

Enough is Enough !

Cleanfreight solutions exist today to tackle urgent climate & air quality goals.



Asher Bennett, Founder & CEO, Tevva Motors Ltd

The Need

+ 1 C since 1880

+ 1.5 probable as soon as 2030

- Sea level rising 3.3mm annually
- GHGs +60% since 1994
- Up 2.7% in 2018
- CO2 rising YOY – 411ppm
- IPCC – 45% reduction in GHGs needed by 2030 to hold at +2C
- Arctic sea ice projected to hit zero as soon as 2030



Role of Transport

UK CO2 is down by 43% from 1990, yet transport emissions are up

- Transport = 28% of UK GHGs
- Road Freight accounts for 17% of all transport emissions

**Lets talk Km's or miles, not vehicles -
Vehicles don't make pollution, burned fossil fuel does**

Electric commercial vehicles & technologies



eTrucks without compromise

-45% in ELEVEN years

The big ask

- 45% reduction in 11 years

- 45% GHG cuts mean 45% of miles fueled by zero carbon electricity
- Implies 45% of UK vehicle park being EVs by 2030
- Suggests at least **25% of new registrations as EVs within 3-4 yrs**



Making it manageable

Urban freight is an aggregated sector and ripe for electrification

Average truck
burns **11,000 litres**
of diesel pa

Compared to:

Typical family car
800 litres pa

Trucks not
uncommonly in
fleets of dozens or
even

hundreds

In one depot

Compared to **one**
family car

60% of UK HGVs
are rigids

Overwhelmingly,
rigids are
deployed on **back-**
to-base
operations

Convert all rigids
to EV by 2030,
and

UK road freight
meets or **exceeds**
the
target

The **WRONG** Question

It's NOT a Binary Choice

- > Meets Climate Change and Air Quality goals
- > Operationally limited



EV

or

E6



- > Designed to meet Air Quality goals not Climate Change
- > \$Billions invested

Why the simple EV is not a broad application solution

BEV range is **not constant**, it varies with

- Temperature
- Driver behavior
- Traffic patterns

Near 2:1 variance from max to min

Consequences

- 100 mile duty needs a 250 mile battery
- £230 per kWh
- 11kgs per kWh

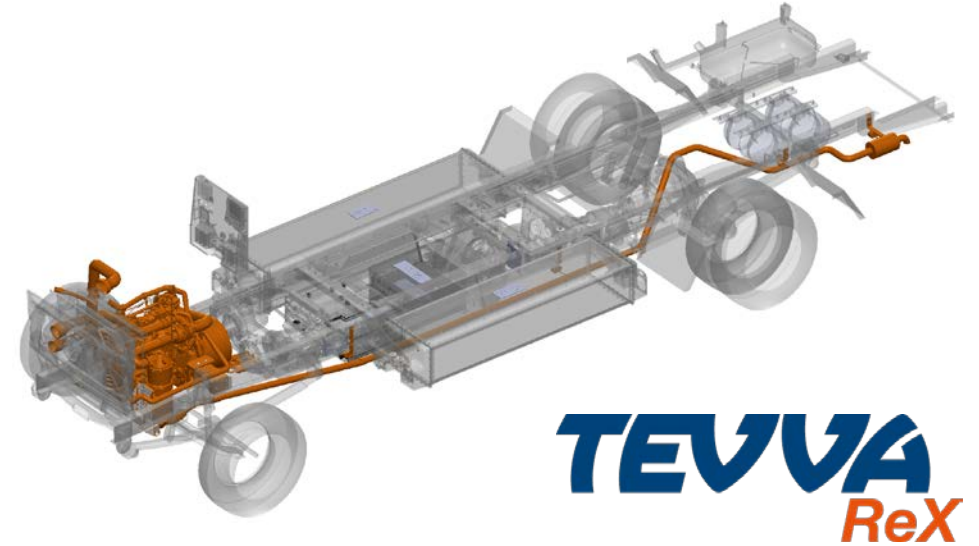
For an 18T truck, this means:

- £40k additional battery
- 1900kg lost payload
- Capex per tonne of payload – 60% - 70% higher

There's always a third alternative...

REX – **Range Extender** – The **enabling** technology

- Range Extender enables “rightsizing” of battery packs
- Enables use of 100% of battery capacity every day at ZERO OPERATIONAL RISK
- Eliminates at least 90% of tailpipe emissions EVERY DAY and 100% of emissions on many days
- Transforms TCO economics from prohibitively more costly to significantly cheaper
- Leasing options mean savings accrue from month one



TEVVA
ReX

In summary

➤ 45% GHG cut in 11 Years

Can we do this? - YES we can!

We have a plan
...a good plan
...ready to execute now

“A good plan violently executed now is better than a perfect plan executed next week.”

General George S Paton

WWW.TEVVA.COM

ROAD FREIGHT IS THE FASTEST GROWING CO2 EMITTER

**THE PROBLEM: 80% OF THE GLOBAL NET INCREASE IN
CO2 SINCE 2000 CAME FROM ROAD FREIGHT**

Source: Is low carbon road freight possible? www.itf-oecd.org