



TOWARDS ZERO-EMISSION CONSTRUCTION EQUIPMENT

**The Dutch national policy framework in addressing zero-emission
construction equipment**



WHY – NEED FOR SUSTAINABLE CONSTRUCTION EQUIPMENT

To meet ambitious emission reduction targets and regulations:

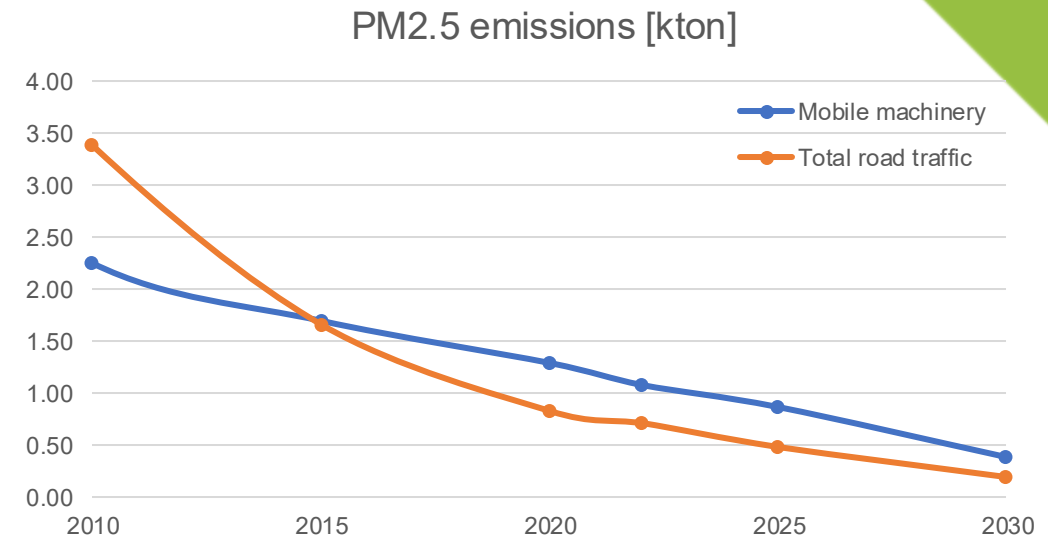
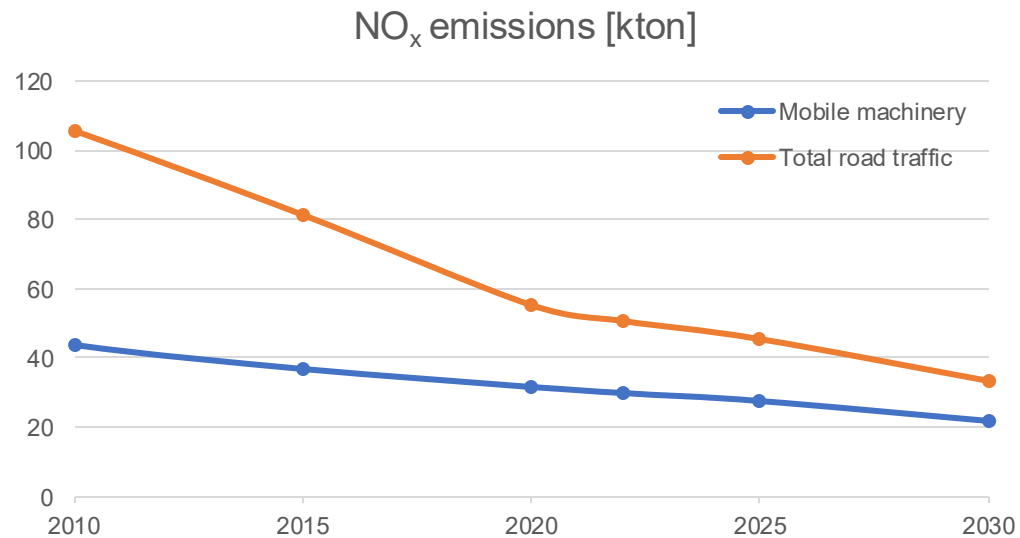
- PM and NO₂ Air quality / health workers
- CO₂ Climate change / Paris agreement
- NO_x Conservation of natural spaces

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- Noise reduction
- Continuation of construction projects



EMISSIONS NRMM VS. ROAD TRAFFIC



Source: TNO, <https://www.emissieregistratie.nl/>

- NRMM emissions are high compared to total road emissions. In NL 253 thousand mobile machines produce same order of magnitude emissions as 11.3 million road vehicles (NO_x & PM).

CONSTRUCTION EQUIPMENT IN THE NETHERLANDS

	Equipment	NO _x	CO ₂	PM ₁₀
Mobile Machinery	150.000	11 kton	1,5 Mton	414 ton
Vehicles	277.300	6,3 kton	1,8 Mton	245 ton
Floating Machinery	350	4,2 kton	0,3 Mton	90 ton
Total <i>(% of total NL emissions)</i>		21,5 kton (7,4%)	3,6 Mton (2,5%)	749 ton (2,8%)

Source: [TNO \(2023\)](#) Transitiepaden Schoon en Emissieloos Bouwen (SEB)

ROADMAP ZERO-EMISSION CONSTRUCTION EQUIPMENT

- Roadmap **towards zero-emission construction equipment**
 - For mobile machinery, vehicles and floating machinery used in construction.
- Clear and uniform approach on how to reach a more sustainable deployment of construction equipment, step by step.
 - Emission requirements
 - Other instruments
- Developed in collaboration with representatives of the construction sector, governmental organisations (central/local) and knowledge institutes.



EMISSION REQUIREMENTS MOBILE MACHINERY

- Applied through public procurements and permit requirements
 - Step by step, for all power ranges, three tiers.
 - Working towards ZE equipment, while phasing out the most emitting machinery.
- Provides clarity and uniformity, for both the sector and commissioning bodies

Tier: BASIS

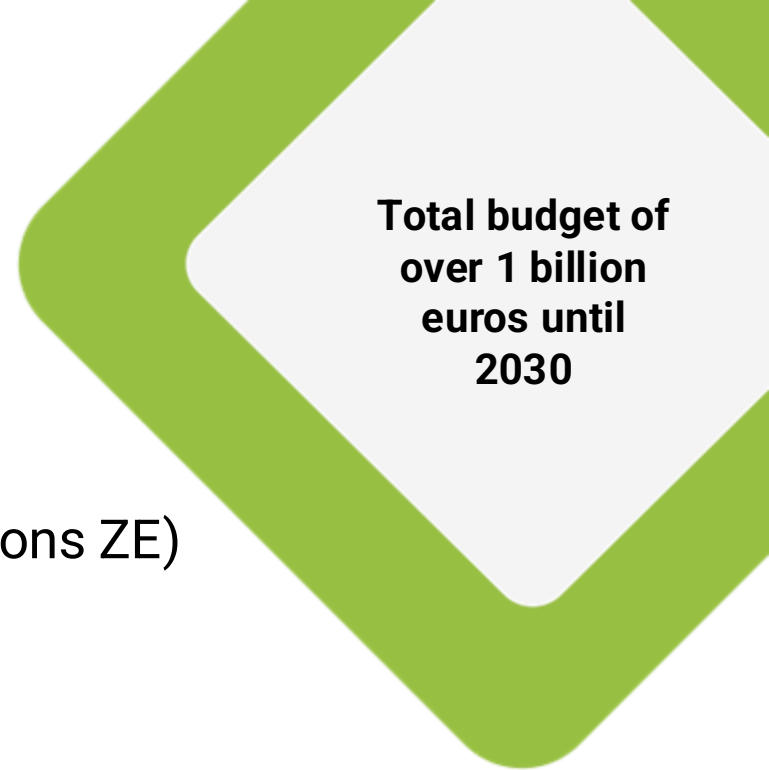
<i>(selection of the emission requirements)</i>	2023-2024	2025-2027	2028-2029	2030
Light duty (37-56 kW)	Stage IIIb	Stage IIIb	100% ZE	100% ZE
Medium and Heavy duty (56-560 kW)	Stage IIIb	Stage IV with soot filter	Stage IV with soot filter	Stage IV with soot filter (2030) 100% ZE (2035)
Specialist and >560kW	No requirements	No requirements	Catalytic converter and soot filter	Catalytic converter and soot filter (2030) 100% ZE (2035-2040)

EMISSION REQUIREMENTS MOBILE MACHINERY

- *Frontrunners*: Extra requirements for emission free equipment
- Stimulating the development and market uptake of zero emission equipment

Tier: AMBITIOUS

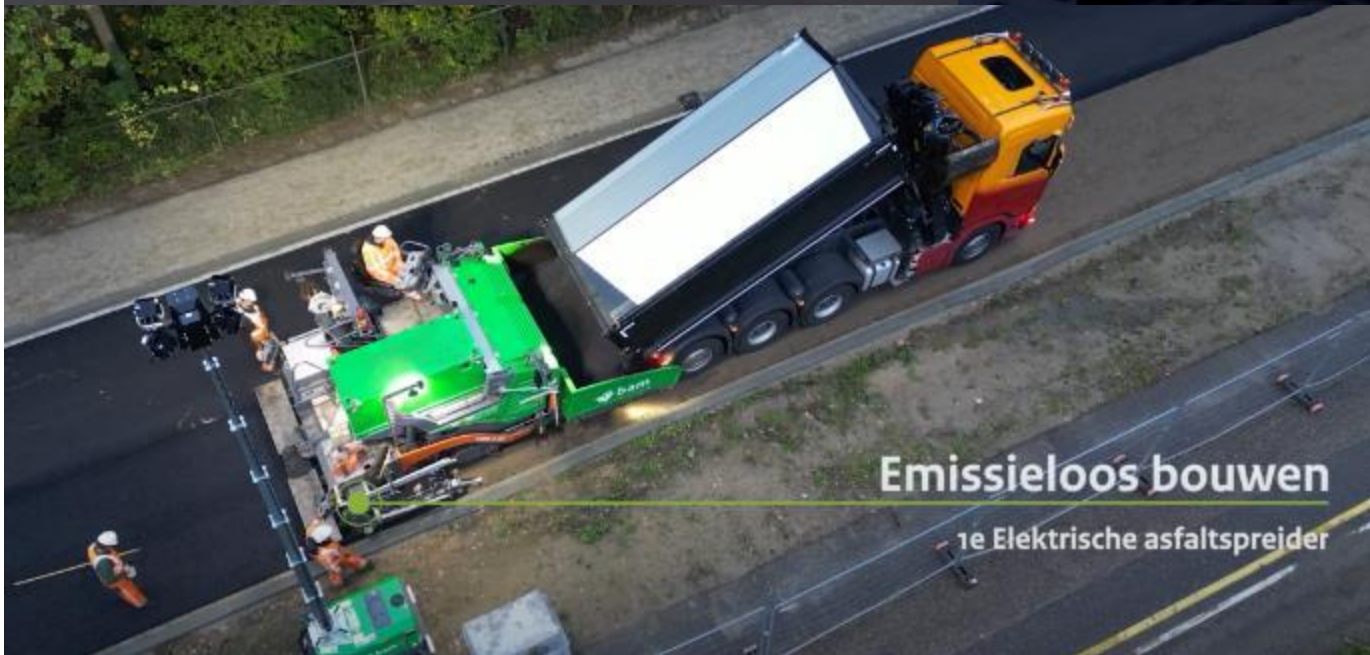
	2023-2024	2025-2027	2028-2029	2030
Share of front runner projects (percentage project portfolio)	5-25%	25-50%	50-80%	80-95%
Share zero emission work execution (hours x power)	10-30%	30-70%	70-90%	90-100%



Total budget of
over 1 billion
euros until
2030

SET OF SUPPORTING INSTRUMENTS

- Subsidy scheme for construction sector (>1600 granted applications ZE)
 - **Acquisition, retrofit and innovation** ZE equipment
 - Charging infrastructure
- Program for and by the construction sector to develop knowledge and gain practical experience
- Subsidy scheme for commissioning bodies
 - Partial compensation costs **deployment** ZE equipment
 - Charging infrastructure
- Support program for local governments
 - Organisational support for implementing and executing roadmap, e.g. developing guidelines





MOVING TOWARDS ZERO-EMISSION CONSTRUCTION EQUIPMENT IN NL



INTERNATIONAL COLLABORATION TOWARDS ZE CONSTRUCTION EQUIPMENT!





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EMISSION REQUIREMENTS MOBILE MACHINERY

Tier: BASIS

	2023-2024	2025-2027	2028-2029	2030
Light duty ('mini' <19 kW)	No requirements	No requirements	100% ZE	100% ZE
Light duty (19-37 kW)	Stage IIIa	Stage IIIa	100% ZE	100% ZE
Light duty (37-56 kW)	Stage IIIb	Stage IIIb	100% ZE	100% ZE
Medium duty (56-130 kW)	Stage IIIb	Stage IV with soot filter	Stage IV with soot filter	Stage IV with soot filter (2030) 100% ZE (2035)
Heavy duty (130-560kW)	Stage IIIb	Stage IV with soot filter	Stage IV with soot filter	Stage IV with soot filter (2030) 100% ZE (2035)
Specialist (a.o. lifespan >15 year)	No requirements	No requirements	Catalyst and soot filter	Catalyst and soot filter
Very heavy duty (>560 kW)				100% ZE (2035 – 2040)
Stationary machinery (a.o. generators, pumps)	Equal to requirements non-stationary	Equal to requirements non-stationary	<560 kW 100% ZE >560 kW Equal to requirements non-stationary	<560 kW 100% ZE >560 kW Equal to requirements non-stationary