

YOUNG PROFESSIONALS AND ENVIRONMENT AND SUSTAINABILITY FORUMS

The Forums jointly invite you to help shape the future of transport and logistics at Vision 2035, their delegate-led Open Conference in September – see Events pages for more details. Here, we provide an update on low-carbon, clean transport.

Transport and logistics are coming under pressure to accelerate progress and scale up implementation of clean, low-emission solutions. Transport is a significant contributor to climate change and pollution, with road freight alone accounting for 23% of global CO₂ emissions. Cities and logistics parks fail to meet air quality legislation, and the UK lags behind on climate change commitments. Pollution and emissions mean significant costs and issues for agriculture and oceans, and we now know it is harming our health.

To support the Paris Climate talks, the 16 highest emitting countries (including the UK) collaborated on the Deep Decarbonization Pathways Project, developing their own national blueprints for meeting the Paris commitments. Three common approaches emerged:

- Ambitious energy efficiency gains
- Reducing emissions intensity of electricity (decarbonisation)
- Switching from fossil fuels to electricity and renewable energy sources

The costs of meeting the targets are typically around 1% of GDP, and could even be less with technology innovations and scale-up. The human health benefits of reduced greenhouse gas (GHG) emissions will save at least four times more than the cost of doubling renewable energy use.

Road Freight Lab

The World Business Council for Sustainable Development's Road Freight Lab report says that with global demand for freight transport predicted to quadruple by 2050: 'meeting the climate challenge requires almost a total decarbonisation of the transport sector before 2100' and means 'we need to almost halve absolute emissions from freight by 2050, based on 2010 levels'.

The report highlights significant opportunities to reduce GHG emissions, through improvements on three vectors: avoid the kilometres; shift away from fossil fuels; and improve fleet efficiency. Apart from replacing physical products with digital services, how else can we avoid the transport or reduce the distance travelled to deliver each product?



The UK lags behind on climate change commitments

Collaborative advantage

Top-tier asset optimisation tools could reduce energy and emissions by on average 12.5%, but are used by few fleet operators. Overlaying the routes of last mile delivery operators in urban areas would typically show three or more operators covering the same area, multiplying distance and drops compared to an optimised, shared fleet. The Road Freight Lab has developed an asset-sharing model with Route Monkey: fleets would provide their data to a platform that optimises the fleets and routes, using all the relevant constraints. Around two-thirds of fleet operators are not deploying even modest asset-sharing models; a single last mile operator (a disruptor such as Uber Cargo?) or a collaborative approach could provide the critical mass to achieve this. DHL's new Connected TMS platform aims to do this for road freight.

Localisation

Instead of long-distance, one-way supply chains, distributed manufacturing and circular economy approaches reduce complex and expensive multiple border crossings for materials and components.

Packaging

We can avoid transporting fresh air by maximising product fill for the pallet and vehicle space, with savings of 10% seen when logistics teams are involved in choosing and designing product packaging.

Shifting from fossil fuels to clean energy

The internal combustion engine is so inefficient that only 1% of the fuel in the tank moves the people in the car. Battery

range remains a major limitation for electric trucks, though Tesla and Cummins have plans for trucks capable of 100+ miles on a single charge. The report says that adopting currently available alternative fuels and electric vehicles would reduce GHG emissions by 83%. Excess wind or solar power can power production of hydrogen or synthetic fuels, thus storing renewable energy for later use.

New modes

Cycle cargo is expanding in cities and we are seeing electric vans and bikes and parcel robots, and some predict that drones will deliver 80% of all last mile items.

New approaches to pipeline systems use highly efficient maglev technology. Virgin has invested in the Hyperloop 1 project, which will move people and goods over long distances two to three times faster than high-speed rail and with a much smaller civil engineering footprint. Edinburgh to London could be one of the routes. In Northampton, Mole Solutions is developing an underground/overground maglev pipeline to move goods from out of town consolidation centres, into and across the town on disused railway lines.

Improving efficiency

Better routing can save time and fuel, although a more challenging suggestion is to widen delivery windows – for example, relaxing delivery windows from one to five hours could lead to savings of 25%. Eco-driver training typically saves 7% on fuel and GHG emissions. Vehicle-centric measures such as onboard energy management are widely available, and innovative trials include platooning and Siemens' e-highway project.

Rapid scale-up

Technology and disruptive innovation are already transforming the world. Just a few years ago, who would have imagined we would see autonomous trucks tested on our roads? For transport and logistics, we need rapid scale-up across all three vectors. The best news is that all the improvements have multiple benefits: lower costs, better human and environmental health, cleaner cities – a sustainable, healthy world, made possible by future-fit logistics.

This is from Catherine Weetman's presentation to the Green Intelligent Supply Chain Association of Suzhou, China, on behalf of SCALA.