

Propulsion Technologies and systems



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Dr Jan Nylander

Charging Solutions and Infrastructure

Scania CV AB

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Trends

- Today we react, many issues on the table, nice words, lack of deployment
- Rapid decarbonisation needed
- Several technologies on the market, BEVs, biogas, synfuel, hybrids
- Important steps;
 - Fossil free logistics are not emission free
 - Emission free logistics demand electric drivetrains
 - Green electric drivetrains demand green electricity
- Risk for costly lock-in effects subsidizing “almost OK” intermediate solutions
- Green logistics must be profitable, long term
- Some hurdles are
 - the grid capacity and charging infrastructure, not the trucks
 - lack of sustainable long-term policies and financial prerequisites lowering risk, stimulating investments and changed behaviour



Electric drivetrain and BEVs



- Pure BEVs, with static chargers and battery
 - depot charged, 300km range in local operation, happens now
 - slow charging overnight saves battery lifetime and keep grid peaks small
 - extended range with public chargers (350/700kW and MCS) will establish regional markets and enable long-haul operation
 - might cause a turbulent grid
 - will demand big batteries
- With ERS
 - high investment cost for infrastructure
 - suitable (cost/benefit) for frequent logistics
 - good also for long-haul heavy transport but need enough trucks
 - small batteries, smaller cost, less environmental impact, larger freight capacity
- With H2
 - good solution for long-haul heavy trucks, on less frequent routes in remote areas
 - 2/3 energy vanishes during processing: electricity -> hydrogen -> electricity
 - double systems/expensive: BEV (with battery) + H2 storage tanks + fuel cell
 - green H2; huge amounts of renewable electricity needed, will take time
 - smaller / lighter batteries and shorter “charging time”



Coherent systems

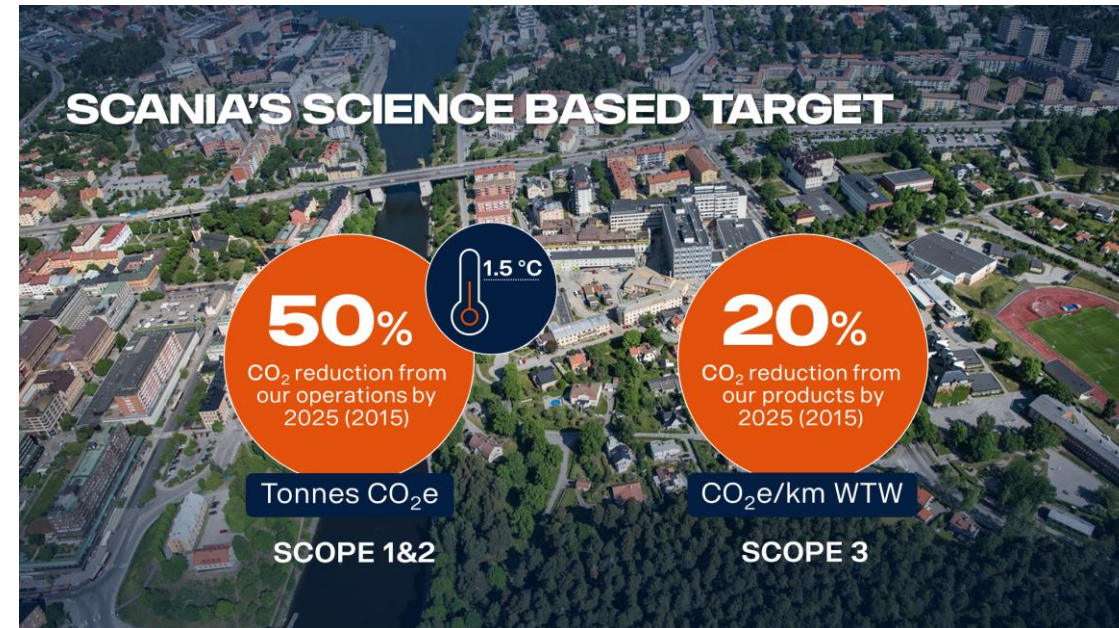
- Coherent and optimized
 - energy and logistics systems
 - propulsion systems, from energy production to moving rubber wheels
- has potential to be very competitive, offering lower transportation cost to customers
- New field of innovation and entrepreneurship, adding new functionality, products and services while cutting emissions and cost
- will cause disruptive market access, as proven functional
- requires large expansion in green electricity production
- depends strongly on propulsion technology: H2 vs BEV vs ERS
- Important to stimulate catalysation with public funding, avoiding long term subsidization dependencies



Drive the shift!



- When it's cheaper to transport goods on electric drivetrains other technologies will only be relevant in very special cases
- Much of the shift today is driven by industry and good management
- There is no contradiction between being profitable and climate smart
- Scania is an example (50% cut on CO₂ (2015 – 2025), 25% for customers) and this is not a stretchable vision but a decision
- Political leadership needed; Make sure usage of electric drivetrains are cheaper, transportation cost lower and focus on deployment, usage and positive effects
- 10 years ago Elon Musk launched the Tesla, model S, in California. What a stupid move. Who want an electric car? This will of course not work. Stupid.





Thank you

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