

Where in the world part 2: **Not all miles are equal**

According to the UK's Department of Transport, heavy goods vehicles (HGVs) are estimated to account for around 17% of UK greenhouse gas (GHG) emissions from road transport and around 21% of road transport nitrous oxide (NO_x) emissions, while making up just 5% of vehicle miles. This misses the fact that they are responsible for moving a significant amount of freight; expressing this in terms of tonne-kilometres gives a very different picture. The chart below, from a paper by Alan McKinnon of the Logistics Research Centre at Heriot-Watt University illustrates this very clearly.

Meeting UK and global climate change targets will require GHG emissions reductions across all sectors of the economy, including road freight. The government is also committed to improving UK air quality, and matrix signals alongside 'smart' motorways now routinely report that speed restrictions are being imposed on the basis of air quality (of which more later). Whilst there are other modes of transport, road remains dominant here, with the consequent emissions impact. Very local production and consumption is not necessarily the answer that it may appear at first sight, despite the reduction in road miles. Figures from DEFRA show that agricultural processes, as discussed below, dominate, accounting for around 45% of emissions in the agri-food chain. Processing, transport, retail, foodservice and waste account for broadly equal proportions of the remainder. Globally, around 1/3rd of the food grown doesn't make it into people's stomachs.

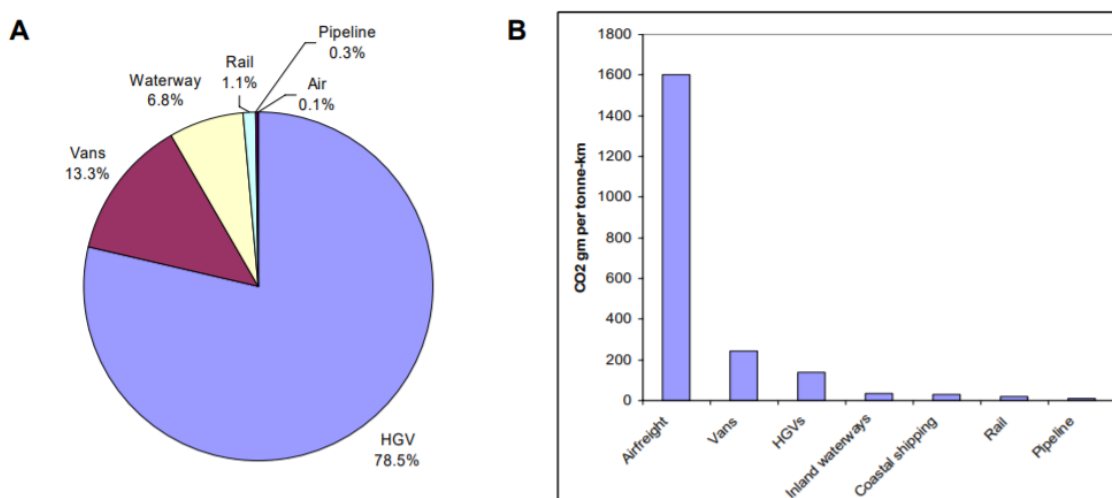


Figure 1: Modal Shares of CO₂ Emissions and CO₂ per tonne-km values for UK Domestic Freight Transport (2004)

The UK Climate Change Act requires an 80% reduction in emissions by 2050 against a 1990 baseline, and both the Conservative and Labour parties have a stated ambition to increase the level of reduction to 100% at some future point yet to be specified. Technology will be part of the answer; the UK's electricity grid has a hugely reduced reliance on coal, and renewable energy generation capacity has grown to around 1/3rd of total UK consumption while domestic usage has reduced through the adoption of LED lights and a range of lifestyle changes. More relevantly, given the significant increase in home shopping in recent years, electric delivery vehicles are starting to appear (or rather re-appear, as battery milk floats were a common sight not all that long ago) and battery storage has become a commercially realistic option. Premier Inn even has a battery-powered hotel (in Edinburgh) although that decision has as much to do with avoiding the cost at peak hours as it has to do with environmentalism. Electric vehicles aren't the answer yet, though, and long-distance transport by sea is still a better carbon option per tonne-kilometre, albeit not as benign as once thought.

A better carbon option then, but carbon is not the only pollutant of concern and global warming is not the only threat we have to face, even if it is one of the most urgent. There are four main types of greenhouse gases closely associated with the agri-food system; carbon dioxide, methane, nitrous oxide and fluorinated refrigerants. Those are not the only molecules with global warming potential, but they are the ones which are most impacted by human activities. There are also other pollutants which have health impacts, such as sulphur dioxide and ammonia, but which are not part of the mechanism of global warming. Ammonia can be released through fertiliser decomposition, and sulphur dioxide is associated with the cheapest type of fuel, often used by commercial shipping. You may have heard a claim that the 15 (or 16, the story varies) most polluting ships in the world emit more pollution than all of the world's cars. This has a grain of truth but is not a meaningful statistic.

The reality is that if there were 15 ships of the largest practical size (which there aren't) burning the most sulphurous fuel without cleaning the exhaust (which they don't) they would indeed produce more sulphur pollution than cars (which use more refined fuel in the best case having almost no residual sulphur). The whole thing was derived from a

thought experiment a decade ago and was never a real-world situation. Private transport is likely to be a larger component of a food economy built on small-scale local production, and here too electrification is likely to change the picture; a survey published in the middle of 2018 suggested that 50% of young people in the UK would like to own an electric car. So how good or bad miles are depends on what you are measuring, and when. And whether you're using real or imaginary examples.

[Where in the world part 1: Home-grown](#)

[Where in the world part 3: Not all hectares are equal](#)

[Where in the world part 4: What's in a name?](#)

Written by **Gavin Milligan** of **Green Knight Sustainability Consulting Ltd**
e. contact@greenknight.consulting m. +44 7967 025215 t. @equesviridi
Shared by **grasp business development**.