The readiness of public charging infrastructure for electric long-haul trucks

Power to go further

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Executive summary

The shift to electric heavy-duty vehicles (e-HDVs) is critical for decarbonizing Europe's road freight sector. This Milence white paper, developed from the perspective of a pan-European e-HDV charge point operator, presents a **data-driven assessment of public charging infrastructure** developments across 14 European countries.

Key finding

Existing public charging capacity **can already support the early deployment** of electric long-haul trucks today, particularly in countries like Sweden, Germany, and the Netherlands, where clusters of high-capacity charging hubs start to emerge. However, coverage remains uneven, and many high-priority road corridors still lack sufficient infrastructure. The current network falls **well short of what will be needed** to support the 2030 climate goals or widespread long-haul fleet electrification.

The paper focuses on a **viable infrastructure rollout scenario from a CPO business model perspective**, one that ensures sufficient utilization, prioritizes deployment where demand will materialize first, and supports sustainable private investment. The findings underscore the critical importance of continued, targeted power truck-specific deployment along high-traffic TEN-T corridors. This 'corridor-first' approach with **immediate investment in strategic highway corridors** can create a "flywheel effect", where visible infrastructure builds fleet confidence, which in turn draws further private infrastructure investment and accelerates continent-wide coverage.

What's needed next?

To sustain scale-up to 2030 and beyond, targeted policy action is needed on two fronts:

1. **Prioritize strategic corridors for rollout:**
    - Fast-track permitting and grid connections for mature e-HDV charging hubs along the TEN-T core network.
    - Treat AFIF hubs as critical infrastructure, using the Clean Transport Corridor Initiative to streamline approvals.
2. **Strengthen financing tools to reduce market risk:**
    - Launch an EU-backed guarantee scheme to de-risk loans and attract commercial financing into high-impact e-HDV charging infrastructure.
    - Continue and scale EU subsidies (AFIF) to support projects where utilization risk remains high, and establish a new dedicated Infrastructure Readiness Fund under the next Multiannual Financial Framework (MFF) to help close commercial viability gaps.

In parallel, the **Automotive Action Plan** should support faster e-HDV fleet adoption by reducing the Total Cost of Ownership of electric trucks through tax incentives, implementation of road toll exemptions and vehicle finance de-risking mechanisms to help fleets of all sizes transition to electric.

Why now?

For CPOs and investors, **growing e-HDV adoption is the key signal** to sustain long-term investment in infrastructure. Policy support for vehicle uptake and corridor build-out must go hand in hand. The next two years are critical to implementing the Clean Transport Corridor Initiative and de-risking vehicle uptake and infrastructure deployment together. The transition is underway, but to accelerate pace, urgent and coordinated action on the policy enablers is needed now.

Introduction

The transition to electric heavy-duty vehicles (e-HDVs) is an essential step towards decarbonizing Europe's road freight sector. As this shift gains momentum, so do concerns about whether public charging infrastructure is keeping pace with electric fleet deployment, particularly for long-haul operations. Can the existing network support the deployment of long-haul trucks and what kind of rollout is required to match the pace of fleet adoption? This Milence white paper seeks to contribute to that conversation by offering a data-driven view from the perspective of a pan-European HDV charge point operator (CPO).

Rather than providing a complete picture of all charging needs for compliance with EU CO_2 regulations, this paper offers a deep dive into a subset of the total infrastructure challenge: it analyzes **14 European countries** where Milence operates and focuses specifically on **N3-class long-haul electric trucks** – the segment most dependent on high-power public charging along main logistics corridors. As such, the findings are complementary to broader studies as those conducted by ACEA and others, which assess total infrastructure needs across all vehicle types and EU member states.

The perspective of a CPO is essential to this discussion. What set this analysis apart is its grounding in **CPO business viability**. Today, investing in truck-specific public charging infrastructure is high-risk: vehicle uptake is still limited and near-term utilization (growth) rates remain uncertain. The modeling estimates how much infrastructure is required not only to meet expected truck energy demand, but also to **sustain financially sound deployment**, accounting for realistic utilization rates, power-sharing-configurations, and charging behavior.

The results indicate how CPOs can deploy infrastructure with sufficient confidence in short- to medium-term energy throughput, while supporting the ramp-up of long-haul fleets in key corridors. This focus on viable rollout pathways means that the modeling is not intended to map or cover **every conceivable geography or use case**. It prioritizes deployment where demand is expected first, typically high-traffic corridors, rather than striving for universal coverage. Reaching a geographically optimized and equitable network for all N3 vehicle types and operational profiles will require **complementary public finance intervention and targeted policy support**.

By narrowing in on current conditions and realistic near-term deployment scenarios from the CPO perspective, the paper seeks to bring greater clarity to where we stand and what it will take to ensure the charging backbone for long-haul electric transport can be built sustainably and at scale.

By taking a closer look at both current conditions and future needs, we aim to inform a constructive dialogue among policymakers, fleet operators, and infrastructure developers who all must work together to accelerate the transition to zero-emission electric freight.

Present long-haul fleet analysis

To accurately assess the readiness of public charging infrastructure for long-haul electric trucks, our methodology combines a structured data-driven approach with qualitative verification, looking into the current market adoption and infrastructure availability.

The fleet data[1] from the 14 countries in focus is filtered specifically on **long-haul trucks**, as urban and regional trucks primarily rely on depot charging and do not significantly contribute to public charging demand.

Definition of long-haul trucks:
classified as **(N3-type) tractor trucks** designed for trailer coupling which are able to carrying weights above 16t and which typically operate over extended distances.

Note: In the Nordic markets (DK, NO, SE) **rigid trucks** are also included in the definition of long-haul transport, as they frequently operate with trailers for long-haul freight movement, These so-called extra-long heavy duty vehicles - rigid trucks pulling trailers - are also permitted in Germany and the Netherlands; however, they are excluded from our analysis for these two countries.

Based on the above definition, the analysis identifies **5,095 electric long-haul trucks** across Milence's focus countries as part of today's electric heavy duty fleet. These trucks are the primary drivers of public charging demand, as they require reliable and high-power charging infrastructure at dedicated truck charging hubs along key transport routes.

eHDT fleet	Tractor	Rigid	Long-haul
Germany	1106	1003	1106
Sweden	304	629	933
Norway	132	726	858
Denmark	84	468	552
Netherlands	434	682	434
France	291	1310	291
United Kingdom	236	614	236
Switzerland	315	451	315
Spain	134	292	134
Austria	79	122	79
Belgium	67	119	67
Poland	51	50	51
Italy	33	58	33
Portugal	6	6	6
Total	**3272**	**6530**	**5095**

Picture 1: # of tractor, rigid and long-haul electric vehicles

1 Source: S&P Global Automotive

Public charging infrastructure analysis

To determine whether public charging infrastructure poses a bottleneck for electric heavy duty fleet expansion, we analyzed existing truck-specific public charging points[2] across the same 14 European countries.

Selection criteria for long-haul truck suitable infrastructure:

- Power capacity: Charge points (connectors) with a **minimum capacity of 300 kW** were considered, as lower-power chargers are not viable for long-haul trucking needs.
- Truck accessibility: Only charge points that allow trucks to charge **without decoupling a trailer** and **support forward entry and exit** were included.

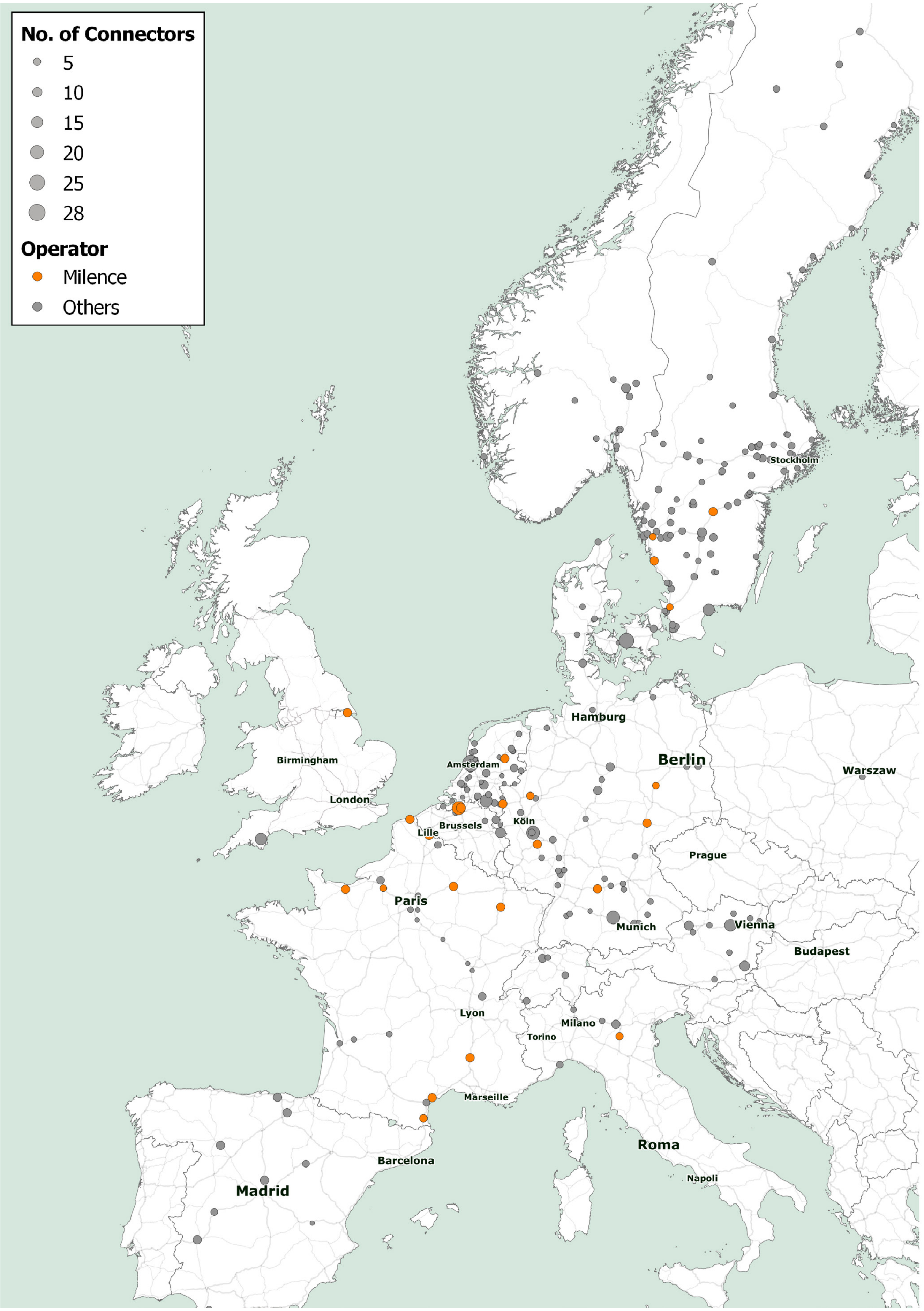
Assumptions on power sharing: It is assumed that 25% of the time charging connectors share power between two connectors on a single charging station. Site-based power limits (e.g., those requiring load balancing) are not accounted for in this analysis.

Note:
qualitative validation was performed through Google Maps and CPO (public) websites to confirm that selected charge points were indeed accessible and suitable for heavy-duty vehicles charging.

The resulting dataset based on the listed criteria provides a filtered and realistic snapshot of today's public charging infrastructure for electric long-haul trucks. As of today, almost 1,100 truck-specific public charging points are in operation across the focus countries.

Country	Hubs	Connectors	Charging capacity (MW)	Annual charge capacity (GWh)
Germany	47	178	53.6	386.2
Sweden	101	351	110.9	798.5
Norway	17	50	13.9	100.2
Denmark	9	47	15.1	109.0
Netherlands	48	165	52.0	374.7
France	24	98	33.0	237.6
United Kingdom	2	24	7.4	53.2
Switzerland	1	3	0.9	6.6
Spain	9	52	16.5	118.6
Austria	6	50	17.1	123.0
Belgium	10	53	15.1	108.4
Poland	1	2	0.6	4.4
Italy	5	21	6.7	47.9
Portugal	0	0	0.0	0
Total	**280**	**1,094**	**342.8**	**2,468.2**

Picture 2: Overview of # truck-suitable charging connectors



Picture 3: Map of # truck-suitable charging connectors

2 Extensive desk research by Milence based on public charging maps.

Results

Our analysis demonstrates that under all tested scenarios, public charging infrastructure in a number of countries in focus can support short term electric long-haul fleet adoption and expansion today. The key assumptions used in the analysis include:

- Annual distance per truck: Each long-haul truck is assumed to travel **130,000 km per year**, based on a representative mix of long-haul tractor units operating in regional, national and cross-border transport use cases.
- Energy efficiency: Each truck is assumed to consume **1.2 kWh per km**, reflecting average consumption across various payload and route conditions.
- Public charging share scenarios: The model considers 20%, 30%, and 40% of total energy demand being met through public charging infrastructure, with the remainder being met through private depot charging.
- Utilization rate scenarios: Public chargers were assumed to operate at 15%, 20%, and 25% energy utilization rates , defined as the percentage of total energy capacity that can be dispensed per connector over time, rather than time-based usage.[3]

For the **5,095 electric long-haul trucks currently in operation**, public charging infrastructure is sufficient in all tested scenarios. From an energy perspective, the existing capacity in the relevant regions can support between **5900 and 19800** electric long-haul trucks, several times the current limited fleet size. From a CPO business model perspective, assuming a minimum utilization threshold of at least 15%, the present high-capacity hubs could already sustain higher vehicle uptake[4]. However, the model does not guarantee a perfect geographic match between existing infrastructure and the precise distribution of trucks on the road today.

Potential fleet

	Public charging share	20%	30%	40%
Capacity utilization	15%	11,866	7,911	5,933
	20%	15,822	10,548	7,911
	25%	19,777	13,185	9,889

Potential fleet increase

	Public charging share	20%	30%	40%
Capacity utilization	15%	2.5x	1.5x	1.0x
	20%	3.0x	2.0x	1.5x
	25%	4.0x	2.5x	2.0x

Picture 3: Potential # of electric long-haul trucks that can be supported by existing public infrastructure under different scenarios (public charging: 20% - 30% - 40%; charger utilization: 15%-20%-25%)

3 Utilization rates above 20% are needed for competitive pricing and viable truck charging CPO business models. A 15% case is included to reflect early-market deployment conditions.

4 The current 5,095 long-haul trucks do not all operate in true long-haul use cases, and they certainly do not charge 40% of their total energy needs at public charging sites

While the overall existing charging infrastructure capacity across the 14 countries appears to support near-term growth, its geographical distribution is **not yet fully aligned with the diversity of long-haul transport use-cases and the long term requirements of a maturing market**. Some countries have a stronger infrastructure presence relative to their electric truck registrations, while others show misalignment, where charging points are available but truck deployment lags behind or vice versa.

The current infrastructure map shows that deployment is prioritized in areas where electric truck adoptions is already underway or imminent. This targeted approach is both logical and effective in early market stages. It also shows that the strategic transport corridors - essential for enabling seamless long-haul operations across countries - are not yet fully covered. As a result, **there are still important infrastructure gaps that need to be addressed** to establish a dense, reliable, and future-proof charging network.

However, rather than pointing to a systemic shortage, **the findings underscore the importance of continued, targeted deployment**, particularly along high-traffic corridors, to ensure that public charging infrastructure can support the anticipated fleet growth. **Filling the gaps will thus be key**.

It is also important to note that this analysis is based exclusively on truck-specific public charging stations. However, additional charging capacity may exist at general-purpose (car-focused) high-power charging stations that trucks can access. If these additional stations[5] are factored in, the real charging capacity could support even more vehicles than estimated.

5 Milence has identified an additional 1008 charge points (connectors) that can support electric long-haul trucks but require trailer decoupling. Additionally, some governmental organizations estimate a higher number of truck-suitable connectors than Milence. For example, the German NOW reports 258 suitable connectors, whereas our analysis identifies only 178.

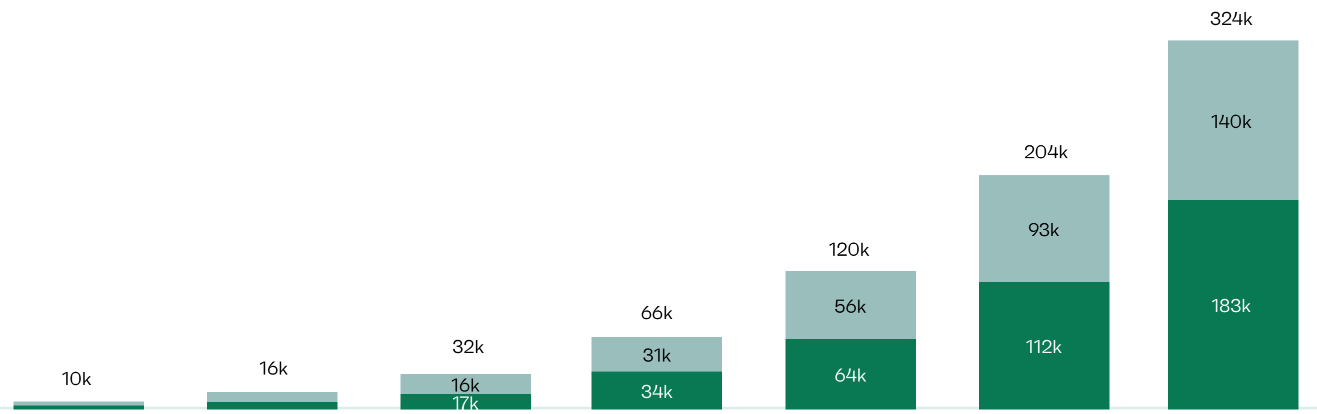
Meeting the demand of a growing electric truck fleet

While today's infrastructure is sufficient to support a variety of long-haul electric truck fleet cases, demand will increase exponentially in the coming years. How much additional public charging infrastructure will be needed by 2030 to support that transition?

Modeling fleet growth

Fleet growth is modeled at the country level, accounting for differences in policy environments, financial incentives, market expectations, production capacity and tightening CO_2 standards. Under the chosen assumptions, we forecast that by 2030, the number of long-haul electric trucks in the selected 14 focus countries will reach approximately 183,000 units, representing a substantial share of the total projected 324,000 battery-electric trucks (N3 type vehicles) on the road.

Forecasted number of long-haul eTrucks in Milence focus countries



Picture 4: Forecasted number of electric long-haul electric trucks for Milence focus countries

Estimating infrastructure needs

To estimate the required number of publicly accessible charging connectors, we calculate the projected vehicle energy demand. We again assume each long-haul truck drives 130,000 kilometers annually at an average consumption of 1.2 kWh/km, resulting in 156 MWh of energy demand per truck per year.

We then model charging infrastructure needs based on three key variables: public charging share (20% - 30% - 40% of total energy demand), charger energy utilization (ranging from 15% to 25%) and charger type mix: the relative adoption of (GWh delivered over) MCS versus CCS connectors.

For this analysis, we assume that CCS chargers deliver an output of 400 kW, with no power-sharing capabilities (as we expect all connectors to deliver their maximum capacity of 400 kW). MCS chargers are assumed to deliver 1000 kW, also without power sharing.

		20%			30%			40%		
		15%	20%	25%	15%	20%	25%	15%	20%	25%
25% MCS	CCS	7,218	5,414	4,331	10,828	8,121	6,497	14,437	10,828	8,662
	MCS	2,406	1,805	1,444	3,609	2,707	2,166	4,812	3,609	2,887
	Total	**9,625**	**7,218**	**5,775**	**14,437**	**10,828**	**8,662**	**19,249**	**14,437**	**11,549**
50% MCS	CCS	3,781	2,836	2,269	5,672	4,254	3,403	7,562	5,672	4,537
	MCS	3,781	2,836	2,269	5,672	4,254	3,403	7,562	5,672	4,537
	Total	**7,562**	**5,672**	**4,537**	**11,343**	**8,507**	**6,806**	**15,124**	**11,343**	**9,075**
75% MCS	CCS	1,557	1,168	934	2,335	1,752	1,401	3,114	2,335	1,868
	MCS	4,671	3,503	2,802	7,006	5,255	4,204	9,341	7,006	5,605
	Total	**6,228**	**4,671**	**3,737**	**9,341**	**7,006**	**5,605**	**12,455**	**9,341**	**7,473**

Picture 5: Forecasted number of charging connectors for different utilization rates and MCS adoption rates

For a 30% public charging share and an average utilization rate of 20%, the projected need ranges from 7000 (high MCS adoption) to 10800 connectors (low MCS adoption).

High-power MCS charging offers major operational efficiencies: it reduces land use per MWh delivered and enables shorter dwell times. However, to unlock these benefits, charging hubs must be supported by smart energy management, robust booking systems and dynamic route planning to ensure optimal utilization across fleets and geographies.

With these key enablers in place, our energy demand model estimates that approximately **8500 public charging connectors** will be needed across the 14 studied countries by 2030, up from around **1,100 today** under a scenario where 30% of total truck charging demand is met via public infrastructure, chargers operate at 20% energy utilization, and 50% of that public charging is delivered via MCS connectors. These numbers reflect not a prescriptive target for policymakers, but an efficient rollout path from the perspective of a charge point operator, one that balances expected electric long-haul truck market uptake with the operational requirements for **a viable CPO business model**. The assumptions are grounded in realistic utilization levels and expected fleet behavior. In essence, this scenario defines the amount of infrastructure that could be sustainably deployed and operated under commercial conditions in the coming years.

However, this demand-driven approach **does not seek to cover all geographic regions or address every operational use case**. Instead, it focuses on **where long-haul demand will materialize first: major TEN-T freight corridors**, where electrification will have the most immediate impact (also in emissions reduction potential). These are the routes where utilization rates can be met most quickly, making them essential to kickstarting the broader charging ecosystem.

This corridor-first approach also creates investment certainty for CPOs, enabling them to scale into lower-density areas once early high-utilization hubs are operational. In this way, **it puts a flywheel on market growth, paving the way for a progressively denser and more balanced public charging network over time**, covering an ever-broader range of long haul transport use cases.

It is important to note that this model **does not replace broader estimates of infrastructure need**, such as the 40,000 - 50,000 public connector projections put forward in the most recent ACEA study for full N3 fleet coverage across the EU-27 by 2030. Our results provide a realistic starting point for infrastructure rollout under current market conditions. To reach that higher level of **geographically comprehensive infrastructure coverage, additional public intervention and financial support will be required**, particularly for locations or segments that may not be commercially viable in the short term.

Building 8,500 connectors by 2030 requires deploying around 110 truck-specific (MCS and CCS) connectors per month, a pace that is well within the capacity of the infrastructure sector[6], provided that permitting processes are streamlined and grid connections for e-HDV hubs are prioritized.

Public and private actors must align around these priorities. Accelerating deployment along strategic long-haul freight corridors will not only enable early fleet adoption, it will also signal confidence to investors, unlocking further rollout and accelerating network growth. In this context, frameworks like the **Automotive Action Plan**, the **Clean Transport Corridor initiative**, and **national grid investment strategies** will be crucial to turning targeted corridor deployment into a resilient, pan-European infrastructure network.

6 As a reference, in France alone, approximately 3,500 public charging points above 350 kW were installed over the course of last year (from 01/04/2024 to 31/03/2025), averaging 290 connectors per month.

Accounting for overnight charging?

While our core model estimates infrastructure needs based on daytime long-haul operations supported by CCS and MCS public chargers, it is important to acknowledge that **a certain share of long-haul trucks will also charge overnight** during mandatory rest periods.

The following analysis explores a sensitivity scenario that incorporates overnight charging into the public infrastructure mix. Assuming that 30% of public charging demand is met through overnight sessions, typically involving extended dwell times and delivered at lower effective charging rates via standard CCS (400 kW) or MCS (1000 kW) connectors, the required connector mix and total count shift accordingly. In this scenario, we assume:

- 50% of installed CCS connectors and 25% of MCS connectors are also used for overnight charging;
- Each overnight session delivers an average of 400 kWh of energy

The resulting impacts are twofold:

- The number of high-power (MCS and CCS) connectors needed during daytime hours would decrease, as some of the electricity demand is shifted to overnight periods.
- The total number of public connectors, however, would increase, since overnight chargers have lower power output and utilization rates, requiring more connectors to deliver the same electricity volume.

		20%			30%			40%		
		15%	20%	25%	15%	20%	25%	15%	20%	25%
25% MCS	CCS	5,053	3,790	3,032	7,597	5,684	4,548	10,106	7,579	6,063
	MCS	1,684	1,263	1,011	2,526	1,895	1,516	3,369	2,526	2,021
	Overnight	11,345	12,082	12,524	17,017	18,123	18,786	22,690	24,164	25,048
	Total	**18,082**	**17,135**	**16,566**	**27,123**	**25,702**	**24,849**	**36,164**	**34,269**	**33,132**
50% MCS	CCS	2,647	1,985	1,588	3,970	2,978	2,382	5,293	3,970	3,167
	MCS	2,647	1,985	1,588	3,970	2,978	2,382	5,293	3,970	3,167
	Overnight	12,307	12,804	13,101	18,461	19,205	19,652	24,615	25,607	26,203
	Total	**17,601**	**16,774**	**16,277**	**26,401**	**25,161**	**24,416**	**35,202**	**33,547**	**32,555**
75% MCS	CCS	1,090	817	654	1,635	1,226	981	2,180	1,635	1,308
	MCS	3,270	2,452	1,962	4,904	3,678	2,943	6,539	4,904	3,923
	Overnight	12,930	13,271	13,475	19,395	19,906	20,213	25,860	26,541	26,950
	Total	**17,289**	**16,540**	**16,091**	**25,934**	**24,810**	**24,136**	**34,579**	**33,080**	**32,181**

Picture 6: Sensitivity scenario including overnight chargers

This scenario reinforces the importance of a **diversified infrastructure mix**, capable of supporting multiple operational patterns and charging behaviors and use-case across the long-haul sector.

Recommendations

The European Union has already established a strong regulatory framework to support the transition to electrification in the freight sector. Key policies include amongst others progressive HDV CO2 emissions standards, e-HDV charging pool targets under AFIR, and the Eurovignette Directive, which allows road toll exemptions to incentivize electric truck adoption. The Automotive Action Plan will play a critical role in complementing this framework and ensuring continued progress.

Our analysis demonstrates that today's public charging capacity is capable to enable early-stage long-haul truck fleet adoption and expansion for a number of use cases in regions where suitable infrastructure is already in place. While not yet comprehensive or evenly distributed, the current charging network offers a starting point for the transition. At the same time, almost all truck-specific infrastructure currently in place relies on CCS technology. The rollout of MCS, which is essential for cost-efficient long-haul operations, has not yet progressed at pace, this primarily due to standardization delays, regulatory integration and, until recently, clarity regarding the timeline for the commercial availability of MCS-capable vehicles.

Therefore, looking ahead, targeted infrastructure growth towards an MCS-capable network will be essential to keep pace with rising fleet numbers and to provide the reliability and coverage needed for broader market uptake.

In addition, electric truck adoption is not occurring evenly across Europe and across all freight use cases. Major transport hubs and logistics corridors are experiencing faster adoption rates, while other regions are progressing more slowly. **A market-driven infrastructure model**, guided by a stable long-term zero-emission policy clarity and investment signals, allows charging infrastructure to be deployed where and when it is needed most, ensuring efficient resource allocation.

To sustain the necessary growth towards 2030 and beyond, policy efforts must now shift toward **enabling faster and more efficient infrastructure deployment** at the **national and local levels**. The ability to build charging hubs **ahead of vehicle deliveries** is critical to maintaining the momentum of electrification. Two aspects will be key:

1. Prioritize strategic charging corridors

The recently announced **European Clean Transport Corridor Initiative** rightly highlights the importance of the TEN-T core corridors for electric trucking. Immediate prioritization of these high-traffic routes for grid access and permitting is crucial to ensure that charging hubs are available where long-haul electric fleets will be most concentrated in the coming years.

As part of this initiative, dedicated permitting and grid connection fast lanes should be established for e-HDV charging hubs that demonstrate maturity, such as those receiving Alternative Fuels Infrastructure Facility (AFIF) co-funding, to ensure that advanced projects are not delayed by administrative bottlenecks or competition with speculative applications.

This prioritization effort should be supported by the creation of experienced, cross-functional teams within permitting authorities and grid operators, tasked specifically with processing e-HDV charging hub applications. These teams should work from a standardized permitting blueprint that clarifies classification issues (e.g., whether charging hubs are considered buildings, parkings or fueling stations or a combination), identifies the competent authorities at each step, and includes a clear checklist of required documentation to minimize rework and delays.

Recognizing the strategic importance and advanced development stage of AFIF-supported sites - and the growing urgency of decarbonizing freight transport - public authorities must treat these applications as priority infrastructure. The new Competitiveness Coordination Tool should be leveraged to support urgent deployment, with national authorities classifying e-HDV charging projects along the TEN-T core network as critical infrastructure and adopting streamlined permitting and priority grid connection processes.

2. Adress financing barriers for infrastructure scale-ups

Despite growing utilization rates, the e-HDV charging sector still faces fundamental financing challenges. CPOs continue to operate in a high-risk investment environment, with limited early demand visibility and long administrative lead times for hub commissioning, all of which delay revenue generation and undermine traditional bankability assessments. To accelerate network expansion, **especially MCS-ready hubs, stronger public financial support is essential**.

Approximately €10 billion[7] in investment is needed to deploy 10 GW (of MCS- and CCS-capable connectors) by 2030. However, without guaranteed large off-take volumes or sufficient early demand, private capital is unlikely to commit at the scale required. Public funding instruments must therefore serve two complementary roles:

1. Guarantees are the first and most urgent enabler. The EU should prioritize the creation of a guarantee-backed financial instrument, administered by the EIB or in cooperation with national promotional banks, to mitigate downside risks for private lenders. Such guarantee mechanism would:

- Protect against demand and utilization shortfalls, especially in the early years of operation;
- Facilitate better terms, improving debt affordability for CPOs;
- De-risk private lending to high-impact corridors, reinforcing the investment certainty created by regulatory initiatives such as AFIR and the Clean Transport Corridor Initiative.

2. Subsidies, such as those under AFIF, remain vital for reducing capital expenditure and covering project cost gaps. Continued and scale-up funding of this type will be necessary well beyond the current programming period. Success programs should be expanded to cover a greater share of market risk, particularly for high-power sites where early demand remains uncertain.

We estimate that **guarantees may need to cover up to 50%[8] of the required investment volume – around € 5 billion – to leverage full-scale deployment through blended finance**. These guarantees play a critical role in unlocking private capital at this early market stage. As market viability improves, the reliance on guarantees can be progressively phased out. Subsidies should then be layered in to cover capex-heavy (MCS) projects with lower immediate commercial returns.

In addition, many locations essential for operational flexibility, redundancy, or equitable access, such as secondary roads, multimodal terminals or mountainous regions, do not offer immediate commercial returns. These sites are unlikely to attract private investment at scale without targeted support. Fulfilling complete infrastructure needs to comply with the CO_2 standards and achieving a truly continent-wide zero-emission transport network will require the next Multiannual Financial Framework (MFF) to include an **'Infrastructure Readiness Fund' aimed at closing unviable business cases and ensuring geographic coverage**. Public co-investment will be critical to achieve comprehensive coverage (~40-50K public connectors) for all relevant N3 electric truck use cases across Europe.

While infrastructure is keeping pace with demand today, the Automotive Action Plan should in addition deliver **concrete actions on targeted fiscal and regulatory measures to support reduction of the Total Cost of Ownership (TCO)** for electric long-haul trucks. Once **TCO parity** with diesel trucks is reached, the market will naturally drive adoption - an effect already visible in certain regions or use cases where large electric truck orders have been placed. For CPOs and investors, sustained and growing vehicle uptake is a critical signal. It underpins long-term confidence in the business case for public charging infrastructure, unlocking investment not only along core routes but eventually also into a dense, continent-wide network which can support the wide variety of long-haul use-cases.

Measures that will have the most impact across all long-haul vehicle segments include:

- **Tax incentives**: In addition to existing national subsidies for e-long-haul vehicle purchases, further tax benefits or depreciation incentives could make TCO more competitive.
- **Road toll exemptions**: expanding and ensuring constituent application of electric truck road exemptions across all EU Member States to improve operational savings.
- **Vehicle finance de-risking mechanisms**: favorable loan conditions, leasing models, tailored financing schemes, and resale value guarantees should be offered to fleet operators of all sizes to bridge the upfront investment gap.

The electrification of long-haul trucking is already well underway. Charging infrastructure is being deployed today, and it continues to scale in line with market demand. However, to maintain and accelerate growth, a stable, market-driven approach - combined with strategic policy interventions in the short term - will create the conditions for a cost-effective and scalable transition to electric freight transport to reach the set climate targets. Immediate actions on **strategic corridor prioritization**, **financing de-risking**, and **TCO reduction** will be key to ensuring Europe remains on track. The next two years will be critical in shaping the future of e-HDV deployment. So now is the time to act together.

7 This estimate is based on an average total cost of approximately €1 million per megawatt of installed charging capacity. It includes high-power chargers, grid connection and upgrades, site preparation, and related infrastructure. Actual costs may vary depending on permitting, location, grid availability, and technology mix, but €1 million/MW provides a representative benchmark for planning large-scale truck charging deployment.

8 For high-risk infrastructure segments (like e-HDV charging), 40–60% coverage is often required to reach sufficient credit enhancement and attract private lenders.

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