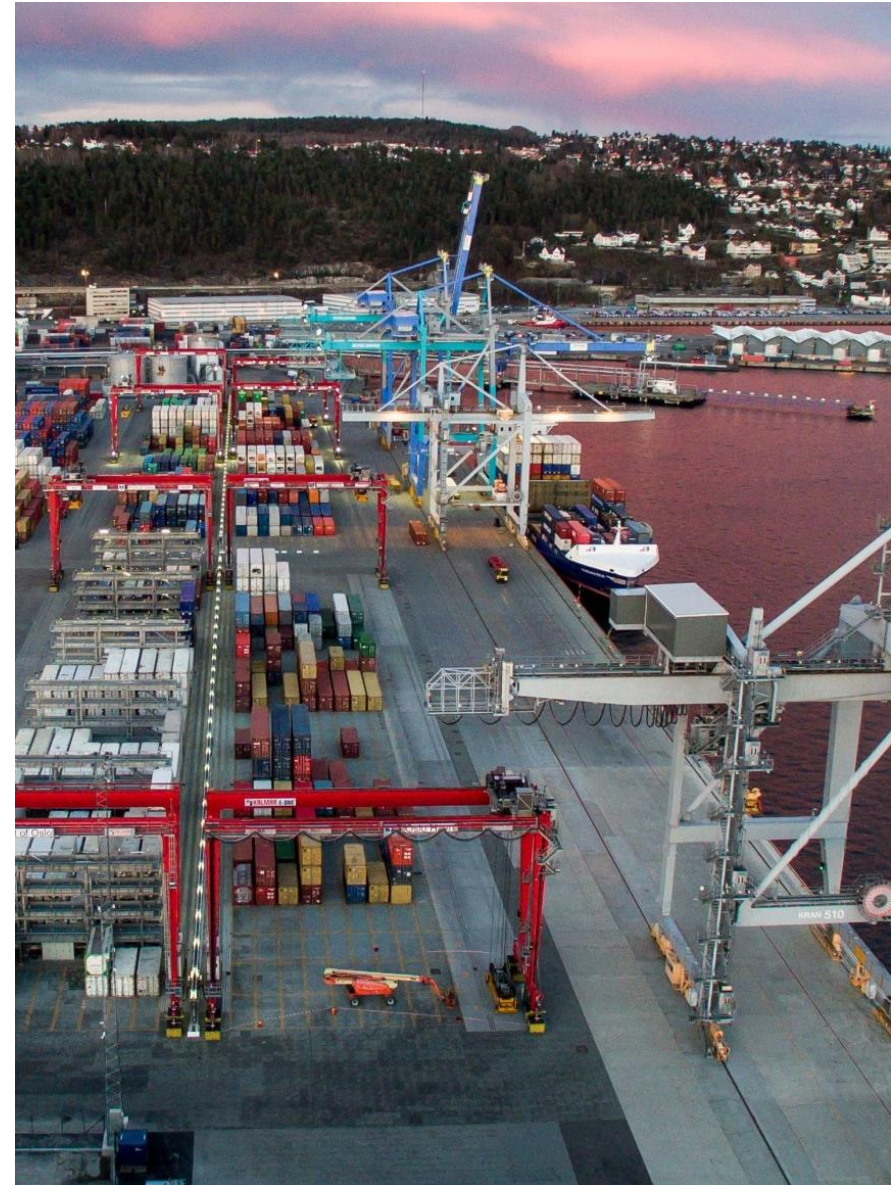


# Norled local ferry – automatic charging





# Electric cranes is first step towards automation





# Terminal equipment to zero emission building site



2022?



Figur 28: 5-akslet helelektrisk betongbil fra Liebherr. (Kilde: Electrive.com)





# Bulding shore power and charing for cargo ships next

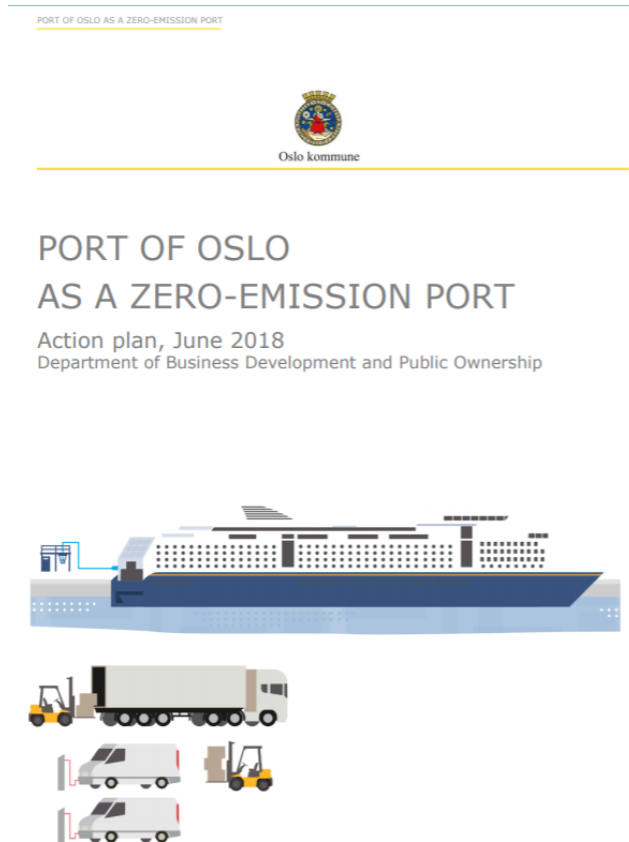


# Port: future fuels may need to bunker i urban ports





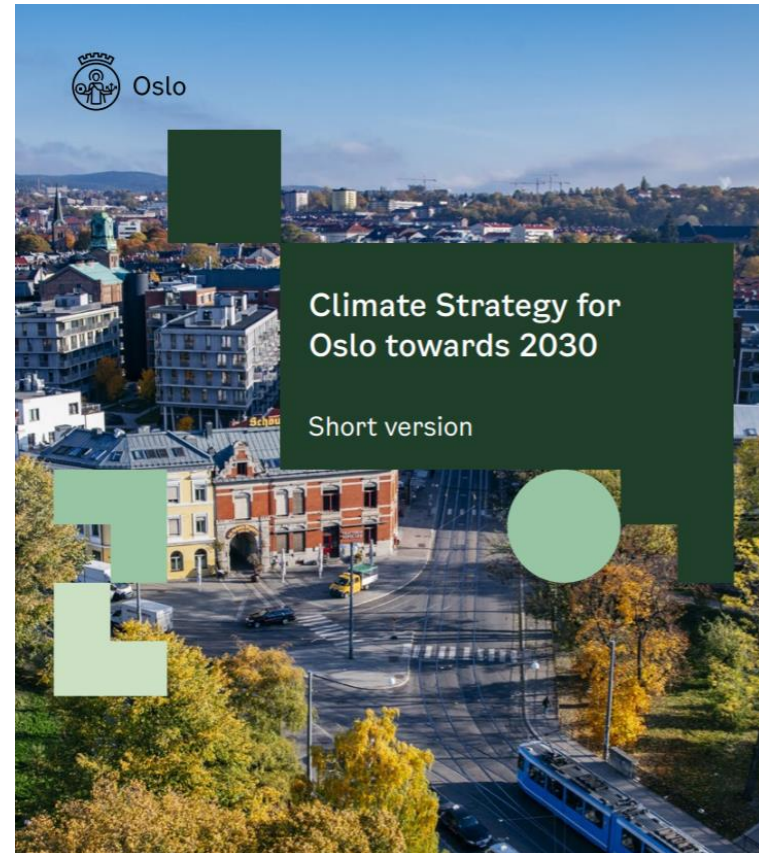
# Commitment and a common roadmap in Oslo



<https://www.klimaoslo.no/wp-content/uploads/sites/88/2019/03/Action-Plan-Port-of-Oslo-as-a-zero-emission-port.pdf>



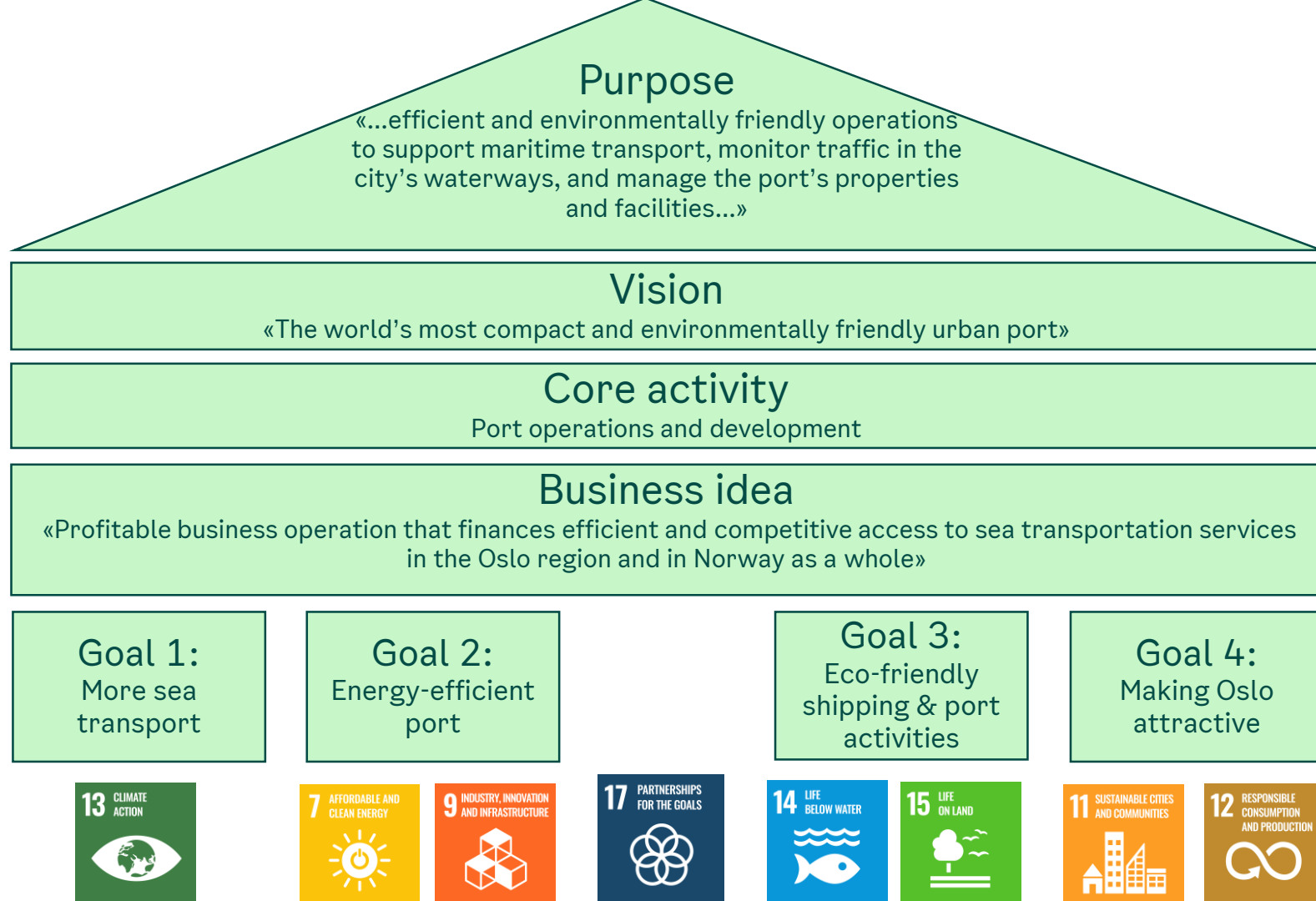
Oslo



[https://www.klimaoslo.no/wp-content/uploads/sites/88/2020/09/Klima-strategi2030-Kortversjon-ENG\\_2608\\_enkeltside.pdf](https://www.klimaoslo.no/wp-content/uploads/sites/88/2020/09/Klima-strategi2030-Kortversjon-ENG_2608_enkeltside.pdf)

# The Port of Oslo

## Climate and Environmental Policy 2020-2030



### Five strategic priorities for climate and environmental action

- Stop climate change with more sea transport.
- More cooperation to increase the use of clean energy for sea transport and zero-emission solutions on land.
- Innovative infrastructure with more shore power and charging, energy-efficient buildings, areas and quays.
- Efficient port operations with zero emissions, enhanced waste management and sewage treatment and materials and building materials.
- Develop, build and operate our urban port without contributing to the pollution of the air, sea or land.



# Climate and Environmental Policy in Oslo

**Goal 1:**  
More sea  
transport

**13** CLIMATE  
ACTION



**Goal 2:**  
Efficient port  
operations

**7** AFFORDABLE AND  
CLEAN ENERGY



**9** INDUSTRY, INNOVATION  
AND INFRASTRUCTURE



**17** PARTNERSHIPS  
FOR THE GOALS



**Goal 3:**  
Eco-friendly shipping  
& port activities

**14** LIFE  
BELOW WATER



**15** LIFE  
ON LAND



**Goal 4:**  
Making Oslo  
attractive

**11** SUSTAINABLE CITIES  
AND COMMUNITIES



**12** RESPONSIBLE  
CONSUMPTION  
AND PRODUCTION



## Future zero-emission port

1. 50 % more cargo by 2030
2. 40 % more passengers by 2030
3. 95% reduced CO<sub>2</sub> emissions on land by 2025
4. 50% reduced CO<sub>2</sub> emissions from ships by 2025
5. 85% reduced total CO<sub>2</sub> emissions by 2030
6. 50 % lower total NO<sub>x</sub> emissions by 2025

## Energy-efficient port

7. Increased share and use of renewable energy to ship and transport on land within 2030
8. More energy-efficient buildings, areas and quays within 2030

## Zero-emission operations

9. Avoid acute pollution and cooperate on emergency preparedness
10. Collaborate improving the ecological and chemical status of the fjord
11. Only native and endangered species in port areas by 2030

## Sustainable urban port

12. More zero-emissions construction sites by 2025
13. 90 % sorted waste by 2025
14. Conduct noise measurements, raise awareness about noise and process input from stakeholders
15. Increased delivery of ship sewage by 2030

# Sustainable development in the Port of Oslo

## Goal 1:

More sea transport



## Goal 2:

Efficient port operations



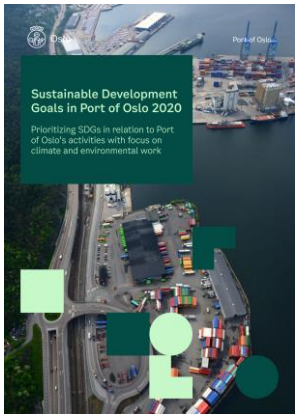
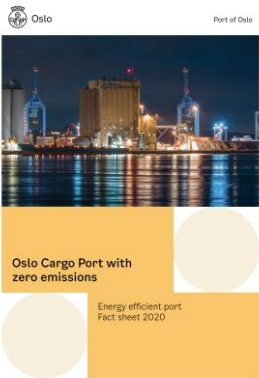
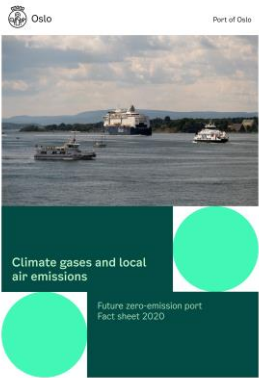
## Goal 3:

Eco-friendly shipping & port activities



## Goal 4:

Making Oslo attractive





# The City of Oslo aim to be emission-free in 2030

The Port has a goal of 85 percent reduction of greenhouse gases by 2030

## Targets and timeline:

- All activity and transport on land must be emission-free by 2025
- Shore power for all types of ships by 2030
- RoPax ferries sailing emissions free 2025
- Shore power for cruise by 2025
- Port dues by polluter pays principal
- Increase freight by sea from road



17 PARTNERSHIPS  
FOR THE GOALS



**Cooperation  
to succeed**

13 CLIMATE  
ACTION



**Future zero-  
emission port**

7 AFFORDABLE AND  
CLEAN ENERGY



9 INDUSTRY, INNOVATION  
AND INFRASTRUCTURE



**Energy-  
efficient port**

11 SUSTAINABLE CITIES  
AND COMMUNITIES



12 RESPONSIBLE  
CONSUMPTION  
AND PRODUCTION



**Sustainable  
urban port**

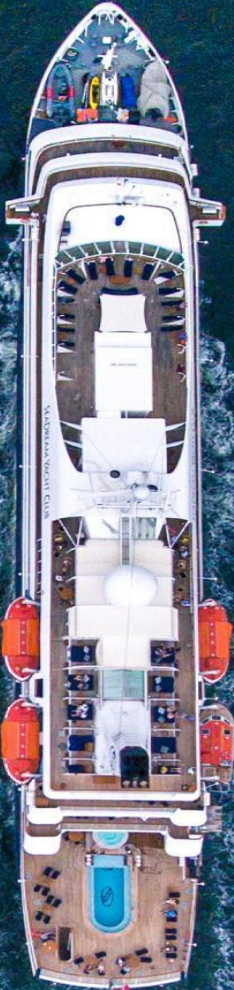
14 LIFE  
BELOW WATER



15 LIFE  
ON LAND



**Zero-emission  
operations**



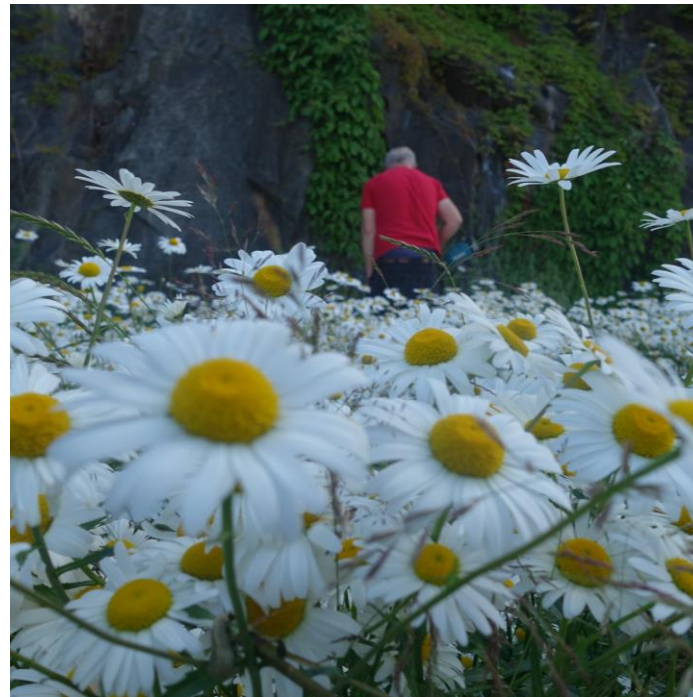








Life under water in Oslo harbour

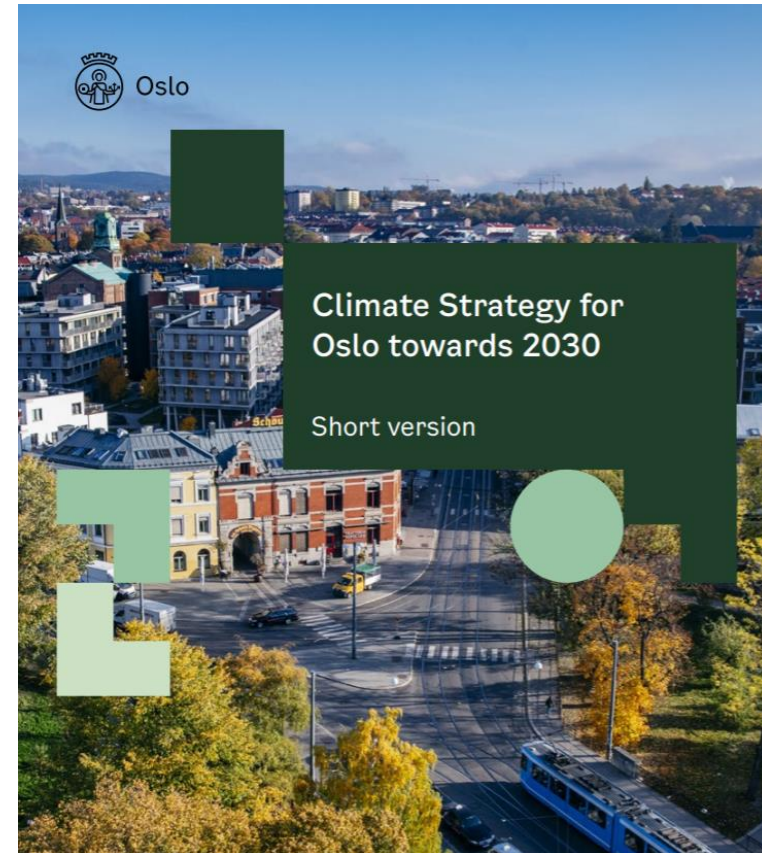
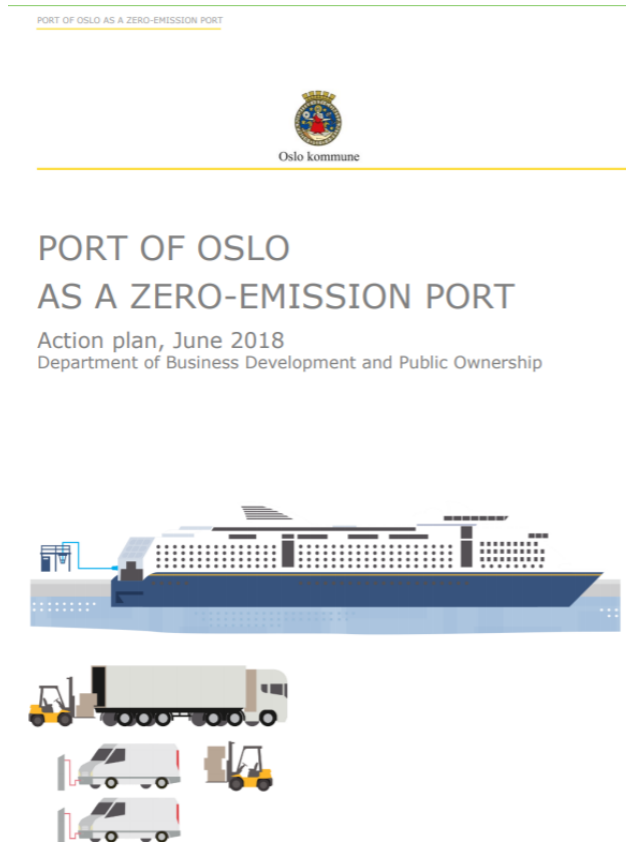


Life on land along the port promenade



Better use of waste in a circle  
Reducing emissions far beyond the  
port area and on building sites

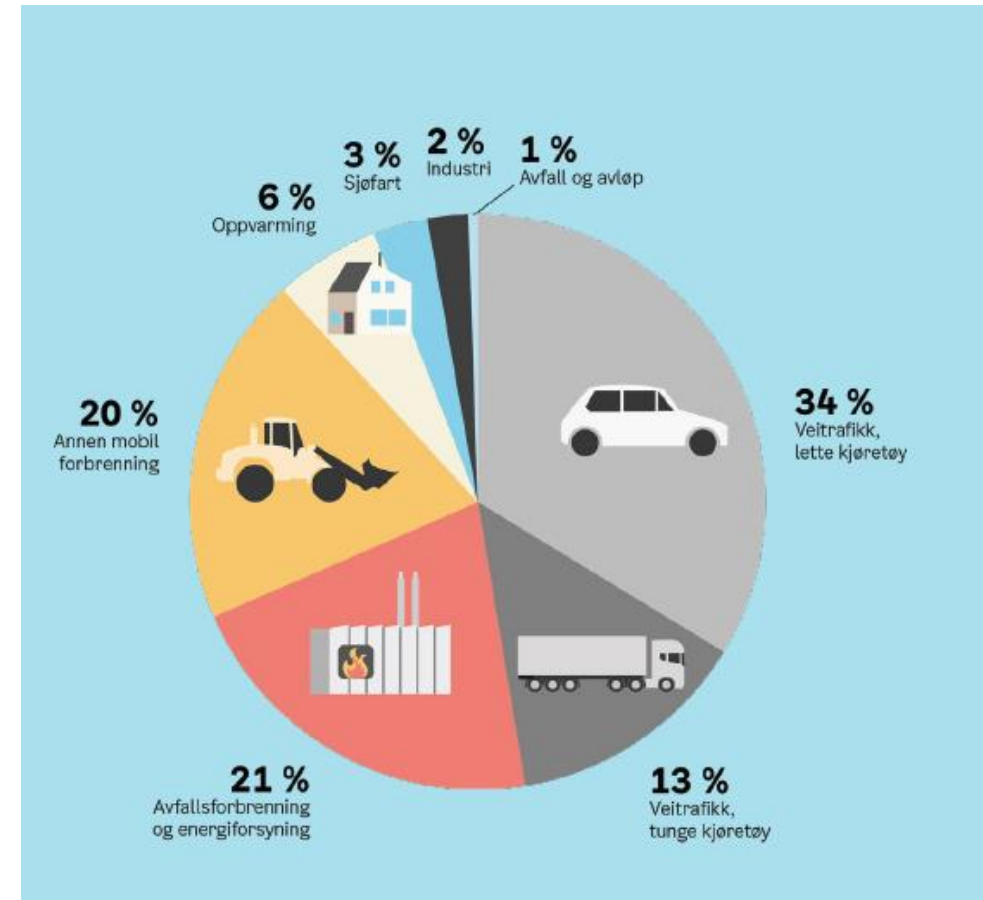
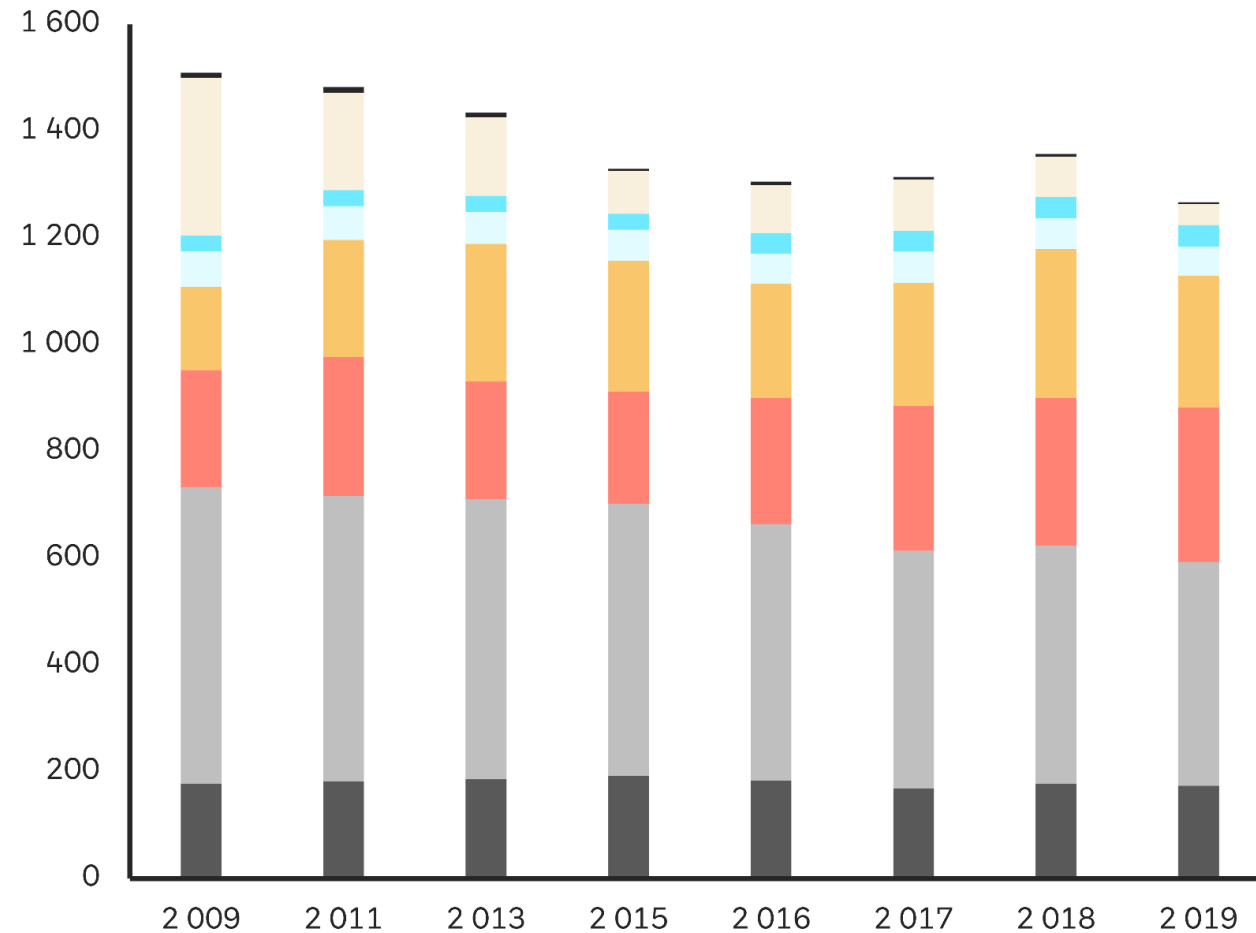
# C40: Commitment and a common roadmap in Oslo





# Emission trends in Oslo (2009-2019)

1 000 tonn CO<sub>2</sub>-ekvivalenter

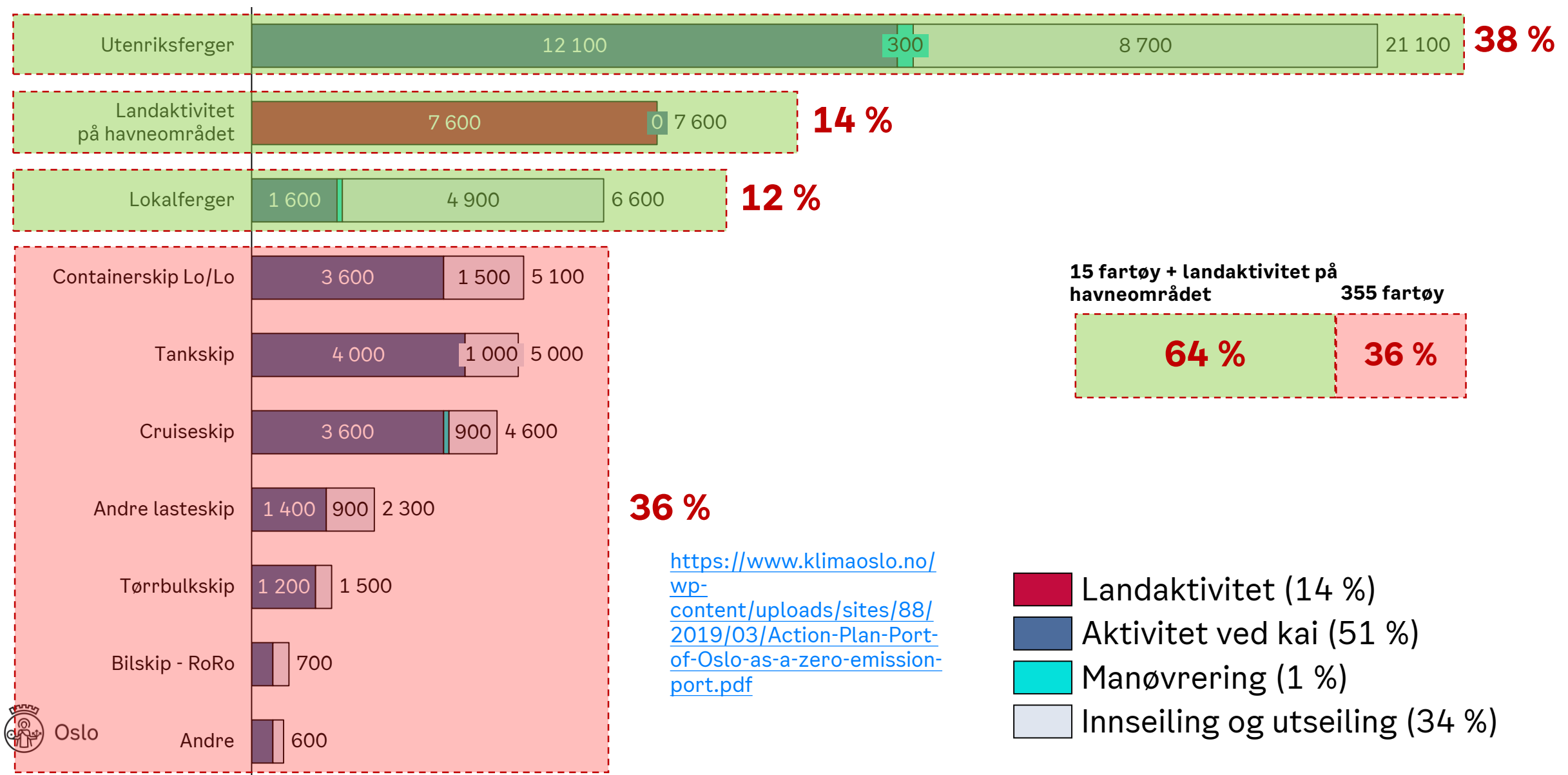


Oslo

15.04.2021

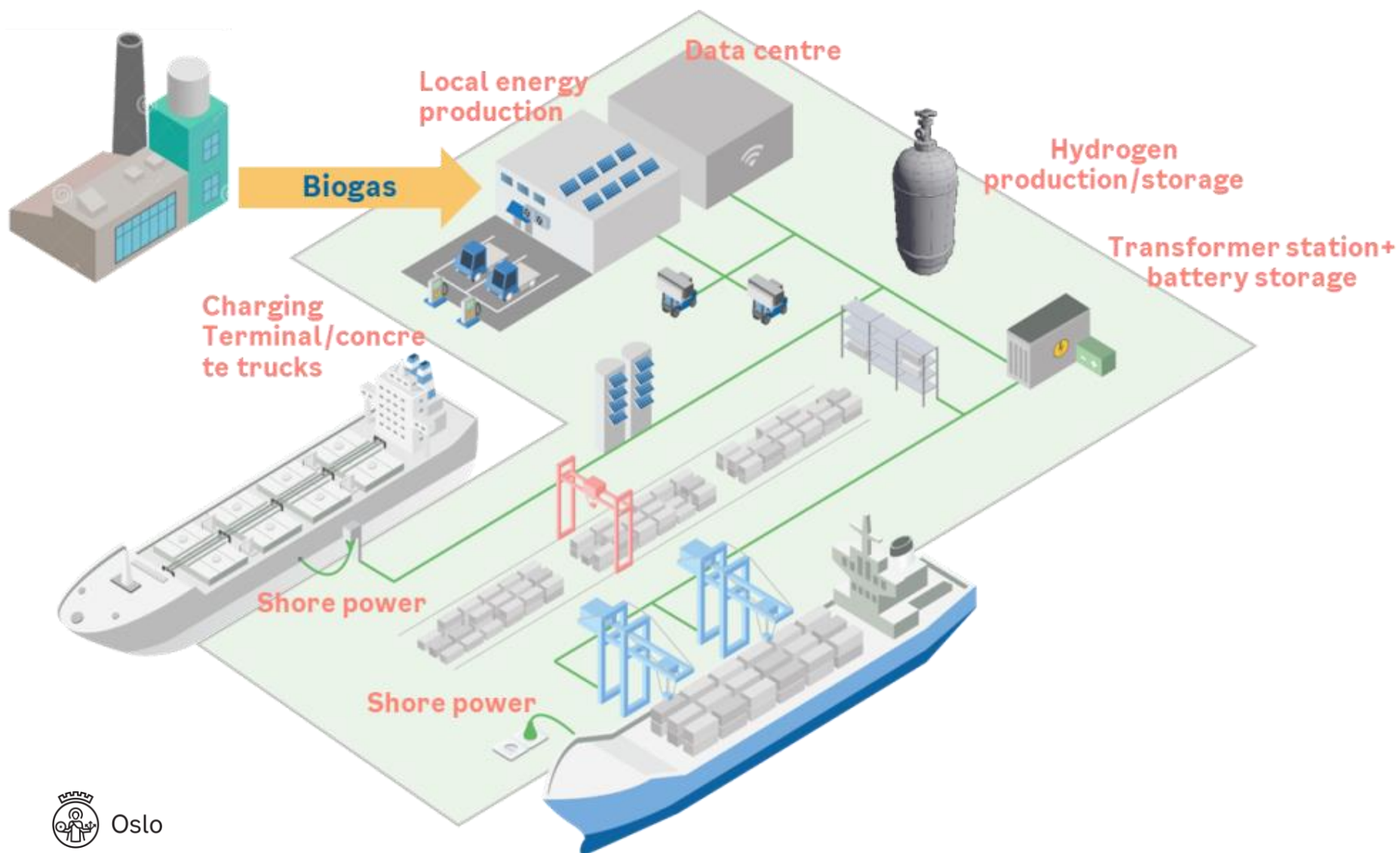
21

# Zero emission actions plan for the Port of Oslo





# The road map is clear – start building infrastructure



## Possible solutions considered:

1. Ship to shore power and charging
2. Charging cargo handling and transport
3. Hydrogen production and storage
4. Battery to keep power peaks down
5. Solar panels for local production – for local grid
6. Vehicle-to-Grid (V2G)
7. Area efficiency – small, compact solutions, below the surface
8. Smart port solutions – combining different customers with different demands
9. Biogas production and storage from sewage plant
10. Heat from sewage plant to other industry in the port

# Utslippsfri Oslofjord

Havnesamarbeid  
for en utslippsfri  
Oslofjord



Cooperation  
with other  
ports

We don't  
compete on  
environment



Oslo Havn

Drammen  
havn



GRENLAND  
HAVN

BORG  
HAVN



LARVIKHAVN

MOS  
HAVN

Foto: Mohri Films





## **International cooperation**

Europe – European Sea Port Organisation  
Globally – C 40 Green Port Forum

# ISO & PERS systematic improvements

## Basic Principles in the Port of Oslo

- 1. Be a driving force to develop a port of the future. Develop in accordance with Oslo's zero-emissions vision and established cost-benefit principles.
- 2. Comply with governing laws and regulations and self-imposed requirements such as the municipality of Oslo procurement strategy.
- 3. Report annually on environmental results in accordance with ISO 14001 and PERS certification.
- 4. Strengthen environmental awareness and competence through training and fact-based communication. Implement measures to monitor the port's environmental impact, including greenhouse gas emissions, local air pollution from ships and land transport, noise, waste and wastewater, and relations with the local community.
- 5. Continue to maintain an open, constructive, and proactive dialogue with partners, customers, suppliers, local communities, governments, environmental networks, other national and international ports, port organizations, and stakeholders to reduce negative environmental impacts, while exploiting opportunities for improvement.

Ingvar M. Mathisen Port Director (2020)





# Goals and environmental status 2020 Improvements in 2021-22

## 13 CLIMATE ACTION



### Goal 1: More sea transport

Goal: 50 % more cargo by 2030

**Status:** 15 % cargo growth 2009-2019

Goal: 40 % more passengers by 2030

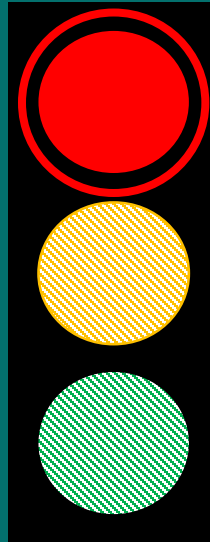
**Status:** 8 % passenger growth 2009-2018

### Future zero-emission port

1. 50 % more cargo by 2030
2. 40 % more passengers by 2030
3. 95% reduced CO<sub>2</sub> emissions on land by 2025
4. 50% reduced CO<sub>2</sub> emissions from ships by 2025
5. 85% reduced total CO<sub>2</sub> emissions by 2030
6. 50 % lower total NO<sub>x</sub> emissions by 2025

### Improvements 2021-2022

- Efficient port services and compact activities.
- First shore power for cargo ships in 2021
- Charging for terminal equipment in 2022





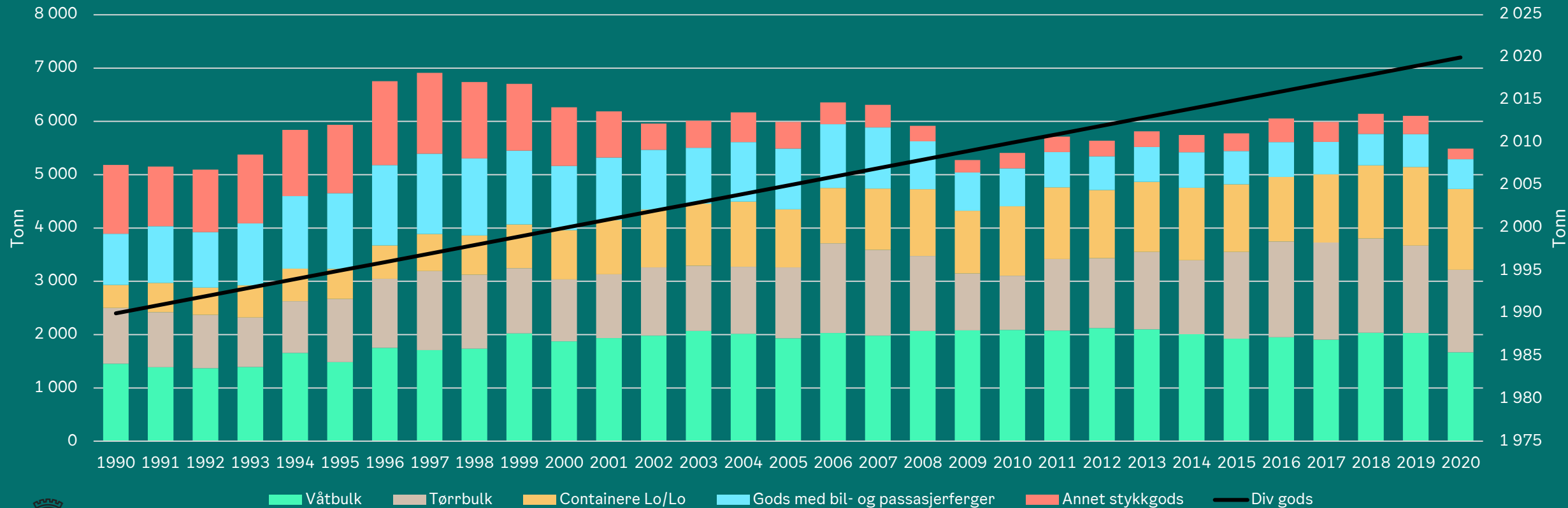


### Goal 1: More sea transport

Goal: 50 % more cargo by 2030

Status: 15 % growth 2009-2019

Cargo in the Port of Oslo (1990-2020)



**13** CLIMATE ACTION



### Goal 1: More sea transport

Goal: 40 % more passengers by 2030

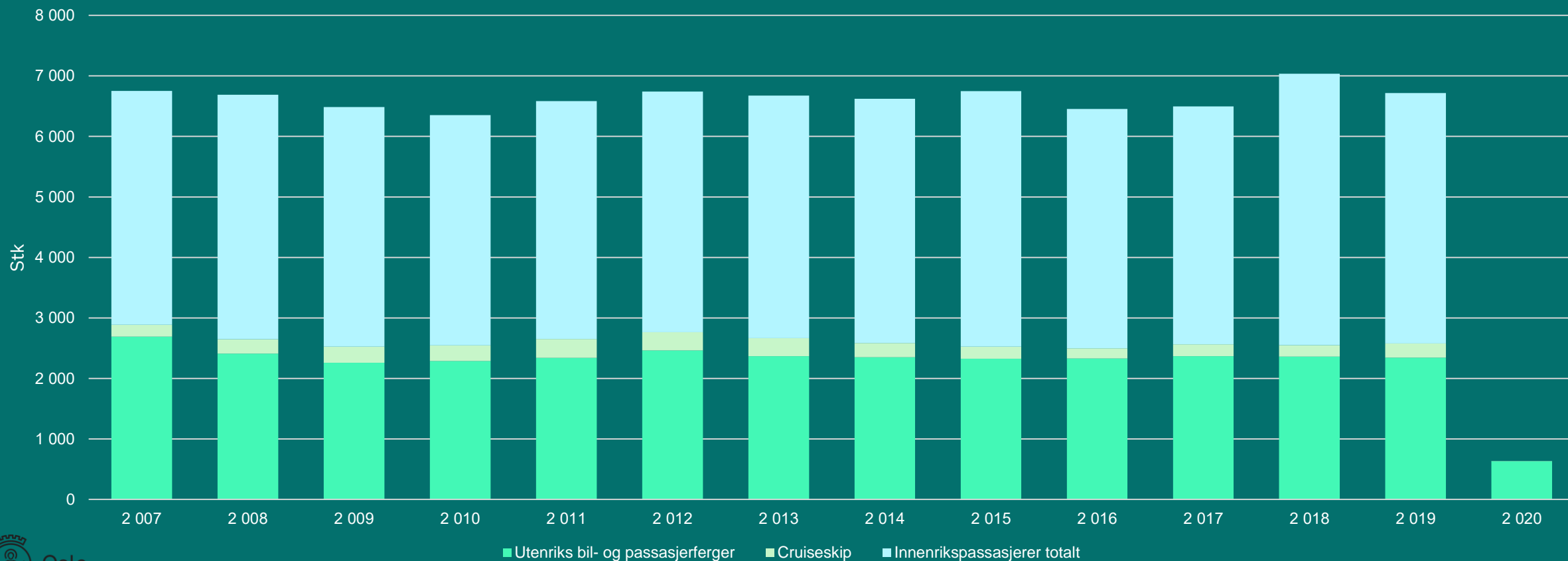
Status: 8 % growth 2009-2019

### Status 2020 due to Covid-19:

Passengers from cruise and foreign ferries reduced to 1,9 mill. (74 prosent). Only 2000 cruise passengers in the Port of Oslo in 2020.

In 2021 the plan was to welcome 123 cruise calls with 234.000 passengers.

## Passenger transport in Oslo (2007-2020)





**13** CLIMATE ACTION

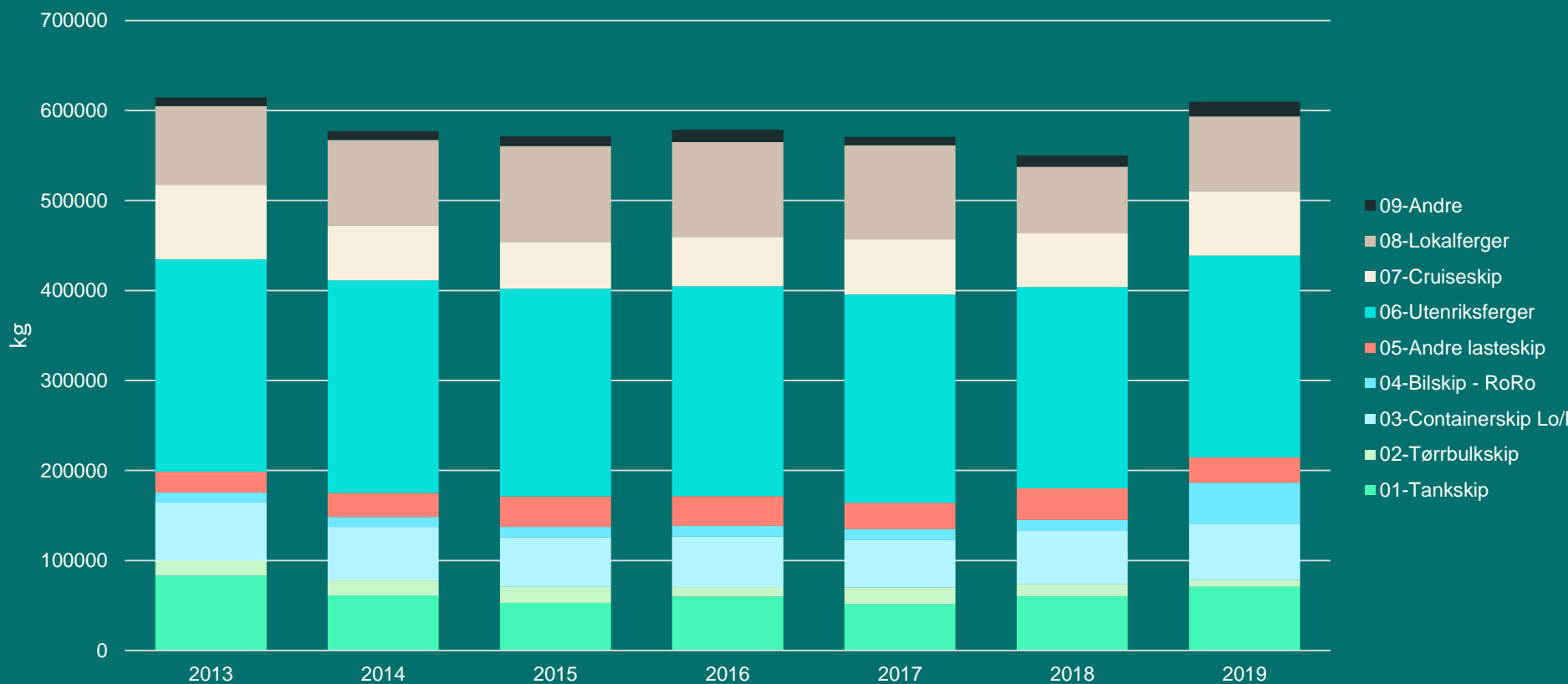
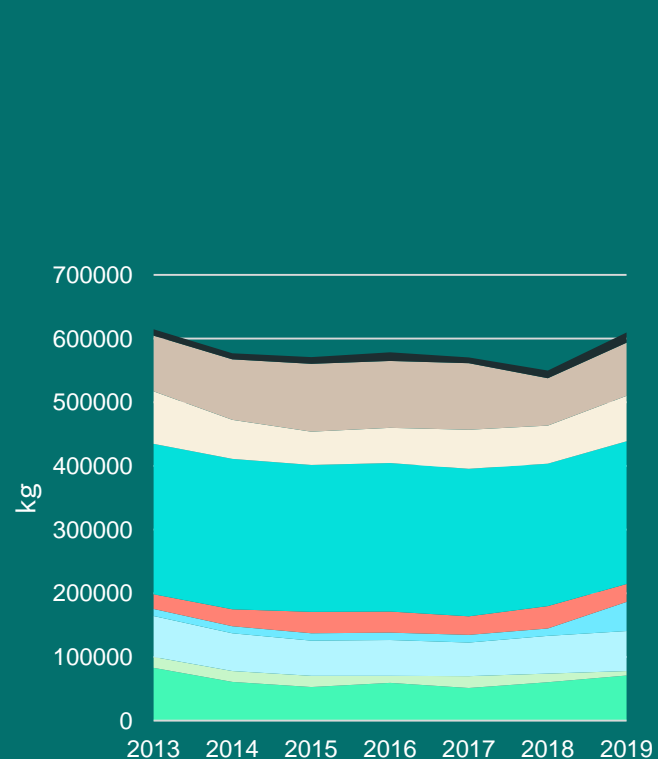


## Goal 1: More sea transport

Goal: 50 % lower total NOx emissions by 2025

Status: Shore power and electric local ferries in 2020

## Total NOx-emission with sailing into Port of Oslo



13 CLIMATE ACTION



**Goal 1: More sea transport**

95% reduced CO2 emissions on land by 2025

50% reduced CO2 emissions from ships by 2025

85% reduced total CO2 emissions by 2030

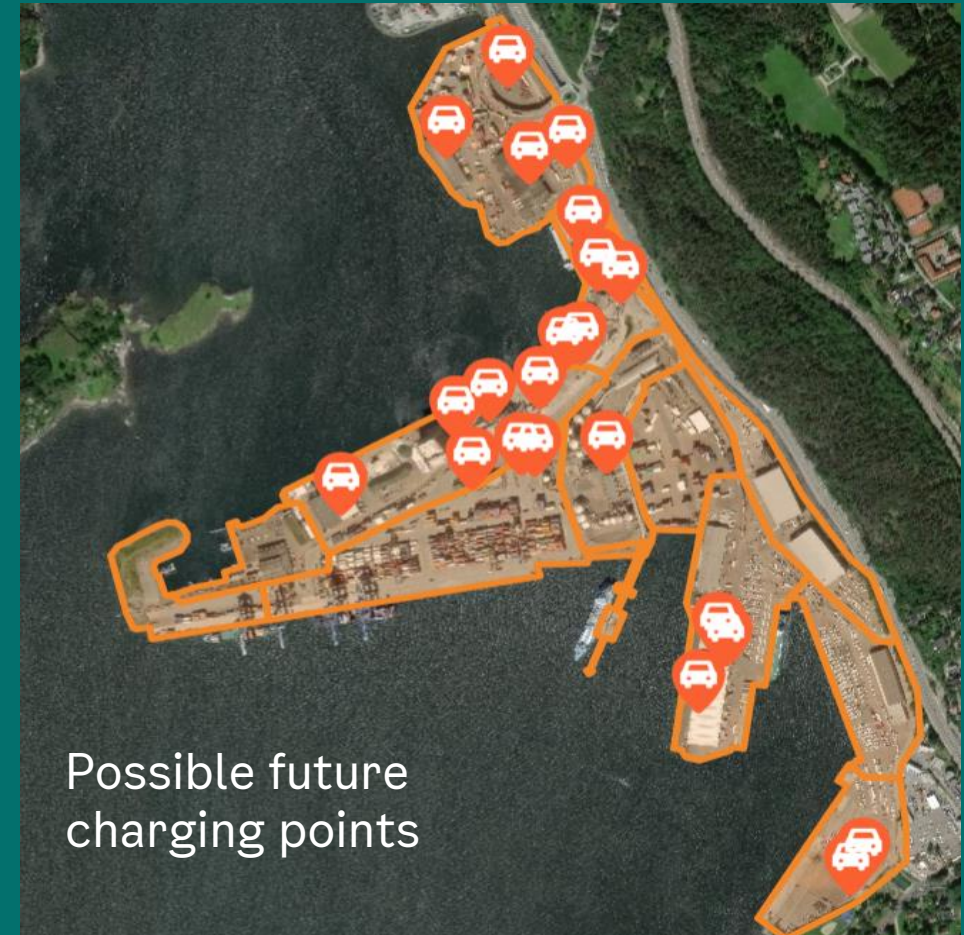
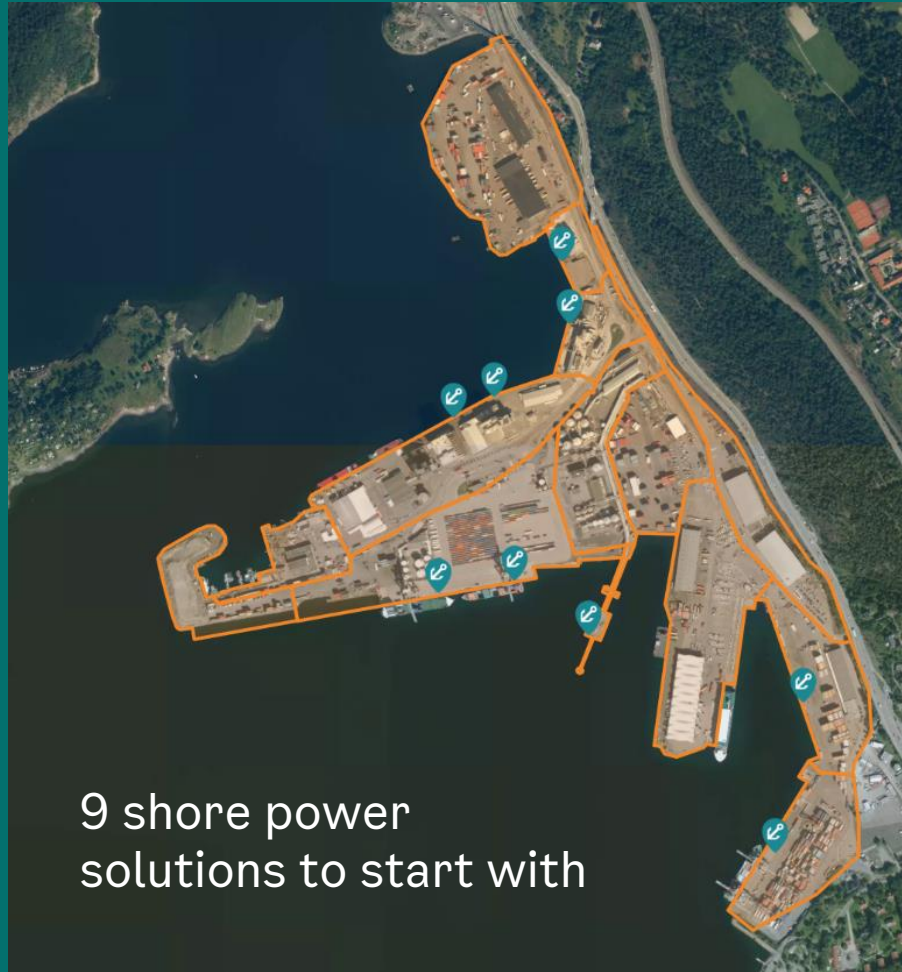


2022?





# Estimated 20 million Euros in port investments in 10 years



7 AFFORDABLE AND  
CLEAN ENERGY



9 INDUSTRY, INNOVATION  
AND INFRASTRUCTURE



## Goal 2: Efficient port operations

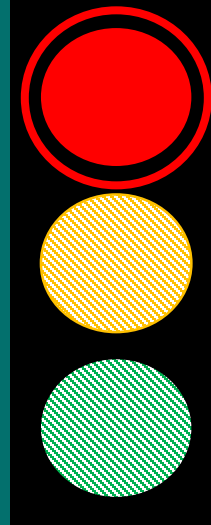
**Status:** 8,9 GWh used for shore power in 2020 in Oslo out of 57 GWh in total in Norway

## Energy-efficient port

- 7. Increased share and use of renewable energy to ship and transport on land within 2030
- 8. More energy-efficient buildings, areas and quays within 2030

## Improvements 2021-2022

Even more efficient port services and compact activities in the cargo port through shared space & common charging solutions  
First shore power for cargo ships in 2021  
Charging for terminal equipment in 2022





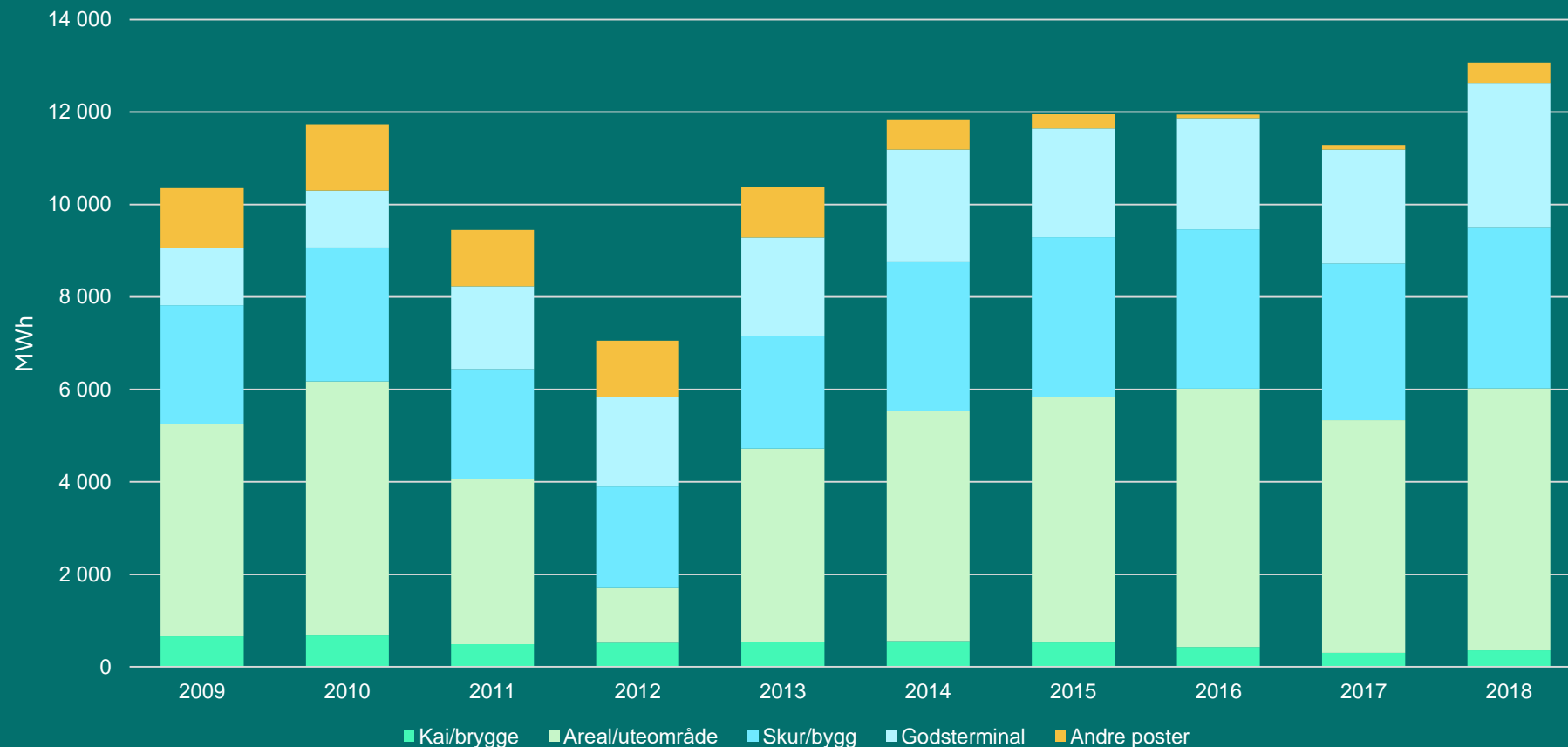
7 AFFORDABLE AND  
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## Energy consumption will increase in the Port of Oslo



In the Port of Oslo our customers will have an increased consumption for energy due to electrification in the transport sector. In 2021 a new energy system will be applied to improve energy consumption in buildings and with new solar panels we start production of our own renewable power

14 LIFE  
BELOW WATER



15 LIFE  
ON LAND



### Goal 3:Eco-friendly shipping & port activities

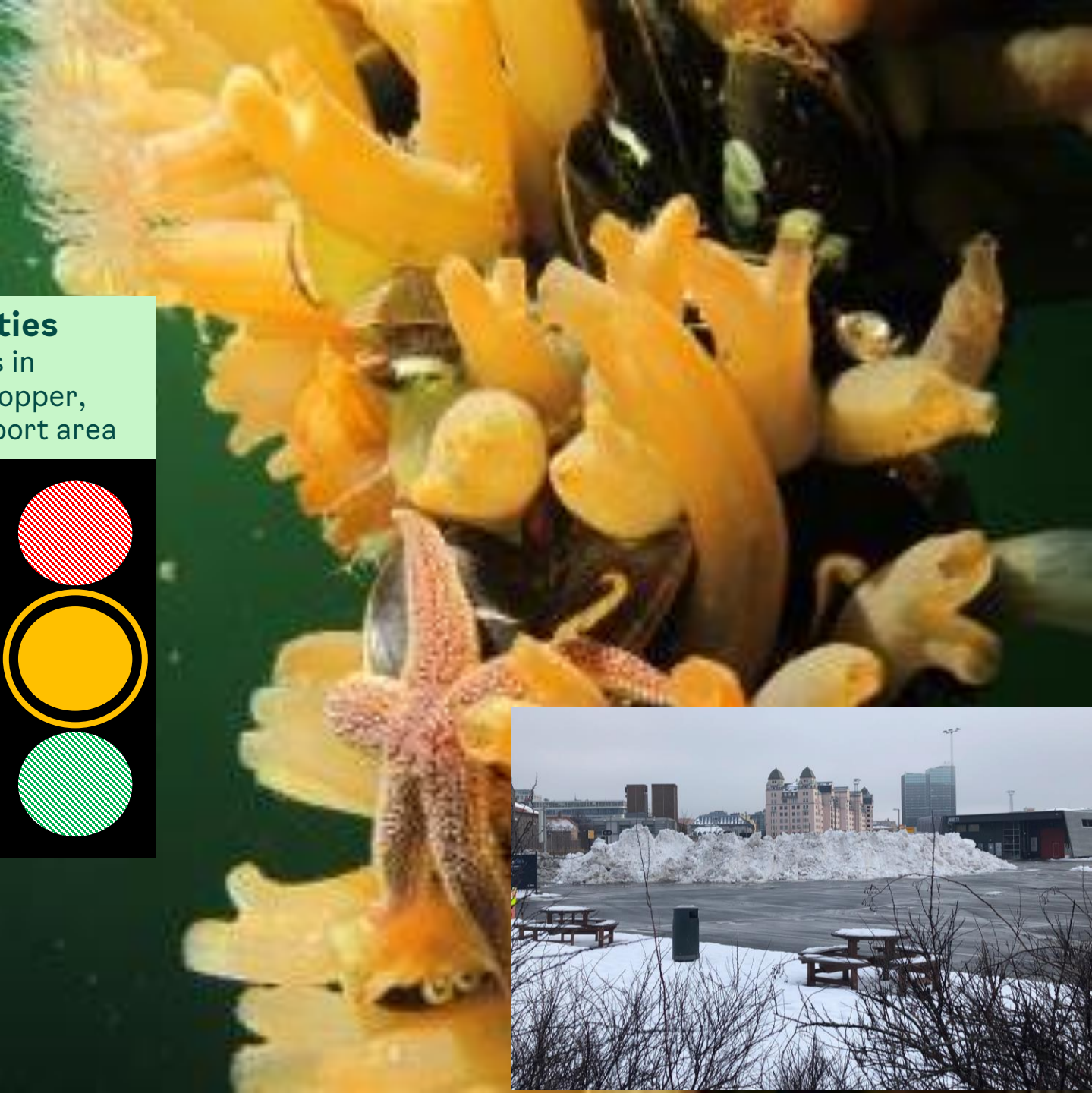
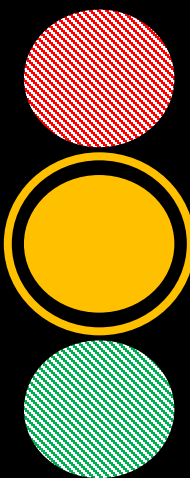
**Status:** Systematic sampling of snow for pollutants in 2020/21. Results show as expected microplastic, copper, TBT, PAH. Some well known foreign species still in port area

### Zero-emission operations

9. Avoid acute pollution and cooperate on emergency preparedness
10. Collaborate improving the ecological and chemical status of the fjord
11. Only native and endangered species in port areas by 2030

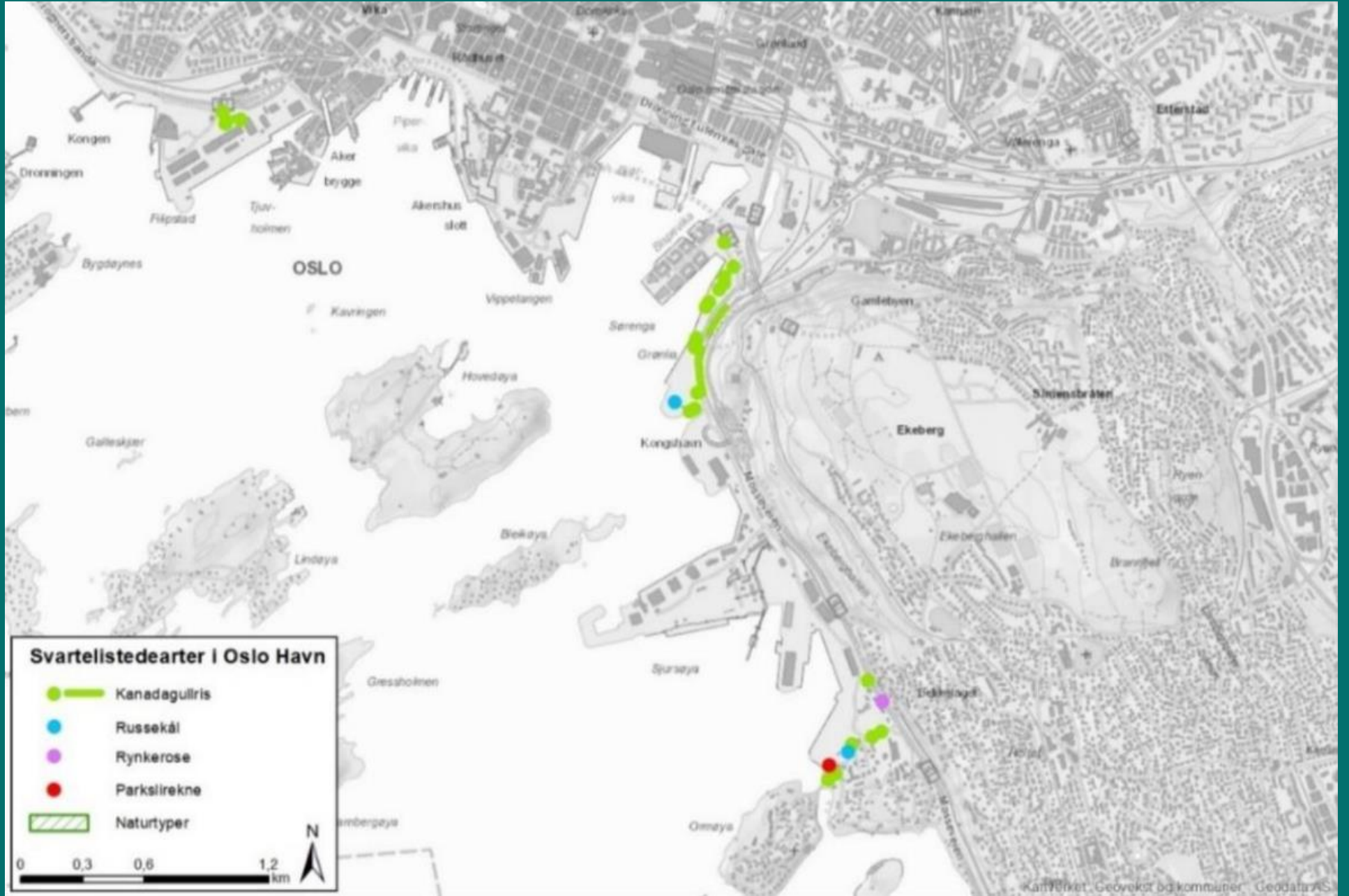
### Improvements 2021-2022

Keep low threshold to register incidents, want more reports in to improve risk assessments  
Keep up systematic sampling to find sources of pollution in the port area – discuss solutions with the city of Oslo on common snow handling  
Keep combating foreign species on land and plant only indigenous species in our park areas





## Forreign species in the port of Oslo to combat



**11** SUSTAINABLE CITIES  
AND COMMUNITIES



**12** RESPONSIBLE  
CONSUMPTION  
AND PRODUCTION



## Goal 4: Making Oslo attractive

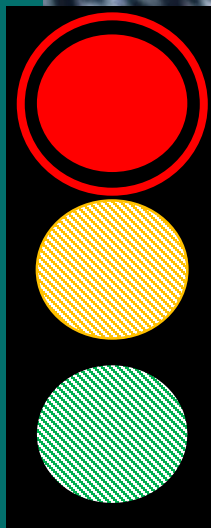
**Status:** No zero emission building sites in 2020. 60-90% sorted waste, noise from ships addressed with shore power, less passenger ships due to covid-19

### Sustainable urban port

- 12. More zero-emissions construction sites by 2025
- 13. 90 % sorted waste by 2025
- 14. Conduct noise measurements, raise awareness about noise and process input from stakeholders
- 15. Increased delivery of ship sewage by 2030

### Improvements 2021-2022

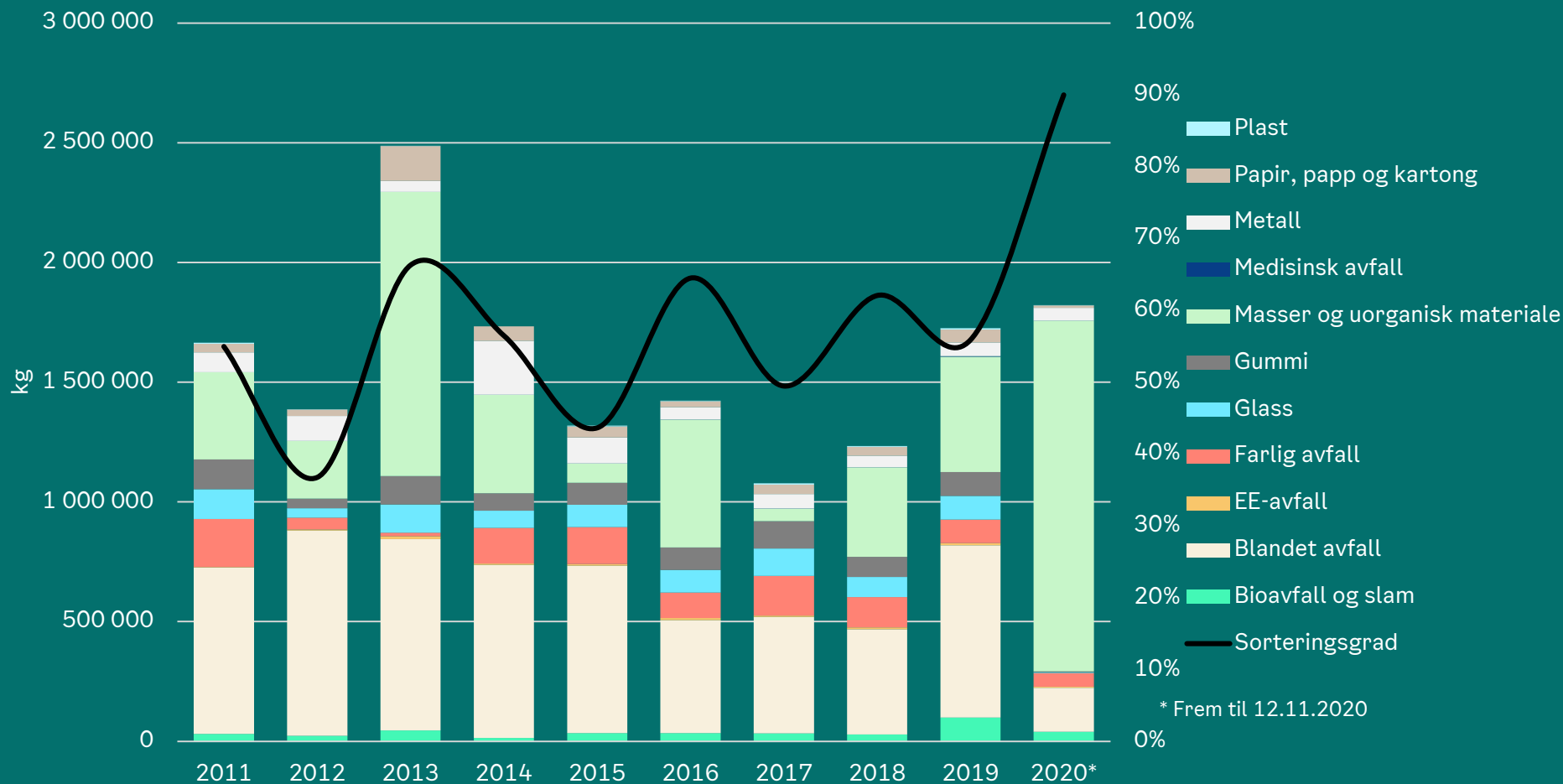
Continue to ask for zero emission building sites. Demand suppliers to report fuel consumption on port projects, fossil free and other fuels. Share information to reduce waste and noise from ships in the Port of Oslo. No cruise to deliver sewage in 2020.







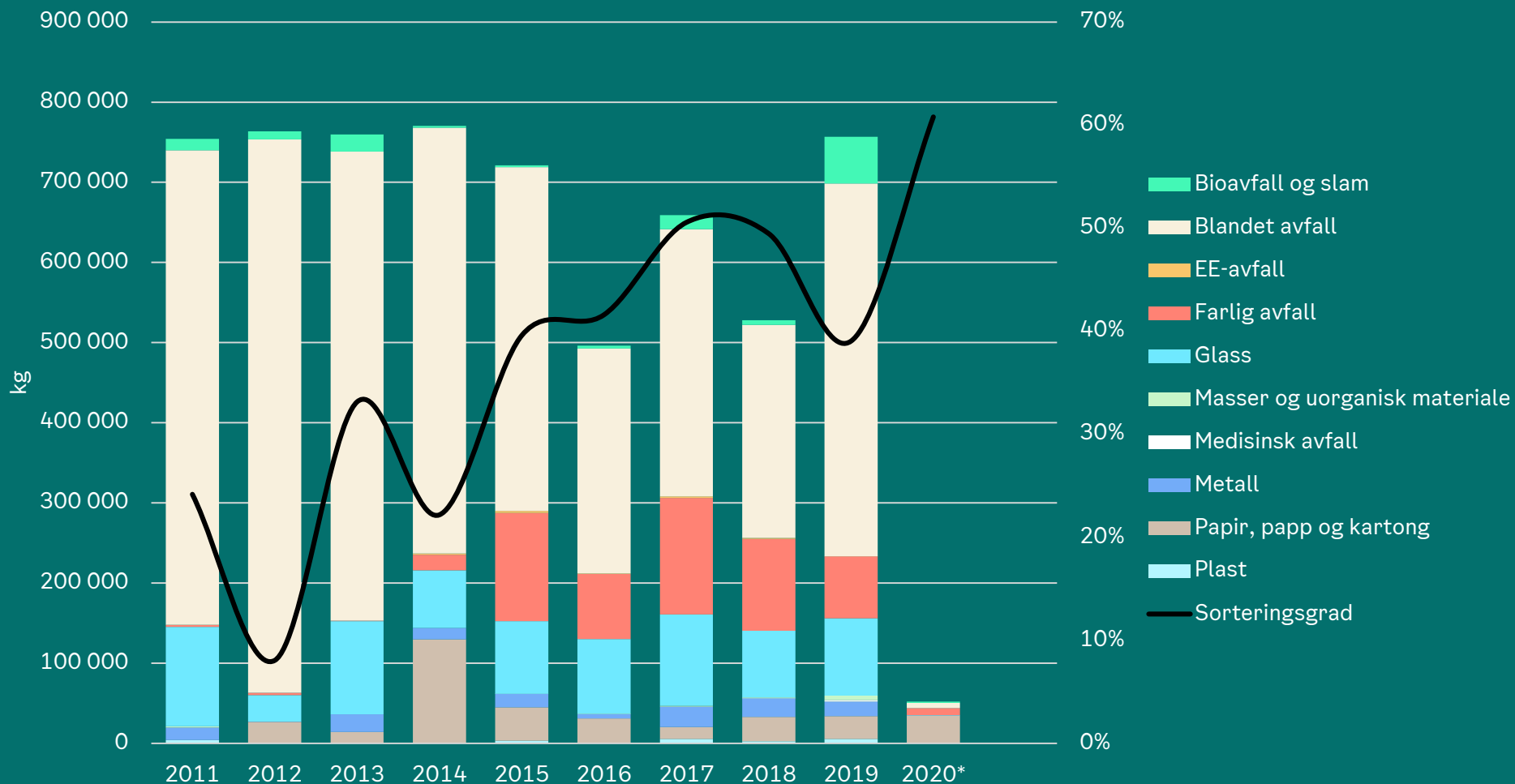
## Total waste and % sorted in the Port of Oslo



2019-2020 show that with several maintenance projects in the port area more excavation masses from digging increased alot (light green) and thus increased the percentage of sorted waste.



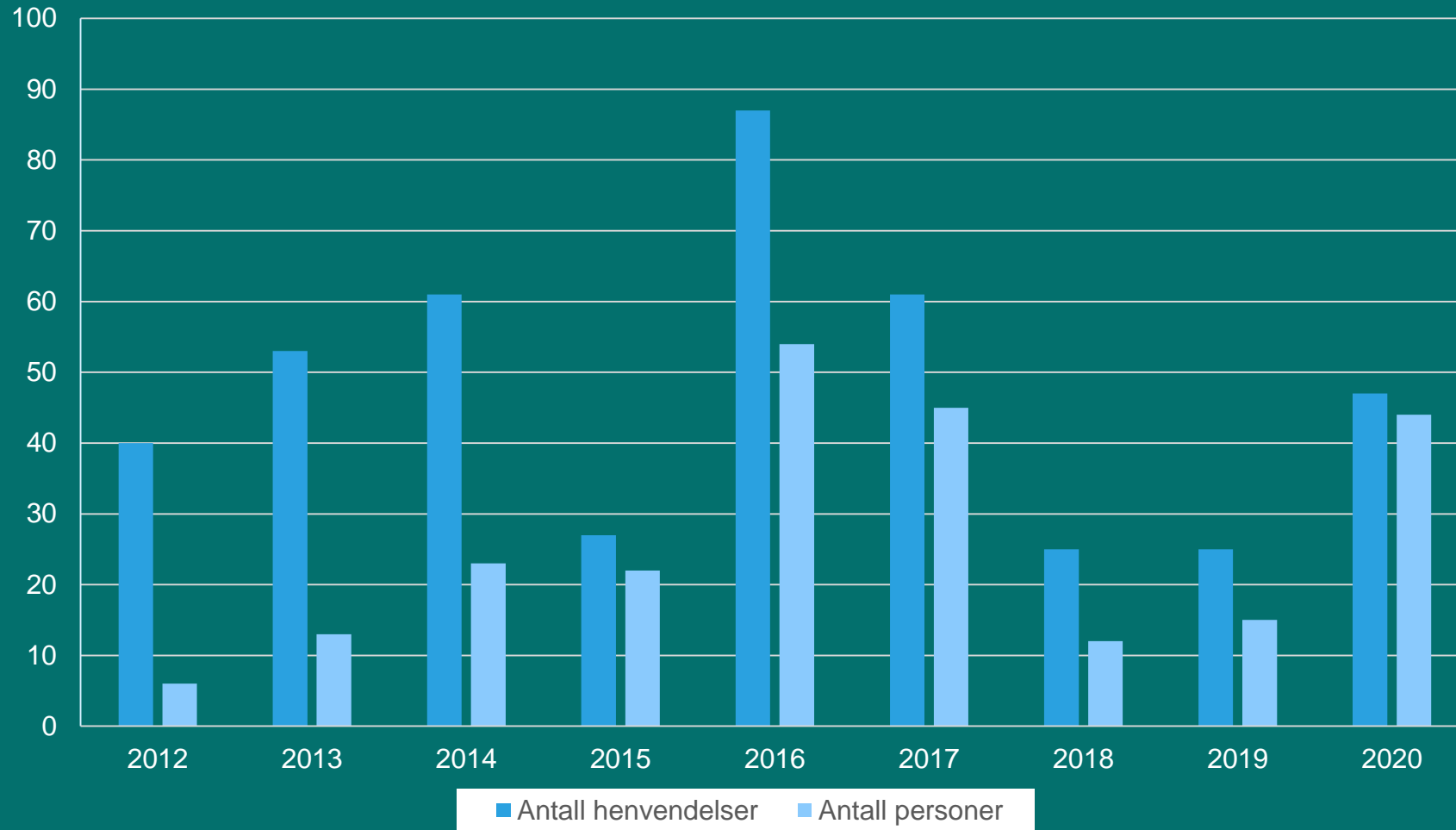
## Total waste from cruise and % sorted in the Port of Oslo



In 2020 the Port of Oslo expected 140 cruise calls with approximately 240.000 passengers. With Covid-19 only 2.000 cruise arrived in Oslo in 2020. The cruise vessels are the main contributors to waste delivery in the port, and can perhaps also contribute to future circular solutions if regulations will allow it.



## Complaints reagarding noise in the Port of Oslo

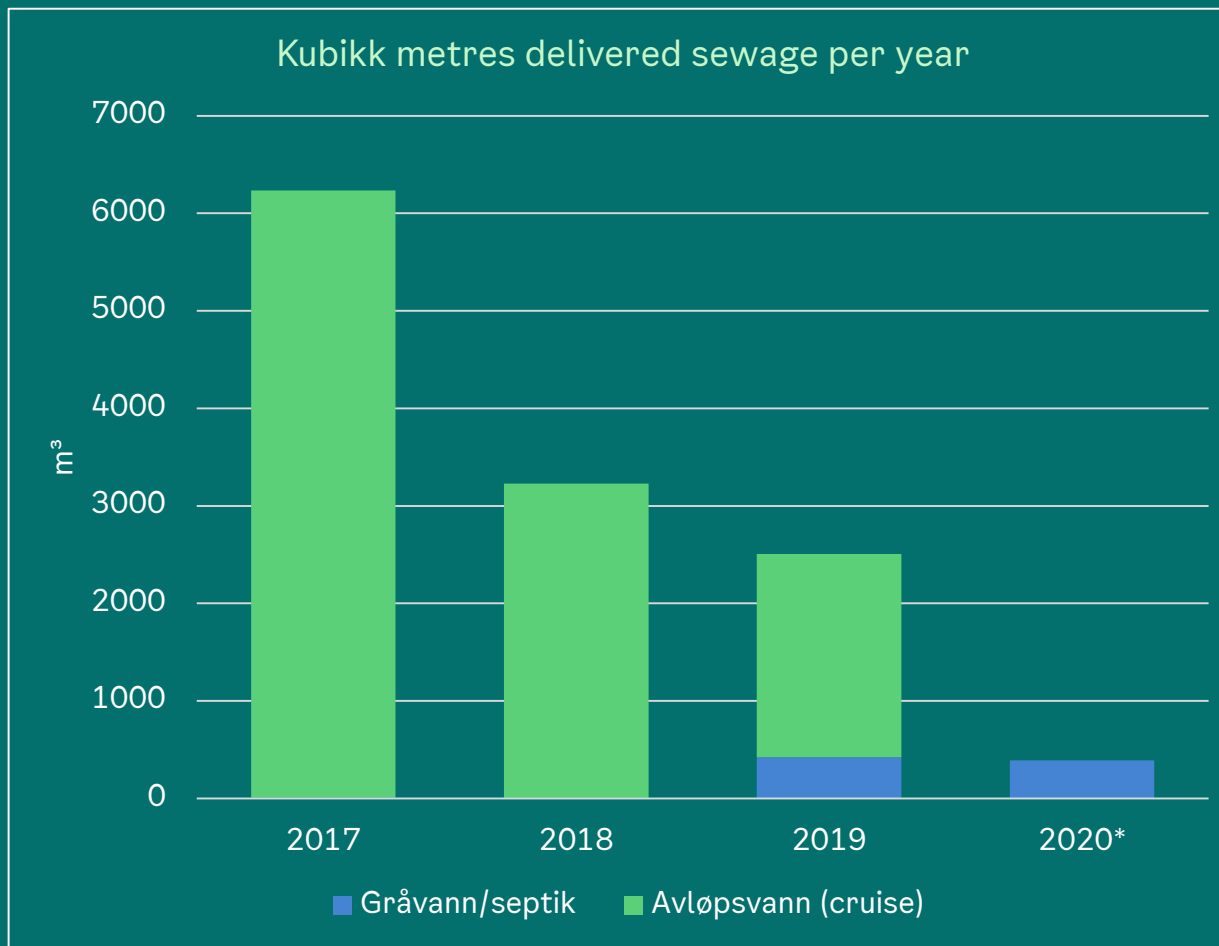


In 2020 the Port of Oslo had several ropax ferries at berth 24/7 due to Covid-19. Being an urban port the neighbours did complain until Color Line retrofitted their ship to use the manuel shore power solution that already excisted on the quay. Color Line use an automated connection daily on both vessels at another quay in Oslo. Due to Covid-19 both ships were in port at the same time.





## Delivery of sewage and grey water in the Port of Oslo



In 2020 no cruise vessels delivered sewage in the Port of Oslo.  
The sewage in Oslo is used to produce biogas for transport

# Making Oslo attractive in the Port of Oslo



# Making Oslo attractive in the Port of Oslo





# Making Oslo attractive in the Port of Oslo

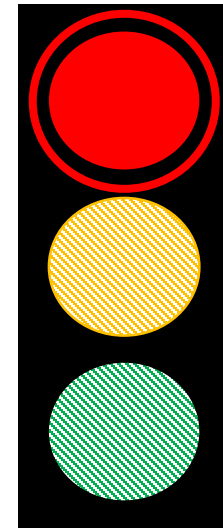
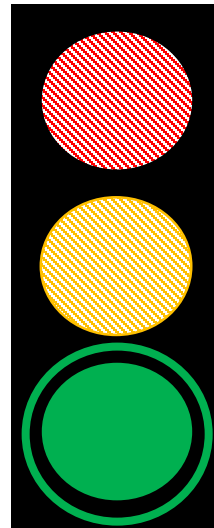
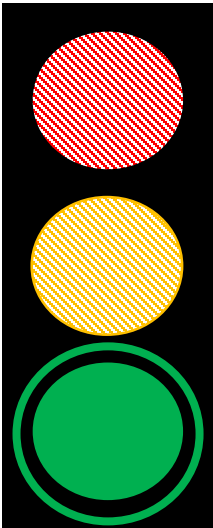


# Making Oslo attractive in the Port of Oslo



# In compliance with regulations, systematic improvement and reported incidents

- ▶ Compliance with regulations
- ▶ External audit only suggested improvements
- ▶ Reported incidents, want more to better calculate risk and areas of concern





# The City and Port of Oslo aim to be emission free



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Oslo



Photo: Mohri Films