



ON THE MOVE

Transport is seen as a major source of emissions but some companies are setting new trends in carbon reduction within the travel and transport sectors.

Elisabeth Jeffries reports

THERE IS SOMETHING unlikely about a clumsy container or fishing boat being propelled across the North Sea by a dainty yellow kite soaring ahead of it. But only a few months ago, this scene was brought to the attention of many people across the world. SkySails, the German company which helps ships cut ever-increasing fuel costs through the use of wind power, had for the first time fitted a sail to a modern trawler, the Maartje Theadora. While wind power may be the

beautiful revival piece of our time, its beasts are not on the point of being transformed. Ships, like trains and planes, sometimes outlive generations of people. Managing an ageing family is the nature of the transport business.

That is a problem airlines understand only too well. After several delays, Boeing's new jet, the 787 Dreamliner, made its maiden flight in December 2009. This is one of the new generations that will be in service as the world finds out whether worrying predictions of climate change are correct, though it will be many years before existing models are phased out. Boeing trumpeted the newcomer's light composite materials and 20 per cent lower fuel consumption per passenger – an impressive progression. But the energy efficiency card is played too often as an environmental benefit.

In fact, in many businesses it is actually the sign of a globally growing industry sliding through a productivity curve. The Dreamliner will without doubt help airlines reduce their own bills in a cut-throat environment. Even then, the curve is getting flatter. "Improvements in

fuel efficiency due to the introduction of new aircraft have decreased over time," reported the International Council on Clean Transportation in November 2009.

The Dreamliner's performance also has to be set against projected air transport demand increases of around 5 per cent per year. Even conservative estimates suggest that demand could more than double by 2050. There will be plenty more planes in the sky in future. In 2009 alone, a recession year, new aircraft deliveries rose 6 per cent.

Jatropha, coconuts, algae, plants called halophytes (which tolerate salt) and camelina – a member of the cabbage family – may help grow us out of this dilemma. Air New Zealand, KLM and Qatar Airlines are among the carriers that have been taking part in surprisingly successful trials of biofuels made from some of these crops: "There used to be a target of certification by 2013, but the testing and research programmes are moving much faster than they were when that target was set, so it now looks likely we will get certification for biofuel use in aviation some time next year," states Haldane Dodd, of the Air Transport Action Group (ATAG) in Geneva. ATAG suggests that, as a result, biofuels could be used on commercial flights within three to five years.

"The issue becomes how we can ramp up the supply of biofuel from sustainable sources – this is a supply issue, rather than a technical one," Dodd adds. That is, so far, an unresolved problem, as governments are unsure whether the increasing use of biofuels would use land otherwise needed for food crops. To counter that problem, BA has come up with a biomass waste fuel, which it says will be ready by 2014 and would convert 500,000 tonnes of London's waste per year into 16 million gallons of jet fuel.

Airlines have, perhaps unfairly, come under more severe criticism than railways, ships and especially road vehicle manufacturers, who are responsible for 93 per cent of transport CO₂ emissions within the EU. On the other hand, a return journey from London to Paris will set you back by 6.6kg CO₂ by train and 102.8kg by plane, according to Eurostar data. Whereas ships carry more than 90 per cent of EU freight, planes emit more than 20 times more CO₂ per ton-kilometre. Global demand for plane and ship transport is, however, on the increase.

Of the three, rail has succeeded in retaining a more eco-friendly image. Eurostar, drawing 81 per cent of people away from air travel between London and Paris since its launch in 1994, is unusual in also investing in a wind farm and hydropower plant in China and India. But the Shinkansen, Japan's bullet train, is the king of rail. Its operator, the Central Japan Railway Company, has succeeded in cutting energy use with each generation of new trains. When travelling at 270km/hour, it has succeeded in cutting down the energy use of the latest series, the N700, by 68 per cent compared to the first generation, in service in the 1980s.

Redesigning the nose shape, so that it now resembles a bird spreading its wings, is one of the smart ideas introduced by the company, along with new materials, such as aluminium instead of steel, which means it is 250 tonnes lighter than the first bullet train – an important consideration, as Henning Schwarz of the International Union of Railways, points out: "High speed is a trade-off; you consume more energy as you go faster but take people off more carbon intensive modes."

Japanese innovation does not stop with the Shink-

ansen. JR East, another private company, introduced hybrid/diesel fuel cell railcars in 2007 in the Kiha E200, which is about 20 per cent more efficient than a standard railcar operating on level ground. There, as in many parts of the world, trains are being equipped with regenerative braking. This means they feed back some of the energy they use into the supply system, saving the company money but also cutting emissions. Since the mid-1990s, major changes have also been winding across Europe from the Balkans to Scotland as more passengers take to the train. Hungary, Ireland and the UK have experienced the biggest increases in passenger kilometres since then (at least a 45 per cent rise), although most former USSR countries have gone through major cuts.

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Sometimes, it is governments that should be applauded for innovative rail ticket regulations that take more passengers off planes and out of road queues, but occasionally this is led by rail companies themselves, such as Virgin Trains. Its Plane Relief ticket system has allowed passengers to swap their short-haul flight tickets for a free Virgin Trains first class seat, while at the same time thrusting rail travel into the limelight.

Ships tend to live longer than trains, so managing their emissions probably means tinkering with all kinds of logistical, technical and sometimes apparently wacky ideas such as SkySails. Among other things, people have suggested that ships should simply slow down. "From 2010 through 2012, emission reductions in the order of 30 per cent are maximally achievable [through slowing down] without the need for retrofitting slow-steaming equipment," a study by the environmental group Seas at Risk stated this year.

Companies such as the Gargantuan A P Moller – Maersk group, based in Denmark, are taking pains to demonstrate their commitment. Among many things, it has adjusted container and ship design features, which it says could save up to 20 per cent in fuel, and has introduced intelligent controls to the main engine injection timing on ships to minimise fuel consumption. A Danish project called the Green Ship of the Future has considered the possible actions shipping companies could take. These include using liquid natural gas (20 per cent lower emissions) instead of diesel and converting exhaust gas from the main engine to steam, which can be used to heat the ship.

It is clear, therefore, that the transport sector is not waiting for lower emissions outputs to be imposed by statute. It is already getting ahead of the curve by adopting combined energy efficiency and lower emissions features – recognition that reducing energy consumption can also be good for business. ●