FACT SHEET POLAND

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Electricity crediting for depot charging: Assessing a cost advantage for truck operators in Poland

The adoption of zero-emission vehicles will be critical to achieving the European Union's (EU) carbon neutrality targets in the transportation sector. Revised heavy-duty vehicle (HDV) CO_2 standards, passed in 2024, require vehicle manufacturers to reduce tailpipe carbon dioxide (CO_2) emissions from the 2019 reporting period baseline by 15% by 2025, 45% by 2030, and 90% by 2040. Vehicle manufacturers can comply by improving the fuel economy of combustion engine vehicles or by increasing sales shares of battery electric vehicles (BEVs) or hydrogen fuel-cell vehicles.

Past ICCT research has shown that increasing BEV sales is the most cost-effective option for manufacturers to comply with the CO_2 emission standards for both light-duty vehicles and HDVs. A new provision in the Renewable Energy Directive (RED) III could help accelerate battery electric truck adoption once implemented by EU Member States. This measure provides financial incentives for renewable electricity delivered to electric vehicles, including at depots—the backbone of the HDV charging ecosystem.

AN OPPORTUNITY FOR POLISH HEAVY-DUTY TRUCK OPERATORS

Within the European Union, Poland ranks as the sixth largest economy and leads all Member States in terms of annual tonne-kilometers of road freight transport. Truck and charge point operators could benefit substantially from RED III electricity crediting provisions. The Polish government has yet to implement the RED III transport target or establish a market-based mechanism for fuel suppliers.

A new ICCT study explores the impact that RED III charging credits, particularly from depot charging, could have on the total cost of ownership (TCO) of the most common HDV in Poland, the long-haul tractor-trailer. We estimate the quantity of renewable electricity credits that these vehicles could generate annually based on various scenarios for the decarbonization of the country's electricity grid and median EU credit prices.

HOW THE RED III ELECTRICITY CREDITING SCHEME WORKS

Under the RED III, by 2030, EU Member States are mandated to increase their renewable energy consumption in the transport sector, either by achieving an

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energy-based target of 29% renewable energy or a greenhouse gas (GHG) intensity reduction target of 14.5% from a fossil baseline.

The RED III introduces a scheme whereby entities that supply renewable electricity to electric vehicles at public charging stations can receive credits, and Member States may also credit electricity consumed via private recharging points if it can be demonstrated that the electricity was solely supplied to electric vehicles. These credits can be sold to fuel suppliers to use towards energy-based or GHG intensity reduction targets. This crediting system provides an opportunity for charge point operators to offset the costs of charger installation and operation at public, semi-public, or private recharging points. As they implement the RED III in national legislation, Member States like Poland may extend eligibility for credit generation to depots, which are often owned and operated by trucking companies.

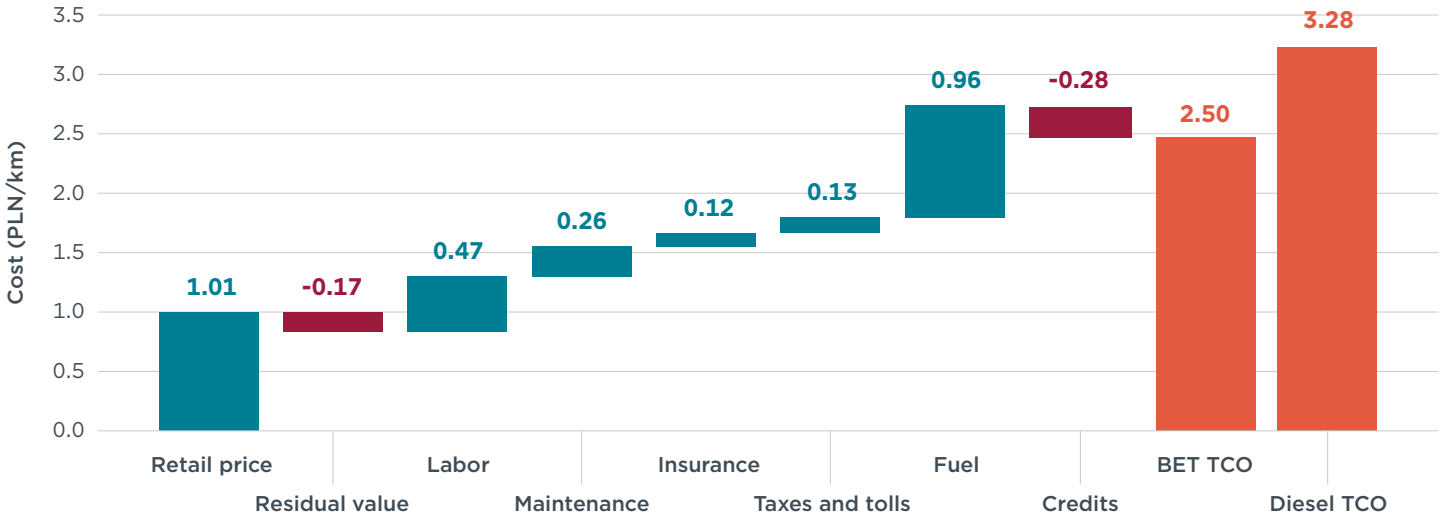
COST ADVANTAGE FOR TRUCK FLEET OPERATORS

The results show that **electricity credits substantially lower the TCO of battery electric trucks for truck fleet operators.** With a crediting scheme in place, the TCO of a model year 2030 battery electric truck falls by up to 10% compared with a scenario without crediting. This is a significant reduction given the tight profit margins characteristic of the freight sector in Poland.

These reductions vary depending on the share of renewable energy in Poland's electricity grid and the price of credits. In a scenario that assumes a moderate share of renewables on the grid,[1] a model year 2025 battery electric truck that operates until 2030 has a 7% lower projected TCO than in a scenario without credits**.** With the use of electricity credits, **the TCO gap between battery electric and diesel trucks drops to less than 3%.** With additional short-term financial incentives such as purchase subsidies or preferential EV tariffs, which were not included in this analysis, the TCO could be even lower than diesel trucks. For a model year 2030 truck, with crediting in place, the battery electric trucks have **a 24% lower TCO than their diesel counterparts** (Figure 1).

Figure 1

Total cost of ownership in 2030 assuming a moderate share of renewables and median EU credit prices



Note: Assumes 80% metered depot charging and 20% public charging.

1 This scenario is based on projections from Poland's National Energy and Climate Plan and median credit prices in 2024 in the five other Member States that operate charging credit schemes.

CREDITING BENEFIT FOR CHARGING POINT OPERATORS

The study assumes truck operators meet 80% of their charging needs at their depot and 20% at public charging points. While crediting public charging may not directly benefit the truck operator, it does benefit charging point operators. Under the moderate scenario for renewable electricity uptake, **credit values could cover from around 20% to 30% of the charging price** of different tariffs, offsetting a significant portion of the costs incurred by charging point operators.

ENHANCING TCO REDUCTIONS THROUGH RENEWABLE ENERGY UPTAKE

Additional sensitivity analyses explore the range of cost reductions that charging credits could generate for the TCO of long-haul tractor-trailers in Poland. Relative to a baseline without renewable electricity credits, the TCO for trucks purchased in 2030 can be reduced by 6% in a pessimistic scenario with lower-than-expected renewable energy uptake and by as much as 19% in an optimistic scenario with 100% renewables via a direct connection to a renewable electricity installation.

POLICY RECOMMENDATIONS

The results of our analysis suggest that the Polish government can support the electrification of the HDV sector by implementing RED III electricity crediting, particularly for charging at depots. To fully leverage the opportunity:

- Authorities could consider extending eligibility to depot charging during national implementation of the RED III.
- Upon RED III implementation, public depots, typically defined as those that are open to the public at least 1 hour per day, could automatically be eligible for electricity crediting.
- Poland could also broaden eligibility to depots that are privately owned in its national legislation.
- Charging point operators can maximize credit revenue if they use a direct connection to a renewable power source.

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