



TOWARDS ZERO-EMISSION CONSTRUCTION EQUIPMENT

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

Ministry of Infrastructure and
Water Management, The Netherlands
18 September 2024





NEED FOR SUSTAINABLE CONSTRUCTION EQUIPMENT

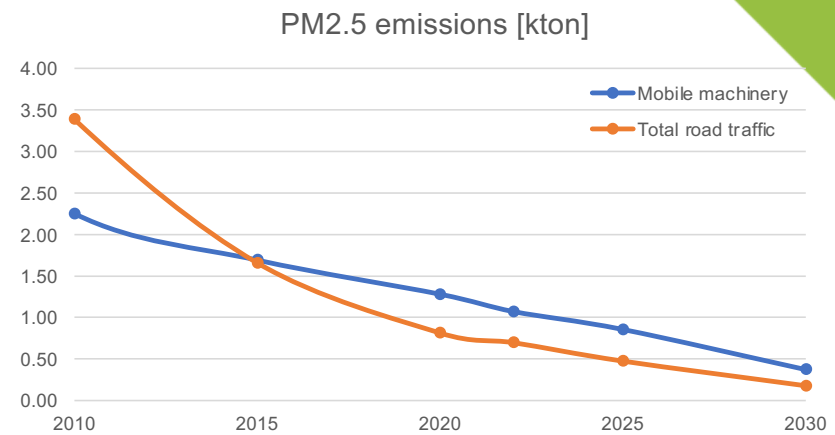
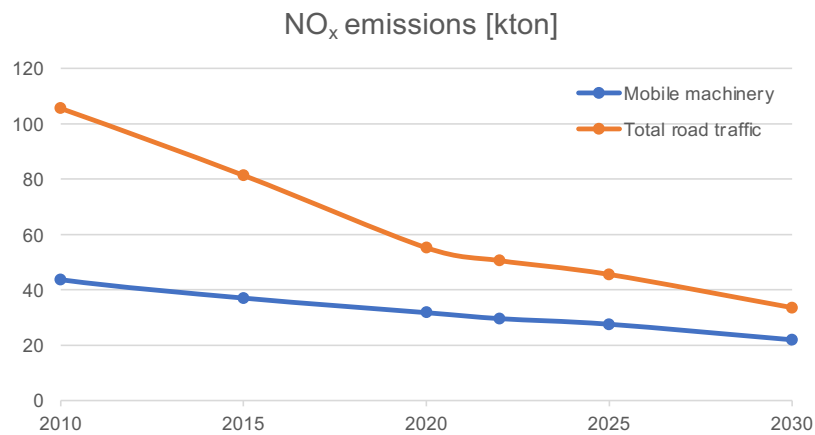
To meet ambitious emission reduction targets and regulations:

- PM and NO2 Air quality / health workers
- CO2 Climate change / Paris agreement
- NOx Nature

+ Noise reduction *and in NL: Continuation of construction projects*



EMISSIONS NRMM VS. ROAD TRAFFIC



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



30 OCTOBER 2023

> 100 parties have committed to the approach







SET OF INSTRUMENTS PROGRAM

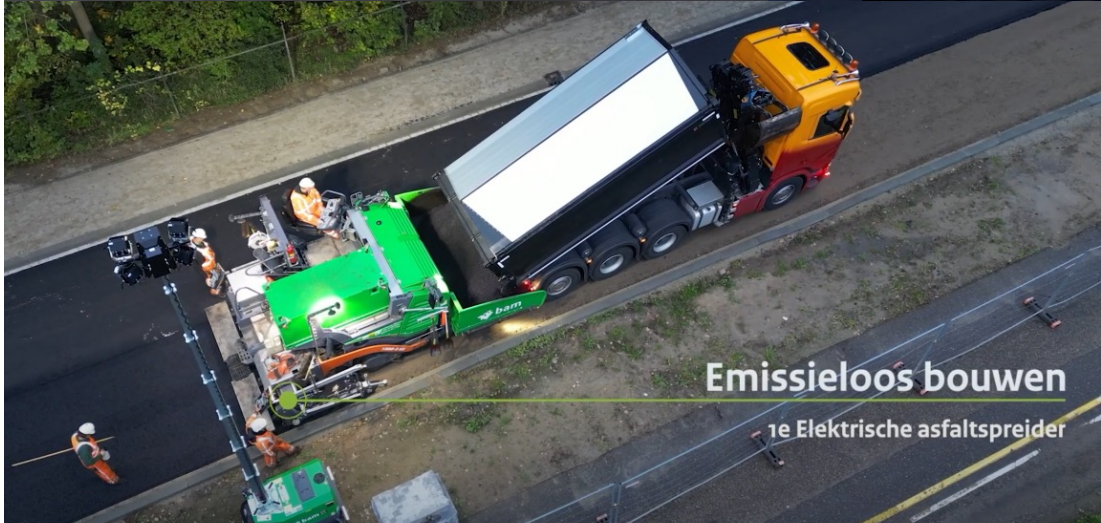
Total budget of over 1 billion euro until 2030

- Subsidy schemes:
 - The construction sector – Purchase, retrofit and innovation ZE equipment
 - Commissioning bodies – Partial compensation costs deployment ZE equipment
 - Charging infrastructure

- Knowledge and upscaling program

- Pilot projects (ZE)

	2022		2023		2024-2025
Granted applications for:	Purchase	Retrofit	Purchase	Retrofit	t.b.d.
ZE Mobile machinery	638	86	755	118	
	<i>Subsidy scheme also includes construction vehicels, floating machinery auxiliar machinery and an innovation subsidy for experimental development</i>				





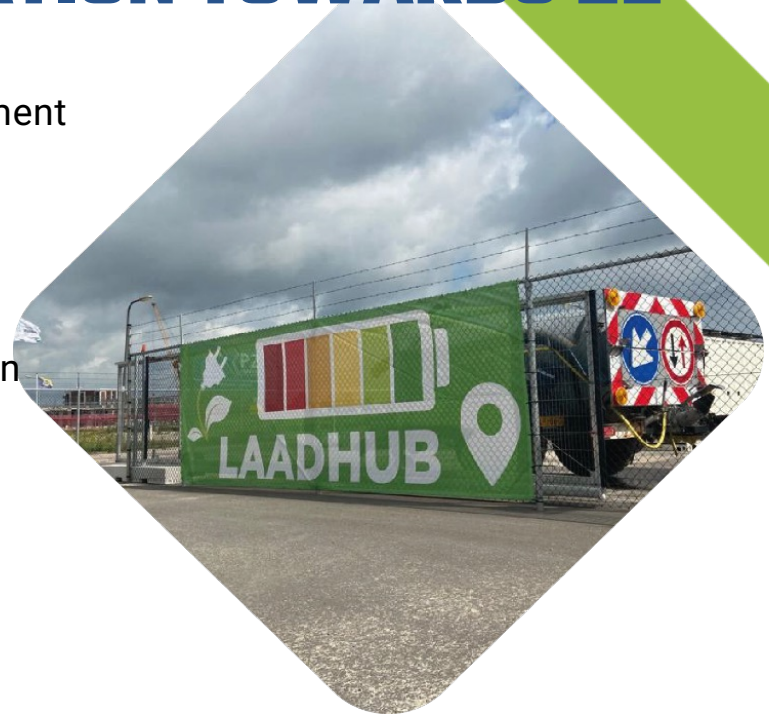
MOVING TOWARDS ZERO-EMISSION CONSTRUCTION EQUIPMENT IN NL





INTERNATIONAL COLLABORATION TOWARDS ZE

- Combining forces in encouraging emission free equipment
 - Multi-stakeholder
- Clear shared targets, providing investment perspective
- Laying foundation for international policy and regulation to spur the development of ZE construction equipment
 - Creating equal playing field
- Enabling framework for deployment ZE 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