How Do We Achieve A Sustainable Future for Freight Transport?

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TGMatrix
INTELLIGENT MATCHING

Introduction

No business article is complete these days without some reference to 'sustainability'. Too often this looks like merely fashionable window-dressing, but for road freight transport, 'sustainability' is an imminent and existential challenge.

The problem is simply stated. The European Commission reports that while road freight represents just 3% of vehicles, they account for 29% of road derived emissions. Consisting of carbon dioxide and other greenhouse gases, but also pollutants such as oxides of nitrogen and particulates. Exhaust emissions aren't the only issues either. Fuel spills, tyre 'crumb', accidents, noise & vibration, congestion, infrastructure degradation... It all has a real impact on the health and wellbeing of people and the environment. Whether at local, regional or higher level it still says nothing of future 'climate change'.

IT'S NOT JUST ABOUT HUGGING TREES

The demand for ever-tighter regulation of transport operations is insatiable. Tough new rules like the Euro 6 standard are already deemed inadequate. The risk? Seriously damaging an industry that forms the life-blood of modern civilisation.

And there's the rub. 'Sustainability' isn't just about keeping plastic out of the oceans and carbon out of the atmosphere. To sustain and improve human existence, saving the planet is a necessary but not a sufficient condition.

As Professor Alan Waller, Chairman of ELUPEG (European Logistics Users, Providers and Enablers Group) puts it:

> ***"There are three issues – economic sustainability, environmental sustainability, and social sustainability. Just hugging trees doesn't help".***

It is easy to imagine superficially attractive 'green' measures, that would increase costs so much that economic sustainability fails. Entire economies suffer where goods and services can no longer be provided affordably. If goods and people can't be brought together, in towns and cities, what future is there for society or social sustainability? Arguably, the cost and difficulty of serving urban areas is already having this effect.

The Problem

Sustainability Needs Urgent Action

If we want a sustainable future for our own companies and a sort of society that enjoys the benefits of reasonably free movement of goods and services. It requires the transport industry to take some serious proactive measures, and soon.

An industry with notoriously slender margins and many seriously undercapitalised operators will understandably be tempted to wait for 'real' breakthroughs. Autonomous vehicles, fully electric HGVs, drones and hyperloops are still maybe a decade or more in the future, and we need action now.

"The only way we will be in business in the next 4 decades is if we **DO THINGS DIFFERENTLY** to ensure that the planet is healthy and all people in our extended supply chains have the opportunity to thrive."

"We must work together, because the engine of global business – its supply chain – is broken, and requires **TRANSFORMATIONAL, CROSS-INDUSTRY COLLABORATION TO FIX IT.**"

"Although we as an industry are starting to make good progress on our own operations, we haven't yet made enough progress in the broader supply chain. While efforts have been well-intentioned, the current level of progress is nowhere near enough" and "**THE SCALE OF INTERVENTION NEEDS TO BE MUCH BOLDER!**"

Grant F. Reid

CEO, Mars Inc.

Climate Week 2017

The Solution

Fortunately, there are many avenues already open to explore. Equally fortunately, many of these will probably be, in the medium term at least, highly beneficial for their adopters.

In 2016 the World Business Consortium Sustainable Development's (WBCSD) Road Freight Lab looked at six potentially high-impact measures that the industry could adopt.

Alternative fuels, drivetrains, including biogas, and electric drives for light/short distance vehicles, are well beyond the pilot stage and are only held back by lack of infrastructure for refuelling/recharging.

'Vehicle-centric efficiency measures', from advanced aerodynamics to more efficient on-board refrigeration plant, are already selling points for new vehicles.

Training drivers in 'eco-driving' has been shown to improve fuel efficiency by 7%... Considering this doesn't require a large investment, it is worth having as we brace for the next oil shock.

Their fourth measure illustrates the point that environmental sustainability cannot be viewed in isolation from economic and social sustainability. The study considers the trend for ever-tighter delivery 'windows', dictated by retailers and other customers.

Tighter windows tend to increase energy use and emissions. Yet the study suggests that relaxing delivery windows from one hour to five hours could lead to savings of 25%.

Finding A Way Forward

Two overlapping approaches that are currently available and have enormous potential, imply the widespread adoption of sophisticated Information Technology. These are asset optimisation, and asset sharing.

Asset optimisation consists of finding the best reconciliation of several conflicting objectives: driver time, weight/capacity, distance and fleet size. Capacity and distance can be seen as proxies for environmental sustainability. Given the skill and recruitment problems in the industry, driver time and the time of traffic managers should also be counted as a non-sustainable resource.

Despite the availability of Computerised Vehicle Routing and Scheduling (CVRS) systems, up to 85% of hauliers attempt this task manually. This is possibly because CVRS systems tend to be 'one size fits all' and don't fully reflect the priorities of the company, its customers, characteristics of resources or the transport network.

Even in the relatively primitive days of 2004, a Freight Transport Association survey found that CVRS users reported:

- 75% increased efficiency
- 58% reduced operating costs
- 38% decreased fuel costs
- 29% reduced fleet size
- 29% reduced total mileage.

More recent (2014) research suggests a typical overall cost savings of Between 5-30%.

WBSCD say *"similar benefits may be available to smaller operators since the solutions found by CVRS to achieve the objectives are often counter-intuitive" and with Software as a Service (SaaS) systems now available, CVRS is an affordable option.*

Working Together to Achieve Common Goals

Overlapping with asset optimisation is asset sharing and, in transport, this can take several forms.

Intelligent Freight Matching is the matching of 'backhaul' opportunities with suitable, local loads. It necessarily includes routing and scheduling and can therefore create solutions optimised for sustainability factors.

Across Europe, the EU reckons that more than 25% of truck mileage is 'empty', while over half is at less than full load… and the figures are not improving. In the UK it's nearer 30% empty. That's 150 million miles a year of unnecessary driving, and it's still getting worse.

Some of this is structural. Prof. Alan McKinnon reported that in 2003 around 130,000 lorries travelled from Scotland to England empty, as 31% more freight was moved in the other direction. A later report in 2010 puts this as 190,000 lorries. But, around 70% of trucks are effectively dedicated to particular customers or lanes and probably don't even look for a back-haul. So, any loaded movement out of Scotland that returns empty could be accounted an almost criminal waste of resources.

Intelligent Freight Matching on its own is potentially a powerful sustainability tool. Among other savings, it could 'save' 350,000 tonnes per annum of CO2 equivalent (CO2e).

Asset sharing can also take other forms. Horizontal collaboration between major shippers, treating transport and warehousing capacity as a common resource, is becoming more acceptable. This has been aided by authorities recognising that competition on the supermarket shelf is not compromised by collaboration in logistics.

Big brands can make their own arrangements for this sort of collaboration. But to create similar opportunities for smaller firms, some form of independent, IT enabled intermediary is probably needed.

WBSCD say ***"Existing cross-business arrangements, such as those underpinning backhaul, provide clear evidence that more extensive collaboration can be envisioned".***

Urban and Last Mile

Urban and last mile freight present very different challenges:

- Smaller load factors
- Multiple drops
- Less predictable requirements
- Less stable network environment in terms of congestion and roadworks
- Often a complex medley of regulations from congestion charges to limits on delivery times or vehicle types / sizes.

One solution may be 'edge of town' Urban Consolidation Centres, but the jury is still out on these. While there have been a respectable number of pilot schemes across Europe, only a few have continued to operate…

Usually they successfully reduce total urban mileage and congestion caused by large vehicles. But they can also increase the sheer number of smaller movements/vehicles on the road. Additionally, they are typically only viable with large numbers of users, and sufficiently large edge of town sites are hard to find.

To be efficient they would need to operate around the clock. However, that may clash with access restrictions designed to improve other aspects of urban sustainability. Alternatively, retailers may have to pay extra labour costs to receive out-of-hours deliveries.

That, incidentally, raises a general problem with sustainability issues. Often the recipient has no visibility of how decisions on delivery time, frequency, quantity and so on impact on sustainability.

There are many reasons effective UCCs will depend on intelligent and highly automated systems. Primarily, these are multiple users trying to access small sites, complex cross-docking operations and tight timings.

Re-planning and rescheduling 'in real time' (and notifying recipients of changes) is bound to be a routine requirement. Statistically, at least one inbound vehicle is certain to be caught in traffic. So, consolidation planning may need to be sensitive to road and traffic conditions a hundred miles away.

Multi-Modal Can Save Up To 65% Of Carbon Emissions

Another potential contributor to road transport sustainability, is to take more traffic off the roads. Around 25% of UK rail freight capacity is not currently being utilised. We see a distinct future for 'aggregators' using intelligent systems to 'assemble' full trainloads of demand. Even more so for systems that also handle the associated initial and final road legs.

Sadly, most former city freight yards, which could have made ideal locations for multimodal UCCs, have been sold off. But there are continental examples of rail, and indeed river, freight feeding UCCs.

Creating Opportunities with Intelligent IT

There are many measures that transport companies, individually or in concert, can take to improve their environmental sustainability profile. Done whilst supporting social sustainability will also ensure their own economic sustainability.

Beyond the purely technical measures, intelligent IT is already creating opportunities for new business models that involve direct or mediated collaboration. They will save, not just natural and environmental resources, but cash and labour – both of which have 'sustainability' issues of their own.

But if the industry doesn't get its act together, it risks being legislated at great cost to business and ultimately the industry.

About TGMatrix

TGMatrix is a fully automated, intelligent freight matching solution for shippers and carriers who are looking to optimise and automate the complex processes of freight transportation.

Our product instantly reviews 1000's of variable to determine the best possible match, based on specific freight / company objectives that will result in 5-15% cost savings for shippers, double carrier margins, dramatically improves sustainability and provides real time, actionable business intelligence.

Unlike typical digital freight brokers, freight exchanges or load boards, we are neutral third party, what takes no cut from the profit made, instead we offer a SaaS based annual license, depending on volume, that represents significant ROI's for both Shippers & Carriers.

Frost & Sullivan

"An industry-leading algorithm... [which] could potentially be a trendsetter in the industry. By ensuring transparency, improving efficiency of decision making and considering aspects such as total carbon footprint, ...TGMatrix has added the much-needed intelligence in the freight matching process"

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– The Intelligent Approach to Freight Matching