

# Selecting freight transport

Different transport modes have a differing set of characteristics, advantages and disadvantages in terms of their suitability for any particular distribution requirement, the main ones are appraised below.

## Road Transport

**Freight moved by GB-registered heavy goods vehicles within Great Britain increased by 0.3 per cent between 2004 and 2005, from 152.2 billion tonne kilometres to 152.7 billion tonne kilometres. The 6 per cent increase between 1995 and 2005 in total freight moved was less than the rise in Gross Domestic Product over the same period (32 per cent). The amount of freight lifted in 2005 (1746 million tonnes) was little changed from that in 2004 (1744 million tonnes), but was 6 per cent more than in 2003 and 9 per cent above that in 1995. (<http://www.dft.gov.uk/162259/162469/rfs05complete>)**

Road transport has many advantages as evidenced by the popularity of its use.

As discussed earlier transportation in the UK is strongly biased towards road transport and this is mainly due to the following:-

- Flexibility
- Versatility
- Competitive (there are many third party operators)
- Well-developed road systems with pricing not related to usage (flat rate tax)

But other factors influence the case for road transport eg:

- Availability of vehicles and/or road freight services at short notice
- Short order-to-delivery times with direct through-movement
- Reduced delays as loads are under driver control throughout the journey
- Availability of a wide variety types and load capacities to suit individual loads

- Ability of vehicles to move right up to loading/unloading points
- Response to short-notice collection/delivery/route instructions or variations
- Loads can be secured by the consignor at the original point of loading and remain untouched until the point of delivery is reached
- A single driver may be responsible for the load from the point of loading to the final delivery
- The consignor's own delivery notes used for receipt signature to provide Proof Of Delivery (POD)
- Reduced requirement for packing where consignments are loaded direct on to closed vehicles without further trans-shipment
- When loads are consigned in a firm's own vehicles or by a contracted logistics provider, the consignor can control the image presented to the customer (for example, by the appearance of the vehicle and the appearance and manner of the delivery driver)
- Documentation presented on delivery will be that of the consignor
- Reduced cost of packaging, handling and trans-shipment
- Individual consignment prices are negotiable
- Increasing use for tracking and visibility of goods

Road transport does however have disadvantages and these are predominantly of an environmental nature. For example, goods vehicles add to the toll of road accident statistics; they create traffic congestion (especially in towns) and cause noise, vibration, visual intrusion and, most significantly, air pollution which presents health risks to the population and adds to global warming. Deliveries may be subject to unforeseen delays, adverse weather

conditions and increasing legislative controls. Deliveries may also be subject to pilfering and illegal trafficking.

## Rail Freight

Is undergoing a renaissance following privatisation of the railways since 1994, a 60% growth in freight on rail; in the year 2004-05 rail freight moved 20.66 billion net tonne kilometres, a level of traffic not seen since 1977, which saved 1.43 billion lorry kilometres. Rail has 12% of the UK surface freight market (i.e. road + rail) with the industry's measurement of net tonne kilometres showing an increase of 9.5% in the year 2004/05 over the previous year. Between the year 2001 – 2002 there were 20 billion tonne kilometres of freight moved by rail ([www.freightonrail.org.uk](http://www.freightonrail.org.uk)).

The principal rail freight operators, English, Welsh and Scottish Railway (EWS) and Freightliner have invested heavily in an effort to attract more traffic from road. EWS, the largest operator has reputedly spent more than £5 billion on some 280 new heavy-duty locomotives and more than 2,500 new freight wagons while Freightliner is targeting 50% growth since its privatisation in 1996 - it too has put a fleet of new heavy duty locomotives into service. The other main freight operator Direct Rail services provides services mainly for its parent company British Nuclear Fuels Limited (BNFL) carrying nuclear materials.

Interesting developments are taking place in other areas of rail operations. Many of these are concerned with improving facilities for intermodal traffic, including experimentation with a prototype Freight Multiple Unit (FMU) from German Railways – Deutsche Bahn (DB) called 'cargo sprinter' which carries swap bodies (or containers) on continuously

linked, flat-bed wagons. These easily loaded cargo sprinters can be both fast and economical over much shorter distances than conventional freight trains and so offer a real alternative to direct road transport.

The principal advantages of rail are:

- Ability to move large volumes of freight especially over long distances
- An average freight train can remove 50 HGVs journeys from our roads
- Greater speed of delivery over long distances (Road vehicle drivers have to take statutory rest periods)
- Removal of freight traffic from congested road networks (a one per cent reduction in road freight equates to taking between 1,000 and 2,000 heavy lorries off the road network each year)
- Reduced air pollution compared to lorry traffic (2-16 per cent only of road transport emission levels)
- Greater energy efficiency in comparison to road freighting – per tonne carried, rail produces around 80% less carbon dioxide than road
- Greater public safety (deaths per 100 million vehicle kilometers are only 0.194 on rail against 53 on roads)
- Greater safety in the transport of dangerous goods – EU figures show that rail is 27 times safer than roads.
- Safety and security of deliveries
- Rarely affected by weather conditions

Besides these advantages, rail also claims to produce less noise, less vibration and less visual intrusion than the equivalent number of heavy lorries per freight train load, bearing in mind that one train could equate to up to 100 heavy lorries. Transport of freight by rail offers a more environmentally friendly alternative to road.

The principal disadvantages of rail freighting are its inflexibility, particularly in handling single load consignments, its lack of direct connection to most delivery locations (meaning trans-shipment to road vehicle for most final delivery legs) and its inability to offer fast services for one-off loads. This therefore can rule out rail transport for many requirements particularly a Just-in-Time (JIT), distribution environment.

### **Inland Waterways**

Little known and considered by many to be an outdated means of transport, in 2005 Inland Waterways carried 49 million tones of cargo (including non-seagoing and sea going traffic) predominantly bulk petroleum and granular materials. Non-seagoing traffic increasing by 31 per cent from the previous year, according to figures from the Department for Transport.

There are further signs of a revival with a strategic review of the networks potential for carrying more traffic imminent and work about to start on the first new canal section for more than 100 years - a 17 mile link between Bedford and Milton Keynes. Irrespective of these developments it has to be recognized that this mode has only limited potential for the majority of logistics operations, but where waterway freighting is a suitable alternative mode - principally where speed is not of the essence, it does offer:

- Advantages of economy over road transport, albeit at a much slower pace of delivery
- Environmental benefits such as reduced traffic congestion and air pollution

### **Sea transport**

About 98% of world trade, amounting to 6bn tonnes of cargo, is carried by sea each year ([www.petroleum-economist.com/default.asp?page=14&PubID=46&ISS=11077&SID=437939](http://www.petroleum-economist.com/default.asp?page=14&PubID=46&ISS=11077&SID=437939)). Sea transport, both coastal and deep sea, plays a central role in worldwide freighting, principally in bulk tanker shipment of oil, petroleum, ore and other excavated materials.

Specially built refrigerated (reefer) ships, container ships (carrying containerised general traffics) and Roll-On Roll-Off (RO/RO) ferry ships also account for large tonnages - the latter primarily on short sea routes. RO/RO shipping is an essential link in a high proportion of international road haulage movements and is thus part of the road modal choice.

From being perhaps the greatest shipping nation, the UK's registered trading fleet has declined significantly over recent years - currently the UK- flagged merchant fleet constitutes only about one per cent of the world fleet. In 1996 only 377 trading vessels of over 500 gross tonnes were UK registered with a combined gross tonnage of 6.06 million tonnes - 88 of these were RO/RO vessels and 38 were fully cellular container vessels.

Coastal sea-born traffic amounts to only relatively small tonnages mainly bulk traffic (coals, oil, ore, etc). Road and rail services invariably offer faster services for domestic freight.

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Sea freight carries the largest volume for International transport. However, in both `short-sea' (English Channel, the North Sea and the Irish Sea) and `deep-sea' shipping a variety of technical and competitive changes are taking place.

One should be aware of these changes as it is possible that, with rapid technical advance in sea freight, the relative advantage of airfreight in terms of rapid delivery may be eroded. This is particularly true on `short-sea' routes to continental Europe.

## Technical Aspects of Sea Freight

The following is a list of some of the technical aspects of international sea freight of which you may need to be aware:

- A `CTO' – a Combined Transport Operator – takes responsibility for an entire, usually containerized, consignment during its entire journey.
- RO/RO (Roll-On or Roll-Off) must be distinguished from `short-sea' to RO-RO ferries and offer less flexibility. Trailer units are usually loaded aboard RO-RO ships by means of special technical equipment rather than being driven on by the conventional lorry-tractor unit.
- ISO containers, also referred to as intermodal containers, are used to transport freight. ISO containers are designed for transportation by more than just one mode: such as truck and rail, or rail and ship. These freight containers conform to the International Organization for Standardization (ISO) container manufacturing standards. ISO is an international standards organization headquartered in Geneva, Switzerland. Cellular container ships have specially

designed hulls to accommodate ISO containers. This is usually done by means of rails or brackets, which fit the corner `strong-points' of a standard container design. Such ships typically carry nothing else but standard ISO containers.

- Combo (combination) ships are usually a combination of break-bulk (conventional between-deck) and container ships. They are particularly used on feeder services between minor ports and major entry ports such as Rotterdam

The demand for shipping worldwide can fluctuate, depending on political and economic changes. As a result, freight rates themselves can change dramatically. This particularly affects scheduled liner operations. As a result, from a commercial viewpoint, shipping companies have the choice either to be aggressively competitive, or to seek security through cartel restrictions on trade.

## Advantages of Sea Transport:-

- Cost advantage over air freight
- Ability to move large volumes of bulky or heavy freight
- More environmentally friendly than air freight
- Good road transport link from ports

## Disadvantages:-

- Speed
- Multi handling at ports
- Relies on other forms of feeder transport
- Can be affected by adverse weather conditions
- Increased documentation
- Greater Packaging requirements
- Ports can be susceptible to more industrial disputes
- May have effect on inventory requirements
- Ports in future may be full to capacity

**Airfreight** is a rapidly growing method of transport with many carriers specializing in particular market segments. In 1997 freight throughput at UK Airports was 1,955,571 tonnes. Airfreight provides an important alternative mode for low-volume, high-value, urgent freight consignments.

In competition with road haulage on pan-European routes, however it is interesting to note that its speed is not always superior - some airlines actually road-trunk airfreight shipments between airports to beat licensing restriction and airport delays. The advantages of air transport can be summarized as follows;

- Speed of delivery – this reduces the necessary inventory and investment and is suitable for seasonable or perishable items
- Reliability of delivery – again reduces the necessary inventory investment in safety and buffer stock
- Environmental conditions – there is less requirement for packaging and cover as the probability of damage and pilfering is less
- Safety and Security
- Comprehensive scheduled network.
- Close to good road networks

There are however a number of disadvantages, which require consideration, as the method, is not suitable for all goods. Disadvantages include:

- High Cost
- Limited Capacity (As a consequence of the above it is mainly suitable for goods with a high value to weight ratio i.e. Small, higher-value goods)
- Subject to delays/susceptible to adverse weather conditions
- Cannot be used for dangerous substances/goods

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- Additional handling to and from airports
- There may be no airport nearby
- Some airlines specialize in freight and others don't, so may not offer such a comprehensive service.

When compared to surface freight the cost advantages of air freight are as follows;

- Inventory costs are much lower than for surface modes. There is less need to hold large inventories to handle slow and uncertain deliveries.
- Packaging costs are lower. However, surface distribution to the final consignee will require packaging
- Airports are sometimes closer to the points of organization and destination than the depots of surface modes where there is an international dimension
- Local distribution costs are frequently lower. Airports are sometimes closer to the points of organization and destination than the depots of surface modes where there is an international dimension
- Materials handling costs are reduced by smaller packages, reduced stocks, less need for trans-shipment
- Insurance costs are frequently lower with the greater efficiency of systems of air cargo
- Vulnerabilities of non-performance are reduced. There are, for example, fewer air strikes in aviation than for surface modes