



# LOGISTICS BEST PRACTICE GUIDE

*A guide to implement best practices in logistics in order to save energy and reduce the environmental impact of logistics*

(2<sup>nd</sup> edition, 2010)



## Foreword 2<sup>nd</sup> edition

Since the last edition of CLECAT's Best Practice Guide (BPG), which was published on the occasion of the Freight Forwarders' Conference in 2009, the BPG has garnered a lot of positive reactions from freight forwarders, users as well as other providers of logistics services. The various best practices listed in the first edition have been an inspiration for other companies, to strive for environmental and economical excellence, combining these benefits with only small changes in the area of technology, management or their workforce. One of the aims of the BPG was indeed to show that both economic advantages and reduction of the environmental impact of transport can go hand in hand.

For the 2<sup>nd</sup> edition the CLECAT Secretariat has managed to double the amount of the best practice cases. Especially the [IGD website](#) has been a rich source of information. The new best practices have been added to the relevant section: you will find them in [Section I – Technical \(21 - 46\)](#), [Section II – Organisational \(30 - 81\)](#), [Section III – Workforce \(15 - 19\)](#), as well as in the new [Section IV](#).

Please note that since the last publication information on some of the best practices are not available through a direct link anymore. If this is the case we have stated it in the 'Link/More information' section. In case of interest we would advise to contact the relevant company.

We also thank the participating companies and CLECAT members that have provided information for the best practices published in the BPG today.

At the end we also want to stress the importance of receiving relevant information from logistics companies. If you have developed and tested a best practice, which you feel could have a place in CLECAT'S BPG, please send your information to the CLECAT Secretariat ([info@clecat.org](mailto:info@clecat.org)). We will then evaluate whether we can include it in the 3<sup>rd</sup> edition, which is scheduled to be published on the occasion of the Freight Forwarders' Conference 2011.

CLECAT Secretariat

Brussels, November 2010

# **CLECAT's Best Practice Guide to save energy and reduce emissions**

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# Preface

## **I. Introduction**

The challenge to mitigate the consequences of human activities on the environment has become one of the major concerns characterising and influencing today's business world. The battle to preserve our environment has gained momentum over the years and is now part of the policy of a growing number of enterprises. The ongoing battle against climate change owing to GHG emissions has also come to the fore in policy and business alike. These two different yet intertwined predicaments have not failed to impact upon logistics activities, questioning some of the basic principles of this discipline. Transport services appear to be one of the biggest sources of CO<sub>2</sub> emissions and some of the transport emissions are also pollutants. This is however an industry, which is, on the one hand, indispensable for growth and employment and yet on the other hand has enduring difficulties freeing its dependence on fossil fuels .

This being said, logistics is not only transport: a more wide-range view on what can be done to improve the environmental performance of logistics can contribute to our industry's footprint in an area where legislation is finding it increasingly difficult to step in.

The need to decrease emissions, but also to save energy and money, should be at the heart of our companies' thinking. Luckily these needs – lessening emissions, decreasing the use of energy and saving money – are connected and may respond to the same drivers: not only the logistics service provider, but also the transport user are likely to benefit from savings that may be environmental as well as economical. There is an abundance of possibilities and many companies have already found ways to improve their business models with individual solutions, which have the potential to be developed into best practices. Their experience is the source of the best practice models that benefit and encourage others to do the same.

In other words we are not trying to re-invent the wheel in this booklet: we are trying to disseminate the best practices that we have managed to collect from different sources, and make them available to others, whether they are logistics service providers or users. Whilst this may appear a minimalist approach, we believe it can be extremely helpful in an area where sharing knowledge and know-how is crucial.

## **II. Aim of the exercise**

### *1. Promoting best practice*

CLECAT has therefore decided to produce a guide for companies that have the intention to implement best practices in their operations, with the aim of leading them to select the best case in their business environment, in order to achieve an improved sustainability and environmental performance in their activity. This paper compiles several of these best practice cases for companies to evaluate, apply and use.

This paper focuses to a large extent on possible savings in resources, especially in the road sector. As regards other modes of transport, their share in the modal split is much smaller, they also seem to generate less best practice examples than is the

case in road transport. Whether this is the result of a lack of best practices in general, or whether CLECAT did not receive enough feedback on this point is not completely clear at the moment. We have also tried to include best practice cases that are not necessarily related to transport, they include the economical use of heating/lighting/paper, the introduction of better recycling systems or more efficient waste disposal, analysis of fuel consumption, optimised servicing, and journey management.

Best practices work properly, if people apply them on a daily basis. As stated above, this document is a living document, which will be circulated to CLECAT members once the first edition is published. The majority of best practices, described in this booklet are brief descriptions covering specifics like the aim, the time line and the costs of the relevant best practice. The Best Practice Guide is envisioned as guidance material and thus not as an exhaustive explanation or description. If more information is required the CLECAT Secretariat will be more than happy to either establish direct contact with the BP owners or provide more detailed information if already available. Additional information is also readily available on the internet: the relevant web addresses are provided beside the BP example.

As a starting point CLECAT has compiled a list in which areas best practices can be found and are useful. The general list aims at providing food for thought for new ideas and/or as incentive to report to CLECAT any positive achievements a company has developed for its business. In the sections following, one can then find the concrete best practices, divided into best practices divided into a Technical and an Organisational/Workforce section.

At the end of this document you will find a short literature review with the most relevant sources and further information.

## 2. *Best practice is you!*

We understand this exercise as a work in progress; this means we have the intention to receive what CLECAT Members (and others) think of reporting as good practice, whenever they are made aware of a positive experience.

To reiterate: this compilation has another important aim, namely promote active participation and new additions to the Best Practice Guide from the transport industry in general, and from the forwarders' community and CLECAT member companies in particular. The Best Practice Guide is a compilation that is meant to be an inspiration to others and will guarantee a wide-range appeal and publicity in exchange for information on a company's efforts to promote environmentally-friendly, sustainable transport solutions.

We therefore hope that you can also get inspired by reading the examples provided in this guide, and send us *your* best practices as soon as possible. Keep in mind: this is an ongoing exercise and a living document. Due to the nature of best practices, that are developed, refined and then possibly exchanged again, once new technology or management improvements have been developed, this publication can never be complete or finished. Every additional best practice will make it however more complete and meaningful. Please do contribute to making it as complete as possible.

Some may see this in the light of competition. We do not believe it should be seen as in a competition between companies for the same market segment, but as a means

of letting others benefit from other experiences. The addition of your best practice is a business chance, not a danger to your business. The inclusion in this compendium may result in a better or greener public image of your company, raising its profile with possible future clients.

We therefore encourage both Members and third parties to send their feedback and experiences to the CLECAT Secretariat ([info@clecat.org](mailto:info@clecat.org)) for possible inclusion in the next editions. A short abstract, possibly with the results of the best practice and a link, providing more information, would be enough. This only takes a few minutes and will provide your company with great visibility.

### **III. General areas for improvement**

#### *1. Technology*

There are various improvements in the area of technology, which can benefit a company enormously. Sometimes best practices will only bring minor changes and benefits in a business process, sometimes one can make heavy investments, which although will only pay off after some/long time of usage, the savings will build up over time and be very significant. Whether the amount of money saved from new technology justifies the (sometimes big) investment in new machinery/software or whether the economic benefits of introducing new technology sometimes remain a risk, all are ideas best evaluated case by case. The environmental benefits on the other hand are often clearly noticeable, but again it often remains unclear which are the economic benefits, or even worse, which are the hindrances leading to the sad equation "good for the environment: bad for business". However, it can not be stated often enough, and the best practices shown in this document confirm this perception: many best practices that have had a positive impact on the environment are also beneficial in their economic performance. This can happen either directly, e.g. through less fuel consumption, or indirectly, e.g. because customers are looking for a CO<sub>2</sub> neutral transport and reward the positive efforts made by their service provider by selecting their service over and above others.

The following paragraphs are a general introduction to this section on technology and can maybe generate some further ideas in other areas.

Before starting with **evaluating the benefits** of any best practice, the company in question should define for itself what is to be considered "green" in their perception. As soon as it is clear what one wants to achieve, it is possible to research specific best practices, which best suit the company's business needs. An analysis of the company can help to see what effects one can measure directly and what can only be measured indirectly. Transport related benefits will always be indirect, if a company does not have its own fleet. It is a critical first step to take informed and intelligent decisions.

On this specific point we wish to suggest that elements of environmental best practice may be usefully introduced in the quality management of the company, even before contemplating environmental standards such as ISO 14000<sup>1</sup>.

Just to quote some of the most common measures that are advantageous in road transport logistics, new kinds of radial **tyres** technology, with proper maintenance,

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<sup>1</sup> [http://www.iso.org/iso/iso\\_14000\\_essentials](http://www.iso.org/iso/iso_14000_essentials)

can run over 100,000 kilometres on the original tread. Another option is re-treadability, which means that truck tyres are produced so that they are capable of being re-treaded two or more times with careful and observant maintenance. Not only should a company be trying to reduce waste during production, it can also recycle used tyres for energy production. After retaining re-treadable casings, burning whole tyres in cement furnaces and power stations is becoming more common overseas and particularly Australia - with tyres producing more power than coal.<sup>2</sup>

A company has to keep its **truck fleet** up to date, because newer trucks will for example feature the latest emissions-control technologies. With new software, companies have the possibility to continually monitor engine performance. Investment in new technologies will help reduce emissions *and* energy consumption at the same time.

Another idea would be to have primarily team-driven vehicles, which would result in fewer empty runs (by generating a lot more revenue per kilometre). For this strategy to be successful there should be no imbalance between inbound and outbound freight: this means that one of the greatest efforts should also be made to adjust the commercial policy in order to archive this result. Transportation management systems can help analyze identifying profitable/unprofitable routes.

On Route planning, please see section 3 below.

It is possible to use a weight-based calculation to determine the amount of carbon a shipment emits and then offset that through the purchase of **carbon credit**, which can be traded in certain credits exchange platforms.<sup>3</sup> CLECAT is closely monitoring any related activity in the EU, which would introduce a harmonized method to calculate the amount of CO<sub>2</sub> emissions for a specific transport mode or quantity of freight.

With the installation of **alternative energy sources**, e.g. solar photovoltaic<sup>4</sup>, solar hot water, wind, ground source heat pump, and biomass systems, companies can save energy/heating in their office buildings as well as in their warehouses. Offices and warehouses that are built with modern eco-friendly criteria can make significant cuts on the company's energy bill.

When evaluating facilities and vehicles, **energy consumption data** can help find energy sources of energy waste, e.g. electrical equipment, which uses energy just by being in standby mode.<sup>5</sup> As it was noted above, the identification of a carbon footprint is an important feature for conducting any kind of 'green business'. There are companies, who can deliver such a service<sup>6</sup>, but it would be more attractive and valuable to come to a European standard, instead of struggling with several conflicting solutions.

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<sup>2</sup> See for example: [http://findarticles.com/p/articles/mi\\_qa5356/is\\_199806/ai\\_n21423255/](http://findarticles.com/p/articles/mi_qa5356/is_199806/ai_n21423255/)

<sup>3</sup> "8 steps to a greener supply chain"

<sup>4</sup> See also Best Practice I.3.: FedEx plans to install the largest rooftop solar-electric system in the US at its distribution hub in Woodbridge, N.J. This is the fifth solar power project for FedEx and will produce 2.42 megawatt solar power.

<sup>5</sup> For general energy consumption data in the transport sector in the USA, see the Transportation Energy Data Book: [http://www-cta.ornl.gov/data/tedb27/Edition27\\_Full\\_Doc.pdf](http://www-cta.ornl.gov/data/tedb27/Edition27_Full_Doc.pdf)

<sup>6</sup> E.g. <http://www.carbonfootprint.com/index.html>: aimed at helping small businesses all over the world understand their impact on climate change

**Environmental reporting**<sup>7</sup> is sometimes expected from appropriate authorities in EU Member States. What looks at first sight like a bureaucratic burden, can also help identify sources where energy is wasted. The best idea is to introduce elements of environmental reporting on a voluntary basis and make it a promotional feature of the service.

**Packaging reduction** will inevitably lead to better economic performance, as well as being an advantage for the environment. Often packaging has already been optimized, but it everyone's experience that packing still offers ample possibilities for improvement. It is worth re-thinking the packaging policy for many products and adjust/retrofit to the newest technology.<sup>8</sup> It may also be worth considering this activity as an additional and innovative service that logistics service providers could propose to their customers.

Waste itself is inevitable and unavoidable, but there is always room left for **waste reduction**, which will lead to a better environmental performance as well as economic benefits through savings on waste disposal fees. Recycling is an option to enhance the environmental performance, in other words disposing/recycling items like computers, monitors, keyboards and fluorescent bulbs can save money and can also be proposed as a service to third parties.

Only very few of the best practices deal with bio-fuels and additives, as we feel this is a topic that is worth a more detailed and dedicated publication. The same goes for all new vehicle related technology (hybrid, electrical, hydrogen, etc.).

## 2. *Personnel*

In the area of personnel there are various possibilities to enhance both the economic and environmental performance at the same time. Thinking of logistics the most notable and well known is **driver education and training**, which focuses on making drivers aware of fuel-efficient driving, and contributes to enhancing the safety of both driver and goods. This generates savings in the form of lower insurance premiums, less energy consumption and better use of resources.

Examples of driver education measures can be found in the detailed best practices below. Some examples for driver education: teaching drivers about tyre maintenance and optimal tyre pressures etc. This contributes to lifting the current low levels of tyre maintenance and prolonging the life-cycle of tyres. Driver training programmes can give incentives to drivers who perform efficiently in achieving fuel economy through reducing idle time and keeping speed limits within a certain range: engine control modules can be used to set maximum speed limits, which again will help to diminish waste of fuel and accidents.

**Offices benchmarking tools** can improve the work flow. A company should calculate an ideal benchmark based on the type of office space, number of

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<sup>7</sup> See for example: [http://www.globalreporting.org/NR/rdonlyres/541615B9-9392-448F-AD2A-53C38F2524DF/0/SS\\_LogisticsTransportation\\_ENG.pdf](http://www.globalreporting.org/NR/rdonlyres/541615B9-9392-448F-AD2A-53C38F2524DF/0/SS_LogisticsTransportation_ENG.pdf) (Logistics and Transportation) or [http://www.globalreporting.org/NR/rdonlyres/0F09CCFF-C378-4B5F-9944-76E24679226B/0/SS\\_FinancialServicesEnvironmental\\_ENG.pdf](http://www.globalreporting.org/NR/rdonlyres/0F09CCFF-C378-4B5F-9944-76E24679226B/0/SS_FinancialServicesEnvironmental_ENG.pdf) (environmental reporting)

<sup>8</sup> E.g. Wal-Mart in the US urged their suppliers to reduce packaging and conserve natural resources. Through this initiative 667.000 metric tons of CO<sub>2</sub> will be saved. About \$ 11 billion is expected in savings from a 5% reduction in 10% of the global packaging industry.

workstations and standard occupancy. As a next step benchmarking should be carried out to be tailored to the specificities of the relevant building. The tailoring allows working hours, including weekend working, to be specified for each type of office space within the building. Details of catering, vending and IT equipment and machine/computer rooms can be added.

A very simple, but effective way to save electricity: **turn off lights (or other electrical equipment) when not used.** One has to keep in mind that it is **always** cheaper to turn lights off than to leave them on. Improving awareness of energy wasted can save up to 15% of energy costs.<sup>9</sup> However different kinds of lighting might require different solutions (e.g. High Pressure Sodium, like some of the lamps used in warehouses, cannot be quickly turned off and back on again).

To the same effect one should make good use of natural lighting, as most people prefer to work in natural light. One can do this by ensuring that windows and roof lights are not obstructed, and are regularly cleaned, inside and out. Blinds should be used only if necessary, as they are often left closed leading to artificial lighting being used, regardless of daylight availability. It is unlikely that glare will affect the same part of a building all day.

If a company is just establishing itself or it plans to expand and set up new facilities, it could be beneficial to locate these facilities in the **vicinity of employees'** apartments. Companies could otherwise also pay employees' public transport tickets, bicycles, and encourage car-pooling (driving together with other employees). The shorter the way of the employee to his work, the better the environmental performance and the performance of the employee due to less travel time.

It is fundamental that simple savings practices are promoted among the staff.

### *3. Smart/strategic logistics*

A third area of possible improvements, in addition to technology and personnel, is an area, which will be called smart or strategic logistics, i.e. the improved management of the supply-chain. In the main section further down you will find various examples of such smart logistics solutions. These have the great advantage over technology that the costs are limited and they will often remain as an integral part of the business process over a long period of time, while technology often has to be replaced after some years to have the newest or best available technology. The training of personnel is also producing long term effects, but personnel may leave (with the training it has received) and starting from scratch become necessary, once new employees are hired.

There are various ways to improve the management of the supply-chain. Some of the following examples have been put into practice by companies with great success. You will find more information of those success stories later in the document.

**Route planning** enables a company to identify less profitable (or more costly) routes, whose planning can be optimized. In commercial Route Planning less profitable routes can be abandoned to the competition, if no other solution is available. Modern computer programmes, in addition with tracking and tracing technology and reporting schemes, are able to calculate the best solutions and the best routes. Identifying a non-profitable route is the first step to amending the

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<sup>9</sup> <http://www.loseyourexcuse.gov/docs/lyefacts.pdf>

situation. Here software can also help, but often a forwarder will need to look for solutions without the help of management software, once the problem is identified (e.g. find new customers to decrease empty running).

**Intermodal solutions** can bring great benefits, because they combine the best of various modes of transport, possibly to improve the overall performance. When carrying goods from A to B, it is generally advisable to look for alternative solutions and compare them. It is thus possible to create geographical shortcuts in the trips (e.g. in several places in the Mediterranean), decrease the dependency on fossil fuel, whilst reducing greenhouse gas emissions. Transshipping cargo units may be costly and this is the reasons why it is essential to cut on costs wherever possible, e.g. by using the European Modular System at the end legs of intermodal trips.

**Smarter city distribution** is a planning system that enables forwarders to optimize the use of urban infrastructure and allows them to put the specificities of city delivery requirements to value. CLECAT has identified a series of public measures at European level that would help accommodate freight transport in inner urban areas, e.g. dedicated bus/HGV lanes, 24 hour delivery times, enhanced public transport use for passengers, building of infrastructure for electric vehicles, hybrid technology in busses and delivery vans, multi purpose city distribution centres, etc. At local level some of these measures have already been tested and successfully put in practise. As a forwarder, one should explore these possibilities, approach local policy-makers and administrations and start collective negotiations in order to achieve better managed freight transport even in city centres.

**The Consolidation of cargo** is one of the best techniques to cut costs and emissions. It increases logistics service providers' revenues whilst offering lower costs to shippers and providing environmental advantages to all. Consolidation works both in transit (groupage services) and when goods are standing still (third party warehouses) Consolidation has only advantages: less freight traffic, less environmental damages, better utilization of vehicle fleet, less space occupancy, etc. The only problem is overcoming the "ownership" prejudice, which often makes ones' "own" warehouse, truck, van, aircraft look better than a shared one. There will be Best Practices examples further on in this document about consolidations and their advantages.

#### **IV. Concluding remarks**

CLECAT hopes to provide with this guide a tool for companies to improve their way of doing business, primarily from an environmental point of view, but also from an economic point of view. Best practices are an important tool to gain sometimes small, but sometimes also big improvements that in the long run can be visible in a company's balance at the end of the year.

While the term 'best practices' implies that some source has the final answer to a matter in dispute or disarray, one has to acknowledge that best practice, in the sense it is used in this document (i.e. any kind of improvement in technology, operation or workforce management, resulting in economic and/or environmental benefits for the relevant company), should never be seen as a final solution, but rather as one important step towards a constant improvement in the flow of business operations. In this light we believe that sustainability best practices should be

inserted straight into the quality management of our companies and become an integral part of it.

The practitioner is best placed to evaluate a new measure and report on its success for the benefit of its company and, by means of this or similar instruments, the trading community, its customers and the environment at large. For this reason all are encouraged to submit their experiences and suggestions, especially the very rarely seen best practice examples in the area of air, rail and maritime transport would provide a welcome and important addition to this Best Practice Guide.

# BEST PRACTICE EXAMPLES

The following part is the most important part of this document: the descriptions and references to the various best practices experienced and reported by companies and organisations. It is divided in 4 different sections: best practices relating to Technical, Organisational and Workforce aspects. The 4<sup>th</sup> section covers best practice compilations and other best practices that do not comfortably fit into one of the three other categories.

Each best practice case will contain a header, which describes why this is to be considered a best practice for a given company. This is followed by the aim which stood at the beginning of the company's decision to improve its performance. A short methodological presentation follows, whilst at the same time it precedes the costs analysis (if available) and the results. More information is normally available at the web links that appear at the very end of each section.

It has to be stressed that there is almost always more information available for each of the best practices listed hereunder. This CLECAT document just gives the highlights. All are welcome to contact CLECAT's Secretariat for specific questions. Your question will either be answered directly or you will be put in contact with the companies that successfully introduced the related measure into their business paradigm.

## **I. Technical**

### *1. Information Technology for Efficient Road Freight Operations (Department for Transport, UK with RHA and FTA)*

**Aim:** Help logistics and transport professionals to better understand a range of different IT systems that can be used within their operation, and offer practical advice to help them choose and implement a system.

**Methods:** Use Fleet Management Systems to gain extra benefits: Fleet management systems are essentially advanced database applications that can help you manage the day-to-day administration necessary to keep vehicles on the road (keeping track of when vehicles need to be inspected, when MOTs are due, etc), and help you manage information about your fleet over time which you can use to generate reports and KPIs on a wide range of operational areas (including fuel use, accidents, maintenance costs and service history). Fleet management systems are generally made up of a number of modules or database tables on different operational areas, such as vehicles, drivers and the workshop, and these are all tied together to allow you to generate information on your fleet activity as a whole.

In principle there are different factors, which can be managed to achieve efficiency gains: managing deliveries (paperless manifest/POD systems), one freight exchanges, traffic information systems, simple journey planning tools, CVRS<sup>10</sup> systems, haulage pricing tools/job costing systems, managing vehicle systems (in-cab communication systems, vehicle tracking systems, satellite navigation systems, vehicle diagnostics systems), managing products (warehouse management systems, voice picking systems, product scanning and tracking systems – RFID, supply chain planning and management systems), managing loads (trailer tracking systems, telematics-based temperature control monitoring systems, vehicle weighing systems,

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<sup>10</sup> Commercial Vehicle Safety Regulation (**CVSR**)

security systems), managing drivers (driver information systems, digital tachographs and hours compliance tools), and managing fuel (fuel recording systems).

Steps to take: identify the need - select the system - implement the system - monitor and improve the system (there are further steps and cautionary principles mentioned in the document).

Costs: € 52.250 (for a case study)

Results: Financial benefit of € 123.000 each year.

Link / More Information: [Freight Best Practice](#)

## 2. Telematics for Efficient Road Freight Operations (Freight Best Practice / Department for Transport, UK)

Aim: Telematics can provide information about performance that may be difficult to collect by other means. This data can identify mechanical problems or poor driving styles that can have a significant adverse effect on operating costs: excessive or deteriorating fuel consumption; over-revving within a gear; harsh braking; gear changing at inefficient engine revs; accelerator pedal pushed to the floor when accelerating.

Method: Report identifies 6 key areas, where telematics can be useful: Vehicle and driver data; paperless manifest and proof-of-delivery systems; vehicle and trailer and asset tracking systems; satellite navigation systems; safety and security systems

Potential benefits of telematics - reduced fuel consumption through effective fuel monitoring, to identify losses and improve future vehicle specification; reduced fuel consumption and maintenance costs through effective driver performance costs through effective driver performance monitoring, promoting improved driving styles; reduced accident rates which could lead to lower insurance costs; increased vehicle and load security; vehicle and driver information can be used to set up driver league tables.

Costs: for additional technical equipment and improvements

Results: Very wide applicability of telematics, which can be used to solve various problems. Example areas for improvement are high vehicle maintenance costs, high road accident rate, inaccurate time sheets, invoicing errors, or unpredictable traffic delays en route.

Link/More Information: [Freight Best Practice](#)

## 3. Solar roof to save energy (FedEx/ USA)

Aim: substituting power generation with renewable sources using existing assets.

Method: FedEx Ground plans to install the nation's largest rooftop solar-electric system at its distribution hub in Woodbridge, N.J. The solar power project is the third between a FedEx operating company and BP Solar and the fifth solar power project for FedEx. The 2.42 megawatt solar power system will cover approximately 3.3 acres of rooftop space with approximately 12,400 solar panels. When completed, the system will be capable of producing approximately 2.6 million kilowatt-hours of electricity a year and could provide up to 30 percent of the hub's annual energy needs.

As part of the agreement, BP will install and operate the solar power system and FedEx will purchase the power generated. Installation is scheduled to begin in August 2009 and expected to be completed by November 2009.

Results: When the system is fully operating, the combined environmental benefits based on a projected annual reduction of approximately 1,867 metric tons of CO<sub>2</sub> emissions, are equivalent to one of the following:

- More than 340 passenger cars not driven for one year.
- 802,129 litres of gasoline not burned.
- 4,300 barrels of oil not consumed.

- 259 households' electricity use for one year.
- 47,872 tree seedlings grown for 10 years.
- 13 acres of forest preserved from deforestation.

Data is derived from the U.S. Environmental Protection Agency's greenhouse gas equivalencies calculator.

Link/More information: [FEDEX](#)

#### *4. Fuel Saving Devices (Department for Transport, UK)*

**Aim:** It is important for managers to find the solution custom-made for the requirements of each company. The guide provides several examples and tips how to discern which methods and technologies will give you the most benefit.

**Methods:** Be aware of the 5 stages of the fuel process: delivery/storage/dispensing; vehicle tank to engine; through engine to flywheel; flywheel to road wheel; energy to vehicle motion - fuel can be lost at every one of these stages.

Become familiar with the various product types: aftermarket fuel additives; combustion improvers (catalysts and magnets); lubricating oils and additives; claims for oil additives; Euro IV and Euro V Legislation (operators at the moments can meet these requirements using either the Selective catalytic reduction or Exhaust gas recirculation methods).

Key to a successful introduction is product testing. Avoid poorly organised trials, ignoring seasonality, poor quality data. If possible contact manufacturers who could possess the test results on various parameters, which one need to take into account.

**Costs:** Additional equipment / fleet upgrade

**Results:** Fuel savings, depending on which method is used

Link/More Information: [Freight Best Practice - Fuel Saving Devices](#)

#### *5. Reduction of Waste through an Oil Treatment Plant (Amals)*

**Aim:** to have waste water treatment as additional service for customers.

**Costs:** ca. € 1 million

**Results:** overall reduction in waste and more efficient processing. A positive return of investment after 5 years. High customer satisfaction.

Links/More information: [IRU Best Practice Guide](#)

#### *6. Reduced Water Consumption by Using a Modern Washing Facility (Berger)*

**Method:** investment into a new washing facility, which allows the company to wash 9,000 trucks per year.

**Costs:** € 100,000.

**Results:** wash-water usage reduced by almost 50%. Reduced clean-water costs from € 1,835 down to € 917.

Links/More information: [IRU Best Practice Guide](#)

#### *7. Introduction of Power Saving Technology (Sørensen)*

**Aim:** reduce electricity consumption.

**Methods:** several technical improvements, e.g. motion detectors and relays for refrigerator compressors. The electricity meter is read regularly to monitor electricity consumption.

**Costs:** € 2,500

**Results:** in the first 6 months after installation € 1,200 could be saved. The investment will be amortized in just over one year.

Links/More information: [IRU Best Practice Guide](#)

#### *8. Double-deck Cargo for Increased Efficiency (Emons Cargo)*

**Aim:** to reduce the number of transport movements by developing a double-deck truck.

**Method:** based on a technique used in the glass industry, trailer capacity was increased from 33 to 52 europallets. All trailers are equipped with their own handling equipment.

**Costs:** a double-deck trailer costs € 90,000.

**Results:** 52% additional capacity compared to a conventional 33-pallet trailer, equalling a 34% reduction of kilometres driven. 5% of all full-load shipments in Europe would be suitable for transport with the double-deck.

**Links/More information:** [IRU Best Practice Guide](#)

#### *9. Use of Intermodal Transport (Ewals Cargo Care)*

**Aim:** to enhance and draw advantages from intermodal transport.

**Methods:** Ewals has set up a hub-and-spoke network for long-distance haulage. At least two modes are used to transport the cargo from pick-up to delivery.

**Costs:** no extra costs, because intermodal transport over long distances is competitive with road transport.

**Results:** CO<sub>2</sub> could be reduced by at least 32% in comparison to road transport. The intermodal transport has reached and even bettered the goal of 92% utilization.

**Links/More information:** [IRU Best Practice Guide](#)

#### *10. Monitoring Fuel Consumption (Ewals Cargo Care)*

**Aim:** Reducing fuel consumption

**Method:** development of special data sheets to monitor fuel consumption per truck. Processing of the data with the help of a computer programme.

**Costs:** none (sheets were developed during working hours)

**Results:** management can result quickly to unusually high fuel consumption. Employees are motivated to drive economically, because they will be compared to their colleagues.

**Links/More information:** [IRU Best Practice Guide](#)

#### *11. Reduction of Emissions by Use of Low-emission vehicles (H.P Therkelsen A/S)*

**Aim:** lower emission with the purchase of up-to-date EURO level trucks (at that time EURO 3). Because they have a higher fuel consumption, the company launched an initiative to increase transport efficiency.

**Methods:** investment in new technology (navigation systems and modern communication technology).

**Costs:** € 350,000 in new communication technology.

**Results:** Significant reduction in NOX, HC and CO<sub>2</sub> emissions. Improved information flow means better co-operation between scheduler and driver as well as the company and its major customers. Drivers are motivated by the opportunity to drive new, modern vehicles. Because of the new communication system, they are also less disturbed by phone calls and paperwork.

**Links/More information:** [IRU Best Practice Guide](#)

#### *12. Improved Vehicle Utilization through Mobile Sludge Drainage (Joma Slamsugningsservice AB)*

**Aim:** The company searched for suitable technologies to reduce environmental impact. The Moos KSA system, with a specially equipped tank vehicle, was introduced for suctioning sludge from cesspits. When the waste water is sucked up into the vehicle's tank, a polymer is added that causes the sludge to flake, making it easier for the water to pass through the tank's filters.

**Method:** The project owner decided to focus on the Mobile sludge drainage concept and proposed this idea to its main client, Gislaveds commune (the local authority). The authority approved the concept and the company opened negotiations with the equipment supplier, Simon Moos in Denmark.

**Costs:** Equipping a truck with the Moos KSA system involved extra costs of about SEK 517,000 (€ 54,600).

**Results:** Driving distances, and thus emissions, have been radically reduced because the tank does not need to be emptied so often. Also, among other positive results, operating costs are approximately one sixth of those of conventional equipment because of the reduction in driving distances.

**Links/More information:** [IRU Best Practice Guide](#)

### *13. Eco Guardian – Lower Emissions and Fuel Consumption by a Comparative Trial of Vehicle Technologies (J. W. Suckling Transport Limited)*

**Aim:** The objective of the Eco Guardian project (stage 1) was to conduct a comparative trial between two initially identical vehicles, one of which was then equipped with particle filters and operated on ultra-low-sulphur diesel (ULSD). The trial covered fuel consumption, emissions of the four main air pollutants (HC, CO, NOx and particles) and the costs involved.

**Method:** The measure was verified twice, the first time immediately after implementation (first test), the second time after six months in use (second test).

**Costs:** The cost of the tests amounted to ca. € 35.500.

**Results:** Reduction in total costs through higher fuel efficiency. Fuel efficiency: The Eco Guardian vehicle recorded an improvement of nearly 2% in fuel consumption against the control vehicle. Emissions: The Eco Guardian vehicle recorded significant reductions in emissions of all four air pollutants.

**Links/More information:** [IRU Best Practice Guide](#)

### *14. Water-saving Equipment and Use of Rainwater for Vehicle Cleaning (Metzger Spedition GmbH)*

**Aim:** High-pressure cleaners produce large volumes of wastewater.

**Method:** A new water-saving high-pressure cleaner was put into operation in 1996. It has led to a significant reduction in water consumption and the associated costs. The installation of water cisterns enables high-priced drinking water to be substituted by rainwater (which is free of charge).

**Costs:** The price of the high-pressure cleaner unit was € 2.820.

**Results:** The costs of drinking water and sewage disposal were reduced by more than 50% for 1999 compared with 1995.

**Links/More information:** [IRU Best Practice Guide](#)

### *15. Reduction of Water Consumption (Transportes Campillo SA)*

**Aim:** The goal was to reduce water consumption at the company site in Valencia.

**Method:** The following measures were taken: daily monitoring of the water meter; monthly and yearly recording of water consumption; inspection of the plumbing system; purchase of a high-pressure truck washing system; installation of a drip watering system for the gardens outside the building; installation of toilets that use less water for flushing

**Costs:** The cost of the high-pressure washing system was about € 2.750. The drip watering system for the gardens cost € 3.365.

**Results:** the consumption of drinking water was reduced by nearly 50%, reducing company costs by € 800 per year.

**Links/More information:** [IRU Best Practice Guide](#)

#### 16. Hybrid shunting locomotive (Port of Rotterdam/ Netherlands)

**Aim:** ALSTOM Transport, in cooperation with the Port of Rotterdam Authority and Rotterdam Rail Feeding, is starting up a practical trial with a hybrid shunting locomotive.

**Methods:** The new locomotive saves energy by reusing braking power. The difference between conventional and hybrid engineering is in the drive technology. The diesel engine in the hybrid locomotive is smaller, and in principle is not kept running during the often long waiting times in the shunting process. The auxiliary and drive systems are then powered by a battery. With a hybrid locomotive the diesel engine runs at maximum capacity only when there is a demand for maximum power or in order to charge the battery. Because of the relatively small diesel generator and the battery pack, savings can be made on fuel and maintenance costs, and so the investment in such a locomotive can be recouped in just a few years and the emissions of exhaust fumes, particulates and noise substantially reduced.

**Costs:** unknown

**(Estimated) Results:** Alstom expects to achieve fuel savings of at least 40% and to halve the volume of CO<sub>2</sub>, NO<sub>x</sub> and particulate emissions. Noise will also certainly be reduced by 15 dBA and the company is counting on reducing maintenance costs.

**Link/More information:** directly from the [Port of Rotterdam](#).

#### 17. Transport of waste materials by water (London Waste and Bywaters/SmartBarge Ltd/ UK)

**Aim:** Using a new barge concept of a container with recyclables.

**Methods:** Containers are transported half a mile by road to a material recycling facility for sorting. For the return sailing the barge was loaded with a container of residual waste and returned to an energy recovery facility. Unlike conventional steel barges, SmartBarge is made up of modular components incorporating a steel chassis and rotor-moulded polyethylene float sections. The modules lock together and act like a life ring around the hold or the container, being carried.

**Costs:** £ 7 million

**(Estimated) Results:** the SmartBarge has a tremendous flexibility as it can be filled with different types of containers and different loads. Reducing GHG emissions (water transport has 20% of the carbon footprint of road).

**Link/More information:** [Let's recycle](#) (with further links to the companies involved)

#### 18. Improvement in aerodynamics (Aspray Transport Ltd / Freight Best Practice)

**Aim:** Improve fuel efficiency by retrofitting with aftermarket options.

**Methods:** Review the options and use the relevant Freight Best Practice guide (see below) to get an overview of the different options. Cost/benefit analysis with the help of special software.

**Costs:** for new technology/equipment

**Results:** Fuel savings, depending on the measures that have been applied

**Link/More information:** Freight Best Practice's "[The Quick Guide to Truck Aerodynamics](#)" and "[Aerodynamics for Efficient Road. Freight Operations](#)"

#### 19. The Benefits of Operating Electric Vehicles in an Urban Environment (TNT / Freight Best Practice)

**Aim:** use the advantages of electric vehicles in urban transport.

**Methods:** exchanging diesel vehicles with electric vehicles makes it necessary to change some operational practices.

**Costs:** investment in a new vehicle fleet. Specific costs unknown.

**Results:** Fuel cost approximately 20% of diesel equivalent: potential for reduced maintenance through fewer mechanical parts.

Link/More information: No direct information available anymore. Please contact [FreightBestPractice.org](http://FreightBestPractice.org) for more information.

#### *20. Innovation Secures Future at Rural Haulier (Andrew Black Limited)*

Aim: identify and invest in new technology for vehicles to improve performance.

Methods: the following technologies have been investigated (details in the study): Fleet tracking and telematics; onboard weight; weight saving equipment; lift axles and tyres saving; braking optimizer. In addition business processes can be improved, in this case: clean vehicles (save time and effort for maintenance); wheel alignment; diagnostic equipment; disc brake re-grinding.

Costs: depending on your vehicle fleet. For 30 vehicles all measures taken together cost: ca. £ 350,000.

Results: Minimising vehicle downtime and maintenance; reducing tyre wear and improving fuel consumption. Annual savings in CO<sub>2</sub> and costs have been amortised after 3-7 years.

Link/More information: No direct information available anymore. Please contact [FreightBestPractice.org](http://FreightBestPractice.org) for more information.

#### *21. Optimising Load Fill – Opticase (Pepsico)*

Aim: Achieving increased case and pallet fill through case reengineering. The major consideration of case sizing was to achieve a standardised pack count rather than a standardised case. There was a need to reduce the complexity of the operation by limiting the number of case sizes being used while at the same time challenging the existing pack configurations to optimise the efficiency of the case and pallet.

Method: The current range of multi-pack case sizes was reviewed, including both pack and case count. A radical change in case size was proposed. This was a move to a single case option of 600mm x 400mm x 576mm. Trials were carried out on all the affected products to establish the impact to pack count and associated benefits and costs that would result from such a change. An additional proposal was developed that added a secondary case size for the more popular product lines, enabling customers to have an option. The secondary case option had a lower pack count than current and it was felt that this may encourage new customers to list the products as a result.

Costs: commercial risk (would customers accept the new sizes?).

Results: The overall project took one year to complete. The whole of the multi-pack range was consolidated down to 2 case sizes. Thus corrugate converters were able to produce much larger run sizes and manage stock levels more effectively. The single footprint, which was exactly twice that of the new standard case footprint made the picking process simpler and created more stable pallets. The larger case improved the packing efficiency increasing the overall packs per pallet to be increased and reducing the total number of loads being distributed.

Links/More information: is available from the [IGD website](#) or the participating companies

#### *22. Multi Pack Project (United Biscuits)*

Aim: to demonstrate how a review of packet size can have a large impact on case, pallet and vehicle utilisation. As part of a review of case fill UB identified a significant opportunity to improve case fill with its range of Hula Hoops multipacks by reducing the air within the outer multipack bag.

Method: A cross-functional project was launched involving manufacturing, marketing, commercial, procurement and logistics to reduce the air in the multipack bags to increase the bags within a case and ultimately the packets on a pallet. Initially trials were undertaken within manufacturing to develop a process for reducing the volume

of air sealed within the multipack bag. Once a solution was found the number of multipack bags within the case were reviewed and increased and travel tests trials were undertaken to ensure any change would not impact on product quality. The commercial teams then approached customers to get sign off of a change in number of multipack bags within a case.

Costs: unknown

Results: Once signed off changes took place across the entire range driving efficiency savings in several functions within UB. Case fill improved by between 15 and 25% reducing the number of pallets distributed by 30,000 pallets per annum. This generated a significant transport and pallet handling saving throughout the supply chain as well as a packaging (cardboard) saving. In addition to the cost saving benefits, the improved pallet utilisation had environmental benefits associated with reducing truck miles and packaging requirements.

Links/More information: is available from the [IGD website](#) or the participating companies

### *23. Technology to aid load planning and increase vehicle fill (United Biscuits)*

Aim: UB stores and transports products in a pallet module height of 1.38m which are doubled stacked for full pallet deliveries. Each product has a different pallet weight and pallet support weight depending on the strength of the packaging, product and fill of the case. UB's customers have differing rules regarding pick pallet and load build. All the above complexity made it very difficult for a load planner to understand the minimum space an assembled load would occupy without either sub optimising load fill or over-planning vehicles.

Method: UB used SAP for all its order to cash processing. It used Manugistics TM for its vehicle and route scheduling and transport allocation. UB's warehouse management system (WMS) however has been developed and incorporates load compliance, product dimensions and all customer rules enabling load building and compaction. This processing provides planners with an accurate view of the minimum footprint each order will occupy.

Costs: unknown

Results: The system enhancements helped deliver an 11% improvement in overall fill ie pallets per load and a further 6.3% improvement in picked pallet fill i.e. cases per picked pallet. The project also resulted in a reduction in customer complaints and refusals and a reduction in planning issues experienced in the warehouse.

Links/More information: is available from the [IGD website](#) or the participating companies

### *24. Optimising Load Fill – Layer Pickers (Wincanton for Heinz/ UK)*

Aim: Use of automated MHE to perform case picking where layers are ordered by the customer. Also, to get rid of the traditional manual method of layer picking by picking halls or by re-stacking loads in marshalling lanes.

Method: Implementing an automated layer pick system and dedicated buffer store. Wincanton then used suction cups to lift product from one pallet to another, as well as in line wrapping machines and labellers prior to marshalling.

Costs: unknown

Results: Over 50% of case pick is now picked using automation. Increase of accuracy, stock damage and cost. Reduction of empty runs.

Links/More information: is available from the [IGD website](#) or the participating companies

### *25. Reducing the number of units of despatch (UOD's) (Alliance Boots/UK)*

Aim: Increasing trailer fill by reducing the number of units of despatch (UOD's) from over 10 to 2. Reason: various units of despatch (UOD's) have been developed to serve stores from central warehouses and DC's across the UK. The impact has been: poor trailer fill, poor trailer forecasting, shortages of UOD's leading to operations using whatever is available, difficulty in cleaning and maintaining, complexity in the operation in having to manage various UOD's.

Method: Due to a new automated central warehouse in Nottingham an opportunity arose to challenge the way UOD's were managed, to simplify the operation and also to build in additional security features. A new crate was developed which is stacked 6 high on a dolly. The crates and dolly are banded, this band should not be broken until it reaches a store. Bulkier products and show material are supplied in a new Roll cage, which has the same footprint as the dolly, enabling improved trailer fill. The crates and roll cage were developed to fit the internal height of their double deck trailers maximising the potential of the vehicle fill.

Costs: unknown

Results: Only 2 methods of sending stock to store now exist. Increased trailer fill and ease of unloading at Distribution centre as all dollies and roll cages are rolled off. Other benefits: reduced theft; enables positive receiving in store – accurate store stock files; created more space on returning vehicles for backhaul as UOD's nest better; easier for stores to receive and collate to return.

Links/More information: is available from the [IGD website](#) or the participating companies

### *26. Loose Loading Trailers (Ceva)*

Aim: To address the problem that palletising results in less efficient use of space and stability issues due to irregular sizes of cartons.

Method: Loose load trailers - new automated Distribution Centres are equipped with telescopic loading booms. Trials confirmed suitability of loose loading standard curtain sided trailers, enabling shared use of fleet once trunking operation was completed and during day shift.

Costs: unknown

Results: 25% increase in average cartons per trailer from 1,200 to 1,500, overall number of trunks reduced, for example trunks to London depot reduced from 10 to 8, and no impact to off loading and sortation timing with use of booms and gravity conveyor.

Links/More information: is available from the [IGD website](#) or the participating companies

### *27. Replace single deck trailers with double deck trailers (Boots / UK)*

Aim: The current fleet of single deck trailers were coming to the end of their working life, so an opportunity arose to review current delivery methods on Primary transport.

Boots send out approx 110 single deck trailers daily. The trailer fill was poor in terms of cube, the floor fill was good, but the full height of the trailer was not fully utilized. Aim was therefore the replacement of the Boots single deck trailer fleet with fixed double deck trailers.

Method: For the roll out of the new fleet all permutations of Double Deck Trailers (DDT) designs were considered from both a transport and warehouse perspective. Considerations were given to overall cube fill, floor fill, ease of loading, load safety, running costs and stability on the road. Both decks are able filled floor to ceiling.

Costs: for new trucks.

Results: Reduced number of trunks by 30%, increased cube fill from 18m<sup>3</sup> to 30m<sup>3</sup>, and saved 3.5m road miles.

Links/More information: is available from the [IGD website](#) or the participating companies

### *28. SmartTruck for urban delivery (DHL / Berlin)*

Aim: Provide significant reduction of the length of routes while saving on costs, time and CO<sub>2</sub> emissions through the use of dynamic route planning.

Method: All parcels are loaded in the SmartTruck with RFID tags and reader are used to check that the right parcels are on board; dispatch center sends the optimal route, based on the current traffic conditions; dispatch centre can change the turn-by-turn navigation route

Costs: unknown

Results: Overall decrease of costs of 10 to 15 % and increase of productivity of almost 10 % (Average driving distance per tour decreased by 10 to 15%; the distance of some tours was decreased by 20%; Reduction of fuel usage of 10 to 15%; Reduction of CO<sub>2</sub> emissions of 10 to 15 %; Increase of number of stops (pick-up or delivery of parcels) per hour of 8 to 9 %). With the DHL SmartTruck solution more packages can be delivered while driving less kilometres.

Links/More information: [DHL website](#)

### *29. Boots Multi-Deck Urban Delivery Trailer (Boots / Location)*

Aim: Boots has recognised that an opportunity to reduce miles exists within its regional distribution fleet whereby access restriction issues to its stores have traditionally meant that a short urban truck has inefficient vehicle and driver utilisation.

Method: The concept has been to design and manufacture an urban trailer that meets all of the physical limitations that exist whilst it has the capacity of carrying the volume of a maximum length standard trailer. No such trailer existed of this specification. The trailer was named MUD – "Multi-deck, Urban Delivery Trailer".

Costs: unknown

Results: The trailer is 10m in length and only 4.1m high, yet carries the same volume as 13.6m full length trucks. This has therefore given the company the opportunity to gain benefits in various areas including miles saved, increased cube and reduced costs. The design gives an increased capacity of 65% over a traditional 10m urban trailer

Links/More information: is available from the [IGD website](#) or the participating companies

### *30. Trailer Specification (Kimberly-Clark / UK)*

Aim: To improve vehicle and pallet fill and reduced road miles, by taking a dual action approach.

Method: 2 different areas were addressed in order to allow more product onto the vehicle:

- **Product Specification:** It was identified that it would not be possible to stack product to a transportable height due to the product specifications. By working with marketing and manufacturing teams it was identified that the product height could be reduced by a minimal amount (4mm) and that this would facilitate an alternative pallet stacking pattern. This in turn would allow product to be stacked to the maximum 3m high pallets.
- **Trailer Specification:** Continental mega trailers have an internal height of 3m. This was sufficient load space for the 3m high pallets, however it did not give any clearance for loading of product. By talking with 3<sup>rd</sup> party hauliers we

identified an existing trailer type that had a lifting roof mechanism – the roof can be raised for loading of product (giving the required 3.1m clearance), and then lowered for transit.

Costs: for new trailers.

Results: Reduction in road miles through fewer vehicles on the road, both on the continent and then for onward delivery in the UK. Removal of additional handling as product arriving in the UK no longer required reconfiguration on receipt. Reduction of storage and handling costs as a result of a greater pallet height.

Links/More information: is available from the [IGD website](#) or the participating companies

### *31. Potato trailer design to maximise load weight (Pepsico / Location)*

Aim: In 2008 Walkers took over the management and distribution of potatoes into its manufacturing plants. The challenge was to find a solution in the trailer design that maximised the load weight of potatoes without risking infringement of the law through overloading.

Method: The trailers used for the transport were changed: the insulation thickness was reduced, the floor was of a lightweight construction, and the unit was totally sealed to avoid water ingress through the potato flushing process. In addition changes were made to ensure that the maximum permissible weight could be loaded at the farms without risking the vehicle being over weight.

Costs: unknown

Results: An average load of 28 tonnes of potatoes was achieved. This matched the previous provider's average but was achieved in a safe and legal manner. In addition it was possible to combine deliveries with potato collections, driving down kilometres and improving fuel and labour efficiency.

Links/More information: is available from the [IGD website](#) or the participating companies

### *32. Superlight Vehicles (Wincanton for Heinz)*

Aim: Increasing load fill where gross weight is being reached before cubic capacity (same as before).

Method: Customer Deliveries: Employed super lightweight trailers and "lightened" units to increase the payload capacity.

Costs: unknown

Results: Improved payload of 4-6%.

Links/More information: is available from the [IGD website](#) or the participating companies

### *33. Deck Beam Trailers (Nestlé)*

Aim: Resolve the inability to maximise the cube when transporting the full Nestle product range including heavy pallets, light pallets, glass, confectionery, water, etc due to the inability to double stock certain heavy products.

Method: The company designed and built new Deck Beam Trailers by: measuring the trailer fill/cube they were currently using to calculate lost opportunity, and approaching a trailer manufacturer to agree special covering, legality, fit for Nestlé Purpose and price. In addition it was necessary to have intensive in-house discussions with other departments.

Costs: unknown

Results: Reduced food miles by circa 53,250 km, reduced loads to Dublin by circa 60 loads approx, considerable reduction of damage in transit instances, and considerable cost savings.

Links/More information: is available from the [IGD website](#) or the participating companies

#### *34. Using Technology to aid Load Planning (United Biscuits)*

Aim: UB delivers on a route that enables consolidation of all their brands manufactured at 15 factories. It provides the delivery frequency required by all its customers. UB examined the use of technology to aid load planning and optimise vehicle fill.

Method: UB have developed 3 systems all interfaced to provide planners with the ultimate aid enabling optimum load fill. UB used SAP for all its order to cash processing. It used Manugistics TM for its vehicle and route scheduling and transport allocation. UB's WMS however has been developed and incorporates load compliance, product dimensions and all customer rules enabling load building and compaction. This processing provides planners with an accurate view of minimum footprint each order will occupy.

Costs: unknown

Results: The system enhancements helped deliver an 11% improvement in overall fill i.e. pallets per load and a further 6.3% improvement in picked pallet fill i.e. cases per picked pallet.

Links/More information: is available from the [IGD website](#) or the participating companies

#### *35. Use of satellite tracking (United Biscuits)*

Aim: Use vehicle tracking and identify how the tracking and data provided can be used to optimise efficiency and deliver operational benefits.

Method: Tracking was installed on 30 tractor units and vans, 200 trailers and 6 shunt vehicles. The in-cab tracking was also linked to the engine management system enabling real time and historic reporting of driving style. In addition to the immediate benefit of seeing in real time the location of all equipment, a number of daily and weekly reports were developed to enable further efficiencies to be gained.

Costs: unknown

Results: United Biscuits' use of satellite tracking generated a saving of £200,000 pa. This was achieved through the following benefits

- Ability to change plan dynamically adjusting schedules and routes as required.
- Improved ability to track and trace trailers – improving trailer utilisation and reducing fleet numbers as well as improving preventative maintenance conformance.
- Monitor driver and day-hire haulier conformance to plan and monitor day hire journey routes and distances.
- The system has provided data to review driver's driving style – improving fuel consumption by 8%.
- Shunting reports show number of genuine movements carried out by shunter – reducing shunting costs.

Links/More information: is available from the [IGD website](#) or the participating companies

#### *36. Using technology to automate the gathering and analysis of fuel usage (Robert Wiseman Dairies)*

Aim: The company travels approximately 43 million miles using about 4.8 million gallons of fuel giving per year. The aim was to save fuel, as it is one of the main cost drivers.

Method: During 2008 they trialled and agreed to rollout a tracking and telematics system which provides daily fuel consumption information against both the driver

and the vehicle. Reports can be generated daily or weekly or monthly etc. in line with the business needs and can then be matched against the information provided from the fuel bunkering system at each site to look for discrepancies. They have used the mileage from the tracking system and the fuel from the bunkering system to eliminate the reliance on human intervention from the drivers.

Costs: unknown

Results: They can now see accurate reports on fuel consumption trends by vehicle or driver on a real time basis if required. They are using the new reports to determine discrepancies between the fuel drawn from the bunkers on site and the fuel burnt by the engine.

Links/More information: is available from the [IGD website](#) or the participating companies

### *37. Load Optimisation (Eddie Stobart)*

Aim: A custom built step frame Double Deck trailer that accommodated goods on either pallets or roll cages was used for daily long distance trunk routes. It provided a highly effective load fill on outbound leg but the inbound leg was either empty or contained cages/pallets due to the lack of suitable loads or loading facilities. The challenge was to identify an appropriate trailer design that both maintained the outbound load fill efficiency but that also incorporated General Haulage trailer features that allowed a wider range of inbound goods to be accommodated, maximising load fill.

Method: Before a new design could be considered it was important to identify the criteria that this vehicle would have to meet. The following were considered to be the most important: double deck for outbound loading, ideally meeting current pallet/cage load fill; standard deck curtain sided for rear and/or side loading and apertures to accommodate pallets loaded up to 2.88 metres height; engineering solution to enable quick, simple and safe transition for driver operation to convert from double to single deck; minimise weight to ensure overall GVW under 44 tonnes. Having specified the key features a new trailer blue print was prepared, reviewed, refined and finally a prototype built and trialled. The primary innovation was the use of a swivel deck that could convert the trailer quickly from a double deck to a single deck by a trained operator without the use of tools.

Costs: development costs

Results: The load efficiency of the final solution improved significantly in comparison to the original design, from 50% up to 71%.

Links/More information: is available from the [IGD website](#) or the participating companies

### *38. Multideck Urban Deliver Trailer (Boots)*

Aim: The design and implementation of a new urban articulated trailer to reduce mileage on the road and improve vehicle / driver utilisation.

Method: The concept has been to design and manufacture an urban trailer that meets all of the physical limitations that exist while it has the capacity of carrying the volume of a maximum length standard trailer. No such trailer existed of this specification. The code name of the trailer was MUD – “Multideck, Urban Delivery Trailer”. The trailer is 10m in length and only 4.1 metres height – yet carries the same volume as a 13.6m full length artic.

Costs: unknown

Results: benefits in various areas including carbon reduction, fuel costs, better service to stores and increased vehicle and driver utilisation due to there being less kilometres per item delivered.

Links/More information: is available from the [IGD website](#) or the participating companies

*39. Hybrid technology for HCVs in distribution (DHL/UK)*

Aim: To reduce costs and GHG emissions.

Method: In partnership with manufacturer Volvo Trucks, DHL Supply Chain will trial the world's first 18-tonne hybrid distribution truck. Powered by an electric motor and a diesel engine, which can be used separately or together, the hybrid vehicle will allow for reduced fuel consumption, lower emissions and lower noise levels. DHL and Volvo agreed to partner for trialling the vehicle for a two-year period.

Costs: for new trucks

Expected results: Considerable fuel savings, potential of 15 per cent compared to conventionally powered vehicles; regenerative braking to capture energy for storage in its onboard Lithium ion batteries; the electrical energy is used for the electric motor to accelerate the truck up to 10 to 15 kph; zero emissions when operated in electric mode; reduced noise emissions when in electric mode; excellent driveability due to combined torque from the electric motor and diesel engine, thanks to the parallel hybrid system

Links/More information: [DHL](#)

*40. Eco-friendly technology for refrigerated transportation fleets (Dean Foods and Thermo King)*

Aim: To reduce costs and GHG emissions.

Method: Dean Foods will use a delivery vehicle equipped with a new prototype truck refrigeration system developed by Thermo King. This cost-efficient, hybrid electric-powered truck refrigeration system significantly reduces the emissions associated with traditional diesel-powered transport refrigeration. The prototype diesel-free system has already been put into service in Dean Foods' Dallas TX-area fleet.

Costs: investment in new trucks

Expected results: The company aims to halve its diesel fuel consumption by adopting the new technology over the longer-term. Eliminating diesel fuel usage in the refrigeration units will also significantly reduce costs.

Links/More information: [www.deanfoods.com](http://www.deanfoods.com) and [www.thermoking.com](http://www.thermoking.com). See also this [press article](#).

*41. New online map for multimodal freight movements (Freight Best Practice/ UK)*

Aim: Counter the lack of access to information on the facilities available for multimodal transport by enabling research possibilities for using non-road mode forms of transport as part of a company's supply-chain.

Method: The new online Multimodal Map identifies open user rail terminals, ports and wharfs in the UK. The map also provides contact information and commodity handling capabilities for 160 ports and 90 open user rail terminals and includes links to sources on further advice and available grants.

Costs: free of charge

Results: Possibility to search for more environmentally friendly modes and diminish the respective company's carbon footprint.

Links/More information: [www.freightbestpractice.org.uk](http://www.freightbestpractice.org.uk) and this [Press Release](#)

*42. Use of glass fibre/Kevlar air cargo container (Lufthansa Cargo/Jettainer)*

Aim: Lower emissions and fuel usage, while maintaining the same storage capacity.

Method: Lufthansa Cargo has been trialling a new type of air cargo container. They are constructed of innovative and lighter composites of glass fibre and kevlar,

instead of aluminium, which reduces their weight by 20%, thus lowering fuel burn and carbon emissions.

Costs: for new containers (inquire with Jettainer)

Results: reduction of fuel burn and GHG emissions

Links/More information: in this [press article](#), [Lufthansa Cargo](#) or from [Jettainer](#)

#### *43. Cold-ironing in the port (Port of Antwerp)*

Aim: Seagoing ships belonging to the Independent Container Line (ICL) will now be able to use a shore-based electricity supply when berthed at the Port of Antwerp.

Method: Shore power is already available for barges, as well as the Port Authority's tug and dredger fleet, floating cranes and dry dock complex, and will soon be supplied to pleasure craft and houseboats. Until now, however, it has not been available to seagoing ships - the segment that, in view of its size, has the most powerful effect on environmental performance.

Costs: This €1.1 million project is a collaboration between Independent Maritime Terminal (IMT), the Port Authority and the Flemish community.

Results: ongoing, but significant reduction of electricity expected.

Links/More information: [EoT press release](#) or directly from the [Port of Antwerp](#)

#### *44. Plan the Best Delivery Route (Route4me)*

Aim: To reduce unproductive routes.

Method: Route4me is a new free program for drivers. Just enter the addresses you want to visit in any order, and Route4me will instantly give you the most optimal & shortest route driving directions. When you enter multiple addresses into the system, it will automatically calculate thousands or millions of route combinations to bring back the shortest possible route between all your destinations.

Costs: for free

Results: Significant reductions of routes avoidance of zig-zag routes across town.

Links/More information: [www.route4me.com](http://www.route4me.com)

#### *45. Reduce Nike's logistics carbon footprint (Damco)*

Aim: Help Nike achieve its carbon footprint target by providing an overview of the emissions from all Nike Europe's transportation activities □ 30 % reduction in its global carbon footprint by 2020.

Method: The advanced Carbon Footprint Calculator was used to review the emissions from Nike Europe's supply chain. The project provided quarterly reports on a part of the supply chain. The reports measured the carbon footprint of all inbound and outbound transportation, which enabled Nike to reduce its logistics carbon footprint. Damco's SupplyChain CarbonDashboard was used to provide an overview of the emissions from all Nike Europe's transportation activities including warehouses, ocean transport, aviation, trucking, rail, barge, port operations and consolidation. Using Damco's SupplyChain CarbonDashboard, Nike Europe now has a complete overview of all its emissions – by activity, product group and trade lane – and can make the changes required to hit its ambitious environmental goal.

Costs: unknown

Results: With the quarterly reports, Nike is now working strategically to reduce its carbon footprint. The reports give the Nike team a detailed understanding of what causes carbon emissions – and enables them to closely track the effects of any new reduction initiatives. This means:

- an overview of the Nike Europe carbon footprint for 2009
- understanding the specific activities that contribute to CO<sub>2</sub> emissions
- better project execution with target and KPI setting
- better decision-making

- complete tracking of new initiatives

Links/More information: [Damco's SupplyChain CarbonDashboard](#)

#### *46. Reduce carbon footprint: technology (UK Mail)*

**Aim:** Increasing the environmental sustainability of its operations as UK Mail regards the adoption of effective and relevant carbon emission reduction initiatives as crucial to its constantly evolving strategy.

**Method:** Some of the technological solutions used were:

- The obligatory use of route software. Partially automated sortation and new vehicle loading techniques also had the effect of reducing the number of vehicle routes.
- All double deck trailers have sloping fronts, driving down CO<sub>2</sub> emissions by up to 25t per vehicle per year. They are also in the process of trialling a new aerodynamic, teardrop trailer design which has indicated an 8.5% decrease in emissions. Also all powered vehicles have bespoke aerodynamic kits which have resulted in mpg improvements of between 5-10%.
- They also trialled using 'energy' tyres which provide approximately 6% less rolling resistance and reduce fuel consumption.
- A total of 54% of their forklift trucks are now electric (as opposed to diesel-run counterbalance) slashing carbon emissions by 700 tonnes per annum. In addition, all new company cars now have CO<sub>2</sub> emissions below 160g/km.
- The development of their electronic to physical mail solution, imail, in September 2008 had also had the effect of slashing carbon emissions. By reducing the mail mileage associated with delivering letters, imail is able to cut the carbon footprint of this activity by more than 70%.
- All their vehicles utilise bio-diesel which reduces the CO<sub>2</sub> emissions from their vehicles by 3% and they aim to continue the use of bio-diesel at current levels.

**Costs:** varies

**Results:** see above. In 2009/10 UK Mail achieved its target of cutting carbon emissions from their vehicles by 10%. Changes to routes and optimisation of vehicle fill combined with the above have collectively resulted in the reduction of distances travelled by in an excess of 1 million kilometres, leading to savings in CO<sub>2</sub> emissions of 134 tonnes for the year 2009/10.

Links/More information: [UK Mail](#)

## **II.Organisational**

### *1. Fuel Management for transport operators (Thorntons plc)*

**Aim:** Fuel improvements can be improved by adopting simple measures involving the monitoring and publishing of fuel performance results. Eliminating errors from manually collected data is essential, if good results are to be obtained.

**Methods:** drivers/management adopting a disciplined approach to fuel management; regularly calibrating the on-site pump; correctly recording the fuel obtained in transit; ensuring that vehicle tanks are completely full each time odometer readings are taken; checking the record for mistakes; accurately monitor fuel performance of a group of similar vehicles selected from the fleet; inform the drivers how their vehicles were performing; train and encourage the drivers to improve the fuel performance of their vehicles; measure and report the improvements.

**Costs:** for training of drivers, new technology/equipment

**Results:** immediate fuel savings results. Additional savings can be made by the use of suitable on-board data-loggers (apparently they will pay off between 6-18 months after purchase) - savings account between 4.4 – 8.4% of the operational cost.

**Link/More Information:** [Freight Best Practice](#)

### *2. Performance Management for Efficient Road Freight Operations*

**Aim:** The guide gives decision-makers an understanding of performance management concepts in freight operations, as well as advice on putting a performance management process in place.

**Methods:** Various case studies on improving the management of freight operators.

It provides a guide to be used as a reference document, providing guidance on concepts relating to performance management in freight operations and introducing the types of key performance indicators that can be measured in an operation.

Main themes covered by the guide: Key Performance Indicators (KPIs); roles of management; measuring process; measuring tools; analysis of results; benchmarking; strategies to increase performance.

**Costs:** depending on the measures: none or costs for new equipment

**Results:** depending on the measures

**Link/More Information:** [Freight Best Practice](#)

### *3. Consolidation of Transports (Sieber)*

**Aim:** Wishing to concentrate on its core competencies, Sieber's customer, a medium-sized electronics manufacturer, did not want to invest in new warehouse facilities, but rather to invest in its production capacity. The customer wanted elements of its procurement processes to be executed by an external service provider in order to reduce the complexity of its own procurement activities.

**Methods:** Sieber was able to offer dedicated warehousing capacity to the customer, which could be adapted flexibly to the volume and dimensions of the goods the customer needed to stock. Sieber also took over the organisation of deliveries, consolidating and delivering product components in the right sequence to the customer. This solution reduced the number of deliveries through the mountains by factor of 100.

Challenges to overcome: Organisation of transport to the new warehouse and the management of the associated processes; handover of procurement – information provided by the customer to Sieber; allocation and process design of warehousing capacity at Sieber;

**Costs:** additional costs through warehouse management, but also additional revenues.

Results: Economic and environmental benefits through consolidation and reduction of freight traffic between the logistics provider and manufacturer

Link/More Information: [BESTLOG.org](http://BESTLOG.org) (it is necessary to have a login for the website - register [here](#))

#### *4. Transport Collaboration – Carpathia Express (Czech Republic)*

Aim: The productivity of rail transport has been steadily declining in recent years. This fact, together with a desire to develop a new innovative product for existing, as well as potential customers, has led a team of logistics professionals to design a brand new commercial logistics project. It builds on the close cooperation of these three traditionally competing freight forwarders and three national rail transport providers with the ultimate aim of maximizing the resource utilization of all parties involved and at the same time increasing the productivity and competitiveness of rail transport.

Methods: Pooling the individual customers of the project partners into services subsequently provided by the Carpathia Group; forming a common sales strategy; increasing productivity and countering negative trends in the transport industry, despite the overall decline of rail freight volumes (on a given route); radical reduction of contemporary standard transport journey times; cut overall costs in a way that enables operators to cut the prices charged to their customers substantially; increase in competitiveness; ensuring transport and pricing flexibility while adhering to fair-play principles.

Costs: not available

Results: Average 66% saving on journey times compared to other transport modes; high quality 'one-stop-shop'- type of service for project customers including checking, space reservation, dispatch operations, etc.; the product developed product is widely available and beneficial not only for local customers, but also for customers located in western and northern Europe; the original customer portfolio during initial 6 months of commercial operations was extended by 400%.

Link / More Information: [BESTLOG.org](http://BESTLOG.org) (it is necessary to have a login for the website - register [here](#))

#### *5. Telematics at SME's (Sieber)*

Aim: Rising fuel expenses are the driver for investments in fuel-saving technologies - even for an SME.

Methods: The company engages the collaboration of the drivers in the improvement process. It uses telematics solutions in order to reduce the fuel consumption of its truck fleet by monitoring the driving style of its staff.

Costs: For new equipment (telematics systems)

Results: Telematics monitors the driver's driving behaviour. Conversation between workshop personnel and the drivers helps improve driving styles. Sieber drivers have saved at least two litres per 100 km.

The savings achieved, from reduced fuel consumption and reduced component wear, e.g. on brakes, are 1.5 to 2 times the cost of system implementation and maintenance.

Link / More Information: [BESTLOG.org](http://BESTLOG.org) (it is necessary to have a login for the website - register [here](#))

#### *6. Improvement in Utilization through Customer Incentives (Amals Miljöhantering)*

Aim: to prevent empty trips, improve company profits and reduce emissions by improving vehicle utilization.

Methods: The company found cargo to be transported back to their facility. An incentive programme was put in place and the company was able to offer better prices to their customers.

Costs: none

Results: benefits for the environment, vehicle utilization today averages 90%

Links/More information: [IRU Best Practice Guide](#)

#### 7. *Measuring, Monitoring and Reducing Fuel Consumption (Egon Sørensen Transport A/S)*

Aim: reduce fuel consumption.

Method: drivers have to record their mileage and fuel consumption after each trip. Also recorded are the amount of goods and the route. Software can analyze the data and show savings and possibilities to decrease the environmental impact of transportation.

Results: Fuel consumption could be reduced by nearly 6,800 litres, equalling a cost reduction of ca. € 4.500.

Links/More information: [IRU Best Practice Guide](#)

#### 8. *Tankshare – Improved Utilization through Groupage Freight Service (J. W. Suckling Transport Limited)*

Aim: minimized empty running through shared utilization of transport capacity by its customers.

Method: In April 2000, a pilot scheme was launched and attracted significant interest amongst oil companies. Fourteen companies used the service during its pilot stage, paying rates based on a simple price-per-litre basis, by postcode, depending on delivery load size.

Costs: TankShare is a commercial initiative and, apart from the purchase of new vehicles, required no specific funding to launch.

Results: Improved vehicle utilization and consequent reduction in empty running.

Links/More information: [IRU Best Practice Guide](#)

#### 9. *Improved Material Planning through Communication (K. I. Transport)*

Aim: a communication group was founded that consists of members from the transport company and its most important transport buyer. The goal of this group is to improve communication, thereby ensuring a faster exchange of data and knowledge about specific transport tasks, and understanding of the importance of the data needed by transport companies.

Method: the flow of information and goods was analysed from receipt of an order to delivery of the goods to the customer. In this co-operative approach by shippers and the transport company, the individual processes were clearly distinguished and possible areas of improvement were identified, particularly in the working conditions for staff in the material-planning department.

Costs: no extra costs

Results: By increasing the overall planning time for individual transport tasks from two to six hours, capacity utilization of the vehicles was increased by 5-10%. Overall, employees spend less time planning, loading and executing transport tasks (for example, adhering to rest times and other regulations). The amount of damaged goods was reduced by 10% per year. Fuel costs were reduced. Fewer mistakes were made, communication was improved and IT was integrated more smoothly. Communication is now more direct and effective (members of the communication group know who they can contact in the other company). Mistakes are uncovered and resolved more quickly. Customer loyalty is increased.

Links/More information: [IRU Best Practice Guide](#)

#### 10. Security and Resource Efficiency through an Integrated Management System (Nijman/Zeetank Holding BV)

**Aim:** The company wanted to ease the transport of Dangerous Goods, especially those transported through various countries, by creating a software that can ensure compliance with all the safety and environmental requirements.

**Method:** Create an Integrated Management System (IMS) in accordance with ISO 9901/OHSAS (Occupational Health and Safety Assessment Systems) 18001 to comply with safety and environmental standards. Also the SQAS (Safety Quality Assessment System), the IMDG (International Maritime Dangerous Goods) code and the DGSA (Dangerous Goods Safety Adviser) directive were involved in building up the system. The key step for implementing the IMS was selection and purchase of suitable quality management software. This software includes a quality monitoring tool, a safety management tool and also an environmental tool.

**Costs:** unknown.

**Results:** time savings and quality assurance. Through better understanding of the supply-chain they were also able to optimise multimodal transport, which in effect reduces the CO<sub>2</sub> output.

**Links/More information:** [IRU Best Practice Guide](#)

#### 11. Loss Prevention for the Vehicle Fleet (Nobilis International)

**Aim:** Because of possible injuries and traffic jams, traffic accidents represent a problem for transport policies. However, they also have a direct economic effect on the transport operator. For this reason, Nobilia International implemented a loss prevention system for its vehicle fleet.

**Method:** the following processes, procedures and risks were analysed in depth: office management; driver recruitment, deployment and organization; material planning processes; route planning; loading risks; vehicle safety equipment; number and type of accidents; time and location of accidents. When all the data had been analysed, a customized loss prevention concept was developed that highlighted three areas in particular: driver training, driver recruitment and accident analysis.

**Costs:** not yet known

**Results:** a 57% reduction in the number of accidents; less serious consequences of accidents (injuries, traffic jams); better fuel efficiency because of less damage to the trucks; a reduction in emissions through the use of EURO 3 trucks. By reducing the number of accidents from 88 to 38, the total cost of accidents was reduced from € 306.000 to € 132.100.

**Links/More information:** [IRU Best Practice Guide](#)

#### 12. Reduction of Environmental Impacts by Management (Otto Görgens Spedition-Transportlogistik / Lübeck)

**Aim:** In collaboration with BGL, DaimlerChrysler and DEKRA Automobile Ltd, the company created a strategic concept for emission reduction while carrying out inventory control of its vehicles, volume of cargo, frequency of repair work, fuel consumption and the resulting environmental impacts.

**Method:** Each driver himself keeps logs and creates graphs and diagrams with regard to load status, road/traffic conditions and fuel consumption. Real fuel consumption can be calculated using the diagrams from the driver logs and record sheets from the tachometer, which show distance driven and speed. The programme is further supplemented by the monitoring of repair costs, analysis of weak points and continued education for all drivers. To calculate future fuel consumption, the company determines the number of vehicles required based on expected cargo volumes, and this is made into a target specification.

**Costs:** A total of € 920.000 was invested in new vehicles. The cost for the contract worker was € 12.780.

**Results:** The following results have been achieved: savings in fuel: 19.3%; savings in oil: 5.0%; CO<sub>2</sub> emissions reduced by 38.7%; NO<sub>x</sub> emissions reduced by 28.6%; all vehicles run more quietly due to state-of-the-art technology.

**Links/More information:** [IRU Best Practice Guide](#)

### 13. Regulations for Good Common Practices in the Road Transport of Dangerous Goods (Trancister Sociedade de Transportes SA)

**Aim:** The main goals are the reduction of accidents, crossovers, spillages and incidents that cause new accidents. The motto of the project is "No accidents in three years' time".

**Method:** The project involves a large number of procedures that can be summarized in the categories driver regulations and vehicle regulations (audits, safety management systems, set of procedures with the aim of increasing safety throughout the company's activities, Project "Operational System of Supporting Accidents", ISO 9002 certification).

**Costs:** The cost of implementation is estimated as 2-3% of annual turnover.

**Results:** Elimination of spillages (oil pollution), reductions in fuel consumption through training and defensive driving, reduced accidents through increased training, increased general safety, improved corporate image.

**Links/More information:** [IRU Best Practice Guide](#)

### 14. Improved Efficiency through New Information and Communication Technology (NICT) (Transportes Luís Simões)

**Aim:** improve communication between all operational centres, customers and drivers.

**Method:** installation and implementation of the NICT. The first consists of an analysis of the company's current communications infrastructure. The second is the "Strategic Plan for Communications". This plan outlines recommendations for the reorganization and optimization of existing systems in terms of functionality and research costs. The main aspects covered are the local and extended network infrastructure, mobile communications with the vehicles, Intranet and Internet architecture, communications with customers and system security.

**Costs:** Investments over the past year in new information and communication technology have amounted to about € 550.000

**Results:** Reducing the number of empty trips by ca. 2%; easier control of the company's objectives; better communication between clients, drivers and centres; simplified administrative processes; substantial reduction in communication costs.

**Links/More information:** [IRU Best Practice Guide](#)

### 15. Implementation of an Environmental Management System (EMS) (Transportes Ochoa SA)

**Aim:** reduce their consumption of raw materials, water and energy while at the same time benefiting from various advantages such as decreased costs, higher competitiveness and an improved public image

**Method:** the company started the implementation process for an EMS in 1999 by participating in the SIGMA I and SIGMA II projects. The system is in accordance with the ISO 14001 standard. Necessary steps: selection of a consultancy company preparation of an "Initial Environmental Revision" by the Bureau Veritas Español based on data collected at the company's sites in Madrid and Zaragoza; development of a work plan and time schedule for EMS implementation; development of documentation (management manual, operational processes manual).

Costs: The breakdown of implementation costs to date is as follows: Consultancy fees and EMS development costs € 11.840; Legal consultancy fees € 2.400; Personnel costs € 22.550; Estimated certification costs: initial audit € 2.200; Periodic audits € 750 each.

Results: The average fuel consumption in 1998 was 29.52 litres/100 km, reduced to 28.17 litres/100 km in 2000, representing a decrease of 4.56% in just two years

Links/More information: [IRU Best Practice Guide](#)

#### 16. Improving efficiencies within a scheduled trucking service (BT Transport Exchange Group)

Aim: maximise load utilisation on certain lanes and meet Corporate Social Responsibility (CSR) obligations to minimise carbon footprint within their transport division.

Method: Haulage Exchange is the UK's pre-eminent freight exchange for the road transport industry. In summer 2008 the company developed a new section of the exchange: "Regular Runs". "Regular Runs" enables professional operators to advertise scheduled vehicle movements to a wide audience of transport professionals, and thereby gain a number of benefits.

Costs: not known

Results: improved vehicle utilization, enhanced communication with new trading partners, streamlined communication, and reduced carbon footprint.

Links/More information: [BESTLOG.org](#) (it is necessary to have a login for the website - register [here](#))

#### 17. Cargo Domizil – Intermodal less than truckload transport

Aim: Cargo Domizil created as a division of SBB (The Swiss Rail) to execute unit load rail shipments. Nowadays it is in the hand of consortium, which uses the company's rail capacity to solve the problems of the Swiss night trucking ban and the high tolls for trucks on Swiss roads.

Method: Cargo Domizil offers less-than-full-truckload (LTL) shipments via combined rail/road facilities. Cargo Domizil trucks collect consignments during the afternoon and take them to these rail-side depots. From there they are loaded on trains, forwarded to Olten near Zurich and sorted by the SBB and sent to their destination depot overnight. Structural changes were accompanied by a training programme.

Costs: Not known.

Results: Besides overcoming the night-time trucking ban and avoiding expensive road tolls, the use of rail offers significant advantages in Switzerland's mountainous regions, which are sometimes difficult to reach for large trucks.

Links/More information: [BESTLOG.org](#) (it is necessary to have a login for the website - register [here](#))

#### 18. INDITEX – Pro-Kyoto Project

Aim: To tackle and decrease their CO<sub>2</sub> emissions.

Method: Development of a Strategic Environmental Plan (2007-2010). One of the initiatives, which have been established and will be implemented by 2010, deals with logistics aspects:

- A Bio-Diesel programme for their entire vehicle fleet. For this purpose a supply network will be set up at loading points and along trucking routes.
- Fleet driver training courses on fuel-efficient driving, with all vehicles complying with the EU's EURO 5 standard.
- Zero-emission vehicles to be used in factories and logistic centres.
- In addition INDITEX plans to measure their Carbon Footprint and adopt strategies to reduce it.

Costs: not available

Results: Perceptions of the company will be enhanced by the company's environmental good practice. Reduced energy consumption produces increased economic efficiency. The use of biofuels accounts for 80% of the CO<sub>2</sub> reductions, which add up to 850 tonnes per year.

Links/More information: [BESTLOG.org](http://BESTLOG.org) (it is necessary to have a login for the website - register [here](#))

#### *19. MAPEI - Optimising goods collection cycle time*

Aim: Inbound (raw materials) and outbound flows (finished products) are carried by truck, representing 250 trucks/day (average). Due to the increased production volume and the number of trucks arriving at and leaving the plant, traffic congestion increased around the plant, leading to negative environmental and safety impacts. The logistics system was therefore re-organised in order to optimise the cycle time for load picks-ups from the factory.

Method: The plant was reorganised from a logistics point of view, with the creation of new entry points, preventing queues of trucks. A new storage tank was built with high-speed loading pumps for bulk liquids, to cycle time. Logistics processes were modified, with overnight preparation of shipments of pre-packed products.

Costs: not available

Results: Reduction of average loading time, now standing at 78 minutes, in comparison to 130 minutes in a similar MAPEI plant that was not re-organised (-40%).

Links/More information: [BESTLOG.org](http://BESTLOG.org) (it is necessary to have a login for the website - register [here](#))

#### *20. Mercadona and Renfe: Intermodal Collaboration Distribution*

Aim: The company is sustainability-oriented and wanted their suppliers to join in pursuing the company's objectives to obtain a win-win result. Taking into account environmental concerns, the company developed and launched an environmental plan involving its main logistics and transport supplier, called Acotral.

Method: Mercadona, with Acotral and Renfe, developed a plan to promote sustainable transportation in Spain, and signed a contract with Acotral and Renfe for them to transport non-fresh food and non-food goods. The contract specified that Renfe had to provide eight trains a week from Sevilla to Tarragona and from Sevilla and Valencia in a round trip. This new route connects suppliers' warehouses in the south of Spain with Mercadona Distribution Centres in the east coast.

Costs: not available

Results: This solution enabled Mercadona to reduce CO<sub>2</sub> emissions by over 12.000 tonnes due to the number of its truck deliveries being reduced by up to 9.152 truck delivery journeys. Fuel consumption has been cut with less truck use, and there has been a 70% energy consumption saving.

Links/More information: [BESTLOG.org](http://BESTLOG.org) (it is necessary to have a login for the website - register [here](#))

#### *21. Sharp's collaboration with the green transport marketplace, SmartWay*

Aim: The company's goal was to get involved in the area of transportation and optimise the environmental performance of their supply-chain.

Method: Sharp decided to join a transport partnership - called SmartWay (see links at the end of this paper and also Best Practice I.6. further up) - which was implemented by the US governmental organisation EPA. A partnership between shippers and carriers, who committed to operating green transport practices, also led to increased revenue and cost savings. SmartWay Transport is a voluntary

partnership between various freight industry sectors and the US Environmental Protection Agency that establishes incentives for fuel efficiency improvements and greenhouse gas emissions reductions.

Costs: not available

Results: Reduced CO<sub>2</sub> emissions by 1,383 tons, NOx by 26,5 tons, particulate matter by 1,1 tons and increased the percentage of rail shipments from 7% to 12% of the annual tonnage. Implemented a "No-Idling" policy at Logistics Centres. Increased the percentage of Sharp's SmartWay carrier usage from 33% tons in the first year to 97% by the fourth year.

Links/More information: [BESTLOG.org](http://BESTLOG.org) (it is necessary to have a login for the website - register [here](#))

## 22. Cargo shuttle between Port of Barcelona and SEAT

Aim: to reduce lorry movements and introduce an environmentally friendly method of transporting cargo from the port of Barcelona to the construction plant of SEAT in Martorell.

Methods: Cargometro is a joint venture of three regional operators: [FGC](#), [RENFE Operadora](#) and [Comsa Rail Transport](#). It uses the 17.5 km dual-gauge freight route between Route Can Tunis and Castellbisbal, built under the Madrid – Barcelona high speed programme. The transport of the manufactured cars is being done by the company Autometro.

Costs: the regional government has invested € 8.6 million. The contract with SEAT has a duration of 10 years.

Results: it is expected to remove 32.000 lorry movements from the roads per year.

Link/More information: directly from the company. Overview (in Spanish) can be found on the [CCOO website](#)

## 23. Freight Best Practice "Fuel Efficiency Intervention Trials - How to Test and Save"

Aim: Provide a tool for improving fuel efficiency of heavy goods vehicle fleets. From the publication: "A fuel efficiency intervention is defined as a device, system or action introduced by a vehicle operator to reduce fuel use."

Methods: The brochure (see link below) provides a 12-step process which enables companies to develop a transition to new technology. The brochure also includes 12 case studies of companies that used the freight best practice tools with success.

Costs: depending on the measures that are being implemented. Costs will need to cover new equipment/technology.

Results: depending on the measures improvement of fuel efficiency.

Link/More information: [Freight Best Practice](#)

## 24. "Tesco Sets the Pace on Low Carbon and Efficiency" (TESCO / Freight Best Practice)

Aim: To improve efficiency and reduce carbon emissions from its distribution operation.

Methods: More efficient fleet management by reviewing and assessing all its activities and the interfaces between the main operational areas, including: primary distribution; planning and loading; methods of transportation; network efficiency; delivery to stores. As a result they updated their warehouse management system and standardised all settings within the transport planning tools. They also looked for alternatives to road, i.e. multimodal transport. In addition TESCO increasingly used double-deck trailers for their road operations.

Costs: unknown.

Results: switching to multimodal transport has resulted in a drop of CO<sub>2</sub> emissions by over 2,750 tonnes per year. In one year they increased the use of double-deck units

by 7% from 191 to 205 trips per day, taking 1,221,492 km off the road and saving 948 tonnes per year of CO<sub>2</sub>. All measures together saved 7,489 tonnes of CO<sub>2</sub> per year.

Link/More information: No direct information available anymore. Please contact [FreightBestPractice.org](http://FreightBestPractice.org) for more information.

#### 25. Short Haul Rail Freight (Lafarge Cement Ltd / The Malcolm Group / Freightliner Ltd / Freight Best Practice)

Aim: prove the profitability of short haul rail freight in comparison to road haulage. The main challenges faced by rail freight are the tendency for longer end to end journey times and the need to double handle products where an onward road journey is required

Methods: multi-modal service, providing the end-to-end delivery of products using road to rail and then back to road for final delivery. This provides a seamless customer collection and delivery service for products that can be containerised. From the customer's point of view this can be cost effective for just a single container using the service.

Costs: not applicable.

Results: significant savings in fuel and reduction of CO<sub>2</sub> output (e.g. for Malcolm annual fuel use was reduced from 352,538 litres to 158,326 litres, and CO<sub>2</sub> output was reduced from 927 tonnes per year to 416 tonnes).

Link/More information: No direct information available anymore. Please contact [FreightBestPractice.org](http://FreightBestPractice.org) for more information.

#### 26. Transportation of healthcare products by inland navigation (Baxter)

Aim: to improve speed and reliability, lower transport costs and emissions, and improve overall efficiency of the Baxter distribution centre's supply chain in the Benelux region.

Method: Baxter shifted all of its incoming containers from the deep-sea ports of Antwerp-Rotterdam and Zeebrugge away from trucks and onto inland navigation barges. With this container traffic now entirely on the inland waterways, Baxter has decreased its transport costs by 23 percent, while maintaining efficiency through increased reliability – a clear preference for consistently on-time deliveries over speed – virtually no congestion costs, and huge reductions in CO<sub>2</sub> emissions.

Costs: unknown

Results: costs are down 40% down compared to previous solutions. Barges also only consume 20% of the fuel needed for road transport.

Link/More information: Baxter won the CLECAT/FIATA/ITF Joint Prize for Innovation in Transport and Logistics along the Global Supply Chain in 2009. More information can be found on the [CLECAT website](http://CLECAT website).

#### 27. Shell Chemicals Europe and Bertschi AG network redesign

Aim: Shell was facing the problem of lacking sufficient storage capacity for the chemical substances produced at its site in Wilton (Northeast England). They wanted to reduce the complexity in their production and storage process and also reduce the lead times to the final customer.

Methods: Bertschi as their Logistics Service Provider proposed a concept for the direct loading of the finished goods from the production tanks into tank containers 24/7. Bertschi invested in the training of their drivers, so that they could self-load their vehicles. The process of increasing the transport efficiency required Shell to standardise the size of its produced batches to 50+-ton. This enabled Bertschi to improve its transport efficiency by loading two 25-ton tanks rather than splitting the orders in 23-ton loads. Furthermore, Bertschi contributed to the increase in transport

efficiency by improving back loads within their tanker fleet. All together both companies strived for much greater cooperation on the internal and external level.

Costs: significant costs for redesigning the supply-chain, in this case connected with investment in a new site.

Results: intensified use of intermodal traffic led to a decrease in CO<sub>2</sub> emissions

Link/More information: [BESTLOG.org](http://BESTLOG.org) (it is necessary to have a login for the website - register [here](#))

### 28. Reconfiguration of the supply chain structure (IKEA)

Aim: to optimize the supply chain structure in Poland.

Methods: IKEA evaluated logistics potential of all Polish suppliers. The most important issue was geographical concentration (50-100 km) of producers. A leader of the project was chosen and cooperation between the leader and the smaller suppliers was established. By consolidating the whole stock of products into one warehouse the overall efficiency was improved.

Costs: unknown.

Results: not only reduction in transport costs, but also environmental gains; development of European "green" corridors; positive impact on resources utilisation; decreased fuel consumption; more effective land and facilities use; reduction of CO<sub>2</sub> and noise emission

Link/More information: [BESTLOG.org](http://BESTLOG.org) (it is necessary to have a login for the website - register [here](#))

### 29. Lovosice Inter-Modal Terminal (CD / Duss Terminal)

Aim: A terminal designed for loading and unloading of trucks onto railroad wagons became obsolete after the EU accession of the Czech Republic. The company looked for a new use. Since then also rail transport suffered a decline, while road transport was increasing. The aim was to turn around this development and increase the share of rail and intermodal transport.

Methods: The companies involved was of the opinion that demand for inter-modal transport can only be boosted by constructing a new or major reconstruction of an existing inter-modal facility, which would enable fast, safe, and affordable handling with individual cargo units. Dudd mbh maintains and develops the inter-modal terminal in Lovosice, and helps to attract traditional customers of road transport to inter-modal by superior service, customized solutions, and reasonable pricing justified by large enough volumes of its operations.

Costs: unknown

Results: decreased noise pollution caused by trucks on the roads; contribution to decoupling of overall increase of transport volumes and traffic congestions on the roads; optional third mode available nearby by rail access to the Elbe river port

Link/More information: [BESTLOG.org](http://BESTLOG.org) (it is necessary to have a login for the website - register [here](#))

### 30. Sustainable outbound logistics for worldwide mobility (Mercedes-Benz, Stuttgart-Untertürkheim)

Aim: One basic aim of the project was to create a framework for the economic use of alternative forms of transport such as rail and inland waterways.

Methods: The plant in Stuttgart-Untertürkheim has centralized its global outbound logistics activities at Stuttgart's inner harbour. The Mercedes-Benz Central Shipping Department replaces the shipping areas of each of the seven sub-plants in the Neckar valley. Since its completion in December 2007, axles, transmissions and engines have been leaving the plant via the new site to destinations all over the

world (such as Mercedes-Benz passenger car plants in the USA, South Africa and China).

Costs: The buildings of the new site are rented. Thus, the own investment was only restricted to logistics assets with about 12 million Euro. Given that the annual savings mount up to 7.5 million Euro per year the own investment costs were already covered after two years.

Result: In 2003 100% of international outbound shipments were carried out by truck. Since the implementation of the Mercedes-Benz Central Shipping Department road transport has been reduced significantly. Today it only counts for 26% of all international shipments whereas 44% use inland waterways and 30% rail (figures from 2008).

As a result the distance covered by truck could be reduced by 3.7 million km per year. Accordingly, the CO<sub>2</sub>-emissions fell by 5,383 tons per year (figures from 2008).

Link/More Information: directly from [Mercedes-Benz](#)

### *31. Optimal routing (DHL Global Forwarding / Australia)*

Aim: Help HP to save CO<sub>2</sub> of its supply chain

Method: Relocation of switching centres and changing to other transport modes:

- The switching centre was moved from Perth to Sydney removing the need for overland transport
- A new switching center in Melbourne allows delivering directly to HP's largest customers on site instead of offloading everything in Sydney
- For land freight delivery trucks with higher storage capacity were used

Costs: not available

Results: DHL Global Forwarding helps Hewlett-Packard Australia to cut CO<sub>2</sub> emissions from its supply chain by 41%.

Link/More information: [DHL website](#)

### *32. Optimising Load Fill – Data Accuracy (Brakes)*

Aim: The company wanted to further reduce their food mileage and their carbon footprint. In turn this would further increase the vehicle fill, reduce empty running and return an additional income to the transport operations.

Method: Review current group backhaul operations by site and destination. Evaluate operational capacity per vehicle route and establish backhaul opportunity by identifying current supplier database on specified routes. To discuss operational commitment and capacity at NDC's to handle increased backhaul capacity.

With limited "software packages" all UK suppliers were mapped by temperature and geographic location. The PD (Primary Distribution) routes were then overlaid to find suppliers that were in the vicinity of our PD routes. Once the suppliers and routes were identified a closer look at the supplier was undertaken, volume, frequency, and time were the 3 key factors to be considered.

Costs: not available

Results: Vehicle fill was significantly increased in the first 6 months of the project. Backhaul capacity was reduced to 75% to ensure that customer expectation was met. Reduction in Empty running was calculated at ½ million miles. Continual backhaul review was established to ensure that new product launches were in scope as were product de-lists, ensuring that any space capacity was filled.

Links/More information: is available from the [IGD website](#) or the participating companies.

### *33. Maximising Case Fill By Rethinking 6 Pack Packaging Format (Pepsico)*

Aim: There was a desire by purchasing, operations and logistics to maximise product density to continue the productivity journey

Method: The company analysed the current situation: Move to full automation had caused a deterioration in case fill; pressure from the trade to supply an RRP solution that, unless responded to proactively, could result in further deterioration load fill through the imposition of an inefficient case by the retailers (potentially also an increase in SKU's if different retailers demanded different solutions. Move the packaging format from a 2 x 3 layout to a 3 x 2 format (a smaller more efficient pack).

Costs: For innovation (new package design)

Results: 20% increase in product density which directly translated to savings made in film, corrugate, storage and distribution costs.

- \* Solution met the needs of the retailer as it facilitated delivery of RRP solution
- \* Customer perception was handled by upfront communication
- \* Significant capital investment required as all automated packaging machines needed to be replaced but cost reduction enabled a cost effective business case to be developed
- \* Commercial worked closely with retailers to ensure that shelving adjusted to take account of the shorter pack size

Links/More information: is available from the [IGD website](#) or the participating companies.

#### *34. Dynamic Routing System and Sustainable Biodiesel (Commercial Group/UK)*

Aim: One of the UK's leading office services and supplies companies, Commercial has been [CarbonNeutral](#) since 2006 and is a leader in environment achievement. As 84% of its baseline carbon footprint was fleet, the cornerstone of this programme has been Commercial's vehicles. Here, the company has achieved a 71% reduction in its audited fleet emissions between 2006 and 2009 through a combination of low carbon fuels and low carbon driving.

Method: The Dynamic Routing System (DRS), commended by the Carbon Trust for enabling the company to reduce mileage and remove van routes, uses a combination of inputs, to optimise each route up to weekly, reducing mileage travelled and maximising load factors. Feedback is given to and by drivers to optimise driving style and to account managers to support their dialogue with customers to reduce carbon footprints further.

Commercial operationally uses sustainable biodiesel sourced from UK feedstock audited via a chain of custody model developed with assistance from the Energy Saving Trust. Fuel is delivered via an innovative real time blending system. Biodiesel and mineral diesel are blended between 0% and 100% by vehicle and by fill-up, ensuring that any diesel vehicle can run on an optimum blend of biodiesel. The fuel management system integrates with the biodiesel pump and DRS, allowing each vehicle, driver, route and delivery to be carbon managed. These systems are complemented by staff engagement, which has led to a greater use of public transport and teleconferencing and more responsible driving styles, driving training and a rigorous vehicle maintenance schedule.

Costs: Equipment and installation costs are less than £100,000

Results: Through its innovative DRS and sustainable biodiesel used by the entire fleet, the company has reduced its fleet emissions by over 70% since 2006. As well as reducing emissions, the carbon reduction programme has helped Commercial gain significant new contracts, worth over £8m, as well as saving over £100,000 a year. It has also provided measurable HR benefits and is a significant factor in recruitment; in a recent survey, 95% of staff felt engaged with the programme.

Links/More information: [Commercial Group](#)

*35. Boots Supply Chain Improvement Programme (SCIP) (Alliance Boots/UK)*

**Aim:** In 2008/09 Boots supply chain underwent significant change, both in the central warehouse and the network. This in turn has meant change to the way suppliers deliver stock to Boots.

**Method:** A programme called SCIP (Supply Chain Improvement) was implemented. This involved a day and half programme which starts in-store at the point of sale and works back through the whole supply chain flow. The programme targets the opportunities to improve their joint supply chain: it aims to increase efficiency and reduce cost.

**Costs:** unknown

**Results:** Master data realigned – more efficient ordering quantities; improved pallet presentation; reduced lead-times; improved relationships; increased backhaul opportunities; receiving dock changes to accommodate tall vehicle deliveries. In addition there was an increased awareness for suppliers of the Boots supply chain, and a smoother flow through the supply chain and improved service to stores

**Links/More information:** is available from the [IGD website](#) or the participating companies.

*36. IMPACT - Laundry Compaction and pallet optimisation project (Procter & Gamble)*

**Aim:** P&G initiated this project to address in partnership with the other industry players the need to further compact the laundry powders and liquids forms in order to reduce logistics and packaging costs, reduce product damage and reduce road miles and CO<sub>2</sub> emissions.

**Method:** All the stock-keeping units (SKUs) with a packaging change in scope were identified. The existing pallet fit of these SKU's was analyzed and improvement opportunities defined. In many cases this resulted into the ability to add a layer or to have more product per layer thanks to case re-design. The additional logistics opportunity were financially quantified and following engagement with the business team, additional resources were released to pursue these. Once the revised pallet fit was developed this was included in the project base-plan ahead of committing on the final project execution

**Costs:** unknown

**Results:** The total IMPACT project delivered great sustainability improvements:

- 12% lower raw and packing material usage resulting into 5000 Tons / year less packaging across WE
- 170.000 less laundry pallets across WE reduction (9% reduction)
- 2.5 million miles off the road
- 32000 tons less CO<sub>2</sub> emitted

**Links/More information:** is available from the [IGD website](#) or the participating companies.

*37. Total Supply Chain - Minimising total supply chain costs (PepsiCo -Walkers/ UK)*

**Aim:** Improve average load weight of Walkers, a high cube, low cost commodity, which was only 20% of maximum potential back then.

**Method:** Analysis of the current situation, including range of case sizes, Pareto analysis to identify biggest opportunities, kg/pallet across bag sizes in same brand, and differences between picked and full pallet. Then opportunities were identified and assessed. Successful trials were then grouped together to ensure a single large change was communicated to the trade at a time that was least likely to impact.

**Costs:** unknown

**Results:** Between 2005 and 2007 the company delivered an 8% increase in kg/pallet with a corresponding 8% reduction in logistic £/kg distribution costs.

Links/More information: is available from the [IGD website](#) or the participating companies.

### *38. Improving vehicle fill on store deliveries (Somerfield / UK)*

Aim: Somerfield spends circa £65m per year on transport in delivering product from it's RDC's into it's 800 plus stores. On this scale, even small improvements in vehicle utilisation can generate significant cost savings. They therefore wanted to identify where the main obstacles lie in improving vehicle fill and the work that has been undertaken to try and overcome these obstacles and capture the financial and environmental benefits associated with reducing road miles.

Method: Agreed measurement process with operations; volume smoothing and pushing longer life product into the lower order days; additional training of picking staff to improve cage stacking; challenge store curfews (some are historical); identify stores that could take palletised promotional stock (especially bulky lines); ensure system information around case dimensions is correct; challenge stores to move delivery window restrictions without reducing availability; condensing cages at the point of loading and overstuffing light product onto cages; instructing stores on how returns must be presented; created an outbase to maximise vehicle fill on the stem mileage for longer distance store deliveries; commenced the use of double deckers for some store deliveries.

Costs: unknown

Results: Increased vehicle fill based on 4 measurements:

- Cases per linear foot: Increase of 13%
- Cases per KM: Increase of 7%
- Cases per trip: Increase of 11%
- Cages per trip: Increase of 9%

Extension of fresh intake time (earlier) in just 3 local regions (14 stores) out of the South West has identified a saving of more than £250k per year and will remove 3 units and trailers. In addition it will reduce total road miles for that RDC by more than 200k miles per year.

Links/More information: is available from the [IGD website](#) or the participating companies.

### *39. Pallet Optimisation Project (United Biscuits / UK)*

Aim: Project to review and increase utilisation of cube by increasing case fill, optimising case design and number of cases per pallet. The project was initiated through a desire to reduce logistics and packaging costs, reduce product damage and reduce road miles and CO<sub>2</sub> emissions.

Method: The Logistics team established the following 8 step process:

1. Measure cube utilisation of the pallet for all products for current case dimensions
2. Identify quick wins such as additional layers and understand why currently not maximised
3. Review poor pallet layer designs.
4. Review case fill on all SKU's to identify opportunity with the case.
5. Share results and opportunities with other business to ensure engagement / support.
6. Work with customers where appropriate re case dimension / contents changes.
7. Change sign off processes for introduction of all new products ensuring max use of cube going forward.
8. Establish tracking database to track and publicise progress.

Costs: unknown

Results: Year 1 (2008) - Improved pallet utilisation resulted in saving of 27,000 pallets for like for like volume, reducing transport by 300,000 km.

Year 2 (2009) – 60,000 pallet reduction projected.

Links/More information: is available from the [IGD website](#) or the participating companies.

#### *40. Project Lego - Double Stacking (Unilever / UK)*

Aim: Project Lego was a European lead initiative which during phase one involved the analysis of load fill in primary transport (factory to warehouse). Ultimately, the objective of this project is to identify increased load-fill opportunities and carbon reduction through double-stacking and double-deck trailers.

Method: Based on the 2008 Customer load-fill analysis they were quickly able to understand where the main load fill issues were. Also at the same time working with their 3<sup>rd</sup> party LP they calculated financially the 'size of the prize'. From a brain storm session two areas of the business were identified:

- Using Double-Deck Trailers for External Christmas Co-Packing Operation
- Highlighting the load fill short fall with their Customer Service Managers

Costs: unknown

Results: Following double-deck co-packing activity they managed to save 75,000 kg of CO<sub>2</sub> emissions. It was calculated that if they had to carry the same volume using 26 pallet trailers it would have taken approximately a further 100 journeys.

Links/More information: is available from the [IGD website](#) or the participating companies.

#### *41. Optimising Load Fill for Quality Street (Nestlé - Quality Street)*

Aim: Customer requested for seasonal 1.1 kg Quality Street tins to be delivered on Düsseldorf pallets as opposed to standard [CHEP](#) pallets. This was a commercial agreement between Asda & Nestle to speed up the customers supply chain to the point of sale.

Method: The change of delivery mode had the potential to reduce trailer cube from 50 double stacked CHEP achieving 85% of total available m<sup>3</sup> Reducing to 66 base Düsseldorf pallets achieving only 60 % of total available m<sup>3</sup>. This again resulted in additional vehicle movements, additional booking slots and an overall increase in food miles. The company discussed the problem with Nestlé Customers Service Team and all responsible parties. Then they trialled loads of differing configuration with all relevant parties present and agreed to use box trailers to ensure maximum load restraint.

Costs: unknown

Results: Agreed standard loading layout and achieved 80% of total available vehicle m<sup>3</sup>, leading to a reduction of trucks on the street.

Links/More information: is available from the [IGD website](#) or the participating companies.

#### *42. Review of Backhaul operations (Brakes / Location)*

Aim: Review current group backhaul operations by site and destination. Evaluate operational capacity per vehicle route and establish backhaul opportunity by identifying current supplier database on specified routes. To discuss operational commitment and capacity at NDC's to handle increased backhaul capacity.

Method: The company has a very large supplier base both in the UK and Europe. The project focused on the UK suppliers. With limited "software packages" all UK suppliers were mapped by temperature and geographic location. The PD (Primary Distribution) routes were then over laid to find suppliers that were in the vicinity of their PD routes. Once the suppliers and routes were identified a closer look at the

supplier was undertaken, volume, frequency, and time were the 3 key factors to be considered.

Costs: unknown

Results: Vehicle fill was significantly increased in the first 6 months of the project. Vehicle fill prior to the project was approximately 45% and 12 months on it was running at 85%. Network capacity issues ensued at 85% mainly due to seasonal peaks in demand. Backhaul capacity was reduced to 75% to ensure that customer expectation was met. Reduction in Empty running was calculated at ½ million miles.

Links/More information: is available from the [IGD website](#) or the participating companies.

#### *43. Lifting roof trailer (Ceva / Location)*

Aim: Reduce number of vehicle movements for transfer of lightweight / high volume product (popcorn) from production site to NDC, a journey of over 50 miles requiring 5-6 full loads per day.

Method: Provide 3 high cube trailers with 3.4m internal height and standard running height. Trailers fitted with raising roof to enable ease of loading double stacked pallets from rear and sides. 52 pallet capacity with 104m<sup>3</sup> of product carried.

Costs: unknown

Results: Number of trips were reduced by 50% and the estimated savings amounted to 70k miles per year.

Links/More information: is available from the [IGD website](#) or the participating companies.

#### *44. Centralised transport planning (Ceva)*

Aim: The aim was to manage and co-ordinate at a national level shared user distribution requirements and resources based at multiple sites. Additional aims (among others): maximise delivery order consolidation through co-ordination of delivery bookings, improve vehicle utilisation, reduce mileage, and reduce carbon footprint.

Method: Implement a central Control Tower function located at one site. Develop the existing Transport Management System to provide visibility of all distribution requirements and available resources nationwide. Centralise delivery booking function to maximise consolidation of delivery orders. Centralise vehicle route planning and co-ordination of 1,000 vehicle movements per day.

Costs: unknown

Results: 10% improvement in vehicle fill to date, reduction in empty mileage, reduction in fleet required across the operating sites, and increased delivery service levels.

Links/More information: is available from the [IGD website](#) or the participating companies.

#### *45. Efficiency Improvement (Gist)*

Aim: Year on year comparison of distance run vs weight (volume) transported within a primary distribution network.

Method: A concept of 'Fewer Miles' and 'Friendlier Miles'. 'Fewer Miles' included: Filling the Cube (increased maximum planning capacity – planned to 108%), stacked product higher, transport collaboration, improved integration/backhaul, and improved vehicle capacity. 'Friendlier Miles' include driver training (driver management, performance league tables), vehicle design (aerodynamics), and vehicle telemetry.

Costs: unknown

Results: Their trucks ran 1.7% fewer km (659k) with volumes up 2.3% (27k tonnes).

Links/More information: is available from the [IGD website](#) or the participating companies.

#### *46. Load planning software implementation (Procter & Gamble / USA)*

Aim: The project was initiated by a need to maximize space utilization in load planning and to reduce time of load planning execution.

Method: Procter & Gamble has partnered with a supply chain solution provider to develop a customized load planning software. The Load Builder project has been implemented in two pilot sites both on full pallet and parcel businesses. The existing manual methods have been replaced by enhanced transportation solution enabling better visibility, standardization and automation.

To do so the project team has followed a 5 steps approach: Mapping the existing manual processes, install the automated solution and conduct pilot testing, automate the solution – hands off approach, optimise the solution, and expand.

Costs: for new software

Results: The Load Builder project has delivered so far up to \$3MM yearly savings through: improvement in truck utilisation; reduced manpower in DC planning; automatically created optimised trucks; automated shuttling plan; and optimised stacking rules.

Links/More information: is available from the [IGD website](#) or the participating companies.

#### *47. Load Security and Transport Collaboration (Nestlé / United Biscuits)*

Aim: Both Nestlé and United Biscuits recognised they had empty running which was a potential opportunity if they could find a third party with opposite transport flows. There was a potential for horizontal collaboration.

Method: Both companies agreed on some simple processes to ensure questions of product integrity, brand protection and load protection. In addition to these steps there is also an agreed communications process with the driver communicating any issues at collection of delivery point by exception.

Costs: unknown

Results: Between Oct 2007 and Feb 2009 the collaboration and reduction in empty running removed 280,000 truck kms from the roads. This has resulted in a reduction of 85,000 litres of fuel and a reduction of 223 tonnes of CO<sub>2</sub>. The collaboration has also generated a financial saving split between both businesses. There have been no load security or brand integrity concerns raised at all throughout the partnership.

Links/More information: is available from the [IGD website](#) or the participating companies.

#### *48. Over Sized Vehicle (Wincanton for Heinz)*

Aim: Due to the inherent weight of Heinz product e.g Beans, soup, ketchup etc load fill is restricted by payload capacity before cubic capacity becomes a restriction, known as "grossing out". The aim was therefore to increase load fill where gross weight is being reached before cubic capacity.

Method: Factory shuttle: A private link road was established during the building of a new national distribution centre (NDC) adjacent to the Kitt Green factory. This has enabled over sized vehicles to be built for the purpose of moving finished goods to the NDC, carrying up to 30 pallets in one movement.

Costs: unknown

Results: Reduced vehicle movements by c.3k trips per annum.

Links/More information: is available from the [IGD website](#) or the participating companies.

#### 49. Moving from a national to regional DC operation (Nestlé / UK)

Aim: Nestle were operating two separate national transport networks side by side resulting in the obvious inefficiencies, unnecessary food miles, poor vehicle fill, and high transport costs impacting service. The aim was therefore to move from a two National DC bespoke operation (one holding Beverage/Grocery Products located in Coalville Bardon Leicestershire, the other holding Confectionery located in York) to a Two Regional DC operation with both RDCs holding the full range of Nestle SKUs.

Method: Re-organisation of the supply-chain. For a detailed plan, please see the link further down. Steps include: Cross functional steering group across all Nestle Divisions was formed, milestones set and regular meetings held, revised /updated systems to facilitate legal, safe, and quality compliant double stacked loading of consolidated, re-structured the business to have one selling function products.

Costs: unknown

Results: 38 % Improved Trailer fill from Factory to Store; 20% Improved Trailer fill Store to Customer; ca one million pounds saved store to Customer; ca 806,000 Kms saved; ca 640 tons reduction in CO<sub>2</sub>.

Links/More information: is available from the [IGD website](#) or the participating companies.

#### 50. Axle /Gross Vehicle Weights (Nestlé / UK)

Aim: Ensuring vehicle cube opportunities are maximised whilst ensuring vehicle construction and use regulations are complied with.

Method: A major project across all Nestle divisions to update master data to record and manage the dimensions of every SKU was undertaken. For the detailed plans, please see the relevant link at the end.

Costs: unknown

Results: Increased vehicle cube for all inbound movements to Nestlé DCs from Nestle factory locations, reducing ca 117,000 Kms in 2008; increased vehicle cube to customers from all Nestle UK DCs, reducing circa 210,000kms in 2008. Achieved a substantial reduction in the number of vehicles on the road, thus reducing food miles, saving fuel and reducing CO<sub>2</sub>.

Links/More information: is available from the [IGD website](#) or the participating companies.

#### 51. Customer Order Size (Nestlé / UK)

Aim: Ensure vehicle cube capacity is optimised in a climate of diminishing order size.

Method: Among others: Nestle Customers service department created a role of 'Customer Service Implant' for each major retailer to work closely within their organisation. Therefore creating a communication median allowing information about the two organisations to flow freely with an end result to improve supply chain efficiency, of which reduced food miles and increased vehicle cube is key. Nestlé also offered their customers a Logistics Efficiency discount (LED) to encourage increased order size. In addition a major project was carried out across all Nestlé divisions to update master data and to record and manage the dimensions of every Stock Keeping Unit (SKU) that was undertaken. For more information, please see the relevant link further down.

Costs: unknown

Results: Increased vehicle cube to customers from Nestlé UK DCs achieving a reduction in food miles of ca 210,000 km in 2008. They also achieved a substantial reduction in the number of vehicles on the road therefore reducing food miles saving fuel and reducing CO<sub>2</sub>.

Links/More information: is available from the [IGD website](#) or the participating companies.

### 52. Working in Partnership – Night Time Deliveries (Sainsbury's / UK)

Aim: The development of a series of trials to respond to the increasing need to build flexibility into their network by having wider opportunities to deliver to their stores - to drive customer benefit, improve efficiency and reduce their impact on the environment.

Method: a number of stores were identified where there was some scope for discussion either because the restriction was very old and potentially no longer relevant and/or where the greatest benefit could be gained in terms of time and customer availability. It was also based on the fact that the stores had "local agreements" in place rather than formal planning conditions or Noise Abatement Notices.

The next step was to identify working partners in the process. These third parties helped provide an independent perspective and supported the project management of the trials as well as providing an escalation route for any issue resolution. The independent party can act as an 'honest broker', acting as a facilitator to bring together the retailer and the relevant local authority to form a project team to run the trial.

Costs: unknown

Results: The removal of night delivery restrictions enables the optimisation of delivery route planning. The effect of this will be to maximise the load fill by enabling the most stores possible in the tightest geographical location to be loaded onto a vehicle. This led to: Improved availability to customers, reduced journey times, improved turnaround times, improved vehicle utilisation potential due to less time on the road, improved fuel economy, and less CO<sub>2</sub> and associated emissions due to reduced fuel use.

Links/More information: is available from the [IGD website](#) or the participating companies.

### 53. Optimising Load Fill (Kimberly-Clark - Fiesta)

Aim: Making changes to product specification in order to improve vehicle fill. The height of Fiesta kitchen towel meant that it was impossible to stack to the maximum available vehicle height. This product was manufactured on the continent for import to the UK, and therefore it was highlighted that, with the longer journeys involved, this represented a good opportunity to utilise available space and reduce the number of km travelled.

Method: Having explored options to configure product differently on pallets in order to increase pallet height, it was identified that product specification was the key to increasing pallet fill. A cross functional team was set up, including representatives from manufacturing, marketing, packaging technology, customer management and supply chain in order to investigate whether there were options to change the product in order to improve pallet fill. It was identified by this team that a minor reduction in the height of the roll would allow pallet height to be maximised at 1.5m, allowing pallets to be double stacked to a maximum of 3m.

Costs: Internal management of the project, and changes to the product. This project was initiated in 2003, and took around 15 months to implement, including manufacturing / product changes.

Results: A minor change to product specification delivered the capability to add one extra layer of product to every pallet, reducing the number of loads required to be moved by 17%. The change was implemented smoothly without disruption to the supply chain, customers or consumers. Knock on benefits included a reduction in storage and handling costs for both Kimberly-Clark and retailers as a result of a greater pallet height throughout the supply chain.

Links/More information: is available on the [IGD website](#) or from [Kimberly-Clark](#)

#### 54. Reducing Packaging – Reducing the Cube (Woods Brewery – Lightweighting Glass)

Aim: The project was initiated through the desire for the business to reduce packaging and improve environmental performance.

Method: Edward Wood MD, found a new supplier of bottles, where the amount of glass used was reduced by 25% from 400 gr to 300 gr.

Costs: unknown.

Results: There used to be 840 bottles per pallet, now there are 960 per pallet. This means that an extra 120 bottles can be fitted on the pallet or an extra 10 cases. Overall reduction in shipping costs (pay by pallet between £40-45 per pallet). At £45/pallet old style bottles cost 64p per case to distribute and new style bottles cost 56p per case so per pallet there is a saving of 80p. And, lighter weight bottles = reduced cost of bringing bottles into plant for bottling, a further cost saving.

Also the lighter bottles meant a reduced cost to shipping into the brewery when empty, which led to even more savings by the business. The lighter bottles have an environmental benefit, an important part of the ethics of the company. When selling on pallet quantity, the extra 120 bottles equals extra sales.

Links/More information: is available from the [IGD website](#) or from [Woods Brewery](#).

#### 55. Dynamic Daily Scheduling (Gist/ UK)

Aim: The customer wanted to drive efficiency in transport operations by moving from fixed route operations to dynamic daily scheduling. A solution that could be successfully integrated with other stake-holder departments and the current operating methods of the Transport Department was necessary.

Method: Base case scenarios were created in [Paragon](#), which were then modified to demonstrate that schedule efficiency could be driven through dynamic scheduling. This was done whilst maintaining the critically important criteria of no changes in current delivery time windows. Modelling work was done over a number of weeks to take into account fluctuations in volume and other operational activity. When sign-off with the customer was achieved, Gist created a Central Planning Team consisting of 2 Planners and 1 Manager (all Gist employees). The team was set up to work on a 2 shift basis to enable planning to be carried out twice daily for the 2 different operating cycles.

Costs: unknown

Results: It is expected that the move from fixed route to dynamic scheduling will save the customer upwards of £0.5m per annum. It also delivers a platform for the customer's other business units to be considered for dynamic planning. Projected savings for customer in Year 1 were £500k, which represents approximately 5% of their transport budget of approximately £11m. Projected fleet savings mount up to 6% (5 units out of a fleet strength of 83).

Links/More information: is available from the [IGD website](#) or the participating companies.

#### 56. Use of scheduling within the DHL network (DHL)

Aim: The challenge was to drive improvements in the following areas: reduce transport costs by up to 20%, improve customer service; increase control of transport; reduce delivery lead times; be more responsive to customer demands; improve strategic decision making; reduce administration costs; underpin strategic growth objectives; eliminate paperwork.

Method: Please see the relevant link for an extensive list of measures that need to be taken into account. The re-organisation makes it necessary to cooperate with

virtually every department in the company. The success of the schedule is based on the effective development and delivery of processes and it is here that technology can support and reinforce.

Costs: unknown

Results: Efficiency gains, specifics not known.

Links/More information: is available from the [IGD website](#) or the participating companies.

#### 57. Technology used to manage the Primary Transport operation in a multi-category business (Nestlé)

Aim: Before Nestlé's operation was centralised each division organised their own transport requirements. This was inefficient, costly and not environmentally sound. It was recognised that integrating the disparate operations into one would not be achievable without a system solution that could bring visibility of the total operation to one place.

Method: In order to integrate the other divisions successfully the systems had to be simplified and where necessary moved to new platforms. An enhanced suite of applications was rolled across the operation. These included;

- Centralised load planning and vehicle scheduling
- Standardised WMS systems and interfaces at all DCs
- Adoption of "Toolbox" at all DCs to give live access to the vehicle schedule
- Enhanced yard management system at all DCs
- Web-based yard management at factories
- Web-based system for key hauliers

All relevant data about the vehicles progress had to be consolidated into one application and the system had to be intelligent to enable the team to focus on dealing with the exceptions that weren't progressing as planned. For more information, see the link.

Costs: unknown

Results: The centralised view of all the transport has: improved service (non delivery rate, due to transport related issues, to some customers is now less than 1 in 10,000 loads), increased options to backload more vehicles and reduced empty running and costs.

Links/More information: is available from the [IGD website](#) or the participating companies.

#### 58. Reducing unnecessary shunt movements (Boots)

Aim: Before the new yard system was implemented, each building was managing its own operation, which was leading to increased shunt moves to the trailer park and assets being under-utilised. The aim was therefore the implementation of a Yard Management System to increase site wide automation and reduce unnecessary shunt moves at Boots' Beeston site.

Method: Boots selected a market-leading vendor and implemented the C3 Yard Management System in September 2008. They switched the system over for the whole operation at the same time (which included 16 on site warehouses, 20 offsite warehouse and distribution centres). They chose a yard system with 'agent technology' to manage the automation of the shunt moves, outside supplier bookings and inbound trailer movements.

Costs: unknown

Results: They achieved a 20% reduction in shunt moves to the trailer park. They are also working towards a centralised 'Control Room', which will reduce the number of individual users. The biggest achievement has been the automated 'shipping runs'

which have allowed them to live load double deck trailers out of their main warehouse and give the operation an optimum shunting service.

Links/More information: is available from the [IGD website](#) or the participating companies.

#### *59. Developing Relationships (PepsiCo)*

Aim: Empty running/third party delivered loads were inefficient both financially and environmentally. The aim was to develop relationships with end customers to improve front haul and backhaul utilisation.

Method: The company initially agreed internally to increase relationships with their customers. Senior management holding the relationship with the supply chain team would discuss the opportunities at a high level with their customer contacts. Agreement in principle would then be passed onto the Transport Planning Management to agree the relevant routes and rates.

Costs: unknown

Results: Quantifiable reduction in environmental impact by reducing km's.

Links/More information: is available from the [IGD website](#) or the participating companies.

#### *60. Virtual Arrival (Intertanko)*

Aim: The primary aim of the project is to reduce actual CO<sub>2</sub> emissions. Ship owners already have great incentives to reduce fuel oil consumption further as it is the most expensive element in a tanker's voyage costs (60-80% of a typical tanker's total operation costs).

Method: This is done by taking advantage of inefficiencies in the market. Often ships steam from port to port at full speed, only to wait for days to load or discharge. This causes unnecessary fuel consumption and thus CO<sub>2</sub> emissions. One of the intentions of the Virtual Arrival Project is that the commercial benefits that accrue are shared between the vessel owner/operator and the charterer. Although developed for the tanker trade, the principles of Virtual Arrival are suitable for adoption in other trades where the required time of arrival at a destination port is not fixed or is subject to change due to operational or commercial reasons.

Virtual Arrival is a sustainable and practical process aimed at improving efficiency within the transportation chain, while achieving real benefits with regard to safety, fuel saving and reductions in vessel emissions. Shipping is a business with very long traditions and the obstacles relate to who is paying for the fuel oil, the waiting time as well as third party obligations. Virtual Arrival is a concept that aims to overcome existing obstacles. The project involves several parties, firstly the chartering and ship owning side, but also ports, insurers classification societies and weather routing companies. Weather routing may itself be a way to reduce GHG emissions and this project could mean a more widespread use of weather routing as the project involves establishing quality criteria for such companies.

Costs: unknown

Results: Reduction of GHG emissions by improving efficiency of the supply chain.

Links/More information: [Intertanko](#)

#### *61. Managing Smaller, More Frequent Deliveries (Kimberly-Clark)*

Aim: Current deliveries to customers were less than full load and therefore inefficient, and neither manufacturer was delivering daily to customers. Retailers wanted smaller, more frequent deliveries, the manufacturers wanted to be able to deliver this in an efficient way without introducing additional empty running or increasing costs.

Method: A single 3PL was awarded the contract to run the consolidation site and to undertake the combined deliveries. The consolidation aimed to enable smaller, more frequent delivery to customers without adding additional cost. This was to be measured in terms of drop size, delivery frequency, driven km and transport costs. It was essential that the involved manufacturers had similar organisational cultures. The success of the project depended upon there being a sufficiently common customer base, and compatible drop size requirements.

Costs: unknown

Results: Consolidation achieved:

- Service improvements: increased delivery frequency; fewer deliveries per vehicle; fewer trucks; improved vehicle fill
- Retailer DC benefits: lower inventory as a result of more frequency deliveries; improved availability of product; improved unloading efficiency; simplified dock planning
- Environmental Benefits: reduction in driven km of 20,000km per annum
- Cost Benefits: double digit percentage reduction in distribution costs.

Links/More information: is available from the [IGD website](#) or the participating companies.

### *62. Transport Collaboration (Kimberly-Clark)*

Aim: Discussions between two manufacturers identified that both were receiving less than full load orders for some smaller customers, and were not able to maximise optimisation of these deliveries due to the geographical delivery areas. Both companies had a desire to improve efficiency on those deliveries. Analysis showed commonality of delivery locations and compatible order profiles, and that significant reductions in empty kms could be achieved through consolidation of these less than full load deliveries. The aim was to reduce the overall mileage involved in making the deliveries, to reduce the number of inbound vehicles being received at the customer locations, to maximise drop-coincidences and therefore improve efficiencies, and to reduce costs.

Method: A single 3PL was identified for both companies. Any orders of less than full vehicle load quantities were included in the consolidation. Two manufacturers with compatible products were involved.

Key milestones were the agreement of intention to go ahead with joint deliveries, the appointment of a single 3PL, and the agreement of implementation date and go live. One of the key benefits of a transport-only consolidation is that it is much quicker and easier to implement than a new consolidation operation. It also gives an opportunity for feasibility studies to be done of consolidation benefits without high levels of investment in warehousing infrastructure or stock holding set up.

Costs: unknown

Results: Aims and objectives were achieved, with reduced mileage on the relevant deliveries, reduction of inbound loads to customer locations, and reduced transport costs.

Links/More information: is available from the [IGD website](#) or the participating companies.

### *63. Consolidation of Internal Networks – Project SHIRT (Nestlé)*

Aim: The physical integration of Nestlé UK's Food, Beverage & Confectionery distribution network - 1 order, 1 delivery, 1 invoice. Taking York (the then Confectionery DC), and Bardon (the then Grocery DC) and consolidating all categories into two, North and South DC's. The objectives were to improve customer service, reduce the need for overflow storage, minimise the impact of the Working

Time Directive, but also to reduce the environmental impact through less delivery miles.

Method: A high level assessment established the costs & benefits of each option, concluding that combined deliveries would be feasible and cost effective, and that Bardon should remain, and free space should be shared with other clients. A business case was developed and agreed. A more detailed study was then carried out to define how the new configuration could work. The measures were:

- Factory deployment split directly to both York and Bardon, with 50% of the total stored volume in York, was the lowest cost option
- Parent – child, where lines would be deployed to either Bardon or York, then redeployed as required, was 10% more expensive than a direct factory split deployment.
- A Fast – slow split, where both options apply depending on individual SKU throughput, costs slightly more than factory split, but is more flexible.
- Capacity of the in house Nestlé owned site at York needed to be maximised.

Costs: unknown

Results: In addition to the cost savings significant reduction of trucks on the street.

Links/More information: is available from the [IGD website](#) or the participating companies.

#### *64. Modal shift for Sanofi-Aventis (DHL Global Forwarding / Germany)*

Aim: Help Sanofi-Aventis to save CO<sub>2</sub> of its supply chain

Method: Change the delivery of temperature-controlled goods for sea freight export from heavy goods vehicles to inland vessels.

DHL Global Forwarding transferred five container units each week from road to inland waterways network from Mainz to Antwerp or Rotterdam. By switching to inland waterways emissions can be reduced by around 1/3 to 22kg of CO<sub>2</sub> per tonne.

Costs: not available

Results: Sanofi-Aventis reduced its carbon footprint by 30%.

Links/More information: [DHL website](#)

#### *65. Modal shift for Bosch Siemens Household Appliances (DHL Global Forwarding / Germany)*

Aim: Help BSH to save CO<sub>2</sub> of its supply chain

Method: Over 13,000 containers had been transported by 120 trucks between the BSH factory in Giengen, South Germany, and container terminals in Hamburg and Bremen per year.

With a new rail terminal, including two new 359-meter tracks, BSH's factory in Giengen was connected to existing rail connections

Costs: not available

Results: By moving freight from road to rail CO<sub>2</sub> emissions are cut by over 60%, one intermediate stop is saved and the runtime is the same as before.

Links/More information: [DHL website](#)

#### *66. Primary Network (NFT/Sainsbury)*

Aim: There were a number of objectives that the project set out to deliver, including:

- The migration of Sainsbury's suppliers into the Primary network □ more cost visibility, maximisation of potential for consolidation and thus efficiency
- The reduction of empty running (measured by monitoring vehicle fill for each delivery on a weekly basis)
- Reducing Sainsbury's carbon footprint by driving fewer kilometres for each pallet delivered

Method: Sainsbury's (JS) has been working with NFT for over 15 years in both primary and secondary distribution. NFT initially approached Sainsbury's with a proposal to collect and consolidate suppliers product through one of three transshipment "hubs" strategically located within the UK. This enabled a reduction to inbound RDC deliveries by optimising vehicle fill on each load as well as utilising the same vehicles to collect suppliers product en route following an RDC delivery. The fully open-book model of a three-hub Primary Network (called NPPN – National Perishable Primary Network) commenced deliveries in June 2002.

Costs: unknown

Results: The NPPN has now been in place for over six years and average vehicle fill has increased by 20% during that time, therefore reducing empty running substantially. Planning initiatives utilising Sainsbury's secondary store fleet to undertake primary collections / deliveries which now account for 26% of all journeys, further reducing Sainsbury's carbon footprint (5.4 million km saved per annum which is equivalent to 4.6 million CO<sub>2</sub>). Use of the NPPN fleet to undertake store deliveries have further reduced km and CO<sub>2</sub> emissions (2.2 million km which is equivalent to 1.9 million kg of CO<sub>2</sub>).

Links/More information: is available from the [IGD website](#) or the participating companies.

#### *67. Pallet Network (Pall-Ex / UK)*

Aim: A Retail company in the UK wanted to re-organise its distribution network, but also to reduce its carbon footprint. Pall-Ex provided a tailor-made consolidation solution.

Method: To cater for the requirements of this UK Retailer, Pall-Ex contracted one of their member depots to collect freight from the their warehouse, freight was then delivered to the hub and processed as above. Pall-Ex provided more flexibility in terms of flowing deliveries from their regional distribution centres, allowing them to distribute goods quickly. The Retailer required unwrapping, decanting and storeroom delivery of their freight by the delivery driver. Pall-Ex had to instil this process into all of its member depots to maintain consistency for all deliveries.

Costs: unknown

Results: By choosing to outsource through a palletised freight distribution network, the Retailer has calculated that they make annual savings of 890 tonnes of CO<sub>2</sub>.

Links/More information: is available from the [IGD website](#) or the participating companies.

#### *68. Consolidation project (The HEART of ENGLAND fine foods (HEFF) Delivery Service)*

Aim: The business issues facing HEFF members initiated the project; increasing costs of distribution, efforts to reduce the food and drink carbon footprint and the similarity of current and target customers were the key drivers for a coordinated and consolidated approach that was then developed in consultation with producer members. The aim was to generate trade opportunities and sales for regional food and drink but also to reduce the total number of journeys made by regional producers when transporting food.

Method: Route sharing along common delivery routes via an online programme making use of postcode mapping was the first step to address the issues identified. This programme was designed to HEFF's specification and addressed the objective to reduce the number of journeys but did not provide the complete one order, one invoice package; suppliers would still receive and issue individual orders and invoices. Rather than reject this first step it has been integrated into the consolidation project and three satellite hubs have been formed with route sharing

taking place into and out from the satellite hubs which then feed into the central depot where orders, invoices and deliveries are coordinated.

Costs: unknown

Results: The service reduces costs of distribution for producers, but it is also already reducing unnecessary journeys to a shared customer base and therefore is contributing positively to the overall carbon footprint of regional food and drink. Sales for producers are increasing as a result of the consolidation.

Links/More information: is available from the [IGD website](#) or the participating companies.

#### *69. Distribution Consolidation (United Biscuits / Jacobs)*

Aim: After UB took over Jacobs biscuits they sought for significant synergy benefits enabling cost reduction, service improvement and reduction in vehicle miles.

Method: Consolidation of storage and distribution at United Biscuit's NDC in Ashby de la Zouch. To integrate distribution networks of United Biscuits and Jacobs– 1 order, 1 delivery, 1 invoice. Consolidating network also enabled review, alignment and improvement of Jacobs pallet enabling further cost and environmental benefits.

Costs: unknown

Results: Project delivered on time, on budget and with no impact on customer service. 5.8% reduction in vehicle miles enabling cost and CO<sub>2</sub> reduction. Centralised stockholding enabled reduction in overhead costs and reduction in working capital.

Links/More information: is available from the [IGD website](#) or the participating companies.

#### *70. Bristol Consolidation Center (DHL / UK)*

Aim: Reduce pollution and traffic congestion in city centre

Method:

- Environmental benefits through consolidated deliveries
- Now serving 63 retail outlets
- Electric vehicle in operation
- Use of bus lane now agreed with Bristol CC

Costs: unknown. Operation began in May 2004 with European funding and continues under the EU Intelligent Energy Europe Programme

Results: Benefits and savings

- 76% reduction in delivery trips for retailers
- Saving over 227,000 vehicle kilometres
- 27 tonnes of CO<sub>2</sub>, 870kgs of NO<sub>x</sub> saved
- Over half of retailers achieve 20 minute saving per delivery
- 100% on time delivery

Links/More information: [DHL website](#)

#### *71. Heathrow Consolidation Center (DHL / UK)*

Aim: to reduce pollution and traffic congestion, improve security across the supply chain and release of space, increase flexibility to support Heathrow retailers contingency plan

Method: Establish a new 55,000 sq freight facility with multi-temperature warehouse for wide variety of retail goods, security sealed cages and scanning for all airside deliveries, delivery accuracy ensured via bar code scanning, and bespoke development of new roll cage delivery media to improve security screening efficiency. Continuous improvement is monitored via bi-monthly service level surveys with retailers and British Airport Authority. Effective waste management and returns management has been introduced. Stockroom services to support retailers: pre-

retail, inventory management. The operation has been running for over 6 years – 24 / 7.

Results: Reduction in pollution and traffic congestion at terminals by 70%; fewer disruptions to supply chain reliability - guaranteed service; reduction of risk through controlled flows from one main supply partner.

Links/More information: [DHL website](#)

#### *72. Green Corridors: 'En Trave Till' (Skogfors / Sweden)*

Aim: "En Trave Till" (ETT) is a research project investigating the possibilities of achieving higher energy effectiveness and reduced transport costs by increasing timber cargo transport volume.

Method: The project is implemented in two pilot practical tests in Norrbotten and in Dalsland/Värmland and led by the Forestry Research Institute of broad cooperation between the forestry, automotive manufacturers, forest industries, Sweden's National Association of Road Haulage Companies and Private Roads. The project investigates how much fuel consumption can be reduced by timber transportation with longer and heavier than today's vehicles.

Costs: unknown

Expected results: The expected result is reduced fuel consumption by about 20 percent. The project will be finished 2012.

Links/More information: [Skogforsk](#) and [Green Corridors](#)

#### *73. Eurobridge Gothenburg-Ghent (DFDS/ Sweden)*

Aim: Reduce CO<sub>2</sub> emissions.

Method: EuroBridge is an intermodal logistics system linking Sweden and Belgium for further transport in Europe via the ports of Göteborg and Ghent. The EuroBridge integrates maritime and land transport through an effective use of information systems. Participating players are AB Volvo, Green Cargo and the Viktoria Institute.

Costs: unknown

Results: EuroBridge short sea shipping saves app. 161 km in regard to road transport between Gothenburg and Ghent.

Links/More information: [Green Corridors](#) and this [presentation](#) (see slide 3 and following)

#### *74. Green Corridor Gothenburg – Zeebrugge (Stora Enso/ Sweden)*

Aim: The goal is to develop additional rail shuttles at both ends of the coast line for container, trailer and other intermodal freight carriers.

Method: This project builds on an existing corridor for intermodal transport units from Sweden to the continent where the majority of the corridor consists of the ferry line between Gothenburg and Zeebrugge. Maritime routes are served by RoRo vessels with highest performance. The land transport part includes most of the corridor to and from Gothenburg and Zeebrugge, mainly served by rail, and supplemented by trucking. The corridor will have a common platform for web-based booking, management, cargo monitoring, tracking, etc., and reporting of environmental performance based on the load factor of the carrier. Participating players are Green Cargo, Port of Gothenburg and Stora Enso. From the Belgian side involved Cobelfret and B-Cargo, BE.

Costs: unknown

Expected results: reduce the environmental impact of transport and find multimodal transport solutions.

Links/More information: [Stora Enso](#) and [Green Corridors](#)

75. Efficient use of combined terminals over short distances (Green Corridors / Sweden)

**Aim:** "Efficient use of combined terminals over short distances" is based on the idea of improving the efficiency of intermodal transport chains by looking at the possibility of allowing a double trailer to drive to and from the nearest terminal. Especially major cargo owners have the ability to more effectively use their flow of goods and frequency.

**Method:** The project deals with the conditions for exemptions in general, but especially focuses on the project to quantify the potential in terms of cost, efficiency and environmental quality. The project is part of the Green Corridors project of the EU.

**Costs:** unknown

**Expected results:** The reduction of cost, as well as efficiency and environmental quality gains.

**Links/More information:** [Green Corridors](#)

76. Freight Facility Grants (Day Aggregates / UK)

**Aim:** Day Aggregates operates a number of terminals in the London area catering for the construction industry including one of the few active tri-modal terminals, offering a choice of road, rail and water. The aim was to reduce lorry journeys.

**Method:** The company actively seeks to use sustainable means of transport to bring the bulky commodities from source to a terminal near to their point of use. Day Group Ltd received a Freight Facilities Grant of just under £1 million for the provision of rail infrastructure at Purley in South London to enable aggregates to be transported from two quarries at Cliffe (Kent) and Torre (Mendips, Somerset) to Day Aggregates' facility at Purley.

**Costs:** unknown

**Results:** The environmental benefits of the scheme are over £11 million, which equates to over 322,000 lorry journeys and 52 million lorry km removed over the 10 year period of the grant. This is based on the transport of around 115,000 tonnes per annum of aggregates from Cliffe and 200,000 tonnes from Torre to Day Aggregates' rail depot in Purley. Over the 10 year period of the scheme over 3.1 million tonnes of aggregate will be moved by rail.

**Links/More information:** [Freight Best Practice](#)

77. CEOCS™ - carbon emission offset contribution scheme (Arrowlink Express / UK)

**Aim:** The idea is to offset the emissions of transporting goods by road.

**Method:** The emissions are calculated according to the km for the trip and then offset by way of sequestration in forestry plantations in the third world, which also provide habitat for wildlife and employment and resources for local people. The scheme we use is operated by [Carbon Clear](#).

**Costs:** 2/3 of 1 cent per km

**Results:** The method enables to offset carbon emissions on road without extra costs.

**Links/More information:** [Arrowlink Express](#)

78. The Wine Train (JF Hillebrand/UK)

**Aim:** Cost-effective inland transport, reduced road congestion and lower carbon emissions.

**Method:** Following some two years of planning and development and with an initial investment of £1 million, JF Hillebrand launched "The Wine Train" in March 2008, an innovative and exclusive Tilbury to Daventry Rail Service. Now operating on a daily basis, each train carries over 350,000 bottles of wine. They worked closely with intermodal train operators Freightliner to develop a commercially viable service that

compliments pre-existing lines. They invested well-over two-years of development to create this solution in a cost-efficient manner, whereby customers would enjoy both environmental and supply chain performance benefits without enduring any additional costs.

Costs: unknown

Results: The Tilbury to Daventry service is estimated to save an average of 326 km (204 miles) per road-trip equivalent. By conservative estimates, the savings are over 280,360gm CO<sub>2</sub> emissions per container shipped via the rail service. This equates to at least 1.7 billion grams of CO<sub>2</sub> savings per-year. Furthermore, the service is estimated to take 6000 vehicles off the heavily congested M25 and M1 major trunk routes per year (these motorways are widely recognised as two of the busiest roads in the UK).

Links/More information: [JF Hillebrand](#)

#### *79. The Wine Barge- Pioneering logistics movements via inland waterways (JF Hillebrand/UK)*

Aim: reduce congestion and carbon emissions with an exclusively engineered logistics solution for UK retailer Tesco.

Method: Before the Wine Barge, Tesco's New World wine shipments (mainly from Australia, California, Chile and Argentina) arrived in the UK at various southern ports by ship before being driven to the Manchester bottling depot. By shipping direct into Liverpool and then trans-shipping from the Liverpool terminal to the container terminal in Manchester, JF Hillebrand is helping Tesco ensure that the traffic stays on the water rather than roads for as long as possible.

Costs: unknown

Results: The pioneering, green waterborne move from Liverpool to Manchester on the Manchester Ship Canal will cut carbon emissions compared with the existing method by 80 percent. The Wine Barge delivers some 600,000 litres of wine on each journey along the 40 mile stretch of the canal. The new transport method will also take 50 lorries off the road every week, resulting in an incredible saving of 1.1 million kilometres of heavy lorry journeys on British roads.

Links/More information: [JF Hillebrand](#)

#### *80. Hillebrand Bulk (JF Hillebrand/UK)*

Aim: Bottled product remains the favoured way of importing wines and spirits into the UK, however many global wine shippers are looking for an alternative which will provide cost and environmental benefits without compromising the quality of the wine.

Method: In April 2007, JF Hillebrand acquired 100% of the shares of Trans Ocean Distribution Limited, the leading and most innovative provider of transportation solutions to the bulk liquid shipping industry. The combination of Trans Ocean Distribution's expertise in designing and manufacturing flexitanks for bulk liquids complimented JF Hillebrand's position in global beverage logistics. Trans Ocean Distribution Ltd's expertise in the design, construction and use of flexibags enabled JF Hillebrand to provide customers the best possible service for the transport of wine in bulk.

Costs: unknown

Results: The environmental benefits of bulk shipping are incontrovertible. A single container holds 10,584 litres of bottled wine, compared to 24,000 litres of wine in Hillebrand Bulk's VinBulk system. That's more than double the capacity! Naturally, this cuts transportation costs dramatically. Furthermore, VinBulk shipping also reduces carbon emissions – in some cases by up to 50%.

Links/More information: [JF Hillebrand](#)

*81. Reduce carbon footprint: management (UK Mail)*

Aim: Increasing the environmental sustainability of its operations as UK Mail regards the adoption of effective and relevant carbon emission reduction initiatives as crucial to its constantly evolving strategy.

Method: Some of the improved management solutions used were:

- Reduction of the fleet travel distance travelled via effective route planning and optimisation of vehicle fill.

Costs: unknown

Results: In 2009/10 UK Mail achieved its target of cutting carbon emissions from their vehicles by 10%. Changes to routes and optimisation of vehicle fill combined with the above have collectively resulted in the reduction of distances travelled by in an excess of 1 million kilometres, leading to savings in CO<sub>2</sub> emissions of 134 tonnes for the year 2009/10.

Links/More information: [UK Mail](#)

### **III. Workforce**

#### *1. Impact of EcoDriving on emissions and fuel consumption*

Aim: Examine the connection between fuel consumption and eco-driving.

Methods: Apply eco-driving measures: the study examines whether eco-driving has any negative impacts, the study has been used to make measurements of driving styles, fuel consumption and emissions before/after.

Costs: unknown

Results: In the study, fuel consumption was reduced by an average of 10.9%, which should be regarded as typical for training in EcoDriving. There is a clear-cut relationship between the percentage of time at more than half-throttle and higher emissions of hydrocarbons and carbon monoxide. It was not, however, possible to demonstrate any relationship between the percentage of time at more than half-throttle and fuel consumption and the emission of nitrogen oxides.

Link/More Information: [EcoDriving study](#)

#### *2. Fuel saving tips, Department for Transport, UK*

Aim: The brochure, mentioned below, is a short, comprehensive guide with several tips for fuel saving. It gives an overview over short and simple fuel saving tips, particularly aimed at small-fleet operators and owner-drivers. Because of its size, it can be taken onboard a vehicle for the driver's consideration.

Methods: Fill in your truck operating costs; identify resistance of your truck (tyres, trailer front fairing, air dam, etc.)

Costs: none

Results: Fuel savings equal economic benefits

Link/More Information: Freight Best Practice [Fuel Saving Tips](#)

#### *3. The Fuel Efficient Truck Driver's Handbook*

Aim: As a driver, you have a significant impact on fuel consumption. Alert, positive and professional drivers can reduce fuel use and hence vehicle emissions, operating costs and contribute to greater road safety.

Method: publication of a handbook, that collects various measures targeted at improving fuel efficiency by addressing the driver of the transport vehicle.

Costs: negligible

Results: fuel savings

Link/More Information: Freight Best Practice [Fuel Efficient Drivers Handbook](#)

#### *4. Engine Idling (case studies by Lloyd Fraser Group plc, Allies Bakeries Ltd, Ralph Coleman International Ltd, Leggett's Transport Ltd)*

Aim: Excessive idling of HGV engines is simply a waste of fuel and money. With modern vehicles, the cost of switching off the engine and starting up again is usually less than the cost of leaving the engine idling.

Methods: 4 stages: Plan your campaign - brief your drivers - run the campaign - communicate the results

Duration: advisable to have a trial period: 2 weeks without anti-idling, 2 weeks with anti-idling measures

Costs: training and communication

Results: if results of the trial would be extended to a whole year, the company (Lloyd Fraser) would save 65.000 litres of diesel, € 65.250 and 170 tonnes of CO<sub>2</sub>. The other companies have also experienced significant savings.

Link/More Information: [Freight Best Practice](#)

5. *Reduced Fuel Consumption and Accidents through Driver Training (Berger Beteiligungsgesellschaft mbH)*

Aim: reduction of fuel consumption.

Method: driver education, each truck is equipped with a driver handbook that includes information on economical driving methods. To evaluate the programme a measurement system was created.

Costs: € 72.000 for training courses and evaluation

Results: fuel consumption was reduced, saving 1.12%, saving € 73.000 in 6 months. More dramatic was the reduction of accidents, with a reduction of 25%, which amounted to savings of € 88.000 in 6 months.

Links/More information: [IRU Best Practice Guide](#)

6. *Bonus System to Encourage Drivers to Drive Safely and Fuel-efficiently (H.P. Therkelsen)*

Aim: improve driver safety and fuel-efficiency.

Method: driver training and a bonus system for drivers.

Costs: Monitoring of costs for each vehicle ca. € 1.000.

Results: lower risk of accidents and less environmental impact. Between '97 and 2000 there were a 23% reduction of losses and a 21% decrease of insurance premiums for vehicles and goods as well as a continuous reduction in fuel consumption.

Links/More information: [IRU Best Practice Guide](#)

7. *Driver Training for Improved Safety and Fuel Efficiency (Metzger Spedition GmbH)*

Aim: Improved safety and fuel efficiency. A driver training programme was initiated in 1997.

Method: All drivers took part in "economy" and "safe driving" classes. The training focuses on teaching drivers, even the most experienced, moderate driving methods and correct gearbox handling. Appropriate incentives were introduced to encourage and reward above-average economical and, thus, ecological driving behaviour.

Costs: The training costs in 1997 amounted to € 6.100, which is equivalent to € 120 per year for each of the 50 drivers who had to be trained.

Results: Fuel efficiency has increased by 12%. The company has saved a total of 30.000 litres in fuel. At the same time, CO<sub>2</sub> emissions have been reduced by a total of 81.000 kg. The number of accidents has decreased by more than 8%.

Links/More information: [IRU Best Practice Guide](#)

8. *Reduction of Accidents by an Internal Training Programme: "Challenge of the Day" (Nijman/Zeetank Holding BV)*

Aim: The company in question decided to develop internal training for logistic operations with the goal of achieving the highest possible level for this type of programme.

Method: Theoretical introduction, which can be quality/ safety/ environmental information and a legislation item (for example, the IMDG code). Background information on a customer, such as company organization; product information or Material Safety Data Sheet (MSDS). "Challenge of the day". This module is used to help participants learn from mistakes by examining case studies from actual company operations.

Costs: The course was written internally during office hours and consisted of a compilation of historical data, practice examples, etc. The total costs were about € 12.000 (200 hr at € 60/hr). The cost of the training itself is approximately € 2.500 per person.

**Results:** One result of the internal training programme is the 16% reduction in road accidents. Nevertheless, because of the overall reduction in road accidents, the company received an insurance rebate of some € 7.500. Integration of new employees has become a much easier task thanks to the internal training programme.

**Links/More information:** [IRU Best Practice Guide](#)

#### 9. Safe Loading and its Implications (Otto Görgens Spedition-Transportlogistik / Lübeck)

**Aim:** Training for safe loading of trucks was carried out within the context of certifying the company to the BGL label and ISO 9002 standards. All vehicles were equipped with improved load restraint systems. The company became involved in improving safety aspects because management decided to participate in a research group. The purpose of this group was to create guidelines for securing cargo.

**Method:** The following procedures are planned or have already been implemented in order to ensure that all participants adhere to the guidelines for secure and reliable loading of trucks: training and re-training for all drivers and loaders; provision of a sufficient quantity of load restraint systems; implementation of self-monitoring; development of application-oriented regulations for effective safe loading. An important part of this measure was to convince the drivers and loaders to pay more attention to securing cargo and to provide them with state-of-the-art load fastening systems.

**Costs:** The initial costs for training, monitoring and acquisition of load fastening systems amounted to € 3.600 in all. Annual recurring costs for training and material procurement will be approximately the same

**Results:** The positive effects are reduced fuel consumption resulting from optimized load distribution and avoidance of spillage of dangerous substances.

**Links/More information:** [IRU Best Practice Guide](#)

#### 10. Reduction of Fuel Consumption supported by Monitoring (Transportes Campillo SA)

**Aim:** reduce fuel consumption by purchasing vehicles with automatic transmissions, driver training and the assignment of one driver as an instructor, and monitoring fuel consumption for each trip.

**Method:** creation of tables that analyse fuel consumption by route, type of vehicle and transported weight. In total, 49 tables have been established for routes to nearly every country in Europe, with each table containing data on three types of vehicle. Separate tables have been created to show the fuel consumption for each driver.

**Costs:** The cost of developing and maintaining the tables is difficult to quantify as this was still an ongoing process. Driver training cost about € 3.600 and was carried out by a technician from IVECO.

**Results:** A significant reduction in fuel consumption was achieved. This reduction was largely due to driver training and the purchase of vehicles with automatic transmissions. Relating information from the graphs with the recorded kilometres driven by each driver, the illustration shows that, between 1998 and 2000, while the total distance driven increased by 42.992 km, fuel consumption was reduced by 104.034 litres, equivalent to 4.19%.

**Links/More information:** [IRU Best Practice Guide](#)

#### 11. Reducing Accidents by Implementing a Safety Manual (Transportes Luís Simões)

**Aim:** TLS aims to improve working conditions by reducing accidents and promoting a high quality of life for its employees.

**Method:** developed a safety manual that defines and records the operations and procedures in use within the company. This manual is continuously updated and helps to ensure that all work sites use procedures that promote safety, health and hygiene. It also designates employees responsible for certain tasks and indicates when those tasks should be executed.

**Costs:** Although very difficult to quantify, direct cost benefits result from use of the safety manual: lower costs because of the reduction in injuries and incapacities; lower costs because of fewer operational failures; lower training costs for new employees.

**Results:** The safety manual promotes and protects the health of employees and results in fewer work-related accidents; improved quality of service; lower rate of absenteeism; improvement of the internal and external image of the company.

**Links/More information:** [IRU Best Practice Guide](#)

### 12. Improved Efficiency through use of a Guidance and Communication System (VSV Frakt AB)

**Aim:** sustainable development by offering harvesting and transport systems that have a lower impact on the environment

**Method:** the introduction of an EMS and further increase the efficiency of its haulage work, the company has developed a computerized system for transport guidance and communication. The system is called TROMB (Transport Och Mobil Beordring, Transport and Mobile Instructions). TROMB supports mobile communications and consists of a Geographical Information System (GIS), Global Positioning System (GPS), e-mail and emergency alarms. Each mobile unit consists of a computer, keyboard, mouse, monitor, GPS receiver, Mobitex, DARC (Data Radio Channel) communication and an alarm. Mobitex is a wireless network architecture necessary to support wireless terminals. This system is the basis for: transport planning; the distribution of transport orders; direct mailing to the logging truck; alarms in case of accident.

**Costs:** cost is considerably higher than for a standard office computer. Each mobile unit costs about SEK 60.000 (€ 6.300) including mounting, accessories and antennas. The forestry research unit in Skogforsk nevertheless calculates that the system can be amortized in under two years.

**Results:** On the basis of an annual survey of all logging trucks, it is estimated that the TROMB system will reduce CO<sub>2</sub>, NO<sub>x</sub>, and particle emissions by 5% per transported tonne between 1998 and 2003. Information can easily be transferred between the mobile communication systems and the onboard units. This means that the logging trucks can operate over larger geographical areas and 24 hours a day. Also, the rate of returning cargo has increased. Telephone costs have decreased because of the e-mail system.

**Links/More information:** [IRU Best Practice Guide](#)

### 13. Driver Training for Improved Safety and Fuel Efficiency (Wullkotte & Hackmann Trucking & Transport GbR)

**Aim:** driver training programme to improve skills appropriately

**Methods:** The drivers are responsible for determining their fuel consumption. Any irregularities are analysed immediately and possible causes are discussed. If extra maintenance is required, the schedule is checked to see if this can be programmed in

**Costs:** The training costs are € 610 per employee per year. This includes: training in safe and economical driving; training by specialists in transporting dangerous goods; training by specialists in occupational safety methods; training by company management.

Results: Based on an average of 145.000 km per driver per year, the costs for driver training are € 0.42/100 km. If the driver saves an average of 0.75 litres of fuel per 100 km through economical driving, then € 0.53/100 km is saved in fuel costs. The result is a cost advantage of € 0.10/100 km or € 151 per year.

Links/More information: [IRU Best Practice Guide](#)

#### 14. Fuel Saving in a Scottish Haulage Fleet (John Mitchell [Grangemouth] Ltd / Freight Best Practice)

Aim: reduce running costs of their fleet by investing in driver training, anti-idling policy and aerodynamics specification.

Methods: Driver training with the help of the Safe and Fuel Efficient Driving ([SAFED](#)) programme. For modern vehicles the cost of switching off the engine and starting up again is usually less than the cost of leaving the engine idling. Thus the company invested in an anti-idling campaign.

Costs: relatively low – driver education.

Results: 7% reduction in fuel consumption and CO<sub>2</sub> output and fuel costs saved in the amount of £ 274,089 through driver training. Anti-idling measures led to weekly savings of £ 700 per week.

Link/More information: No direct information available anymore. Please contact [FreightBestPractice.org](#) for more information.

#### 15. Ongoing Miles-Per-Gallon (MPG) Improvements (Asda)

Aim: no specific focus on improvements in fuel efficiency performance. Driver training was not concentrated on fuel efficient driving and fleet providers were not engaged to support any improvement process. However their sustainability agenda (as well as their cost agenda) was demanding a reduction in fuel usage.

Method: Vehicle telematics have been able to provide information on various aspects of engine and driver style performance to enable their sites to focus their attention on these aspects. In addition an investment in dedicated resource to enable new approach to driver training was made.

Costs: unknown

Results: 2.7% MPG improvement through 2007; 3.1% MPG improvement through 2008; target of a further 2% improvement through 2009.

Links/More information: is available from the [IGD website](#) or the participating companies.

#### 16. Improved performance through driver style training (Robert Wiseman Dairies / UK)

Aim: The company travels approximately 43 million miles using about 4.8 million gallons of fuel giving per year. The aim was to save fuel, as it is one of the main cost drivers.

Method: Rollout of a tracking and telematics system with a view to focus on driving style to improve fuel consumption across the fleet. The business case for the system was built entirely around fuel consumption improvement. During the trials they recorded driving style criteria and overall fuel consumption for a number of vehicles. The drivers were then given [SAFED training](#) and asked to carry out the same run as previously. The results were immediate and the company managed to sustain themselves through discussing driving style performance as part of the daily drivers debrief. They also produced results tables from the system and made them available on notice boards in the sites so that drivers could compare their own performance against other drivers.

Costs: unknown

Results: During a six month period at the start of 2009 the company increased fuel economy by 0.85 miles per gallon across the fleet. This figure is still increasing and their target is to reach a 1mile per gallon increase in efficiency across the fleet; a figure which has already been exceeded by a number of sites.

Links/More information: is available from the [IGD website](#) or the participating companies.

#### *17. Driving Green (PepsiCo)*

Aim: Trials on newly purchased fleet had delivered fuel efficiency of 4.1km/lt but when put into operation the average fell to 3.7 km/lt. The issue was identified as primarily due to driving behaviour but tracking capability was limited, based on Triscan refuelling system and dependent upon consistent refuelling by the drivers (fill to 1<sup>st</sup> click).

Method: Fuel monitoring equipment was installed on a couple of vehicles as a trial and an immediate improvement was noticed on these vehicles. This improved further when linked to a driver re-training programme where it was possible to clearly highlight how good driving technique improved fuel economy. As a result of this the fuel monitoring equipment was rolled out across the whole of the fleet.

Costs: unknown

Results: The average fuel efficiency improved from 3.7km/lt to 3.9km/lt and this has been maintained of a period of several years. The driver shield programme is now fully embedded into the operation and the drivers are genuinely motivated to drive in the most professional manner and help to police the process and encourage new drivers to get involved.

Links/More information: is available from the [IGD website](#) or the participating companies.

#### *18. Saving fuel (Boarhunt, UK)*

Aim: Boarhunt spends in excess of £2 million per year on diesel for its fleet and was therefore looking to reduce fuel costs and improve efficiency.

Method: The firm looked at enhanced route optimisation as a way of improving efficiency. After a careful selection process it nominated CMS SupaTrak as its supplier of choice to meet its objectives. The EcoTrack fuel and driver management solution was refined in conjunction with Boarhunts requirements. The system allows fleet managers to monitor and manage fuel usage in real time and view reports on driver behaviour which include fuel consumption, speed, use of cruise control and time spent driving in the optimum "green band" range. Performance comparison was an integral element of the trial of the system across a sample of the Boarhunt fleet

Costs: unknown

Results: A before and after vehicle performance comparison showed:

- Improvement in miles per gallon from 7.5 to 8.5
- Fuel savings of up to £500 per vehicle per month
- Boarhunt concluded from this comparison that it should implement the system on all 53 of its vehicles to maximise savings

Links/More information: FreightBestPractice.org brochure "[Fuel Efficiency Intervention Trials – How to test and save](#)"

#### *19. Reduce carbon footprint: workforce (UK Mail)*

Aim: Increasing the environmental sustainability of its operations as UK Mail regards the adoption of effective and relevant carbon emission reduction initiatives as crucial to its constantly evolving strategy.

Method: Some of the solutions related to the workforce of the company were:

- UK Mail monitors the mpg per vehicle. Analysis of this data has led to improved mpg and therefore reduced carbon emissions, through such actions as driver training in fuel-efficient driving techniques, and vehicle maintenance to ensure optimum fuel efficiency is achieved.
- Tyres are audited on a regular basis to ensure repair agents maintain tyre pressures, which if not correct, can have a detrimental effect on the life of the tyre but also the vehicle's fuel consumption.

Costs: unknown

Results: In 2009/10 UK Mail achieved its target of cutting carbon emissions from their vehicles by 10%. Changes to routes and optimisation of vehicle fill combined with the above have collectively resulted in the reduction of distances travelled by in an excess of 1 million kilometres, leading to savings in CO<sub>2</sub> emissions of 134 tonnes for the year 2009/10.

Links/More information: [UK Mail](#)

## **IV. Others / Compilations**

### *1. High Occupancy Vehicle lane in Leeds and Bristol (UK)*

**Aim:** to increase car occupancy by encouraging car sharing; and to demonstrate the feasibility of providing a lane for shared use by buses, other high occupancy vehicles, motorcycles and cycles. This project was part of an EU research project called ICARO (Increasing CAR Occupancy), but had implications for freight transport as well.

**Method:** On the congested dual two-lane Avon Ring Road near Bristol, the local (South Gloucestershire) Council had wanted to implement a bus lane but frequencies were too low to justify reallocating road space to buses alone. It therefore opened an HOV lane for buses, taxis and cars with 2+ occupants. The lane has been extended from the original 750m to 1.2km in length (comprising two sections separated by a roundabout) and operates in one direction in the morning peak only.

**Costs:** Scheme implementation cost was £585,000 at 1998 prices.

**Results:** The Bristol lane has led to an increase in efficiency; the proportion of single occupancy vehicles has fallen from 80% to 68%, and traffic levels have increased by 10% (as a result of vehicles re-routeing from parallel roads) as the lane has 'smoothed' flows and allowed higher throughput.

**Links/More information:** [KONSULT](#) and [ICARO](#)

### *2. SmartWay, US Environment Protection Agency.*

**Aim:** The SmartWay brand identifies products and services that reduce transportation-related emissions and optimises fuel consumption.

**Method:** engage in SmartWay programmes, which result in significant, measurable air quality and/or greenhouse gas improvements while maintaining or improving current levels of other emissions and/or pollutants.

In the EU SmartWay has influenced the Climate TransAct project, Public Private Platform to develop common strategies and to address the environmental issues of freight transport.

**Cost:** depends on the programme.

**Result:** depends on the programme. Generally savings in fuel consumption and reduction of GHG emissions.

**Links/More information:** [US Environmental Protection Agency](#) and [Climate TransAct](#).

### *3. BESTUFS – Best Urban Freight Transport*

**Aim:** Aimed not only at practitioners, but also at regulators. Main focus is urban freight logistics. Not only efficiency, but also sustainability is addressed. It is divided in three parts: goods vehicle access and loading approaches in urban areas; principal issues involved in the last mile solutions; principal issues associated with urban consolidation centres.

**Methods:** Many measures, including: signings, lorry routes, urban freight information and maps, on-street loading bays, nearby delivery area (ELP), urban consolidation centres, vehicle weight and size regulations, time regulations, imposing and enforcing access and loading regulations, environmental zones/emission standard regulations, night delivery, lorry lanes, road charging systems.

Other areas of interest are the efficient usage of infrastructure, technology in urban freight, environmentally-friendly articles and the possibility of joint working between public and private sectors.

**Costs:** depending on the measure

**Results:** depending on the measure

**Link/More Information:** [BESTUFS website](#)

#### 4. Fuel Management Guide

Aim: To save fuel this guide has gathered a large amount of measures with backup strategies and tips for monitoring the process along the way.

Methods: Provide information, advice, and suggestions to improve the fuel performance of your goods vehicle fleet. Provide information about a Fuel Management Programme and how to implement it. Provide a checklist of key points to consider.

Costs: varies

Results: Fuel savings through better management and technology. For details, see the guide.

Link/More Information: [Freight Best Practice Fuel Management Guide](#) (85 pages)

#### 5. The European Environmental Agency's Good practice in Logistics Manual

Aim: General, comprehensive document, which lists good environmental practices in the logistics sector. While the main focus lies in the Mediterranean area, the basic concepts can be applicable everywhere.

Method: Divided into 4 chapters. Most important are chapters 2, 3 and 4.

- Chapter 2 describes how to plan and carry out the introduction of a programme of good environmental practises (PGEP) in accordance with the dimensions and specific nature of a business, ranging from the independent transporter to a complex logistics operator.
- Chapter 3 describes the environmental impacts created by the sector's activities and good environmental practises (GEPs) that can be introduced to reduce them.
- Chapter 4 contains a driver's manual, which gathers together good environmental practises for raising quality and decreasing environmental impact and a guide for an initial evaluation of the environmental situation of a business in this sector.

Costs: depending on the best practice.

Results: depending on the best practice.

More information: [CPRAC – Regional Activity Centre for Cleaner Production](#)

#### 6. Viacombi and Promit Best Practice Compilations (European Intermodal Association)

Aim: showcase best practices in intermodal logistics.

Method: collection of Freight Transport & Logistics Best Practices: includes market cases stemming from transport and manufacturing industry side. It describes running services and sustainable initiatives regarding their background, motivation, main benefits, innovations, partners involved etc. These cases have been obtained via various ongoing EU initiatives while EIA integrated it in a new central structure and neutral design under one umbrella: [www.eia-ngo.com/category/best-practices](http://www.eia-ngo.com/category/best-practices). Currently available a total of 60 cases from the EU funded projects Viacombi, BestLog (already included in the CLECAT Best Practice Guide) and Promit.

Costs: depending on the best practice.

Results: depending on the best practice.

More information: both the [Viacombi](#) and the [Promit](#) brochures contain several best practices. Please download the relevant document to get more information. If possible the Secretariat will single out the best practices that are relevant for freight forwarders in the next edition of the Best Practice Guide.

# Literature and useful links

(Availability checked 10/2010)

- Freight Best Practice website (includes various case studies and best practice documents) - <http://www.freightbestpractice.org.uk> (additions on a regular basis)
- IRU: Best Industry Practices
  - 1<sup>st</sup> issue of Best Practice document: [http://www.iru.org/index/cms-filessystem-action?file=en\\_Publications/bip\\_2001-gb.pdf](http://www.iru.org/index/cms-filessystem-action?file=en_Publications/bip_2001-gb.pdf) (2001)
  - 2<sup>nd</sup> issue of Best Practice document: [http://www.iru.org/index/cms-filessystem-action?file=en\\_Publications/bip04.E.pdf](http://www.iru.org/index/cms-filessystem-action?file=en_Publications/bip04.E.pdf) (2004)
- BESTUFS – Best Urban Freight Solutions: Swedish project on Urban Freight best practices - <http://www.bestufs.net/>
  - Reports available under [BESTUFS I](#) and [BESTUFS II](#)
- ETTAR project (Environmental Technologies, Training and Awareness-Raising) - <http://www.ettar.eu/results.html>
- EIA's bestLog - Creating a Dissemination and Promotion Platform for Logistics Best Practice - <http://www.bestlog.org/index.php?id=226> (2009)
- Green Logistics – Research into the sustainability of logistics systems and supply chains - <http://www.greenlogistics.org/PageView.aspx?id=97>
- Energy Saving Trust - <http://www.energysavingtrust.org.uk/business/Business/Transport-in-business>
- European Environmental Agency – reports on transport best practices and activities of member states - <http://www.eea.europa.eu/themes/transport/reports>
- Swedish Trafikverket "On the Road to Climate Neutral Freight Transportation" - [http://publikationswebbutik.vv.se/shopping/ShowItem\\_3623.aspx](http://publikationswebbutik.vv.se/shopping/ShowItem_3623.aspx)
- SAFED (Safe And Fuel Efficient Driving) - [www.safed.org.uk](http://www.safed.org.uk) (closed, but links to more information are still provided)
- 29<sup>th</sup> edition of Transportation Energy Data Book (U.S. Department of Energy, published 2010) - <http://cta.ornl.gov/data/index.shtml>
- SmartWay (US Environmental Protection Agency) - <http://www.epa.gov/smartway/>
- IGD – The Food and Groceries Experts – Information, Insight & Best Practice - <http://www.igd.com/index.asp?id=0>
- [Best Practice in International Logistics](#) by Manhattan Associates