Rail Freight in Ireland
Why is rail freight topical?

Benefits of Rail Freight

Policies to support Rail Freight

Status of Rail Freight in Ireland

Conclusions
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Conclusions
Recent interest in rail freight stems from a basic desire to reduce the negative impact of growing volumes of road freight ...

### Growth in Road Freight Transport

<table>
<thead>
<tr>
<th>Road Freight 2007</th>
<th>Increase since 2007</th>
</tr>
</thead>
<tbody>
<tr>
<td>315 million tonnes</td>
<td>203%</td>
</tr>
<tr>
<td>19,000 million tonne-km</td>
<td>174%</td>
</tr>
<tr>
<td>2,700 vehicle-km</td>
<td>120%</td>
</tr>
<tr>
<td>120,000 HGVs</td>
<td>169%</td>
</tr>
</tbody>
</table>

Source: Road Freight Transport Survey 2007, CSO
...although the growth levelled off after 2005 and is now probably reversed

- Growth in vehicle-km was less than the growth in tonnes, suggesting increased efficiency
- Growth levelled off after 2005
- By 2006, construction material accounted for almost half of all tonnes lifted in Northern Ireland and two-thirds of all tonnes lifted in Ireland by Irish registered vehicles (InterTradeIreland Freight Transport Report for the Island of Ireland, 2008)
Rail freight has risen in the policy agenda, while a new service has recently started

- In June 2008, Port of Cork was refused permission to relocate its container terminal from Tivoli to Ringaskiddy because of the perceived negative impact on the road network and the lack of rail access to Ringaskiddy.

- Smarter Travel - A Sustainable Transport Future: A New Transport Policy for Ireland 2009 - 2020 committed to “… to explore in greater depth the issues relating to the movement of goods, including: The realistic potential for rail freight”

- In August, IWT, working with Dublin Port and Iarnród Éireann, launched a twice-weekly rail freight service from Ballina to Dublin Port.
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Switching freight from road to rail can release a whole package of environmental and other socio-economic benefits

- Improved air quality
- Improved journey times and reliability
- Reduced number and severity of accidents
- Reduced wear on road network
- Reduced congestion
- Reduced impact on climate change
- Better conditions for walking and cycling
- Reduced noise
- Reduced impact on climate change
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- Reduced number and severity of accidents
- Reduced wear on road network
- Reduced congestion
- Reduced impact on climate change
- Better conditions for walking and cycling

Unlike passenger rail or roads projects, which are evaluated on a socio-economic basis under the Capital Appraisal Guidelines, and receive operating subvention, rail freight operates on a purely commercial basis in Ireland.
In the UK, the benefit of removing lorries from roads has been calculated depending on the location and type of road.

SRA derived values of net externalities of rail freight
(pence per lorry mile)

Motorway High Congestion: 67
Motorway Medium Congestion: 25
Motorway Low Congestion: 3
Conurbation Trunk & Principle: 134
Conurbation Other: 171
Rural and Urban Trunk & Principle: 49
Rural & Urban Other: 42

Source: Sensitive Lorry Miles, SRA, July 2003
The benefits of rail freight can only be realised where there is a cost effective means of getting freight onto rail

- What are the constraints and opportunities for cost-effective rail freight services in Ireland?
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The European Commission has long encouraged modal shift from road to rail

- European Commission White Paper of 2001 – ‘European transport policy for 2010: time to decide’, suggested 60 measures to develop a transport system capable of shifting the balance between modes

**Re-dressing the modal balance – The White Paper**

- **Remaining Mode Share**
  - **Rail:** revitalize and integrate rail, make it competitive and safe
  - **Road:** tighten up controls and penalties
  - **Sea:** develop the infrastructure and simplify the regulatory framework
The White Paper’s approach was to incentivise sustainable modes and discourage the reliance on road*

- Removing barriers to rail freight market entry
- Engaging the ERA (European Rail Agency) and OTIF (Intergovernmental Organisation for International Carriage by Rail)
- Marco Polo Intermodality “open to appropriate proposals to shift freight from road to more environmentally friendly modes”

- Proposed road user charging for road freight related to:
  - axle loadings
  - impact on congestion
  - distance travelled
- Attempt to “tighten up” on road freight practices e.g. safe driving time

*The EU’s goal was not only modal shift for environmental reasons but from a societal perspective - Improve road safety and halve the number of road deaths by 2010
The White Paper had a mid term review in 2006 which reinforced policies to try to shift freight from road to rail

- Relevant success stories:
  - Opening up of rail freight transport to competition
  - Definition of 30 TEN priority projects
  - New road charging directive
  - Promotion of intermodal transport via Marco Polo

- Policy lines to continue along the lines set by the 2001 White Paper

- Specific actions relating to freight:
  - Road transport: internal market review (2006), review of legislation on working conditions (2007)

- Introduction of the concept of “Co-Modality” to recognise the lack of success to the extent expected in implementing modal shift policies. “……Therefore, the future policy will have to optimise each mode’s own potential to meet the objectives of clean and efficient transport systems”
There were subsequent moves to ensure logistics were considered in transport policy making them underlying factors in decision making.

- EU Communication (2006) 336 The “key to sustainable mobility” recommended:
  - modernizing logistics to boost efficiency of individual modes of transport and their combinations.
  - initiatives which may “lead” to changes in mode choice towards “more environmentally friendly, safer and more energy efficient modes of transport.”
Research showed rail freight to be more cost effective over very long distances...

*Towards a more competitive rail freight sector*

- Predicted goods transport will grow by a further 50% between 2000 and 2020
- Noted that the initiatives aimed at revitalising rail freight transport which were launched over the last 15 years or so, by the European Community have produced satisfactory results, but concluded that they do not go far enough.
- Reported that, in the first half of 2007, rail freight increased by 7%, However rail's modal share of freight transport was scarcely increasing.
- Evidence that it would cost less to transport a container by road than by rail unless the distance was over 400km or so.

Source: EC Communication 2007 Logistics: Keeping Freight Moving, Memo
*Towards a more competitive rail freight sector*
.. although other findings\(^1\) suggest that the distance where rail can compete with road on cost is lower

- “On distances exceeding 150 km the average costs of moving goods by rail are usually lower than for transporting them by road “.

- “A pilot study on rail freight performance by distance conducted in 2006 on a group of railway undertakings showed that the market share of rail compared with road is significantly higher for longer distances”
  - over 150 km = 22%
  - > 300 - 325 km = 26%
  - and > 500 km = 30%

\(^1\) Monitoring Development of the Rail Network - COM(2007) 609
The EC is currently looking at “The Future of Transport” which will input to the next 10-year White Paper

The Future of Transport (2009) - emerging themes relating to rail freight

- The trend of increasing demand for long distance freight transport is unlikely to reverse
- The logistics sector would be creating more flexible, but complex networks
- Large intercontinental ports might reach high congestion levels ….smaller ports may present spare capacities if not integrated in the established circuits.
- European network of rail freight corridors and increased competition in the railway markets would facilitate enlarging the share of rail
- Rail freight vehicles would very likely become longer, bigger and more energy efficient.
- Trucks, ships and aircrafts would increasingly rely on alternative fuels
The result of EU directives and initiatives has been varied with decline in rail freight being greatest in Ireland.

- There was a 48.5% decline in rail freight in Ireland between 2003 and 2006.

- Railfreight in the other island economy, UK, grew by 23.4% between 2003 and 2006.

Source: Eurostat, Booz Analysis
But there are limitations to the lessons Ireland can learn from Europe.…

- Compared with Ireland, in continental Europe:
  - distances are long
  - port opportunities are few

- International traffic accounts for 44% of all rail freight in Europe and is the fastest growing sector

- In the case of Netherlands, for example, data include freight travelling between Dutch ports and other countries.

- In UK, the only other island economy in the EU, rail freight is growing

- Elsewhere, in New Zealand, for example, there are many examples of freight going by rail over short distances
.... and Ireland does not figure in the European rail freight market

European rail freight market
In %, total = 318 bn tkm

- Germany 11%
- Poland 10%
- France 9%
- Italy 4%
- Spain 4%
- Sweden 4%
- UK 6%
- Rest 9%
- National 56%
- International 44%

1) Basis: revenue 2003
Source: Eurostat, country statistics, CEMT, company websites, annual reports, Amadeus, press research, Mercer analysis
Note: "Rest" includes Finland, Czech Republic, Austria, Switzerland, Portugal, Belgium, Slovakia, Norway, Hungary, The Netherlands, Slovenia, and Denmark
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Rail freight in Ireland has declined to the point where it has nearly ceased, carrying only 0.7% of trade in 2007

Recent Milestones
- 2009: IÉ discontinues Fastrack, its parcels business
- 2006: cessation of sugar refining in Ireland and loss of beet trains
- 2006: Diageo decide to transfer beer kegs from rail to road
- 2003: Closure of North Wall Freight Depot
- 2002: closure of IFI at Marino Point

Source: Eurostat
Nearly all of Ireland’s freight is carried by road. Main cargoes are agricultural and foodstuffs, and minerals & building materials.

Ireland’s freight movements (Million tonne kilometres) - 1980-2006 *

<table>
<thead>
<tr>
<th>Year</th>
<th>Road</th>
<th>Rail</th>
</tr>
</thead>
<tbody>
<tr>
<td>1980</td>
<td>5,600</td>
<td>100</td>
</tr>
<tr>
<td>1985</td>
<td>5,100</td>
<td>500</td>
</tr>
<tr>
<td>1990</td>
<td>5,700</td>
<td>300</td>
</tr>
<tr>
<td>1995</td>
<td>6,100</td>
<td>200</td>
</tr>
<tr>
<td>2000</td>
<td>12,800</td>
<td>1,200</td>
</tr>
<tr>
<td>2005</td>
<td>18,500</td>
<td>1,500</td>
</tr>
<tr>
<td>2006</td>
<td>17,900</td>
<td>1,900</td>
</tr>
</tbody>
</table>

In 2006, road accounted for 98% of freight kilometre movements in Ireland. Rail accounted for the remaining 2%.

* Source: Booz & Company analysis based on Eurostat data ** Source: Inter Trade Ireland, 2007, Freight Transport Report for the Island of Ireland
Ireland’s relatively small rail freight task is contained to a few niche cargoes

Over the past ten years, there has been a rapid decline in Irish rail freight.

The highest declines in cargo types has been in cement, fertiliser, sugar, beer and general freight commodity classes.

* Source: Inter TradeIreland, 2007, Freight Transport Report for the Island of Ireland
** Source: Booz analysis based on railway timetable data
The national rail network partially matches freight movements

Freight tonnes moved by road in Ireland (2005)*

* Source: Inter TradeIreland, 2007, Freight Transport Report for the Island of Ireland
For many years, passenger operations have been Iarnród Éireann’s primary business, and the existing rail infrastructure reflects this

- The network is single-track except:
  - DART
  - Dublin-Belfast
  - Dublin – Cork and Cork – Cobh

- The signalling system is Centralized Traffic Control (CTC) for the most part but routes that are not highly used for passenger traffic tend to have mechanical signalling

- Height clearance for 9’ foot containers, except
  - Ballina – Waterford line - 9’ 6” high containers
  - The Belfast and Sligo lines - 8’6” containers

- Maximum axle loading of 15.75T,
  - however, internationally, rail freight networks are gradually increasing their axle loadings well past 18T and are stretching to 22T-25T

Source: Iarnród Éireann, Booz & Company analysis

Cork Rail Tunnel
Cleared for 9 foot containers
There are a few freight yards remaining on the rail network

- As most of the freight traffic in full trainload, there has been no need to retain marshalling yards

- Marshalling yards are traditionally retained if operators still shunt wagons and make up trains of (in many cases) single loads of cargo going to multiple areas

- Marshalling yards exist in North Wall (Dublin), Ballina, Westport and Waterford

- Customer railheads no longer exist
IÉ has rolling stock available at present, but estimates that the fleet has a limited number of years remaining life

<table>
<thead>
<tr>
<th>Current Fleet</th>
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<tbody>
<tr>
<td>12X50T Bulk cement wagons</td>
</tr>
<tr>
<td>27X54T ore wagons</td>
</tr>
<tr>
<td>26X39T ore wagons</td>
</tr>
<tr>
<td>- 200X42ft 9 in long container flats</td>
</tr>
<tr>
<td>- 60X47ft 9 inch long container flats</td>
</tr>
<tr>
<td>- 40X 60ft long container flats</td>
</tr>
<tr>
<td>- Total 300 wagons</td>
</tr>
</tbody>
</table>

Comparing this data with the Strategic Rail Review (2003), there has been a 66% decrease in rolling stock from 2002 to 2009.
While there are limitations on the rail network, the road network is still developing, provides good coverage and is generally free

- The national road network has been significantly upgraded
- The programme is to continue until 2015
- Peak hour congestion is found in many urban areas
The road haulage industry itself is highly competitive as there is a large supply of trucks mainly owner-operated.

- There is a large supply of trucks available:
  - The rate of growth in the number of vehicles outstripped that of demand since around 2004
  - In 2007, vehicles manufactured from 2004 onwards accounted for 35% of fleet
- Most of these are available on a competitive basis:
  - Vehicles used for hire or reward performed 72% of tonne-km and 54% of veh-km

Source: 2007 Freight Transport Survey, CSO
While distance need not be a limiting factor, lengths of haul in Ireland are generally on the low side for rail freight operations.

- Some EC research suggests road is more cost-effective than rail for distances under 150km.
- Iarnród Éireann successfully operates over shorter distances.
- Short but frequent operations are also work elsewhere, particularly in Distribution Centre/Inland Port type operations.
- Even if rail is less cost-effective in commercial terms, there may be a socio-economic case for preferring a rail to a road operation.

<table>
<thead>
<tr>
<th>Length of Haul</th>
<th>% of Total Tonnes Carried</th>
</tr>
</thead>
<tbody>
<tr>
<td>Up to 25 km</td>
<td>50%</td>
</tr>
<tr>
<td>25 - 150 km</td>
<td>40%</td>
</tr>
<tr>
<td>Over 150 km</td>
<td>10%</td>
</tr>
</tbody>
</table>

Source: Freight Transport Survey 2007, CSO
Besides price, there are range of indicators to examine when considering “the realistic potential of rail freight” for individual trades
Niche rail markets meeting the necessary indicators have emerged in recent years

- In August 2009, a new service was launched between Ballina and Dublin Port

- IWT, a private freight forwarder, charters two trains a week from Iarnród Éireann, each with 18 freight wagons. Trains are filled with goods for several of IWT’s customers, in both directions

- The Ballina - Waterford service operates in a similar fashion

- Ballina has emerged as a minor rail Distribution Centre

- These services take advantage of:
  - Rail infrastructure and rolling stock which already exists
  - Relatively long distances where rail can compete effectively with road
  - Reasonable volumes - pulled together by the freight forwarding company

### Ballina - Dublin Benefits

- Each train removes up to 18 trucks from the road network, in each direction - 36 trucks per day
- IEA estimate that, if the service expands to 5 per week, up to 9000 trucks per year will be removed from the N5
- While this is highly desirable, the numbers are negligible in comparison to traffic flows
  - N5 near Westport: 15,000 veh/day
  - N5: 5,000 vehicles/day
  - N4 at Lucan: 60,000 veh/day
- Lack of rolling stock mean the operation cannot be easily scaled up without investment, which may change the business proposition while improving the environmental benefit
More generally, rail freight operations will continue to be rare because of the network, scale of industry and road competition.

- **Network**
  - Businesses are not connected to the railway
  - Cost of connection varies by location

- **Scale**
  - Typical distances are shorter and volumes lower than usual for rail freight
  - There will always be exceptions e.g. Tara Mines

- **Competition from Road**
  - Road is generally competitive
  - There are exceptions where road and/or traffic conditions are poor

**These problems are not insurmountable**

- Typical businesses can be served by rail by way of a Distribution Centre where full train loads are assembled and unloaded
- There will always be exceptions e.g. where a business:
  - Is relatively easy to connect to the rail network; and/or
  - Has scale; and/or
  - Has road transport issues.
Distribution Centres overcome the need for customer railheads and provide the scale needed to justify rail operations

- recognise that, except for certain bulk trades, few traffics can complete their entire journey by rail alone
- exports from all over the region would be taken by road and then gathered into full train loads before being taken by train to the port.
- imports would be taken from the port to the distribution centre before being taken by truck to individual destinations throughout the region.
- operated by a logistics company who can provide an end to end service for their clients regardless of the mode and other services e.g. container power supply or management of bonded cargoes
Distribution centres offer a way forward for rail to reduce the impact of lorries in sensitive areas, if people can be persuaded to use them.

<table>
<thead>
<tr>
<th>Pros</th>
<th>Cons</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Overcomes argument that customers are small, dispersed and without railheads</td>
<td>- Double-handling, resulting in additional costs</td>
</tr>
<tr>
<td>- Provides sufficient density to justify rail operations</td>
<td>- Reduced flexibility/speed</td>
</tr>
<tr>
<td>- Contains capital investment requirements locally and to extent which can be roughly quantified</td>
<td>- There may not be an existing railway line</td>
</tr>
<tr>
<td>- Takes significant numbers of trucks of the roads</td>
<td>- Government capital and revenue support needed to encourage/incentivise</td>
</tr>
<tr>
<td>- Commonplace and successful internationally</td>
<td>- Efficient, integrated, operator can transport containers by the most effective mode</td>
</tr>
</tbody>
</table>

Distribution Centres or Inland Ports are most effective where port-related traffic must travel through congested and/or environmentally sensitive urban areas where it gets delayed by the congestion as well as adding to it.

Another application is where ports are short of storage space and it makes sense to move containers to and from a remote site as efficiently as possible.
“Smarter Travel” commits to preparing a freight strategy which could give a context for decisions on rail freight

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**Smarter Travel - A Sustainable Transport Future (2009)**

**Action 10**

*We will:*

- Ensure that the Department of Transport deals with freight policy issues in a more integrated manner and prepares a specific strategy for the freight sector. We will set a target aimed at reducing the environmental impact of freight while at the same time improving efficiency in the movement of goods and promoting economic competitiveness.

- Organise a forum to bring all interested parties together, including industrial development agencies and industry representative bodies, to explore in greater depth the issues relating to the movement of goods, including:
  - *The realistic potential for rail freight*
  - Priority freight routes allowing access to vehicles with greater load factors and capacity
  - Developing key logistics centres to transfer goods to more sustainable forms of transport for final delivery in urban areas
  - Scheduling of deliveries from the ports and in urban areas to avoid peak use of networks as far as possible
  - The incentives and disincentives needed to move to more fuel-efficient vehicles
  - The need to have more rigorous testing of goods vehicles to reduce emissions
  - The potential of Intelligent Transport Systems and Services to improve efficiency.
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Whether there is “realistic potential for rail freight” depends on the particular situation - there is no single easy answer

- **Network**
  - Ability to connect at a reasonable cost

- **Scale**
  - Sufficient scale to justify sustainable railway operations

- **Competition from Road**
  - Rising road haulage costs
  - Poor road conditions
  - Traffic congestion
Hopefully *Smarter Travel* efforts will result in promoting sensible rail freight proposals and jettisoning impractical aspirations

- Rail freight has the ability to “reduce the environmental impact of freight”
- Whether this can be done “while improving efficiency in the movement of goods and promoting economic effectiveness” will depend on the individual rail freight proposal. Opportunities in Ireland will be limited, primarily due to the constraints of the rail network, but they will occur from time to time
- Government needs a basis for assessing rail freight proposals, similar to the way roads and passenger rail projects are assessed for capital (and operational) funding
- Besides a socio-economic cost/benefit analysis, other factors can be taken into account - as they are with other transport projects - such as:
  - Affordability - currently Government’s funding capabilities are limited
  - Prioritisation - there may be other projects of equal or greater value “in the queue”. Also, in most cases it will make sense to continue to prioritise passengers over freight (as in most of Europe)
  - Local policies - for example, if a particular local authority has a specific aim in relation to HGV traffic in a sensitive area, expressed in its Development Plan
- There is a duty upon policy makers at all levels to express policy in relation to rail freight clearly and specifically, based on information as to its feasibility in the local context
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