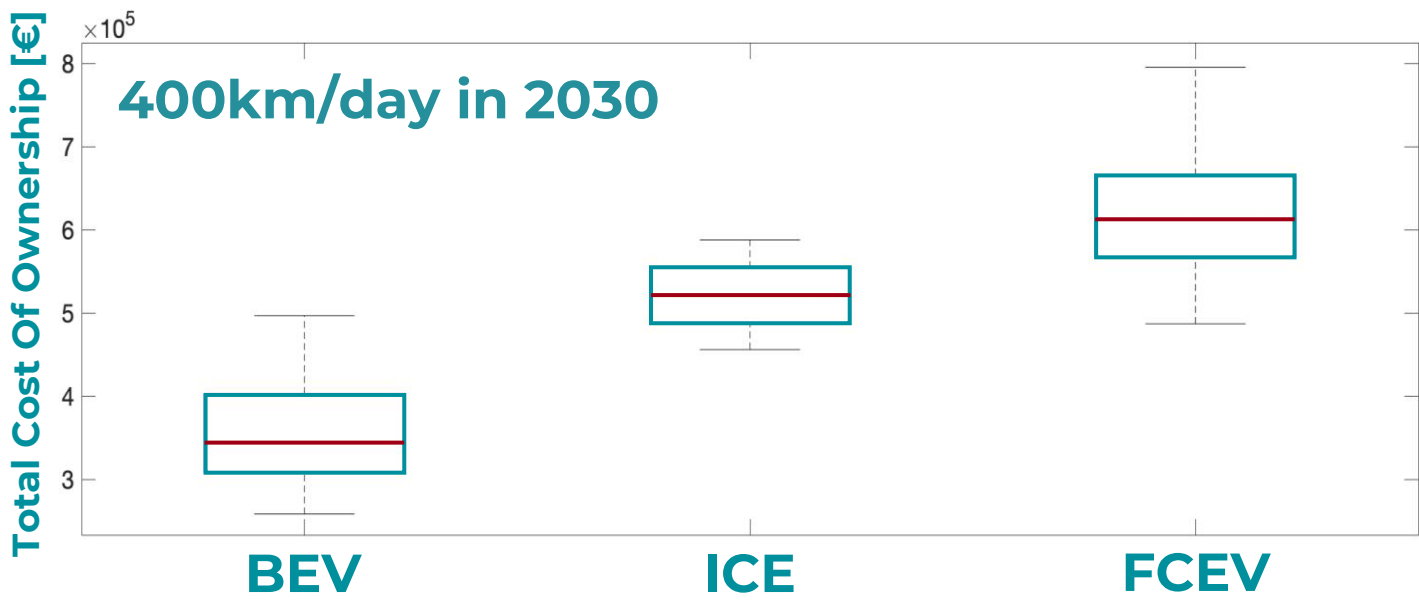
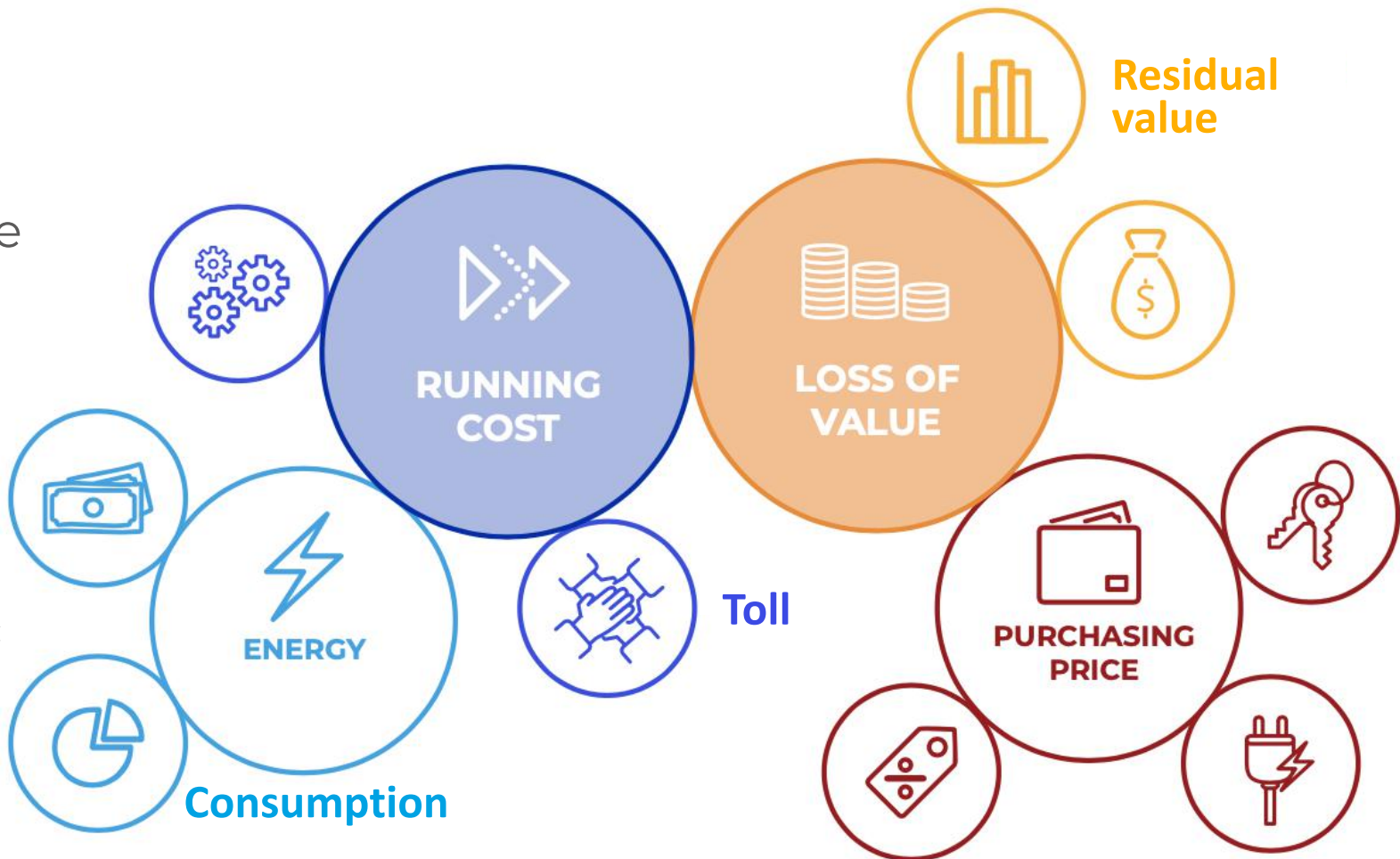


While it is immanently clear that **future transportation must be decoupled from carbon dioxide emissions**, currently there is no singular zero-emission technology prevailing in heavy-duty trucking. As **economic efficiency is the guiding principle for trucking operators**, this paper examines the differences in total cost of ownership for battery and fuel cell electric vehicles. Notably, **battery electric trucks show by far the lowest overall costs** and there are little to no scenarios where this mechanism changes.

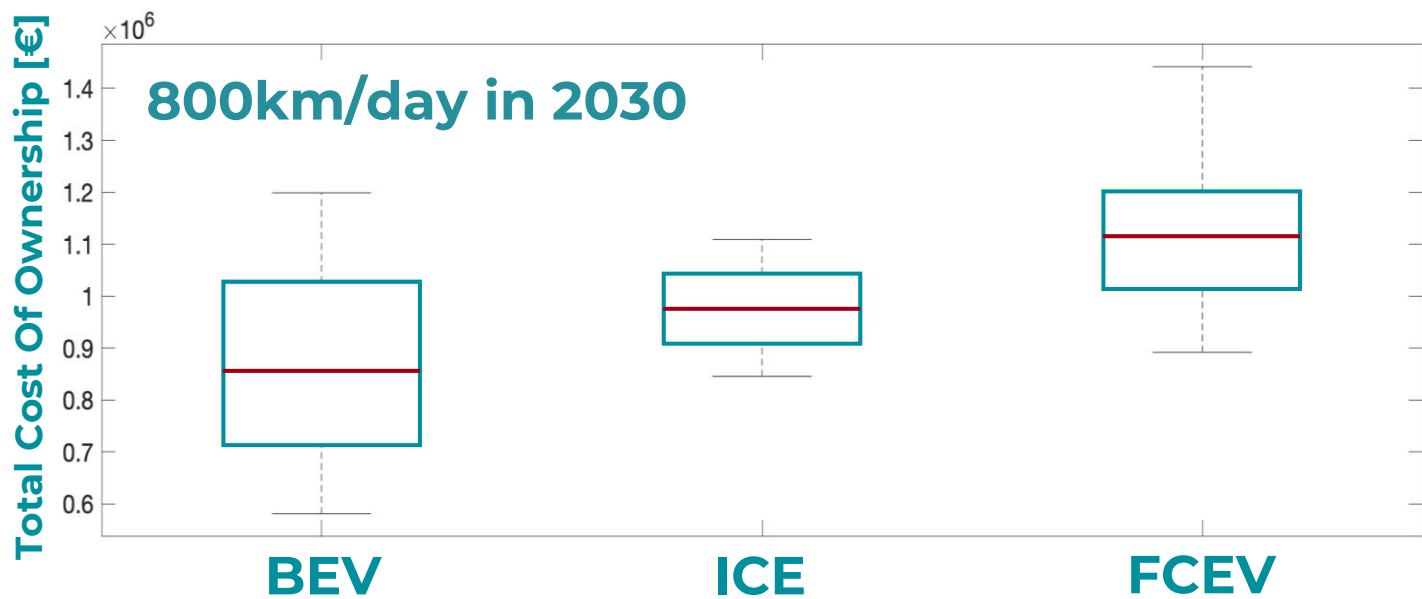


BEVs are by far the cheapest option

- > Despite the **higher asking price** and infrastructure cost, **BEVs can be operated significantly cheaper** than all other options
- > **ICE vehicles are likely to be more expensive** than BEVs throughout Europe
- > Operation of a **FCEV is roughly 220% more expensive** than employing a BEV

Even with Megawatt charging, BEVs will likely show the lowest TCO

- > **Megawatt charging** is assumed to be used, thus allowing for **greater daily mileage**
- > **Energy costs soaring** (up to 0,64€/kWh)
- > Owning and operating a **FCEV truck is still about 170% more expensive** than a BEV
- > Liquid H2 infrastructure nonexistent



Sensitivity analysis (±30% around median values) clearly shows that the trucking business case is mostly influenced by energy cost - especially for fuel cell vehicles

BEV	Energy	119.800€	Toll	27.850€	Battery	12.460€	Incentives	-6.280€
FCEV	Hydrogen	281.195€	Toll	27.850€	Fuel Cell	20.340€	Incentives	-12.650€

