



www.sustainableroadfreight.org

A technology roadmap for freight decabonisation

OECD Freight Decarbonisation Workshop

David Cebon 28 June, 2018



- 1. Key Factors
- 2. Roadmap
- 3. Conclusions

Technology and Logistics both matter!





Barriers to mainstream adoption (Technical, Economic, Political)

KgCO2 Savings vs Operation Type



A-Double: A-double/33t-44t artic Aero Kit: Aerodynamic Kit AMT: Automated Manual Transmission AVs: Autonomous vehicles **B5**: Biodiesel B5 B10: Biodiesel B10 B20: Biodiesel B20 EHR: Exhaust heat recovery **EMS:** European Modular System/33t-44t artics Engine-off: Engine-off when stationary Fixed DD: Powered to fixed double decks LRR Tyres: Low rolling resistance tyres **TIM**: Tyre inflation management 7.5t: 7.5t/3.5t 17t: 17t/7.5t Upto 33t: 33t/25t

Logistics measures for reducing fuel consumption and CO2



Barriers to mainstream adoption (Corporate, Technical, Economic, Political)

Road-mapping Methodology

- 1. Expert focus groups on 12 major measures
- 2. Techno-economic modelling of decarbonisation potential and adoption rates
- 3. Timelines for each measure

Focus Group: Gas and Dual Fuel Roadmap





SRF Roadmap – 3 scenarios



EV Adoption – Scenario 3



Timeline for Logistics Measures

2015	2020	2025	2030	2035	2040	2045	2050
Research i	into impact of Longer	Heavier Vehicles					
Changes to urban access policies enabling off-peak deliveries							
Research into self-organising freight technologies							
Development of technologies to enable self-organising Freigh				nt Exchanges			
Policies to enable Urban Consolidation Centres							
	Shift to m	ore off-peak deliveri	es				
	Adoption of self-org			anising Freight Excha	nges		
		Development of nev	v Urban Consolidatio	n Centres			
		Longer Heavier Vehi	cle pilots				
			Increasing adoption	reasing adoption of Longer Heavier Vehicles for long haul freight			
Restructuring the supply chain network to make increasing use of self-or				ganisng technologies	5		
				Growth in use of Urban Consolidation Centres			

A Logistics Network for Electrification



Overnight vs Opportunity Charging



Conclusions

- 1.80% CO2 reduction by 2050 is only achievable with electrification most heavy goods vehicles
- 2. Battery EVs are viable for urban areas
- 3. Opportunity Charging infrastructure provides huge advantages...
- 4. Long-haul EVs require charge-in-motion
- 5. Overhead wires are the most likely solution for highways
- ➔ A new era of infrastructure investment is required!