

Autonomous Litter Collection — A Smart City Solution for the Green Capital**01 — THE CHALLENGE**

Copenhagen's green capital ambition sets some of Europe's highest standards for public space quality. With the Resource & Waste Strategy 2030 and Climate Plan 2035 creating fresh mandates and budget cycles, the city is actively seeking data-driven digital solutions for waste management. Copenhagen Solutions Lab has already deployed 600+ Nordsense IoT waste bin sensors — optimising when bins are emptied. But the litter that never reaches a bin still relies on ~200 street cleaners covering 374 km of roads and hundreds of hectares of parks manually. The IoT sensors tell you when a bin is full. CleanWalker collects what never made it to the bin.

02 — OUR SOLUTION

CleanWalker is the world's first commercial quadrupedal litter-collecting robot, purpose-built for Nordic urban conditions:

- **AI-powered detection** across 20+ litter categories (25,000+ real-world images)
- **Four-legged locomotion** navigates grass, gravel, cobblestones, cycle paths, and park terrain
- **Cold-weather operation** engineered for year-round Nordic conditions
- **Quiet operation** (<55 dB) suitable for residential neighbourhoods and parks
- **Nordsense-complementary** — litter heatmap data feeds into existing waste analytics

Collected waste is bagged for existing collection routes — no new infrastructure required.

03 — PILOT PROPOSAL — 10 UNITS, 6 MONTHS

Deployment zones: Fælledparken, Islands Brygge waterfront, and Nørrebro Superkilen

KPI	TARGET
Litter items collected per unit/day	Tracked & reported weekly
Coverage per shift	2,000-4,000 m ² /hr per unit
System uptime	>90%
Public interaction incidents	Zero
Cleanliness score improvement	Pre/post measurement in pilot zones

04 — VALUE PROPOSITION**1.5-2.5**

FTE OFFSET PER UNIT

40-60%

COST REDUCTION AT SCALE

RaaS

ROBOT-AS-A-SERVICE MODEL

Zero

HARDWARE OWNERSHIP REQUIRED

Copenhagen would be the first Nordic city to deploy a commercial quadrupedal litter robot — complementing the Nordsense IoT network and strengthening Copenhagen's position as Europe's leading smart city. Through the Nordic Smart City Network, a successful pilot becomes a reference for Helsinki, Oslo, Stockholm, and beyond.

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cleanwalkerrobotics.com | walker@cleanwalkerrobotics.com | MB Software Studio LLC | cleanwalkerrobotics.com

cleanwalkerrobotics.com/pilot