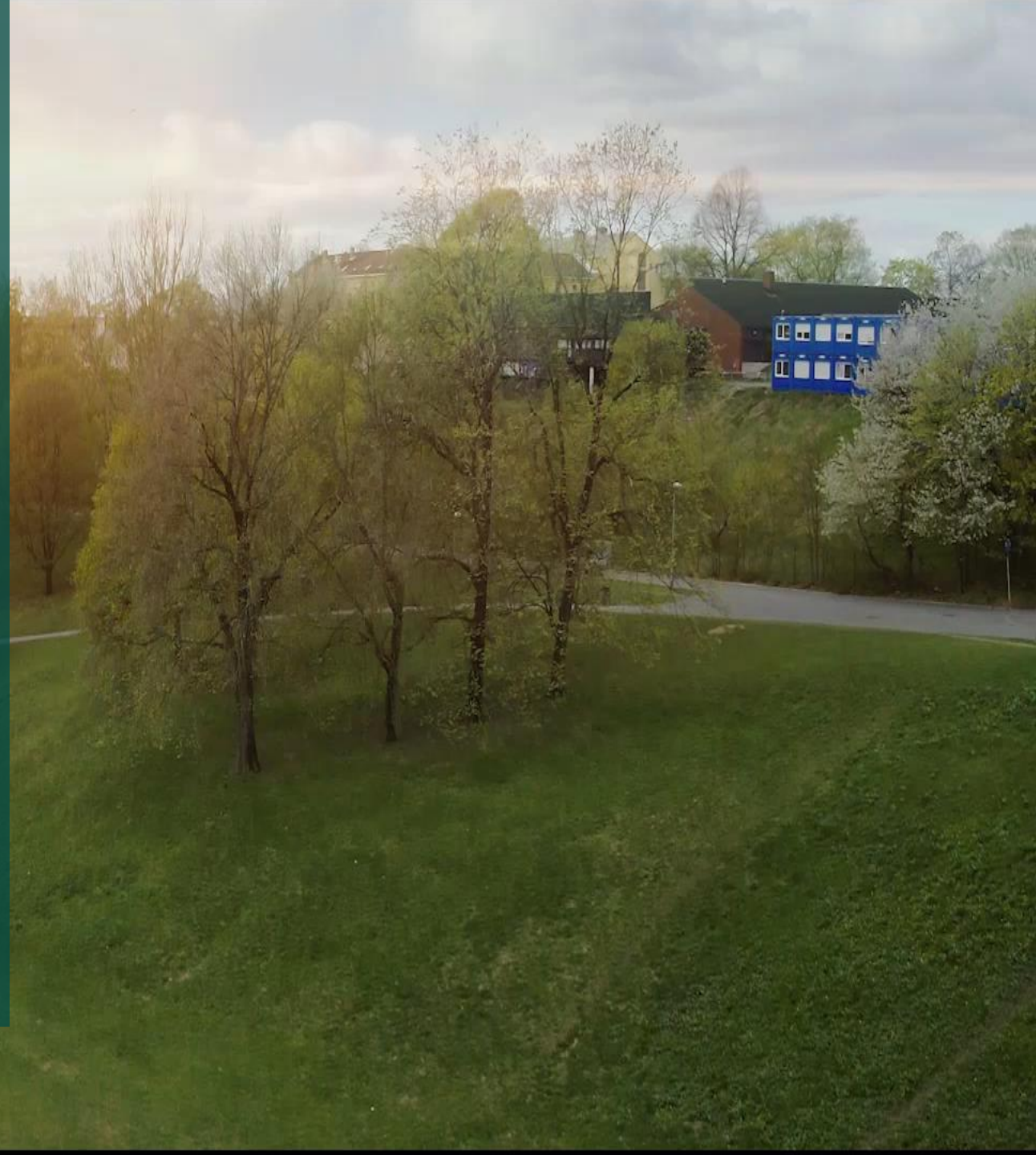




Oslo Climate Strategy and budget towards 2030 – the story

Heidi Sørensen
Head of the Agency for Climate



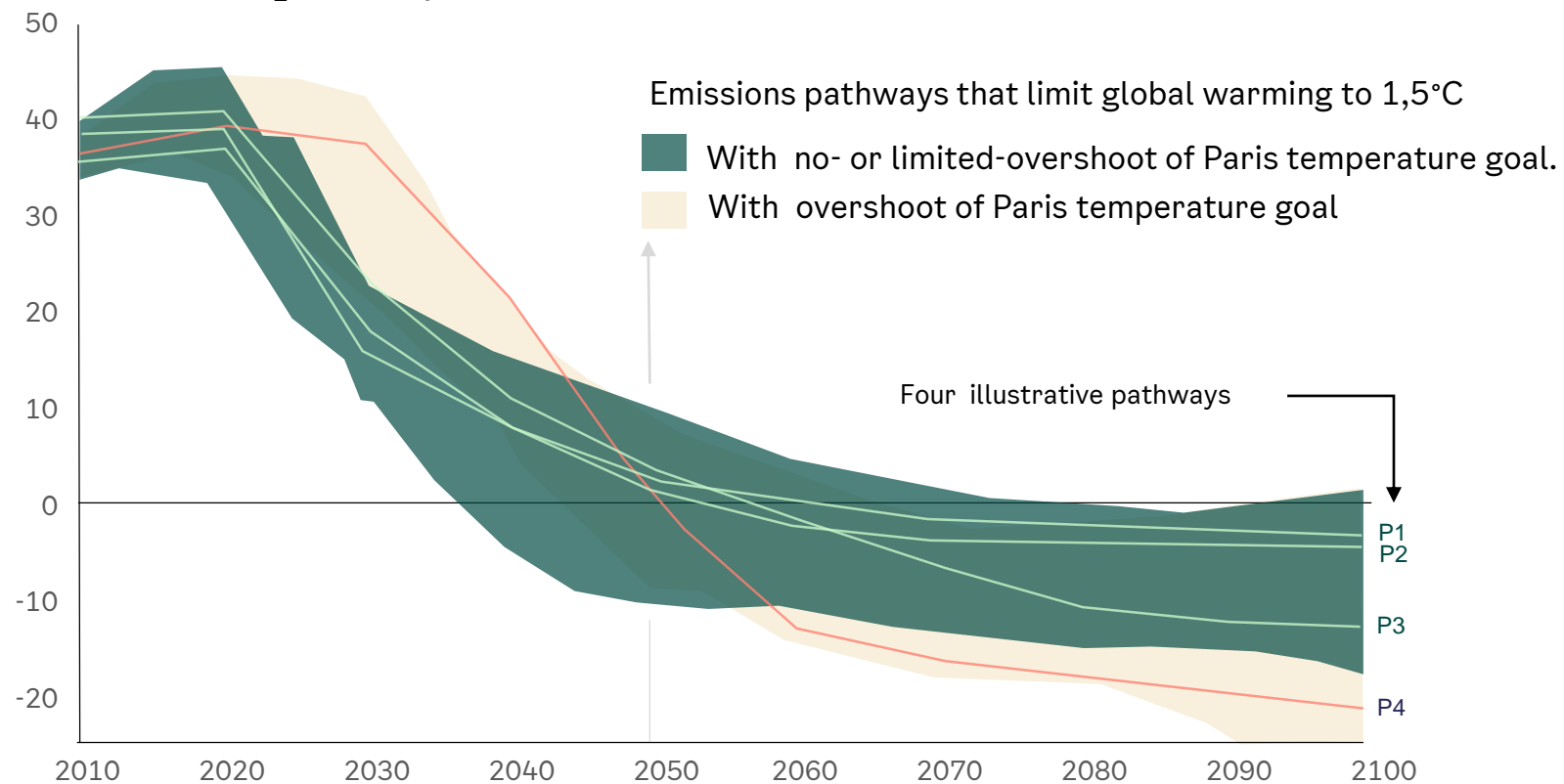
OSLO IN A NUTSHELL



Climate targets and framework

Total global net CO₂-emissions

Billion tons CO₂ annually



Paris agreement



Climate Act



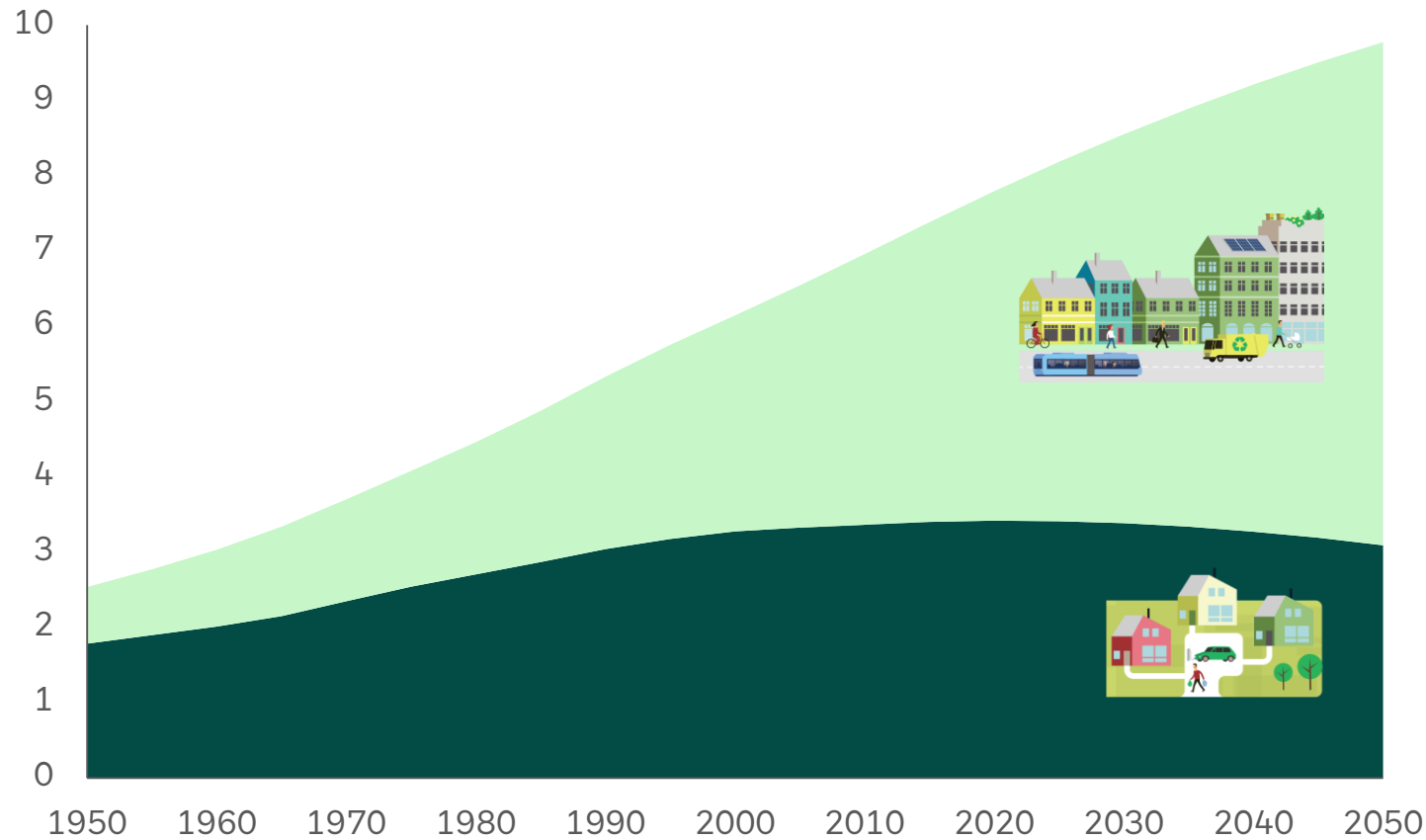
Oslo

Climate strike: youth are mobilizing



Cities are key to a sustainable future

Population (billions)



By 2050 urban population will increase by 50 percent

Carbon neutral cities is a prerequisite for fulfilling the Paris agreement



Oslo

The Climate budget was born in 2016

We want to “count CO₂-emissions the way we count money”



BYRÅDET 2015 – OPPDRAG FOR OSLO KOMMUNE
Raymond Johansen og det rødgrønne byrådet overtok styringen av Oslo etter valget i 2015.

The new City government in 2015



Oslo

ENVIRONMENT SEPTEMBER 28, 2016 / 3:40 PM / 3 YEARS AGO

Oslo's radical "climate budget" aims to halve carbon emissions in four years

Alister Doyle

3 MIN READ



OSLO (Reuters) - Oslo's leftist city government issued its first "climate budget" on Wednesday aiming to halve greenhouse gas emission within four years in one of the world's most radical experiments to slow global warming.



Are Paulsrud disconnects his electric car from a free recharging station in Oslo, Norway, February 21, 2013. REUTERS/Alister Doyle/File Photo

The budget, setting out annual goals to choke off emissions from cars, homes and businesses in the Norwegian capital, adds to a scheme announced last year to ban private cars from the city center.

"We'll count carbon dioxide the same way as we count money," Vice Mayor Robert Steen told Reuters of the targets for halving emissions by 2020.

Left-wing parties, led by Steen's Labour Party, won a majority in the city council in 2015 for a four-year term and have set about using wide powers to re-design the capital

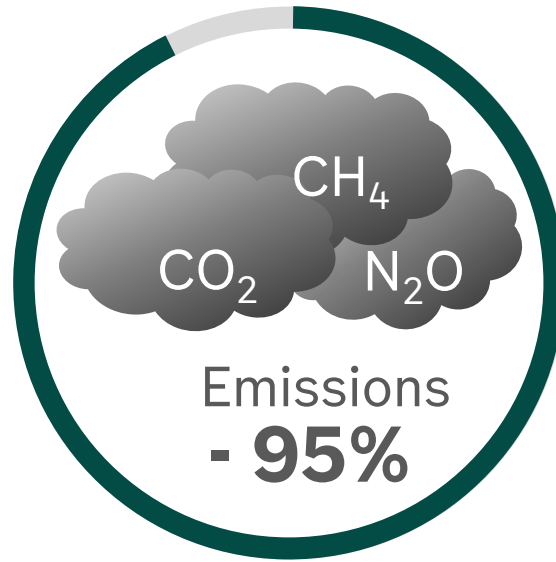
Oslo has set ambitious climate policy targets

Adaptation



2030

Mitigation



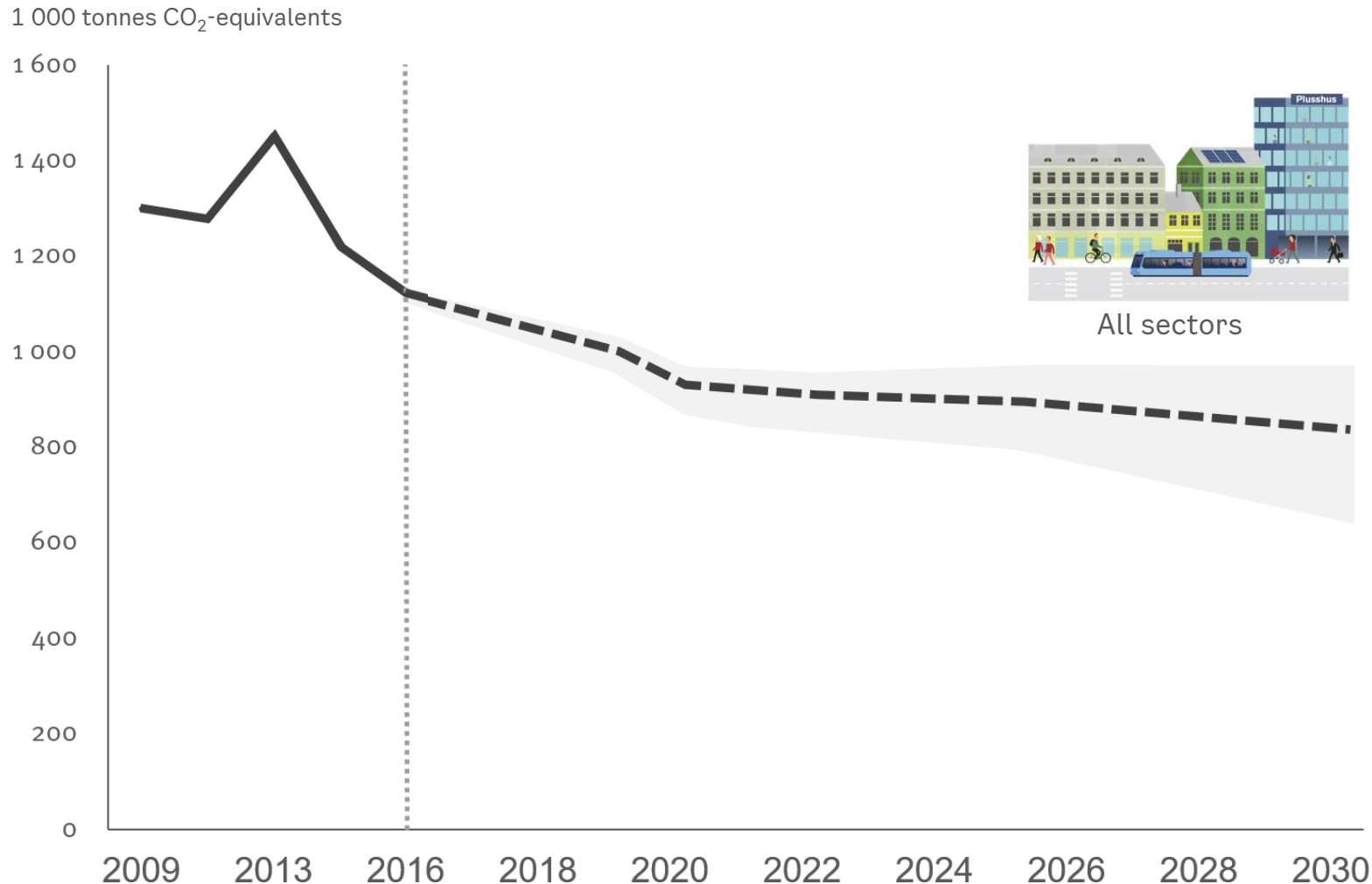
2030



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New measures are necessary to cut emissions



From adjustments to transition:

Need for strong and forceful policies: requirements, restrictions and regulations.

Oslo has to strengthen and develop existing measures.

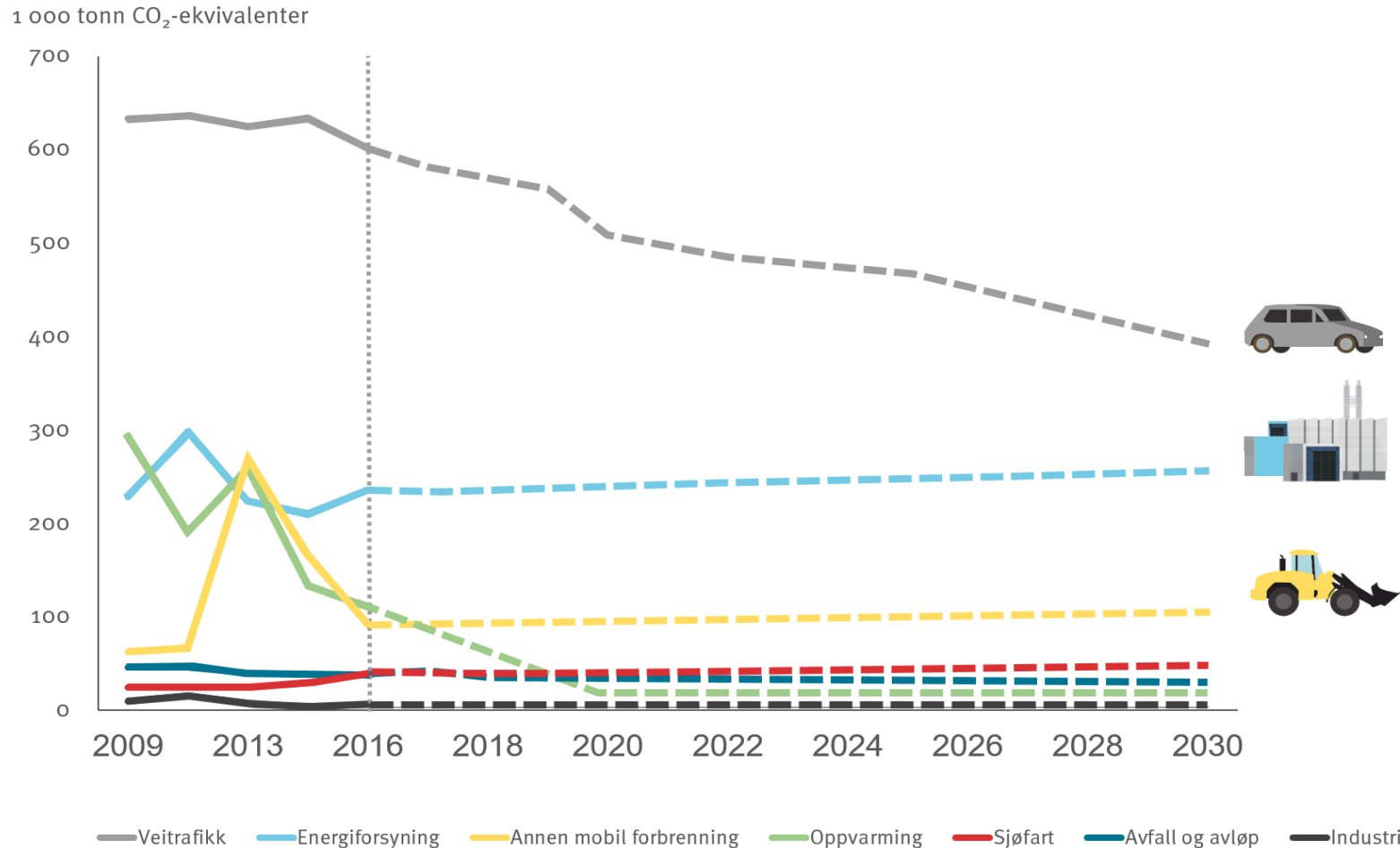
Need for further cooperation, innovation and development.

Implementation of new technology and solutions.



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MAIN CHALLENGES TOWARDS 2030



Goods and goods transport, waste and construction are the main challenges until 2030.

But with ambitious goals, all sectors must be included.



CLIMATE LEADERSHIP

Climate governance:

- Climate budget
- A green procurement policy
- Investments

Cooperation and cocreation:

- Business community
- Academia
- National and regional governments

Climate Communication



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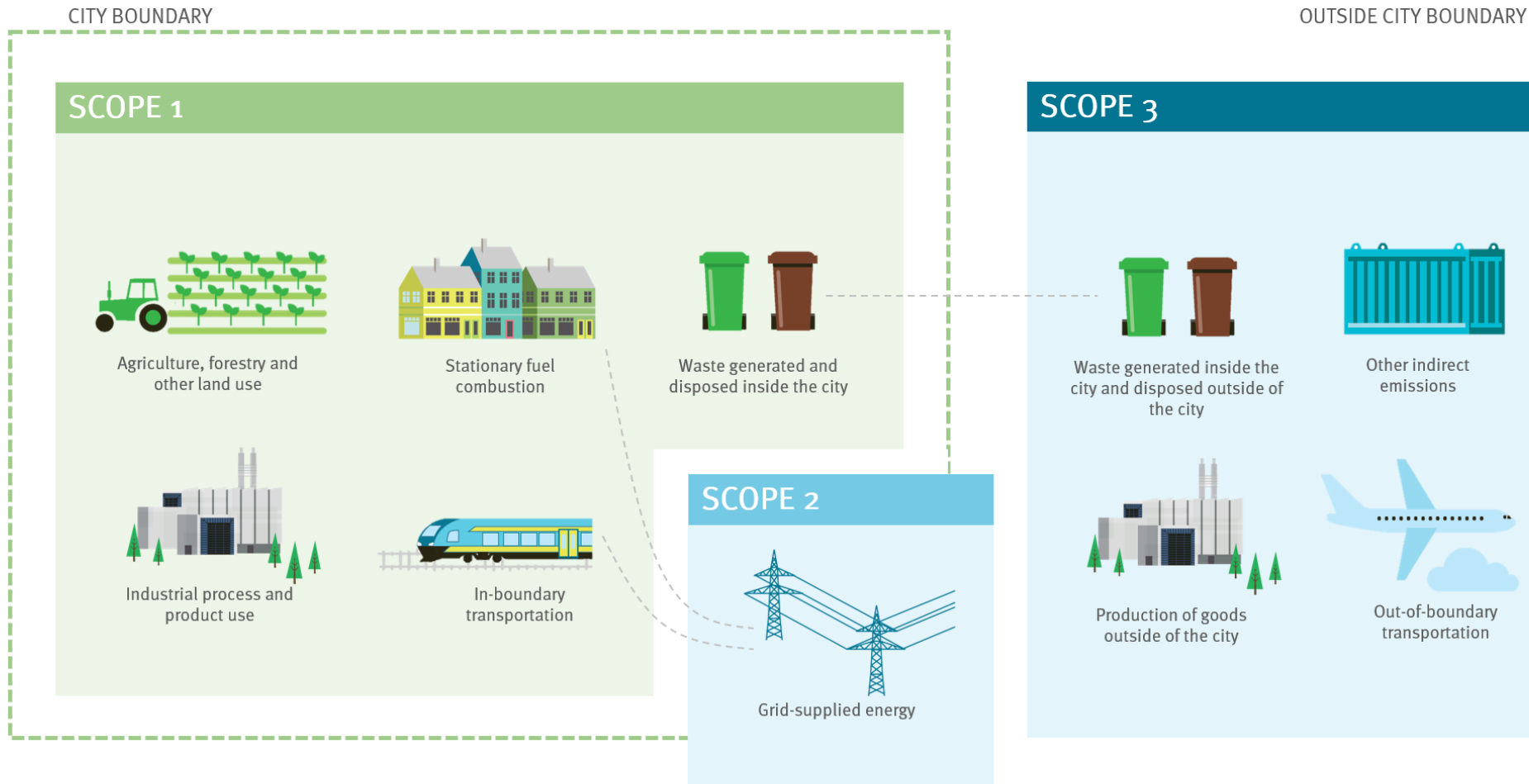


CLIMATE BUDGET

- an efficient governance system

- ▶ Integrated in the ordinary municipal budget
- ▶ Identifies emission reduction measures
- ▶ Identifies costs and responsible unit for implementation
- ▶ Reporting as part of the ordinary budget cycle

Oslo's measures address both direct and indirect GHG emissions

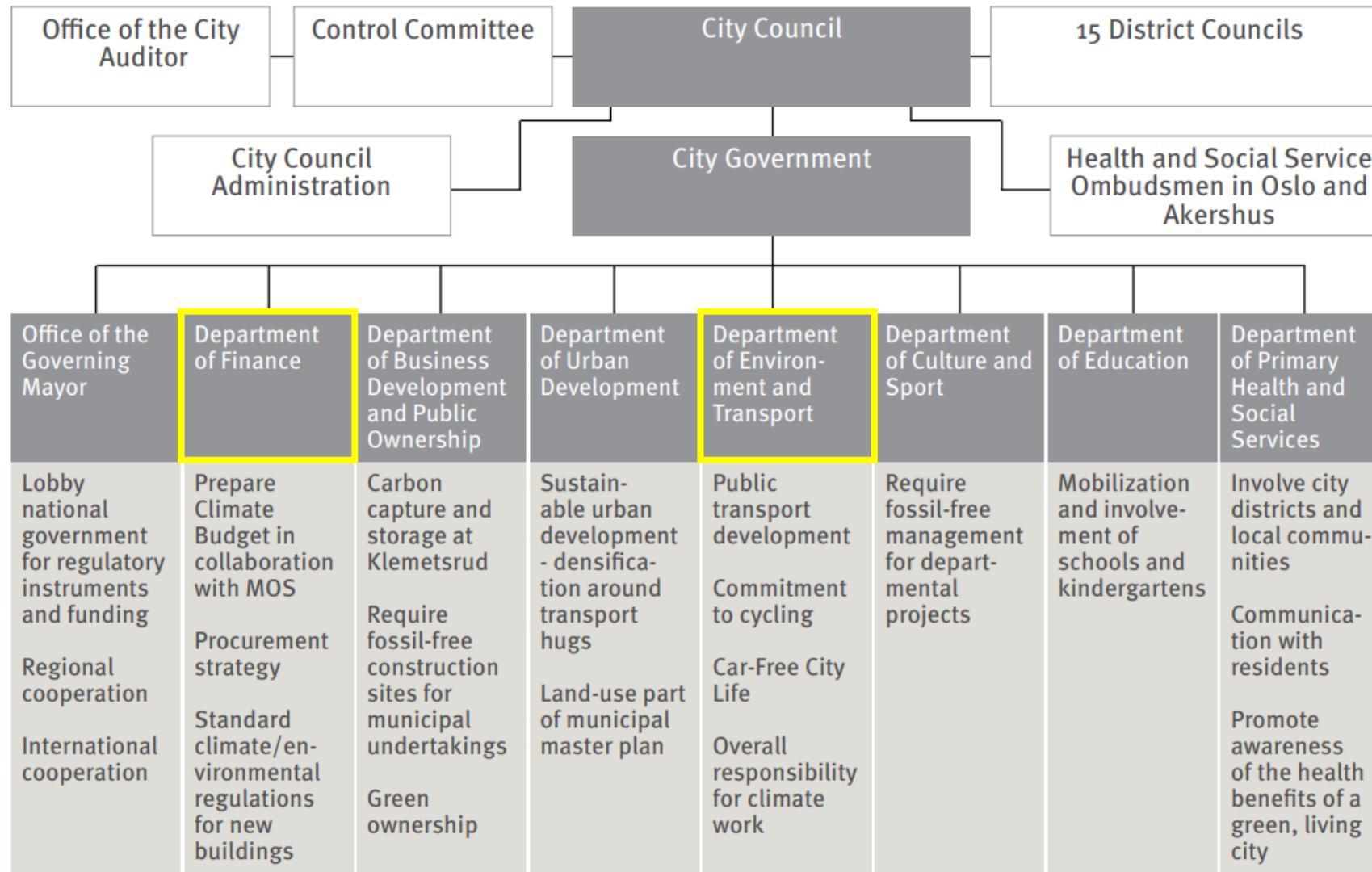


We find it important to work on reducing both our direct emissions and our entire footprint.

However, we need to keep them separate in measurement and accounting.

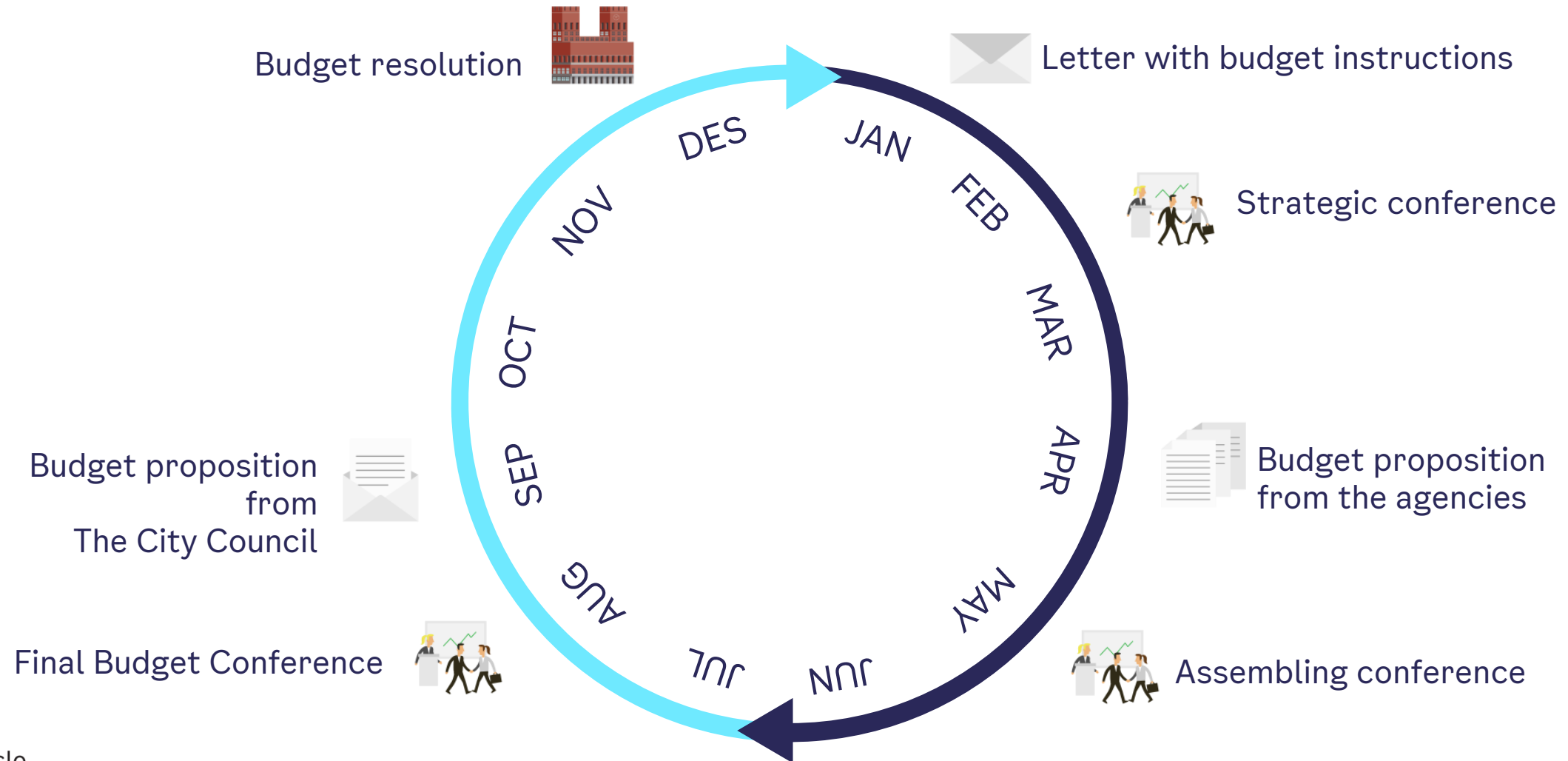


Organisation of the climate work in Oslo



BUDGET PROCESS

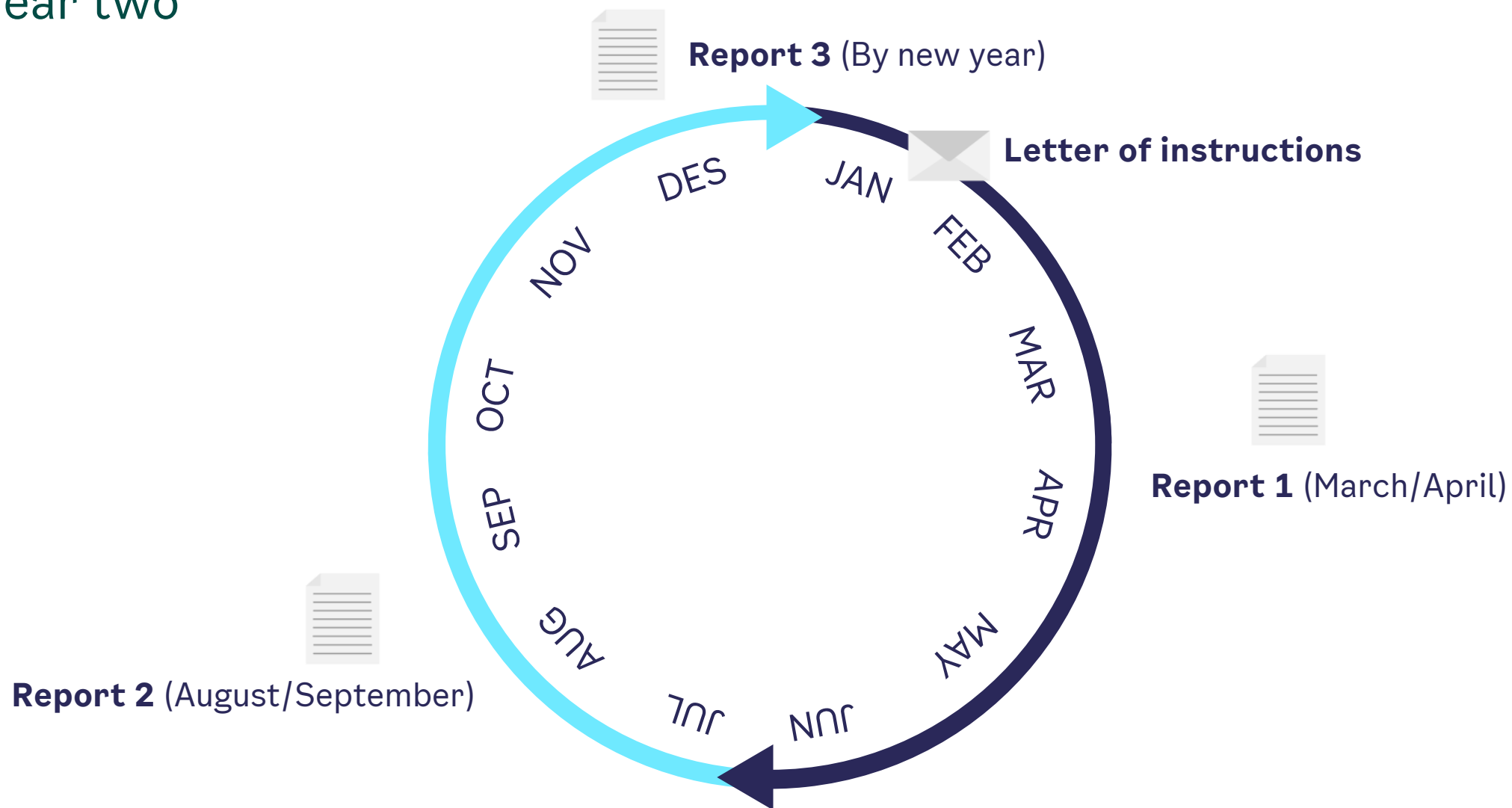
- year one



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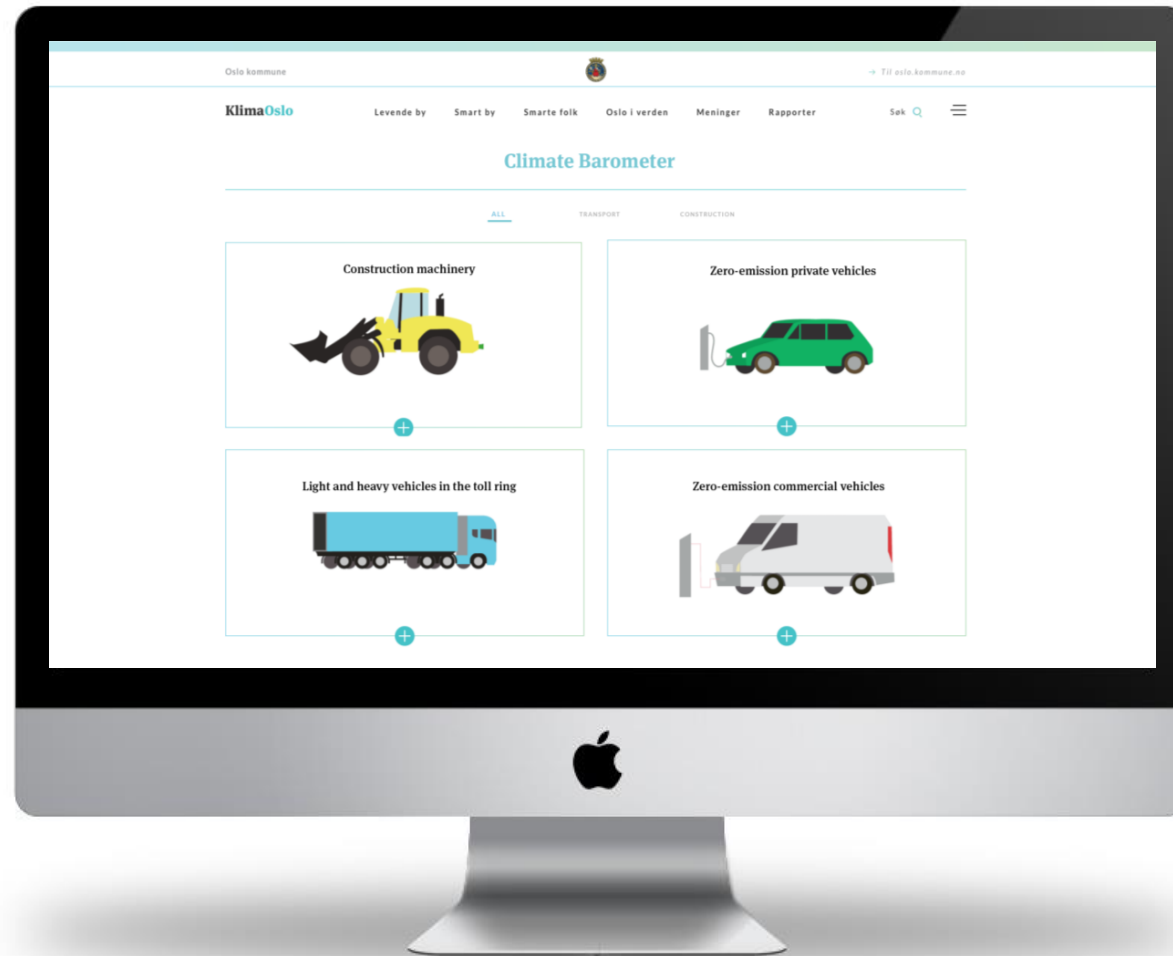
BUDGET PROCESS

- year two



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THE CLIMATE BAROMETER



Oslo

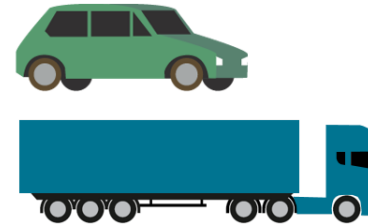
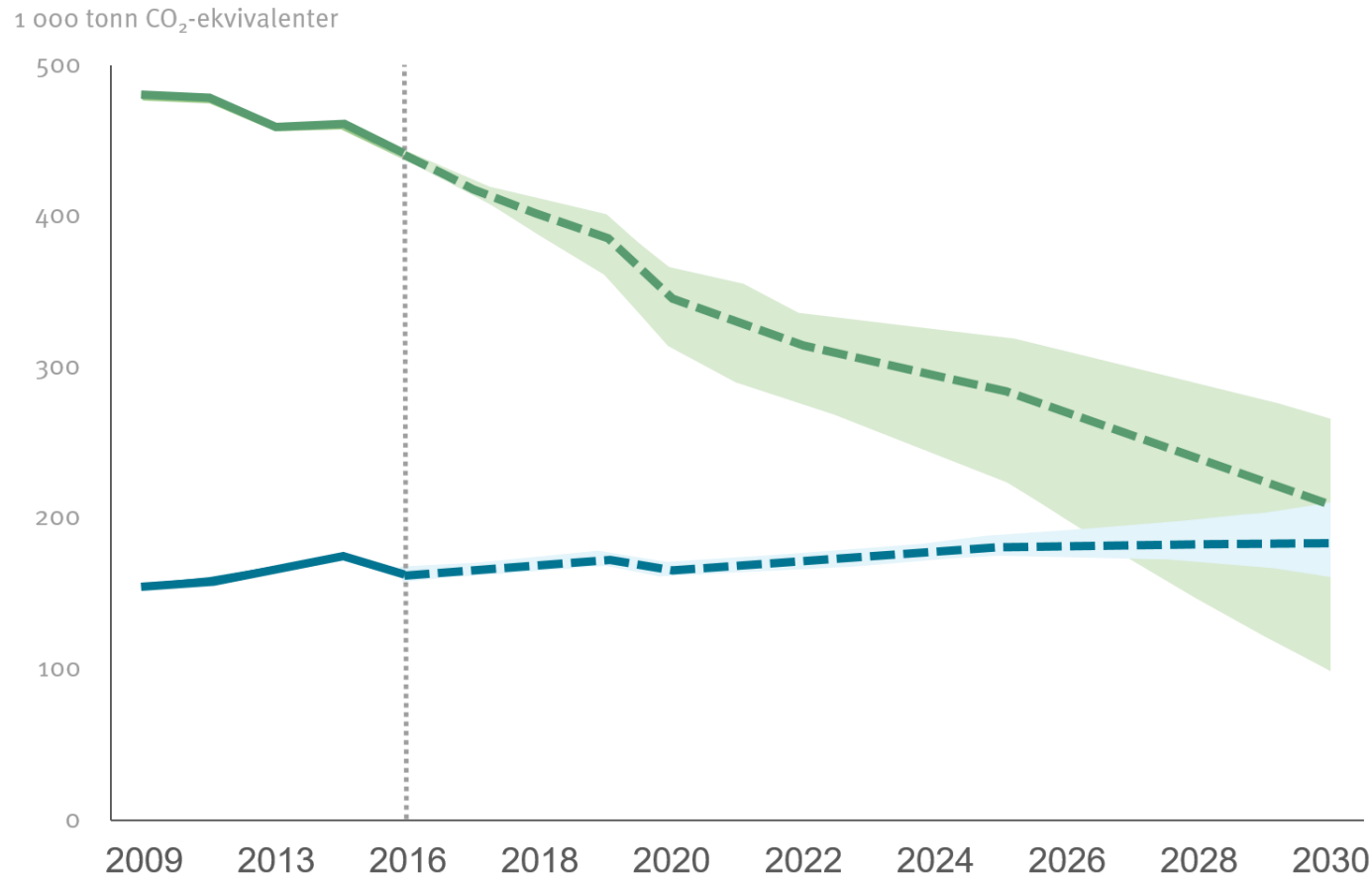


TRANSPORT

55%



Climate smart mobility: measures prove successful, but not sufficient



- ▶ Emissions from passenger traffic are going down as a result of increased use of electric cars and powerful measures prioritising public transport, biking and walking
- ▶ Emissions from transporting goods represent a large challenge
- ▶ New national level measures are necessary
- ▶ The cities need the autonomy to regulate the transport of goods to a larger degree than today



Two consolidation centres opened in 2019, enabling emission free distribution of goods



Oslo



HIGHWAY TO EL

RAGN



NASTA

WWW.RAGNSELLS.NO

RAGN

En del av



OTHER
MOBILE COMBUSTION

6%

The construction sector

- ▶ The building and construction sector counts for 7 – 10 pst of the direct climate emissions in Oslo. In addition there is the embodied carbon in materials
- ▶ Targets: The construction sector shall be fossile free by 2020 and zero emission by 2030. The municipalities own construction sites, shall be emission free by 2025



RAPPORT

Potensialet for utslippsreduksjon ved fossil- og utslippsfrie bygge- og anleggsplasser

Klimaetaten Oslo Kommune

Rapportnr.: 2018-0367, Rev. 1

Dokumentnr.: 10078671-R-01-A

Dato: 2018-04-27



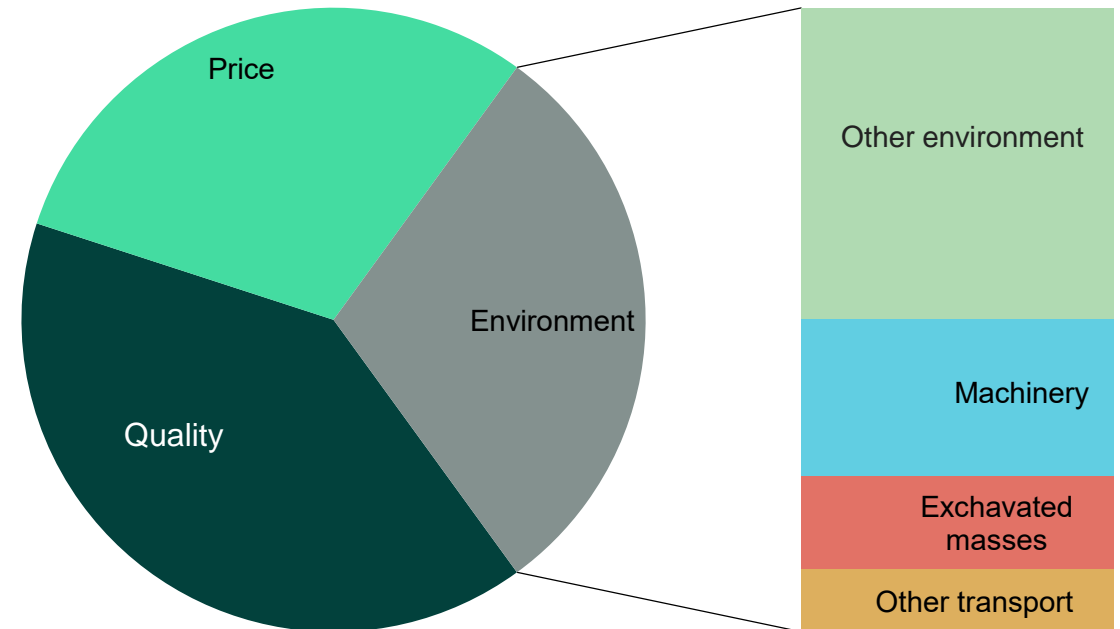
Procurement – a powerful tool in the construction sector

Minimum requirement:

- ▶ Fossil free construction machinery and transportation of excavated masses and waste
- ▶ Zero emission heating and building drying

Tender criteria:

- ▶ Environment should be weighted 30%
- ▶ Zero emission machinery should be weighted 50% of the environmental criteria.





HEATING

6%

Climate and energy fund

- ▶ Charging infrasture in housing cooperatives
- ▶ Charging infrasture in businesses
- ▶ Charging stations for taxis
- ▶ Electric cargo bikes
- ▶ Smart work travel
- ▶ Parking fascilities for bicylcles in housing cooperatives
- ▶ Energy improvement in building



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Klimaetaten i Oslo kommune
6. november kl. 15:44 · 🌐

Kjører du varebil? Nå er det mye å spare på å kjøre utslippsfritt! 🙌🔥✅

Du får en
klimarabatt på
inntil 50 000,- !

**SPAR
50 000!**

14
1 kommentar 1 deling

Liker Kommenter Del



Oslo is aiming to become
a zero-emission city within 2030.

Other cost/benefit effects

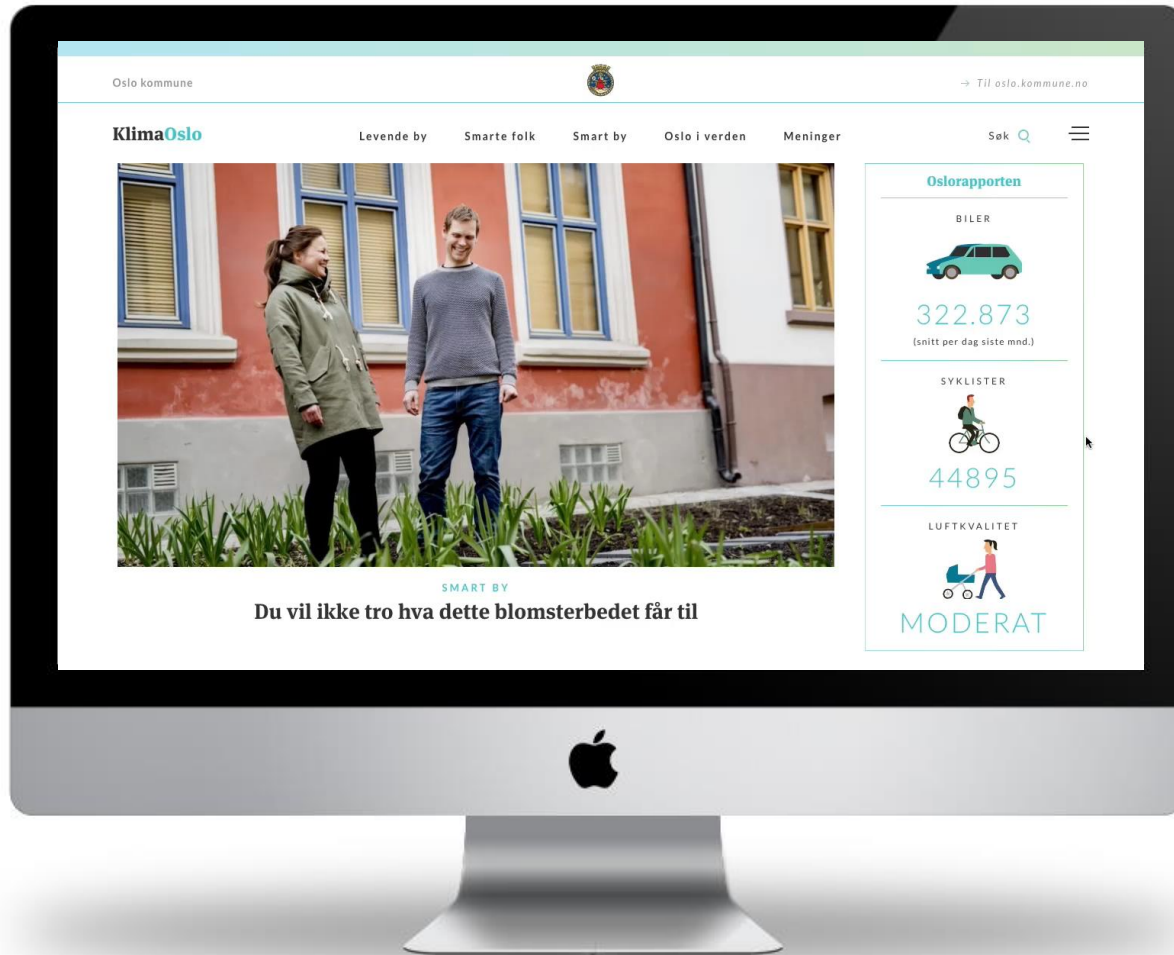
- ▶ Added and avoided costs
- ▶ Reduce air pollution
- ▶ Improve public health
- ▶ Reduce noise
- ▶ Save and increase biodiversity



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COOPERATION AND COMMUNICATION

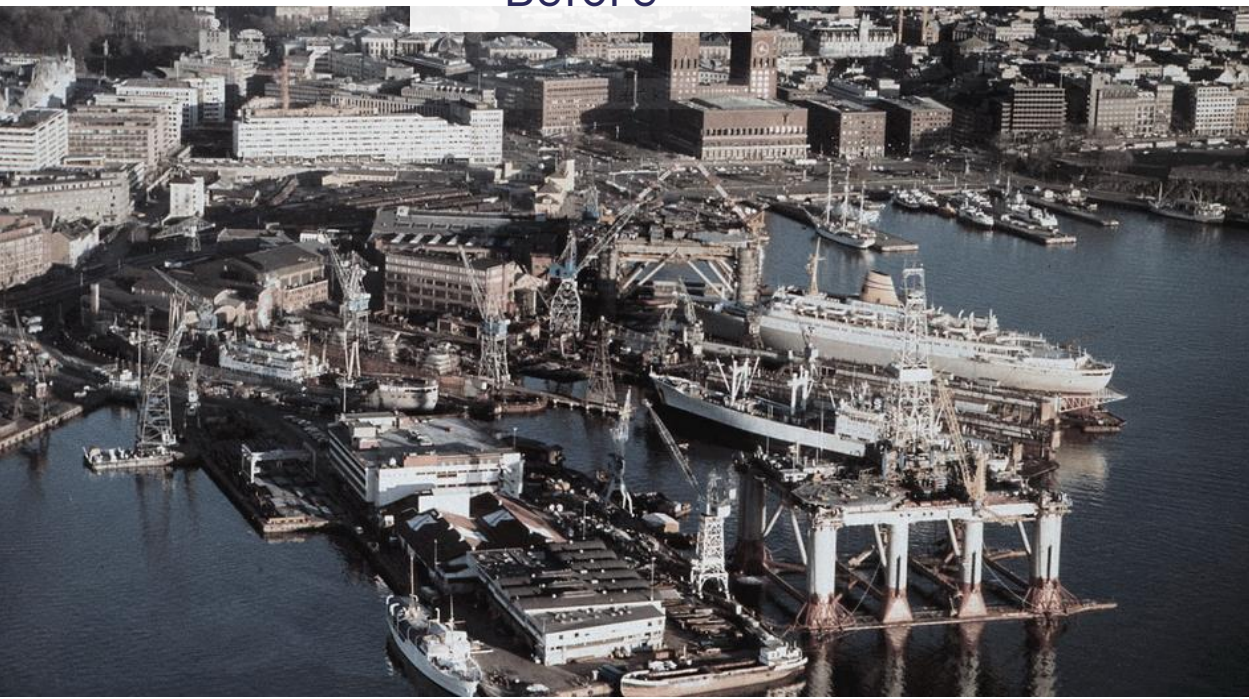


Business for Climate

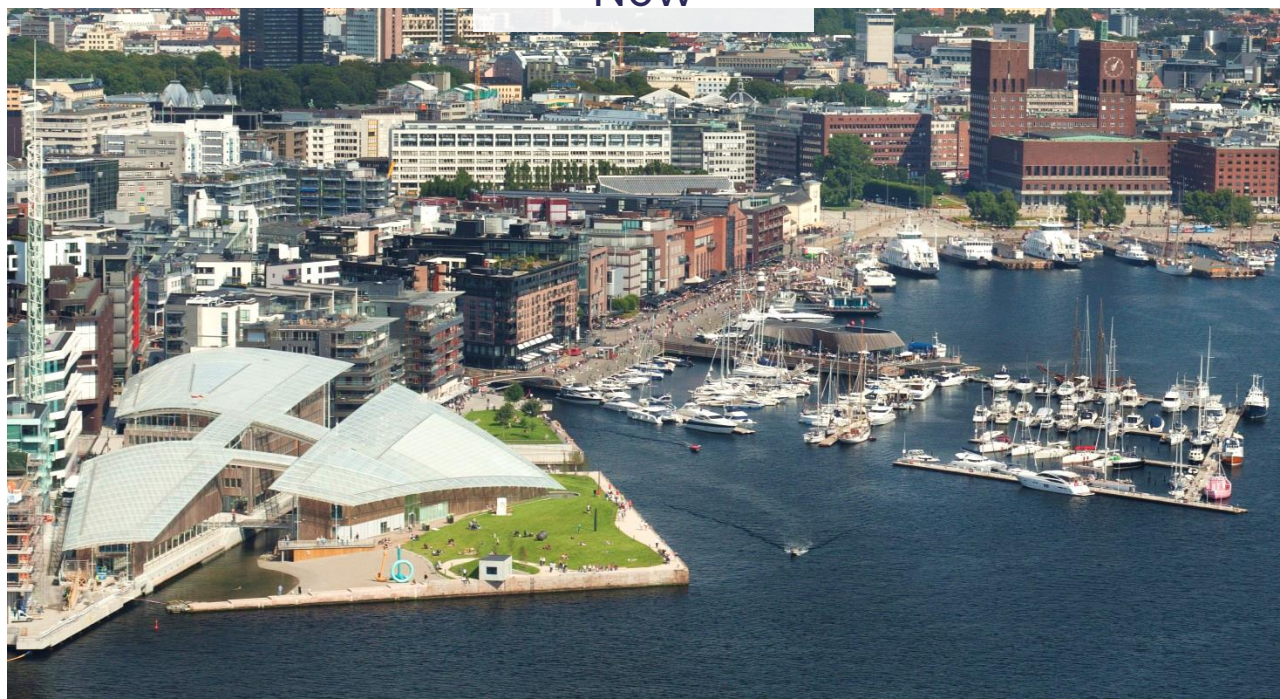




Before



Now





Oslo

Technical presentation of the Oslo climate budget

Paris, 19.11.19

Catrin Robertsen
Technical advisor on the climate budget
Climate Agency, City of Oslo



How to develop a climate budget?

- ▶ Define the system boundaries of the budget
- ▶ Investigate data sources for historic emissions
- ▶ Establish an emission inventory and baseline
- ▶ Adopt ambitious emission reduction targets
- ▶ Ensure robust methodology for mitigation analysis
- ▶ Be aware of the uncertainty
- ▶ Establish a system for monitoring and reporting
- ▶ Keep in mind the importance of transparency!



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System boundaries for Oslo's climate budget

- Direct emissions (scope 1)
- Indirect emissions not included
 - no consumption based analyses
- Geographical area
 - not only the city administration
- Includes all emission sectors in available statistics
- Combination of national, regional and local measures
- Combination of quantified and non-quantified measures
- Adaptation not included

CITY BOUNDARY

OUTSIDE CITY BOUNDARY

SCOPE 1



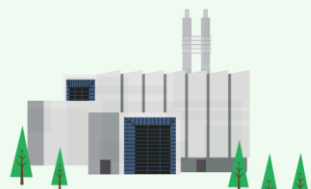
Agriculture, forestry
and other land use



Stationary fuel
combustion



Waste generated and
disposed inside the
city



Industrial process
and product use



In-boundary
transportation

SCOPE 2



Grid-supplied energy

SCOPE 3



Waste generated
inside the city and
disposed outside of
the city



Other indirect
emissions



Transmission
and distribution



Out-of-
boundary
transportation

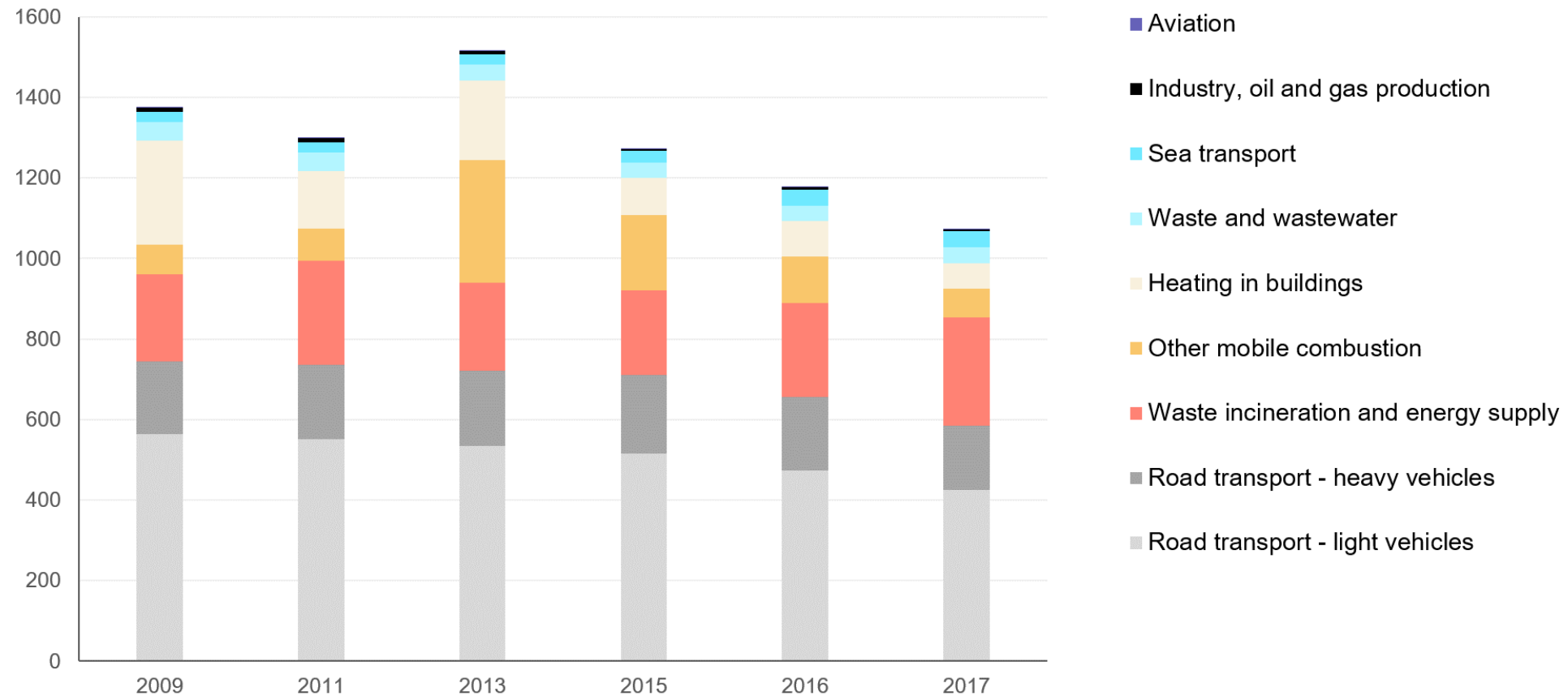
Good data on GHG emissions is essential
in order to develop a climate budget!

GHG emission statistics for Norwegian municipalities

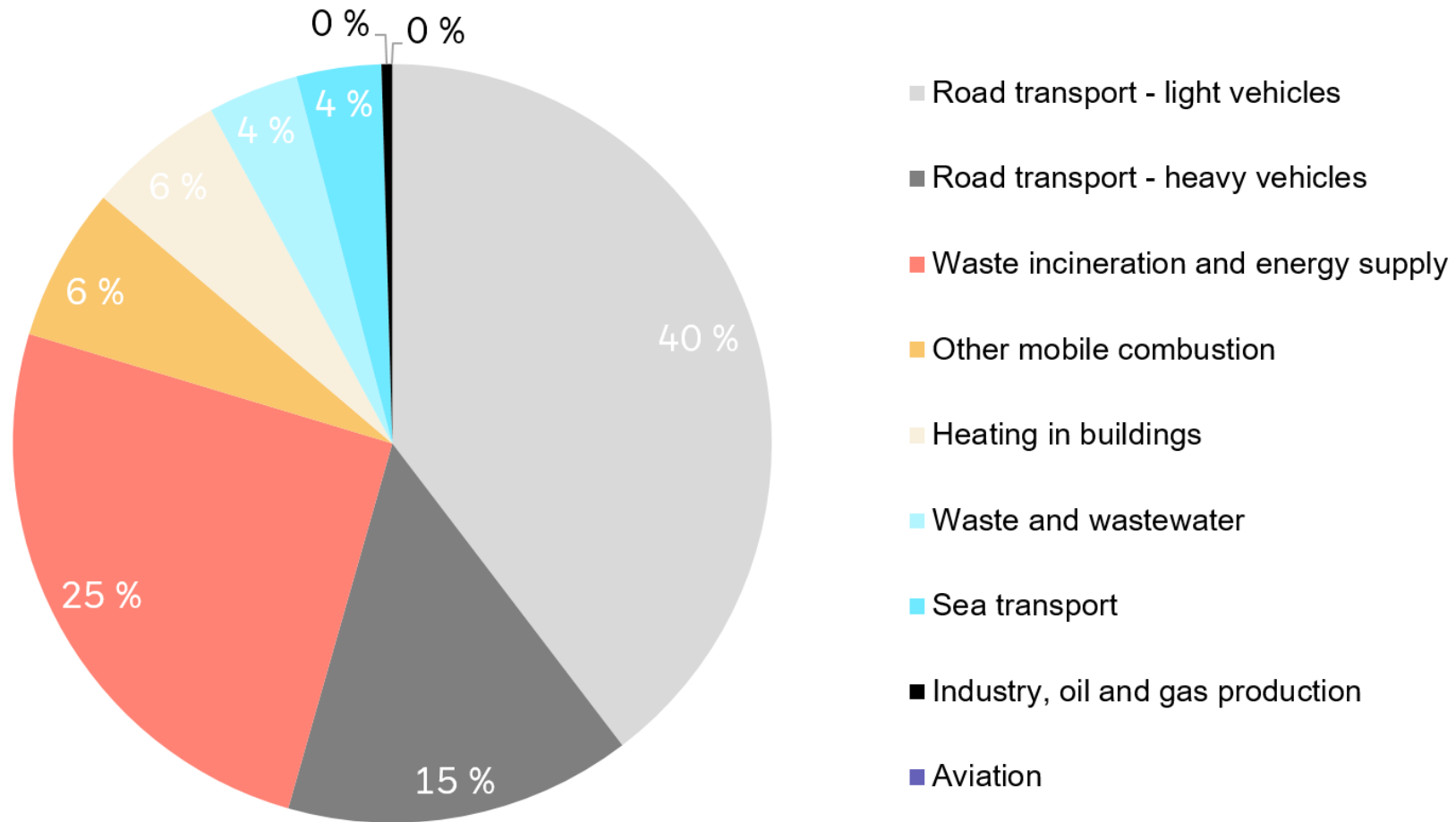
- ▶ The Norwegian Environment Agency is responsible for the compilation
 - Statistics Norway and other institutions contribute with emission estimates and data
- ▶ Inspired by the National System for GHG inventories
 - Developed using the same methodology as the NIR (IPCC 2006 guidelines)
- ▶ Annual publications
 - Two year delay
- ▶ Content
 - Three pollutants (CO₂, N₂O and CH₄)
 - From 2009 -2017
 - Nine emission sectors (38 emission sources)
- ▶ Available online and as downloadable Excel sheets

Oslo GHG-emissions, 2009-2017

1000 tonnes CO₂-equivalents

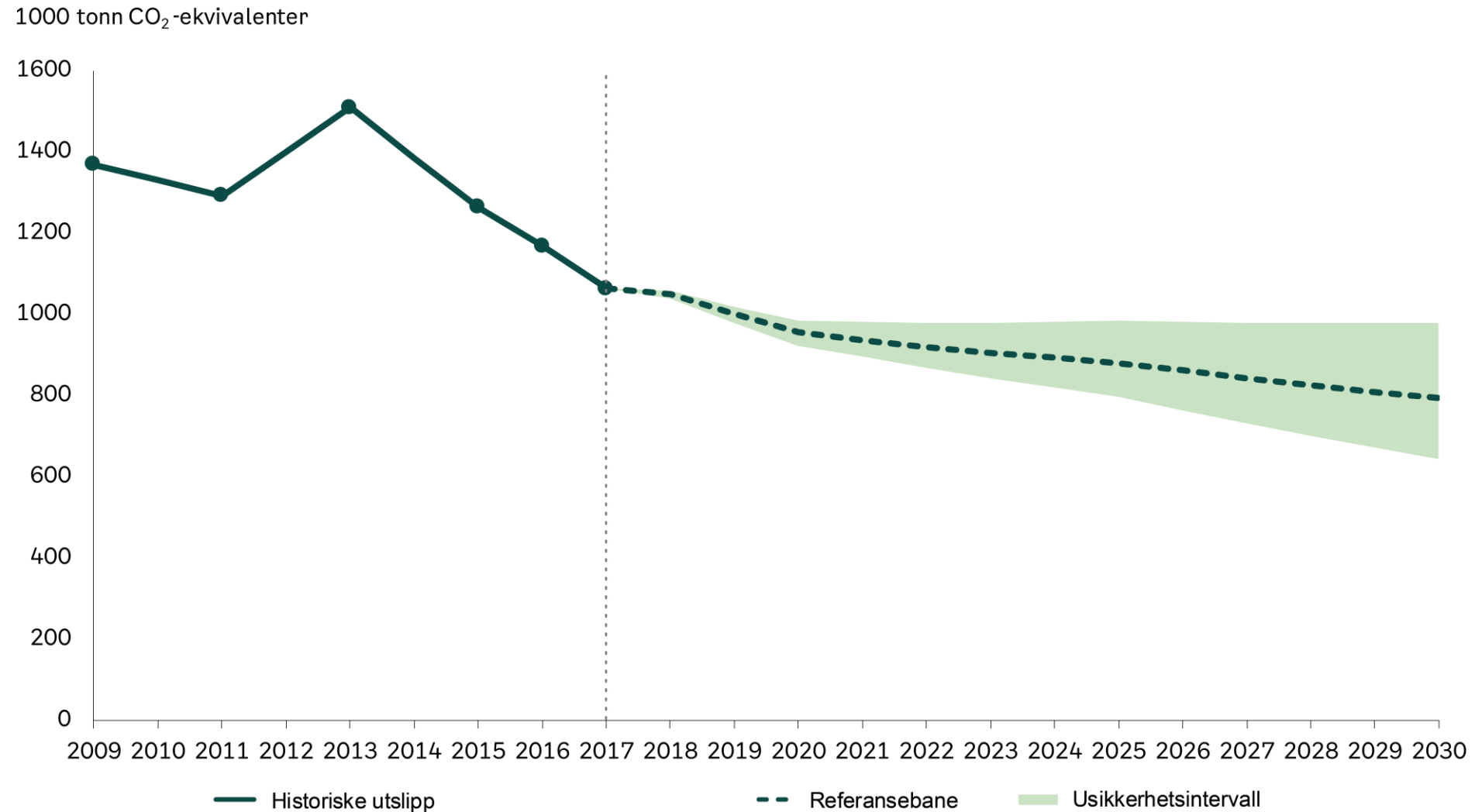


GHG-emissions in 2017

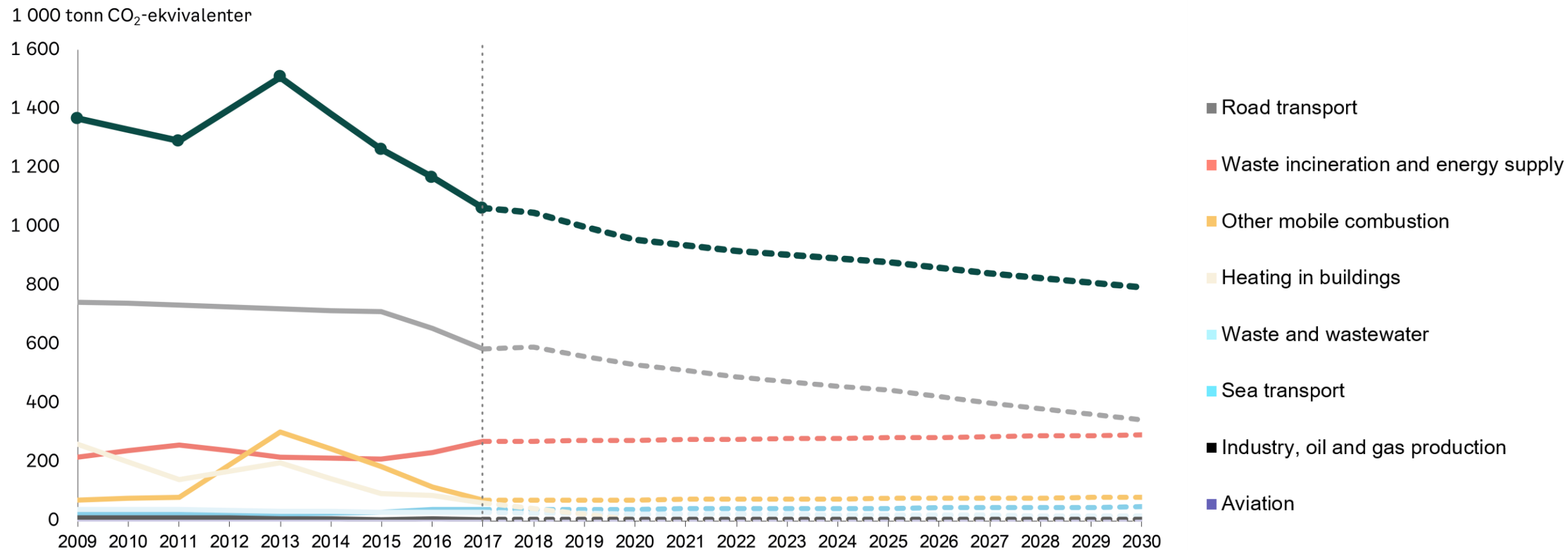


Using a baseline ensures that the
calculated emission reductions needed to
reach the targets is not underestimated!

Projected baseline for GHG-emissions in Oslo

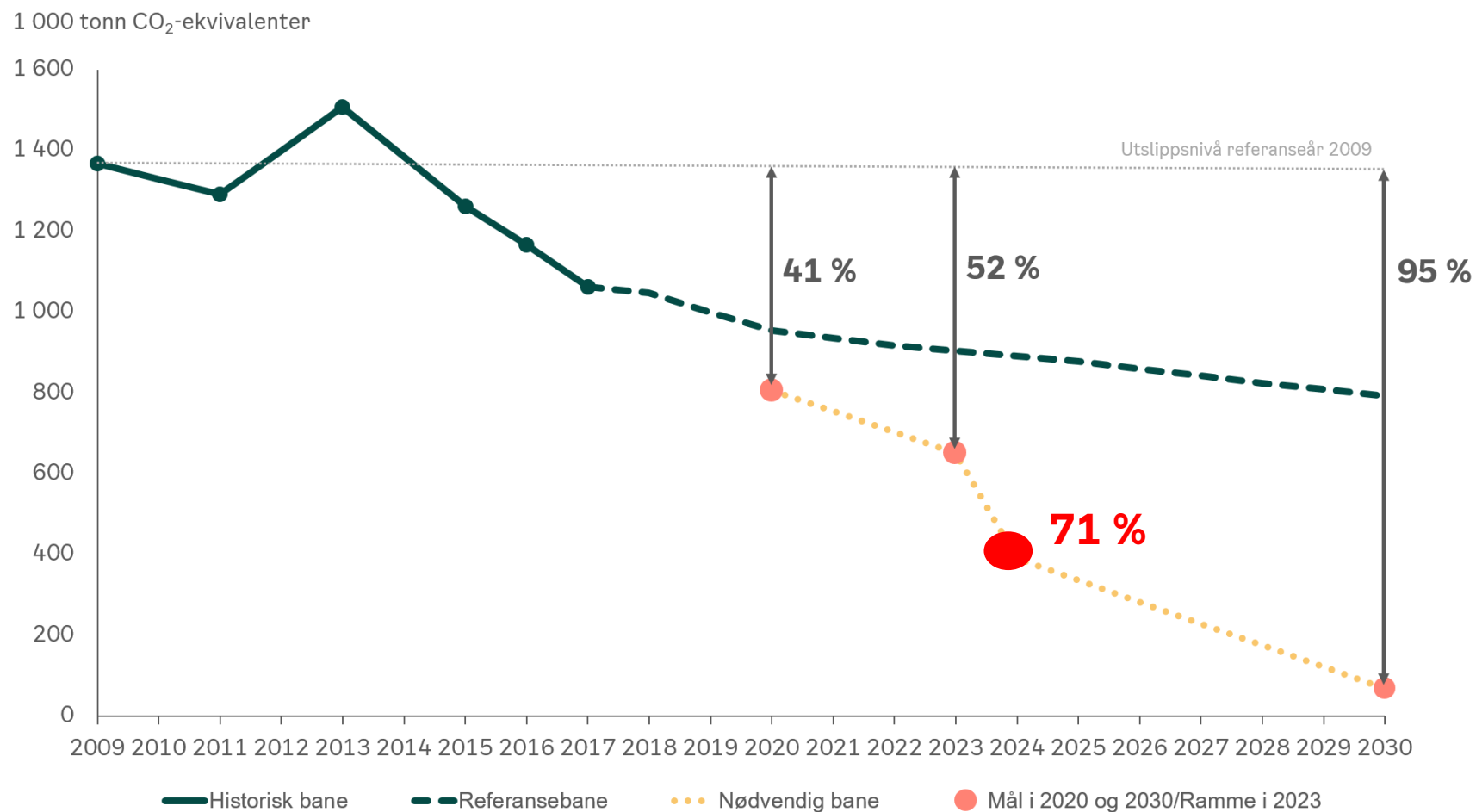


Baseline pr. emission sector



Adopt ambitious emission reduction targets to have a limit to budget towards!

Emission reduction targets in Oslo



2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
41 %	45 %	49 %	52 %	71 %	75 %	79 %	83 %	87 %	91 %	95 %



The 2020 climate budget limits

Table 2.1 limits for GHG emissions in the City of Oslo in 2020 and 2023 1)

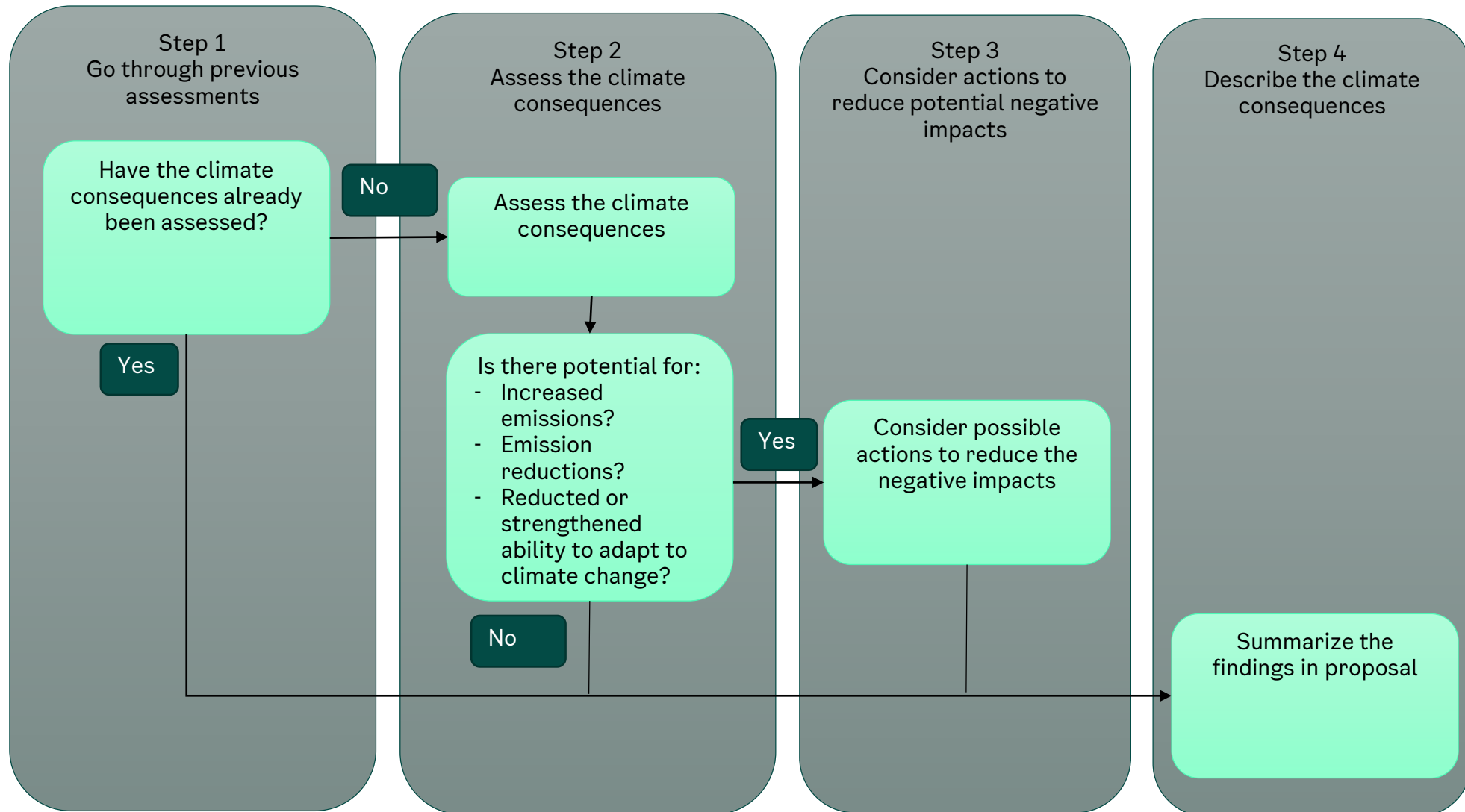
	2009 (reference year)	2017 (statistics)	2020	2023
Historical emissions	100%	-22%	-	-
Level of emissions	1,367,900	1,062,500	-	-
Baseline and effect of measures in climate budget 2020	-	-	-33%	-39%
Level of emissions	-	-	915,900	834,400
			8	13
Further need for emissions reduction 2)	-	-	percentage points	percentage points
	-	-	108,800	183,200
Target and emissions limit	-	-	-41%	-52%
Level of emissions	-	-	807,100	651,200

Decide on the implementation of effective mitigation measures and instruments through the budget!

How to develop and implement effective measures?

- ▶ Study emission sources and map relevant measures
- ▶ Develop a toolbox of instruments
- ▶ Ensure implementation of the measures through the budget process
 - Quantify emission reduction potential
 - Calculate financial costs
 - Describe other cost/benefit effects: added/avoided costs, improved air quality, etc.
- ▶ Encourage cooperation between relevant actors
- ▶ Provide guidance: both technical and practical
- ▶ Ensure regular reporting and follow up any deviations

Assessing climate consequences



Methodology

The estimates in the climate budget are generated through a combination of methodologies.

- Important measures included in baseline
- 10 quantified measures
- High number of measures not-quantified
 - Not all measures can be quantified
- Toolbox of instruments



Oslo

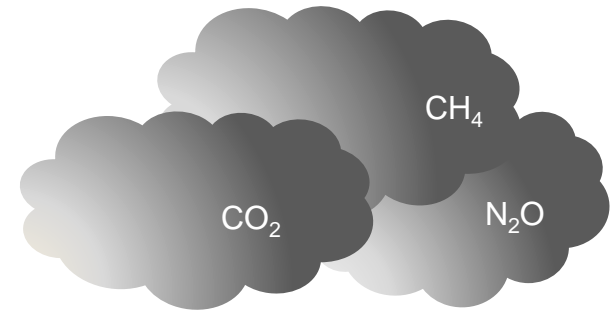
Table 2.2a Measures with estimated emissions-reducing effect

MEASURES	Responsibility for implementation (Responsibility for reporting in parentheses)	Estimated effect of measure, 2015-2020 (tonnes CO ₂ e)
Phase out the use of heating oil in municipal buildings and undertakings	Undertakings that use heating oil (KLI)	121 450
Phase out the use of fossil fuel in privately owned buildings by 2020 through a combination of bans and subsidies (Climate and Energy Fund and Enova)	KLI	
Reduced emissions of landfill gas from Grønmo and Rommen	EGE and EBY	6 900
Phase out the use of fossil fuel and gas in district heating (peak load)	NOE	5 600
Increase material recycling of household waste and boost re-use	REN	4 300
Conclude documentation of nitrous oxide volumes in wastewater, with the aim of correcting figures supplied by Statistics Norway'	VAV	20 500
Introduce a new toll-ring payment system, including new toll stations, in 2019. Note that the effect assumes the implementation of the measures listed below in italics:	MOS	93 300
<i>Installation of new charging stations for passenger and commercial vehicles, including a pilot project for car-sharing schemes</i>	BYM	
<i>Increase public transport capacity to cope with population growth and reduction in private vehicle traffic</i>	Ruter	
Better provision for cyclists	BYM	3 400
National requirement for 20% blended biofuel to be implemented by 2020	National government	53 900
Fossil-free public transport by 2020	Ruter	29 500
Introduce new licensing rules for taxis with requirement for zero-emission taxis by 2022. Note that the effect assumes the implementation of the measure listed below in italics:	BYM	13 400
<i>Install new charging stations for taxis</i>	BYM	
Switch to zero-emission vehicles in the City of Oslo's own vehicle fleet, possibly using sustainable biofuels	All (UKE)	4 100
Establish a low-emission zone for heavy goods vehicles in Oslo	BYM	2 800
TOTAL REDUCTION IN 2020		360 000

The individual measures are discussed in more detail towards the end of this Climate Budget.

Methods for impact assessments

- ▶ Annual effects on direct emissions (scope 1), 2017-2030
 - CO₂-equivalents = CO₂, N₂O og CH₄
- ▶ Measures vs. instruments
 - Avoid double counting
- ▶ Bottom up > Top down
 - ▶ $\Delta \text{emissions} = \text{activity data} \times \text{emission factor}$
- ▶ Base line assumptions (0-alternative)
- ▶ Transparency in all assumptions is important!



Effect per year = (emissions in 0-alternative) - (emissions after mitigation)

Examples in the stationary sector

Total emissions in 2017:

- ▶ 370 000 tonnes CO₂-eq.

Measures and instruments:

- ▶ Phasing out fossil fuels for heating in buildings
- ▶ Phasing out fossil fuels in district heating



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Examples in the mobility sector

Total emissions in 2017:

- ▶ 693 000 tonnes CO₂-eq.

Measures and instruments:

- ▶ Road user payment system/ the toll ring
- ▶ Fossil-free public transport
- ▶ Zero emission construction



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Fossil free and zero emission freight

- ▶ Based on a transport model
- ▶ Utility transport
 - Dedicated parking spaces for zero-emission goods/utility vehicles
- ▶ Commercial transport
 - Dedicated loading bays for zero emission vehicles



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Fossil free and zero emission construction

- ▶ Based on fuel sales statistics
- ▶ Procurement is an important strategy
- ▶ The municipalities construction sites shall be zero emission by 2025
 - Fossil free from 2020
- ▶ Assume that CO2 emissions are zero from 2021



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Oslo Harbor

- ▶ Zero emission plan 2030
- ▶ Shore power to all cruise ships and international ferryboats
- ▶ Electrification of ferryboats in Oslo

Calculated with AIS data!
(automatic identification system)



Oslo



AFP / Staff / Getty Images

ALL ABOARD

Oslo wants to build the world's first zero-emissions port

By [Tracey Lindeman](#) on Nov 9, 2019



Fornebu Metro line

Project period: 2020-2026

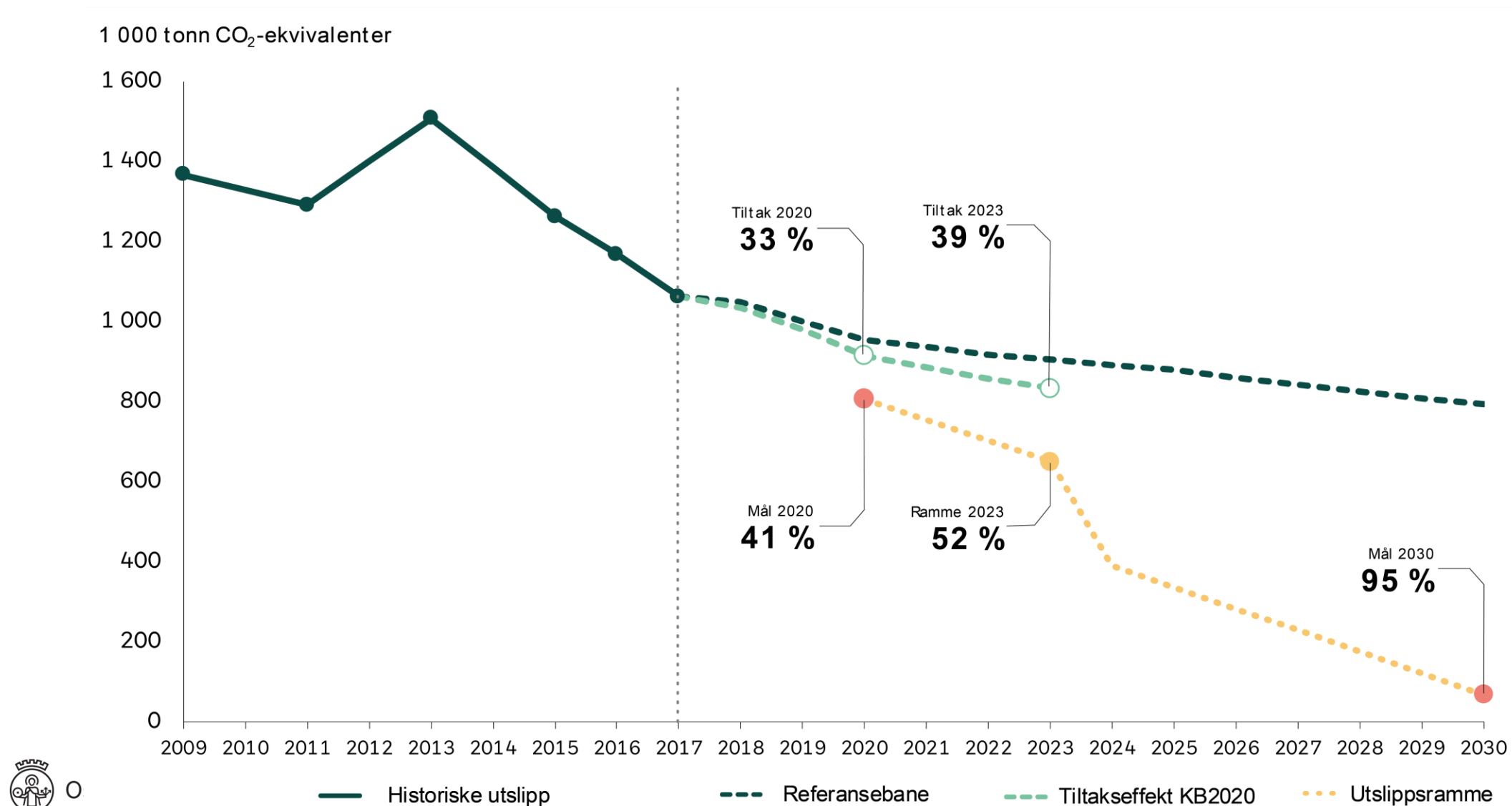
- ▶ Construction
- ▶ Transport
- ▶ Materials

Two analyses:

- ▶ Direct emissions
- ▶ Direct and indirect emissions
 - Carbon footprint



Trajectory for Oslo's emissions, 2020-2023



Study of new measures and instruments

- ▶ Road user payment system
- ▶ Low emission work travel
- ▶ Fossile free city centre
- ▶ Effective and zero-emission commercial transportation
- ▶ Effective and fossile free buses
- ▶ Zero-emission construction sites
- ▶ Transport of excavated masses
- ▶ Reduction of fossile components in waste, incl. Waste incineration



Monitoring and reporting

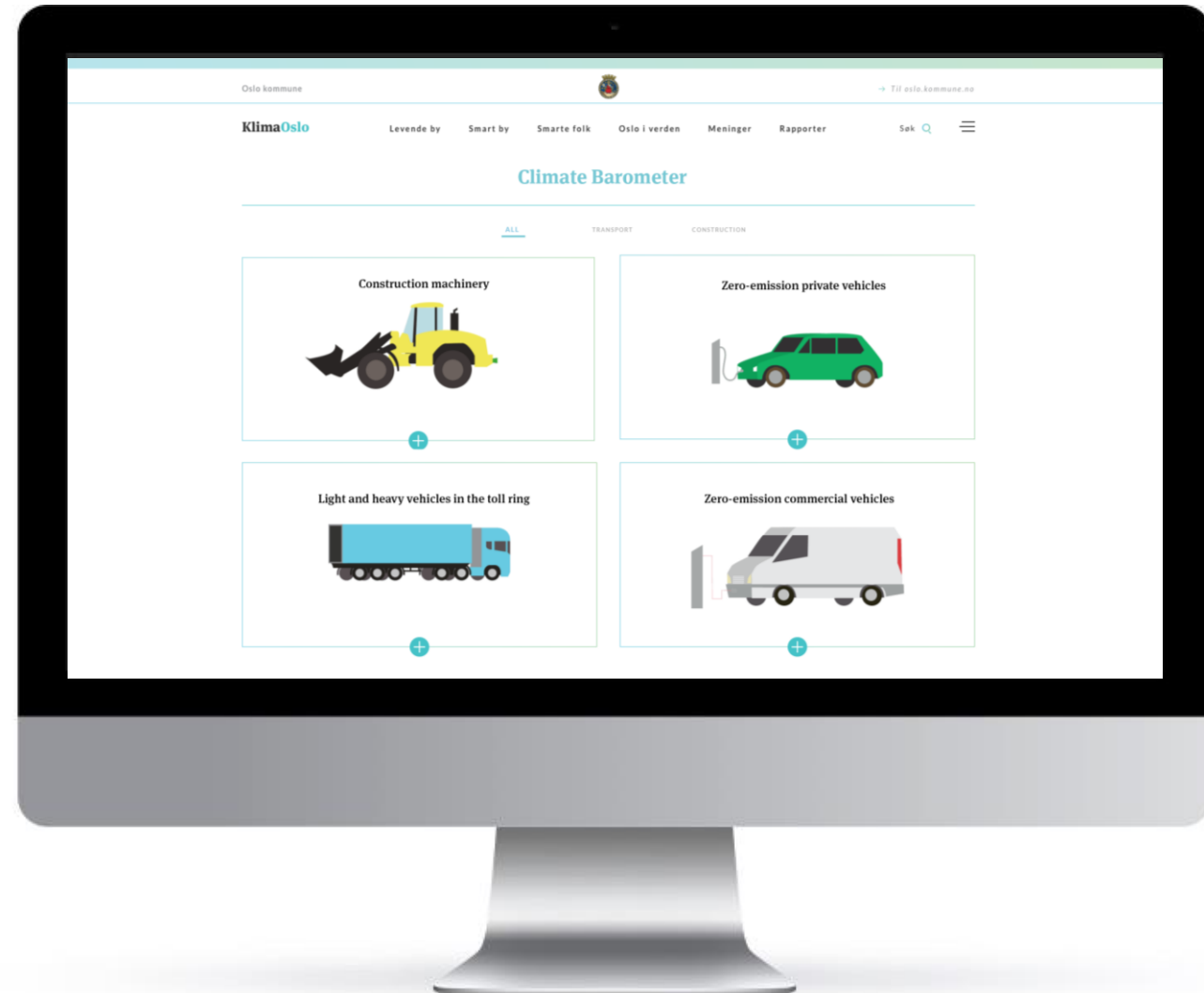
Reporting as part of the ordinary budget process (3 times a year)

- ▶ Result indicators
- ▶ Targets per measure

The climate barometer

- ▶ 17 indicators
- ▶ Results are published at our website

<https://www.klimaoslo.no/>



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Key challenges w/methodology

Statistics

- Frequency of publication
- New emission sources
- Time series 2009 - 2017
- Recalculation
- Lack of activity data and EFs
- Uncertainty / transparency



Measures and instruments

- Base line and trajectories
- Isolated impacts assessments
- Uncertainty / transparency



Measurement, reporting and verification

- Effects
- Climate target 2020 -> 2030
- Uncertainty / transparency



Tools used for calculating effects

- ▶ Emission statistics and baseline are calculated in Excel spreadsheets
- ▶ Models for calculating effects in Excel
 - Provided by the Norwegian Environment Agency
- ▶ Climate budget analysis – model in Excel
 - Calculated per emission sector/source to avoid double counting
 - Baseline approach (0-alternative)
 - Emission factors are comparable with those in the statistics/baseline
- ▶ Reporting on the measures in Word/Excel
 - Not quantified
- ▶ Climate Barometer – compilation of data in Excel



The way forward for Oslo

- ▶ Push for further improved emission statistics
 - Activity data and emission factors
 - Ensure that the statistics respond to the effects of mitigation actions
- ▶ Develop more sophisticated methods for cost/benefit analyses
- ▶ Study strengthened and new mitigation measures
- ▶ Further improvements to the system for MRV

The process of developing the climate budget for 2021-2024 starts now!

Lessons learned & tips to French cities!

- ▶ Start with the emission sources you control
- ▶ Develop methods within the chosen system boundaries
- ▶ Consider using the GPC-protocol for cities
 - International reporting requirements (C40, CDP, etc.)
 - In accordance with NIR?
- ▶ Calculate the effects of mitigation measures
 - Quantified emission reductions is not the only criteria
- ▶ Ensure responsibility for reporting
- ▶ Communication, cooperation and transparency is key!

Questions?

