ZERO INDUSTRY

SØNDERBORG, DENMARK

Emissions domains addressed by the Pilot Activity

- Consumption of non-electricity energy for thermal uses in buildings & facilities
- Consumption of electricity generated for buildings, facilities & infrastructure
- Industrial process emissions
- All vehicles & transport (mobile energy)

Key Terms

Industrial decarbonisation | Heavy transport electrification | Process heat recovery | Waste heat | District heating | Fleet analysis | Business models | SME engagement

Levers of Change

Data and Digitalisation | Democracy and participation | Financing and funding | Governance and policy | Learning and capabilities | Procurement | Social innovation | Technology/infrastructure

Description of the Pilot Activity

ZERO Industry drives the green transition of local industry through two pathways: electrification of heavy transport and recovery and reuse of industrial process heat. Working with the city's most energy-intensive companies, the project develops concrete concepts for waste heat collection and integration with the district heating network, while mapping heavy vehicle fleets and identifying realistic electrification pathways across different vehicle classes.
Year 1 achieved strong cross-sector collaboration: Ten of the most energy-intensive local companies were onboarded.
Internal waste heat reuse offers significant energy and cost savings with very short payback times.
For heavy transport, analysis revealed that most target companies outsource their logistics to third parties

Year One Highlights

Process heat analysis mapped waste heat potential across industries and developed concrete reuse concepts based on real cases. A technology roadmap and business case model were completed, with recent national legislation changes opening additional opportunities for waste heat projects. For heavy transport, analysis of the local diesel truck fleet found very few vehicles in the near-term electrification "sweet spot" — leading to a pivot toward developing a decision-tree covering all heavy vehicle classes and their relevant electrification pathways. A major regional transport operator was onboarded as a key partner. Energy efficiency guidelines were developed for local SMEs and farms, available in three languages.
Two challenges shaped the year. Delivering excess process heat to the district heating network proved difficult to make financially viable for all parties — a new approach is being explored where the heating network sells cooling rather than buys heat, creating mutual dependency. Local district heating expansion to neighbourhoods also proved uncompetitive with individual heat pumps, shifting focus to supporting collective heat pump procurement.

Innovation Highlights

The decision-tree approach for heavy vehicle electrification gives companies practical, honest guidance — acknowledging that some vehicle classes have no viable electrification pathway under current legislation while showing routes forward for others. AI-supported tools are being tested to generate company-specific decarbonisation guidance rather than generic information, with results informing whether tailored AI content drives more action than standard materials.

Twinning with Haarlem (Netherlands) and Gothenburg (Sweden)

An April 2025 meeting in Sønderborg produced directly transferable cases on waste heat and district heating. The next exchange in Gothenburg will focus on transport electrification and district heating. Cities with heavy vehicle electrification experience will share insights at Sønderborg's ReThink Cities Summit.

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