



# Supply Chain Perspectives

VOL 12 ISSUE 1 2011



**IRELAND'S PLACE IN GLOBAL LOGISTICS SYSTEMS  
THREATS AND OPPORTUNITIES**

**INNOVATION AND UTILISATION: A BREAKTHROUGH OPPORTUNITY FOR  
IRELAND'S ROAD TRANSPORT INFRASTRUCTURE**

**DELIVERING EFFECTIVE RETAIL SUPPLY CHAIN NETWORKS**

**DYNAMIC SUPPLY CHAIN MANAGEMENT  
LEADING THE RECOVERY**



*National Institute for  
Transport and Logistics*



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All modules are part of NITL's Masters Programmes (which lead to the award of an M.Sc.). However, all modules are self-contained and may be taken as one-off short courses. They provide an ideal vehicle for updating knowledge, skills and competencies in the areas in question. **For further information or to register for any module contact Antonio at [adelinares@dit.ie](mailto:adelinares@dit.ie) or (01) 4024023.** Each module runs as follows: Thursday (1830 – 2100); Friday (0830-1730); and, Saturday (0830-1600).

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IT in the Supply Chain - 15th-17th & 22nd -24th September

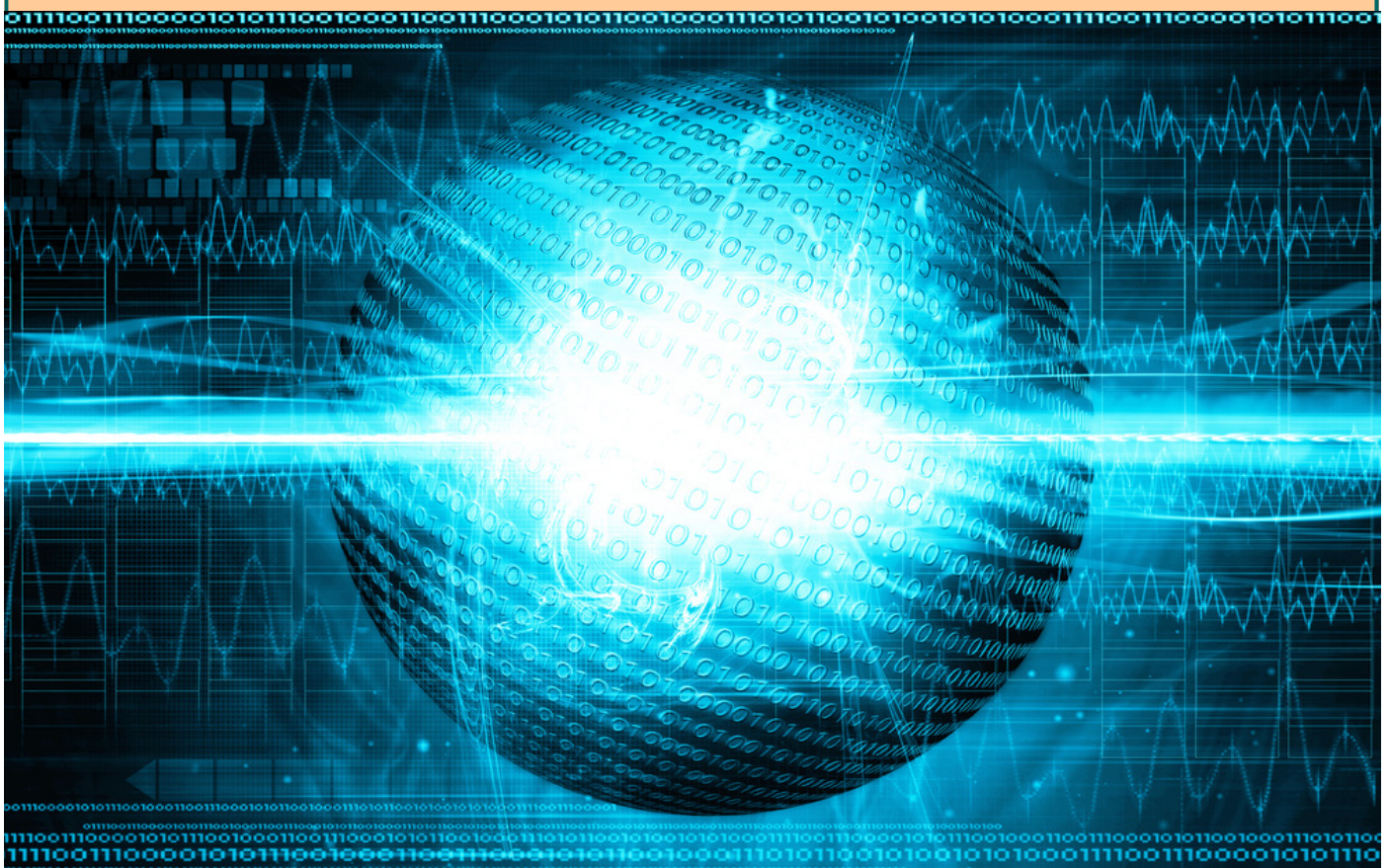
Introduction to Supply Chain Management - 13th-15th & 20th-22nd October

#### Cork

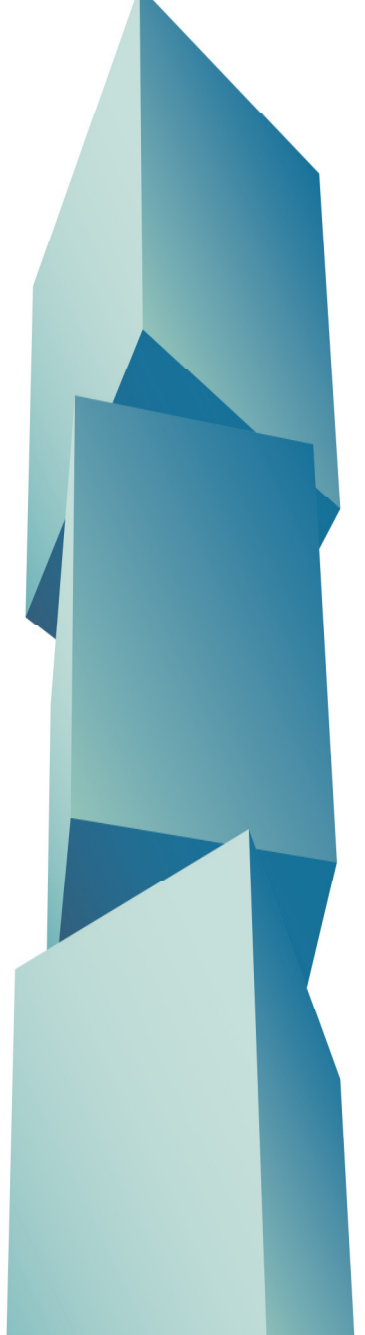
Warehouse Management - 26th– 28th May & 2nd – 4th June

Managing People - 23th– 25th June & 30th June – 2nd July

Essential Finance for Supply Chain Managers - 29th Sep-1st October & 6th-8th October



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National Institute for  
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**W**elcome to the latest Issue of *Supply Chain Perspectives*.

The theme of this Issue is based on the *Logistics Ireland 2010* conference which was held in Dublin in late 2010. The *Supply Chain Forum* element contains a report on the event, the theme of which was *Dynamic Supply Chain Management Leading the Recovery*. The event was a great success with over 200 delegates from all major sectors of the Irish economy in attendance. NITL would like to thank all conference partners and sponsors for their continuing support.

We do indeed live in turbulent times. As this journal goes to press we have received the results of the stress tests on the Irish banking sector. These tests reveal further Exchequer exposure to banking losses as a direct result of reckless practices in the sector during the Celtic Tiger years. This will in turn place further pressure on the Exchequer and most likely delay the economic recovery. In these challenging times one of the few positive areas of economic activity is in the export sector with indigenous and multinational firms performing remarkably well in highly competitive global markets. Economic recovery has to build on this export-driven success. It is only through the creation of real wealth that meets customer requirements in global markets that a sustainable economic future can be delivered. This is why logistics and supply chain management (SCM) is so important to all of our futures.

Next generation SCM will be about further integrating key supply chain processes in a dynamic manner. One of the *Logistics Ireland 2010* keynote speakers, John Gattorna, goes a step further by promoting the idea of *alignment* – alignment of key business processes to the real needs of customers. The feature articles in this issue focus on this issue from a number of different perspectives based on three of the keynote speeches at *Logistics Ireland 2010*. Professor John Mangan looks at the role of a logistics system in the overall competitive scenario of countries with a particular focus on what this means in a relatively peripheral nation like our own. Joe Reynolds explores the issues from the perspective of the transport and logistics sector and makes a number of positive recommendations for improvement based on his extensive experience. Finally, Gerrit-Jan Steenbergen of Zetes provides some interesting insights in relation to the role of technology in this process.

As always, we include our popular *Supply Chain Forum* and web review sections. We welcome your feedback and comments – please don't hesitate to contact us at NITL.

## SUPPLY CHAIN MANAGEMENT FORUM

A Review of Developments at NITL and the World of SCM

### DIT/NITL Win Prestigious Education Award



Dublin Institute of Technology/NITL has won the Education Award at Irish Logistics and Transport Awards 2011. This award is for the third level institute which has offered the most innovative and relevant courses in the transport and logistics industry. The DIT submission included NITL's post-graduate and corporate programmes, as well as a range of programmes conducted by the Department of Transport Engineering and the College of Business. The event organisers noted that the awards attracted over 100 entries with judges commenting on the overall high standards which made choosing the eventual winners all the more difficult.

The trophy was presented at a ceremony in the Burlington Hotel hosted by former *Prime Time* presenter Mark Little. The venue was packed with nearly 400 industry representatives from all over Ireland present to applaud the 43 finalists across 12 categories as the prestigious trophies were

handed out to loud cheers from winners and their guests. Judging was under the auspices of the Chartered Institute of Logistics and Transport (CILT), the recognised professional body for all professionals involved in the transport and logistics industries in Ireland with a panel of distinguished judges drawn from the highest echelons of the industry.

More information about the awards and the full list of winners visit [www.iltawards.ie/](http://www.iltawards.ie/)



*Paul Mallee, President of the Chartered Institute of Logistics and Transport (CILT) presents the award to Declan Allen of DIT*

### NITL Congratulates Masters Graduates

Another groups of graduates from NITL's M.Sc. programmes collected their parchments at the DIT ceremony at St. Patrick's Cathedral in November. This year's graduates include supply chain and logistics professionals from Murgraves, Diageo, AIB, the Armed Forces and Logitech, as well as several graduates from NITL's

full-time M.Sc. programme. NITL was represented at the event by module leaders Gerry Glynn and Daniel Park. NITL congratulates all its M.Sc. graduates and wishes them well in their future careers.

# Large Turnout at Logistics Ireland 2010

## Dynamic Supply Chain Management and Logistics Leading the Recovery



*Logistics Ireland 2010* which took place in October at the Crowne Plaza Hotel in Dublin. This year's event was based around the theme 'Dynamic Supply Chain Management and Logistics Leading the Recovery'. The event was organised by the NITL in collaboration with the Chartered Institute of Logistics and Transport (CILT).

The event focused on the achievement of competitiveness through the effective alignment of supply chain activities. The recent economic volatility has provided a fresh impetus in terms of building the necessary supply chain strategic capability in a proactive and focused manner. It is particularly important in an Irish context because delegates at *Logistics Ireland 2010*

use of the open nature of our economy, the challenges posed by relative geographical peripherality and the potential benefits in terms of cost and customer service. Recent months have shown some modest signs of economic recovery and a return of business confidence. However, after the serious contraction of recent years there is still a long way to go before sustainable economic growth becomes a reality. Stabilising the exchequer finances and the creation of a functioning banking sector are important in this regard. However, it is only through a return to successful export-driven growth that the situation can really be turned around. SCM has a central role to play in achieving this.

*Logistics Ireland 2010* explored these issues in some detail with a particular focus on:

- The critical role of supply chain alignment in addressing the challenges presented by the current economic environment.
- How to implement practical supply chain and logistics solutions

with a view to cutting costs and improving service.

- How to manage the supply chain change process.

The conference comprised a series of innovative presentations showcasing the perspec-



*Joe Reynolds (Reynolds Logistics), Edward Sweeney (NITL), Ingrid Miley (RTE) and Maurice Mullen (Department of Transport)*

tives of leading SCM academics and industry practitioners with a strong focus on the need for change. Possible practical approaches to simultaneously reducing cost in the supply chain and improving customer service were presented.

*Logistics Ireland 2010* was opened by Maurice Mullen of the Department of Transport, deputising for Minister Noel Dempsey, T.D.

The core of the event was based around five keynote speakers:

- John Gattorna, internationally recognised supply chain



*Delegates at Logistics Ireland 2010*



thought leader.

- Paul Condon, Supply Chain Director at Genzyme Corporation, one of the world's leading biotechnology companies with a major operation in Waterford.
- Gerrit-Jan Steenbergen, Vice President 3i Innovation Centre at Zetes, the leading pan-European company in the value-added solutions and services industry for automatic identification of goods and people.
- Joe Reynolds, Chairman of Reynolds Tankers Group. Award winning Reynolds Logistics provides a specialised transport and distribution service for the oil industry in Ireland.
- John Mangan, Professor of Marine Transport and Logistics at Newcastle University, one of the UK and Ireland's foremost logistics academics.

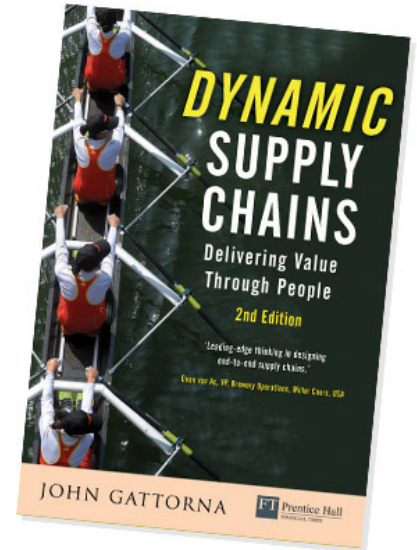
The feature articles in this issue of *Supply Chain Perspectives* are based on the papers delivered at *Logistics Ireland*. In addition, there was a lively Expert Panel Q&A Session chaired by Ingrid Miley, Industry and Employment Correspondent, RTE.

At the conference closing ceremony Edward Sweeney thanked all speakers, conference partners and sponsors. He also thanked his colleagues in NITL, in particular event manager Pamela O'Brien, for their hard working in making the event such a success.

## European Launch of *Dynamic Supply Chains*

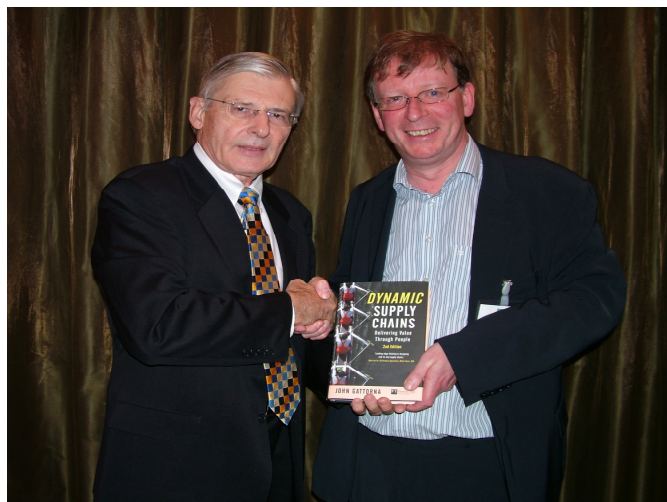
The book recognises that supply chains are at the heart of competitive advantage in business today. If supply chains are managed successfully, companies will be able to deliver their products and services to customers in a smart, cost-effective way. The key to successful supply chain management is recognising that it's people who really drive the living supply chains that are at the heart of businesses. Supply chains are powered by the energy and expertise of employees and suppliers and by the changing wants and needs of customers. John Gattorna calls this principle of matching changing customer needs and desires with different supply chain strategies "dynamic alignment".

Speaking at the launch in Dublin, Edward Sweeney of NITL commented that "John Gattorna's contribution to scholarship and practice in SCM over the years has been substantial and sustained.



This new book represents a major contribution to thinking in the field and presents a range of valuable approaches for supply chain professionals. It can be read equally profitably by students and practitioners alike".

For further information about John Gattorna and his work visit [www.johngattorna.com](http://www.johngattorna.com).



John Gattorna and Edward Sweeney at the recent book launch

## Italian Postgraduates Study at NITL

During the first part of 2011, NITL conducted phase two of an innovative postgraduate programme funded by the Government of Regione Campania in Italy. To mark the students' completion of the programme, a lively presentation ceremony was held recently in Dublin. A cohort of 15 students from the University of Naples "Parthenope" (see [www.uniparthenope.it](http://www.uniparthenope.it)) were presented with certificates following their completion of a series of nine one-week modules on various aspects of advanced logistics and supply chain management (SCM).

Speaking at the event, Edward Sweeney and Declan Allen of NITL congratulated the students on their success to date and wished them well with the remainder of their Masters programme in Naples. Course Director, Prof.



*Prof Renato Passaro and Declan Allen present the certificate of attendance to Palma Lauro*

Renato Passaro of the University of Naples "Parthenope", thanked NITL for hosting the students noting that course coordinator Antonio de Linares was due a particular word of thanks. He looked forward to continuing the fruitful collaboration with NITL in both research and education. The issue of supply chain learning is a particular focus of this collaborative work.



*Students pictured with NITL staff at the event*

On behalf of the students, Ms. Palma Lauro thanked NITL and DIT for their hospitality and their academic endeavours. The students now return to Naples to complete their studies which lead to the award of a Masters degree in SCM and freight transport by the University of Naples "Parthenope".

NITL will be a quieter place following their departure.

## NITL Hosts Visiting Professor

NITL was delighted to host a Visiting Professor from the US recently.

Dr. George Maughan, Professor and Director of the PhD in Technology Management Program at Indiana State University, USA, is visiting NITL to access the expertise and experience of the Institute's faculty specifically on the topic of international technology transfer.



Professor Maughan has written and taught about technology education throughout his career as well as consulted for business and government in the United States, India and Sri Lanka. His current research interests include the nature of scholarship in colleges of technology and engineering, and, knowledge transfer and social capital in the transfer of technology.



## NITL Welcomes New M.Sc. Students

NITL is delighted to welcome its new cohorts of M.Sc. students. There is a growing recognition of the importance of logistics and SCM issues in companies in Ireland and globally. The necessary improvements cannot be achieved without properly educated and trained "supply chain professionals".

There is a prime need for the best young brains to provide a fresh, innovative impetus. In support of this need the full-time M.Sc. in Supply Chain Management provides training and education of a high academic standard and relevant to modern industry. This programme allows graduates, often with limited practical experience, to gain a Masters degree in SCM by following a structured programme of modules which address both the theoretical and applied aspects of the subject. The programme is aimed at the "high-flyers" who will be the world-class managers of the future. The new intake is international in complexion with participants from several countries across the globe, as well as from Ireland.

New cohorts of participants also recently embarked on NITL's Executive Masters programme. This is a flexible part-time programme that leads to the award of an M.Sc. in Supply Chain Management. The aim of the programme is to develop the leaders of



*Edward Sweeney with the new intake of full-time Masters students*

change and business improvement in all sizes and types of companies.

The 'Introduction to SCM' module was run in Dublin and Cork with participants from a wide range of leading edge companies including Oracle, Kerry Group, Allied Foods, Commscope, Millipore, J&J and Musgraves. Participants were also in attendance from a number of

smaller indigenous companies and the public sector. The introductory module was very well received with participants commenting specifically on the high level of participation and interaction, the effective use of illustrative case studies and the blend of theory and practice.



*Participants at the Recent Executive Masters Introductory Module*

## USEFUL WEBSITES

**Freight Fox — [www.freightfox.ie](http://www.freightfox.ie)**

FreightFox provides detailed information on companies providing, using and servicing the freight industry in Ireland. Over 4,000 freight, logistics and supply chain management companies are listed in 94 categories. The listings range from Freight Forwarders and Freight Technology to Airfreight and from Seafreight to Road Haulage. FreightFox is the online version of the highly successful *Irish Supply Chain Management Services Directory* aka The Who's Who Directory to the Irish Freight & Logistics Industry. The website also provides news relevant to the Irish freight sector and information about job vacancies in the sector. It is easily navigable and its search engine enables information to be accessed quickly in line with the website's tagline – "Find Freight Information Fast".



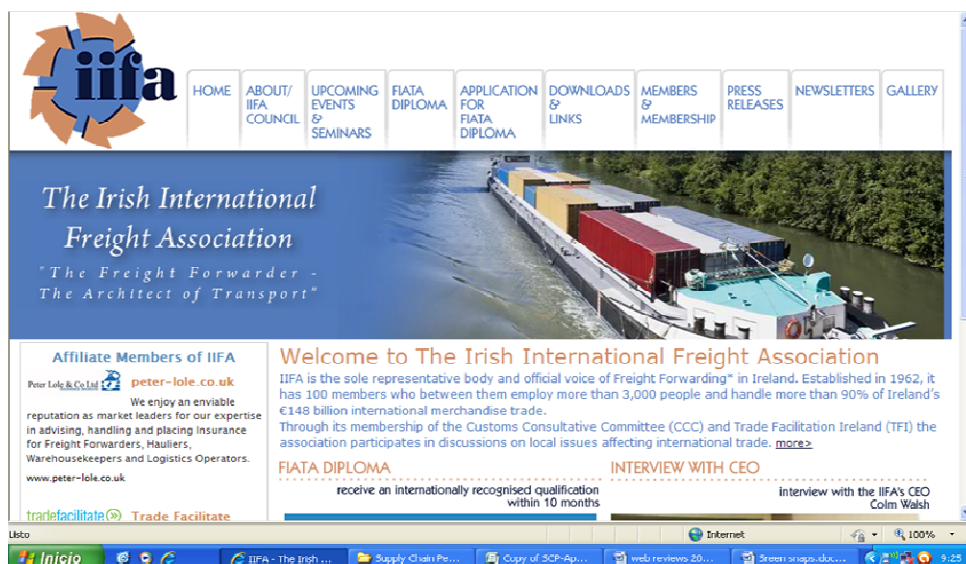
### *Irish Exporters Association— [www.irisheexporters.ie](http://www.irisheexporters.ie)*

This is the website of the Irish Exporters Association (IEA). The IEA represents the whole spectrum of companies within the export industry. This includes SME's taking their first steps in international trade, multinationals exporting their products and services worldwide, as well as export service providers. The IEA has been in existence for almost 60 years during which time exports have increased dramatically and now represent one of the few positive components of Irish economic activity. The website contains two particularly useful elements. Firstly, the publications section contains useful books and studies, as well as archives of IEA's e-Newsletters. Secondly, there is a lot of useful information under the banner of "About Exporting" on items ranging from customs formalities to intellectual property.



### *The Irish International Freight Association— [www.iifa.ie](http://www.iifa.ie)*

The Irish International Freight Association (IIFA) is the representative body and official voice of the freight forwarding industry in Ireland. Established in 1962, it has 100 members who between them employ more than 3,000 people and handle more than 90% of Ireland's international merchandise trade. The website contains information about IIFA events (including downloads of presentations), as well as about its education courses (in particular the internationally recognised FIATA Diploma). It also has useful downloads and links and archives of the Association's newsletters going back to 2000.





# Ireland's Place in Global Logistics Systems

## Threats and Opportunities

By John Mangan

### The role of logistics in a country's competitiveness

There is a growing appreciation today of the impact that best practice logistics and SCM can have on firm success. Not that this is a new idea – in fact the pre-eminent academic in both fields of study pointed out as far back as 1992, in his seminal text *Logistics and Supply Chain Management*, that it is increasingly supply chains, and not individual firms, that compete. In the intervening years many successful organisations have learned how to use their supply chains both to differentiate their propositions from those of the competition and to compete with other actors in the market. Interestingly, much of the focus in the

logistics literature is at the company and product levels, not at the country or region level. While there is a wide and varied extant literature on various aspects of inter-country competition, foreign direct investment, and clustering, the intersection of logistics and SCM with country and regional competitiveness has, in contrast, received much less attention. Yet even less attention has been focused on the topic of *relative* performance by country or region in logistics and SCM practice. As will be shown later, global supply chain activity, largely driven by the private sector, shapes both domestic and international logistics systems. Our focus in this presentation is on how individual countries, in this case Ireland, engage with and perform such logistics activities. Is Ireland a

passive host for nodes of individual supply chains, or can it play a key, proactive role in such supply chains? Do its logistics systems *lubricate* global supply chains and are such systems integrated into global logistics systems? These are important questions for any economy, but especially so for a small, peripheral and open economy such as Ireland's.

In today's interconnected and globalised world, highly developed logistics systems facilitate global supply chain activity. And many such supply chains are geographically dispersed, complex and involve flows of large volumes of freight. Consolidation in many industries (witness for example the widespread merger and acquisition activity within the automobile and pharmaceutical industries) leads to an even greater focus by the merged companies on integrated SCM. A downside of integrated supply chains is, however, that the collapse of a key player in a supply chain can in turn jeopardise many other companies within the same supply chain – in commenting upon the 'collapse of manufacturing' brought about by global recession in 2009, a leader article in *The Economist* magazine noted that whole supply chains (for example the North American



automobile supply chain, which comprises many tiers of companies) could collapse if a key player in the supply chain collapses.

Many large companies, and their supply chains, thus play a very significant role in the global economy and their power should not be underestimated. In fact some of the world's largest companies have annual turnovers greater than the annual gross domestic product (GDP) of some smaller European countries. How such large companies design and manage their supply chains is thus highly relevant for the countries and logistics systems that intersect with those supply chains. The size of the logistics sector within a country varies and in some countries it can be a key sector of economic activity. Furthermore, for some countries, because of relative geographical peripherality in relation to supply sources and/or markets for products, the logistics sector can be of strategic importance in facilitating the participation of those countries within global trade systems. As a service industry, and given the significant amount of cross-border logistics activity that takes place, the provision of logistics services is a form of export services earnings for some countries that have well-developed logistics sectors (the Netherlands being a good example in this regard).

With regard to the contribution of logistics to the wider economy, it is informative to take a look at certain developments in the US in the late 1990s. Economists note that a variety of factors determine the wealth and rate of growth of national economies. These factors are many and varied, and range from available energy sources to institutional factors such as a good banking system. In the late 1990s the US economy experienced a rapid rise in productivity. Closer examination of the economic data by researchers at the McKinsey and Company Global Institute revealed the impact on national productivity of developments in the retail sector, and most notably the impact of the giant retailer Wal-Mart. According to Beinhocker, 'Wal-Mart's innovations in large-store formats and highly efficient logistical systems in the late 1980s and early 1990s enabled the company to be 40 percent more productive than its competitors'. Wal-Mart has been a global leader in best practice retail logistics, with many other retailers imitating some of its strategies. In the case of the US economy, the increases in Wal-Mart's productivity led to an 'innovation race' with suppliers and other retailers also seeking to enhance their productivity, leading, in turn, to a rise in whole sector productivity. Wal-Mart is, as already noted above, one of the

world's largest companies and it is interesting to observe then the considerable impact and importance of how it organises its logistical systems on a wider economy.

### **Ireland's position relative to other countries**

As a small, geographically peripheral, open economy in north-western Europe it is important to understand how Ireland's logistics system performs, how well integrated it is into international logistics systems, and in turn how it facilitates the participation by companies in Ireland in global supply chains. In recent years, a number of disparate indices of various aspects of relative logistics performance have emerged, and Ireland's relative position within such indices is now considered.

Perhaps the most relevant index is the Logistics Performance Index (LPI), developed by the World Bank in conjunction with Turku School of Economics in Finland. The index incorporates extensive survey data via feedback from operators on the ground worldwide and is supplemented by objective data on the performance of key components of the logistics chain in each country. The LPI consists therefore of both perception and objective measures, across six key dimensions, and helps build profiles of 'logistics friendliness'

Int. LPI Rank	Country	LPI	Customs	Infrastructure	International shipments	Logistics competence	Tracking & tracing	Timeliness
1	Germany	4.11	4	4.34	3.66	4.14	4.18	4.48
2	Singapore	4.09	4.02	4.22	3.86	4.12	4.15	4.23
3	Sweden	4.08	3.88	4.03	3.83	4.22	4.22	4.32
4	Netherlands	4.07	3.98	4.25	3.61	4.15	4.12	4.41
5	Luxembourg	3.98	4.04	4.06	3.67	3.67	3.92	4.58
6	Switzerland	3.97	3.73	4.17	3.32	4.32	4.27	4.2
7	Japan	3.97	3.79	4.19	3.55	4	4.13	4.26
8	United Kingdom	3.95	3.74	3.95	3.66	3.92	4.13	4.37
9	Belgium	3.94	3.83	4.01	3.31	4.13	4.22	4.29
10	Norway	3.93	3.86	4.22	3.35	3.85	4.1	4.35
11	Ireland	3.89	3.6	3.76	3.7	3.82	4.02	4.47
12	Finland	3.89	3.86	4.08	3.41	3.92	4.09	4.08
13	Hong Kong, China	3.88	3.83	4	3.67	3.83	3.94	4.04
14	Canada	3.87	3.71	4.03	3.24	3.99	4.01	4.41
15	United States	3.86	3.68	4.15	3.21	3.92	4.17	4.19
16	Denmark	3.85	3.58	3.99	3.46	3.83	3.94	4.38
17	France	3.84	3.63	4	3.3	3.87	4.01	4.37
18	Australia	3.84	3.68	3.78	3.78	3.77	3.87	4.16
19	Austria	3.76	3.49	3.68	3.78	3.7	3.83	4.08
20	Taiwan	3.71	3.35	3.62	3.64	3.65	4.04	3.95

**Table 1 - The World Bank logistics performance index (LPI)**  
(lowest of the 155 countries is Somalia at 1.34)

for 155 different countries. Table 1 illustrates the LPI scores for the top twenty ranked countries, and Ireland's position therein (where it is ranked #11). The highest score on the index is 4.11 (Germany) and the lowest is 1.34 (Somalia, ranked at #155).

A poorer, although probably not unexpected, ranking emerges for Ireland on another more specific index, namely the United Nations Conference on Trade and Development's (UNCTAD) Liner Shipping Connectivity Index (LSCI), which aims to capture a country's level of integration into existing liner shipping networks by measuring liner shipping connectivity. Ireland's ranking in 2008 on the LSCI was #98

(down from #82 in 2004); in comparison in 2008 the UK was ranked #7. The implication of such a ranking for Ireland is that as a country it is quite dependent in the first instance upon linkages with other European countries (most notably the UK, and France, Belgium and the Netherlands) for connections into the main deep-sea container networks.

There are two other indices worth noting. The World Economic Forum's (WEF) Enabling Trade Index 2008 is concerned with the factors, policies and services facilitating the free flow of goods over borders. The index comprises four sub-indices and of most interest here is the sub-index ranking of 'transport and communica-

tions infrastructure' where Ireland is ranked #24, considerably behind a number of other EU countries (the UK, for example, is ranked #8 on this sub-index). The World Bank also produce an annual 'Doing Business' survey which measures the relative ease of doing business in 181 countries using a basket of ten indicators. Of most relevance here is the indicator 'trading across borders' where Ireland ranks #18 (in contrast the UK scores less well on this indicator (rank #28)).

## Risks and Opportunities

From the brief review above it is apparent that Ireland does not enjoy an overly strong position relative to many of its European neighbours in terms of the relative competitiveness of its logistics system. And its logistics sector is not a strong source of export service earnings, as is the case with the logistics sector in a number of other European countries such as the Netherlands and the UK. There is a very significant dependence on the UK land-bridge, especially for RoRo traffic. As maritime container vessels get larger ('gigantism') and hub and spoke networks become more prevalent, Ireland's relative peripherality is accentuated. Furthermore, as the economy contracts, there is a concomitant decrease in available logistics services and equipment which can in turn have an impact on exporters



and importers. Other challenges include the long term trend of rising fuel costs, sustainability issues, security concerns (both in terms of terrorism and the risk posed from protests / blockades at key transport nodes, both at home and abroad) and the potential impact of external shocks (weather and other extreme events, biothreats, etc). How all of these factors can impact Ireland's logistics competence and capability, and more generally its future prosperity, remains to be seen. We have also seen in this article how in many instances whole countries can be at the whim of large multinational companies and their decisions as to how they structure (where, what, etc.) their supply chains. Given all of these vagaries, Ireland needs to ensure it continues to develop a strong, competitive logistics system. An enhanced ability to 'sense and respond' quickly to potential risks, the whole area of business continuity planning, and the increasingly urgent need for supply chains and logistics systems to use less resources, are all areas that need to be given priority by Government and

other key stakeholders. While Ireland is unlikely in the short to medium term to build a *physical* logistics sector with strong export earnings potential, conversely the whole area of developing, managing and coordinating supply chains might present as an opportunity in the form of a sector to be further developed in its own right in Ireland. As a country it certainly has two of the key ingredients necessary for this: well developed technology capability and connectivity, and a strong knowledge base. In the (very justified) criticism of transport in terms of its energy consumption and environmental impacts, we can forget the central role that transport and logistics plays in all of our lives. The International Chamber of Shipping notes that without shipping 'half of the world would starve and the other half would freeze'. Ireland needs its logistics systems, even just to survive.

- The Economist (2009), 'The Collapse of Manufacturing', *The Economist*, 21 February 2009, p. 11.

- Beinhooker, E. (2006), *The Origin of Wealth* (p.262), London: Random House Business Books.



**John Mangan** is Professor of Marine Transport and Logistics at Newcastle University in the UK and Visiting Professor at the University of Hull Logistics Institute where he was Founding Director of the Institute.



## Innovation and Utilisation: A breakthrough opportunity for Ireland's road transport infrastructure Part 1

By Joe Reynolds

In addressing our conference theme "Dynamic Supply-Chain Management and Logistics Leading the Recovery", I am very conscious of my position as the representative of the road-freight industry on today's panel. In this presentation, and the paper on which it is based, I have therefore attempted to bring an Irish roadfreight operators' perspective to bear on the question: "What contribution can the transport sector in Ireland make to the process of economic recovery?"

Before considering how such a contribution might emerge, we need to clearly establish the role and significance of the transport sector within the wider Irish economy.

Firstly, as a contributor to the national finances, the significance of the transport sector cannot be overstated. The Irish Petroleum Industry estimated Government revenues from transport in 2008 at Euro 3.6bn., as shown in Table 1.

Of course, the full impact of recession had not yet impacted on the consumption of transport fuels in 2008, and the 2009 data reveals a predictable decline, as Table 2 illustrates.

One might reasonably infer

from this data that Government revenues from transport would have fallen proportionately, but this is not the case because of rate increases in excise duty (on diesel) and National Oil Reserve Agency levy (on all products) during 2009, and the additional imposition of a new Carbon tax on the consumption of all fuel types. These increases and new charges were offset to a limited degree by the 0.5% reduction in the VAT rate on 1st January 2010.

The net result of these additional and increased charges is that Government revenues from transport diesel are actually set to *increase* in the Fiscal year 2010, notwithstanding the contraction in sector activity and the sharp decline in consumption. With the decline in revenues from non-transport taxes, and allowing for the VAT element of

fuel, the Government take from the transport sector is likely to exceed 10% of national income in 2010.

Secondly, and of even greater significance, is the pivotal role of road transport in the movement of freight in Ireland. As will be evident from Table 4, Ireland, unlike the majority of our European trade partners, joins Malta and Cyprus in being totally dependent on a single transportation mode for virtu-

**Table 1. Transport Taxes and Levies 2008**

2008	Euro'000
<b>Excise Duty</b>	<b>2,520,658</b>
<b>VAT</b>	<b>982,012</b>
<b>Corporation Tax</b>	<b>11,031</b>
<b>PAYE &amp; PRSI</b>	<b>23,878</b>
<b>NORA Levy</b>	<b>75,994</b>
<b>Total</b>	<b>3,613,573</b>

Source: IPIA

**Table 2. Inland Oil Consumption 2008/2009**

Oil Consumption '000 Litres	2008	2009	+ (-) %
<b>Gasoline</b>	<b>2,336,758</b>	<b>2,127,651</b>	<b>(8.5)</b>
<b>Kerosene</b>	<b>1,244,923</b>	<b>1,280,152</b>	
<b>Gasoil</b>	<b>1,460,747</b>	<b>1,246,095</b>	
<b>Diesel</b>	<b>2,961,761</b>	<b>2,691,749</b>	<b>(9.1)</b>
<b>Fuel Oil</b>	<b>114,275</b>	<b>108,209</b>	
<b>Total</b>	<b>8,118,424</b>	<b>7,453,856</b>	

Source: NORA

ally all internal movement of goods across the entire island.

These tables illustrate not just the extensive reliance of the

the totality of internal freight movements, but also the inextricable link between the transport and energy sectors.

**Table 3. Rates of Transport Taxes and Levies on Fuel in Euro Per Litre**

Item	From	To	Date
Duty (Diesel)	0.3681	0.4093	07/04/2009
NORA Levy (All products)	0.0100	0.0200	01/10/2009
Carbon Tax (Gasoline)		0.0420	09/12/2009
Carbon Tax (Diesel)		0.0490	09/12/2009

VAT %	21.5	21.0	01/01/2010
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Source: NORA , Revenue Commissioners

**Table 4. Modal Split of EU Freight Transport (% tonne-km) 2008**

	Roads	Rail	Waterways	Pipe-line
EU 27	72.5	17.1	5.6	4.8
Ireland	99.4	0.6	0.0	0.0

Source: Eurostat

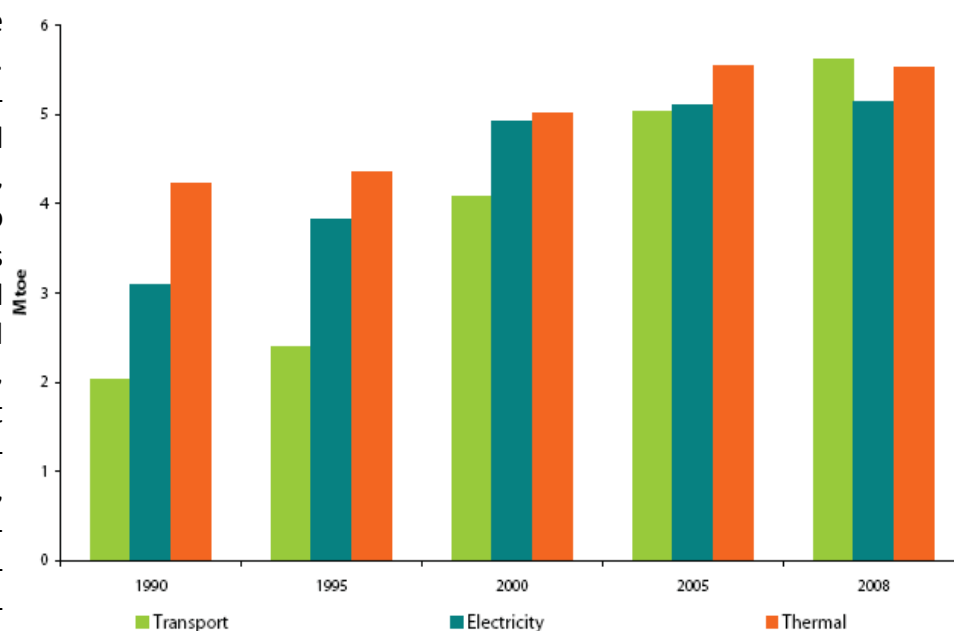
This single-mode dependency on the road transport sector has profound implications for the Irish economy, in terms of the internal cost of goods, national competitiveness, and the future direction of transport policy. However regrettable the absence of a rail alternative, and for whatever historical reasons, transport policy in relation to the internal movement of goods in Ireland must in the short and medium term be concerned with, and directed towards, road freight. It also follows that much of the EU and international research in this area, which is predicated around modal shift from road to rail, is irrelevant to present and foreseeable Irish circumstances.

State on transport for National revenue and the absolute reliance on road transport to carry

As with transport, the Irish energy sector is also characterised by another dependency, in this case the dependency on imported fuel to meet national energy needs. In 2008, imported oil and gas accounted for 81% of Ireland's Total Primary Energy Requirement. As a component of this requirement, the increasing significance of transport since 1990 relative to heating and electricity generation is shown in Figure 1.

The transport sectoral share of Total Final Consumption (TFC) at 42% is even more significant as shown in Table 5.

**Figure 1 Primary Energy by Mode of Application 1990-2008**



Source: Energy in Ireland-2008 SEI



**Table 5. Share of Primary Demand and Final consumption by Sector 2008 (%)**

	<b>TPER</b>	<b>TFC</b>
<b>Industry</b>	<b>20.5</b>	<b>18.6</b>
<b>Transport</b>	<b>34.7</b>	<b>41.9</b>
<b>Residential</b>	<b>25.2</b>	<b>23.8</b>
<b>Commercial/Public</b>	<b>17.3</b>	<b>13.5</b>
<b>Agriculture</b>	<b>2.2</b>	<b>2.2</b>

Source: *Energy in Ireland-2008* SEI TPER=Total primary Energy Requirement

If we now examine the energy requirements by fuel type, the dependency of the transport sector on imported fossil fuel is highlighted in table 6. Biofuels and the Dublin electrified rail systems comprise the renewable

and relative growth of in transport activity over this period as demonstrated in Figure 2.

Any increase in national transport efficiency will therefore reduce both the dependence on imported

fossil fuel and the rate of emissions per tonne carried.

The key characteristics of the transport sector in Ireland that emerge clearly from this data can be summarized as follows;

- Government revenues from transport are the principal sectoral contributor to Irish exchequer income
- 99% of all Irish internal freight movement is conducted by road
- 99% of Irish transport energy is imported fossil fuel
- Transport is the largest contributor to energy-related CO2 emissions

**Table 6. Share of TPER, TFC and Transport by Fuel 2008 (% rounded)**

	<b>TPER</b>	<b>TFC</b>	<b>Transport</b>
<b>Fossil fuels</b>	<b>96.2</b>	<b>81.0</b>	<b>98.90</b>
<b>Coal</b>	<b>8.8</b>	<b>2.8</b>	
<b>Peat</b>	<b>5.2</b>	<b>2.1</b>	
<b>Oil</b>	<b>54.8</b>	<b>63.7</b>	<b>98.90</b>
<b>Gas</b>	<b>27.5</b>	<b>12.4</b>	
<b>Renewables</b>	<b>3.6</b>	<b>1.9</b>	<b>0.99</b>
<b>Electricity</b>	<b>0.4</b>	<b>17.1</b>	<b>0.11</b>

Source: *Energy in Ireland-2008*

and electricity components within transport.

A further consequence of fossil fuel dependency is that energy use in transport now accounts for over one-third of energy-related CO2 emissions, and is by far the largest CO2-emitting sector, illustrated in Table 7. The growth in transport-related emissions since 1990 follows the dramatic rise in the absolute

**Table 7. Share of Primary Energy-related CO2 Emissions by Sector 2008 (%)**

<b>Industry</b>	<b>20.0</b>
<b>Transport</b>	<b>34.8</b>
<b>Residential</b>	<b>25.7</b>
<b>Commercial/public</b>	<b>17.2</b>
<b>Agriculture</b>	<b>2.3</b>

Source: *Energy in Ireland-2008*

It follows that transport policy—particularly in relation to the transport of goods by road—has the potential to profoundly impact on government revenues, the cost of Irish goods, international competitiveness, and—to a lesser extent—energy supply security and the level of national CO2 Emissions

Having established the position of transport in the wider context of the economy, I would now like to consider the profile of the transportation sector itself in terms of passengers and freight, and examine the respective weightings of these two elements in terms of:

- the national vehicle

fleet

- fuel consumption
- emissions
- transport policy.

It can be seen that goods vehicles comprise a very small proportion (14.1%) of the total national vehicle fleet in 2008 (falling to 13.9% in 2009). A further breakdown of good vehicles by unladen weight is shown in Figure 4.

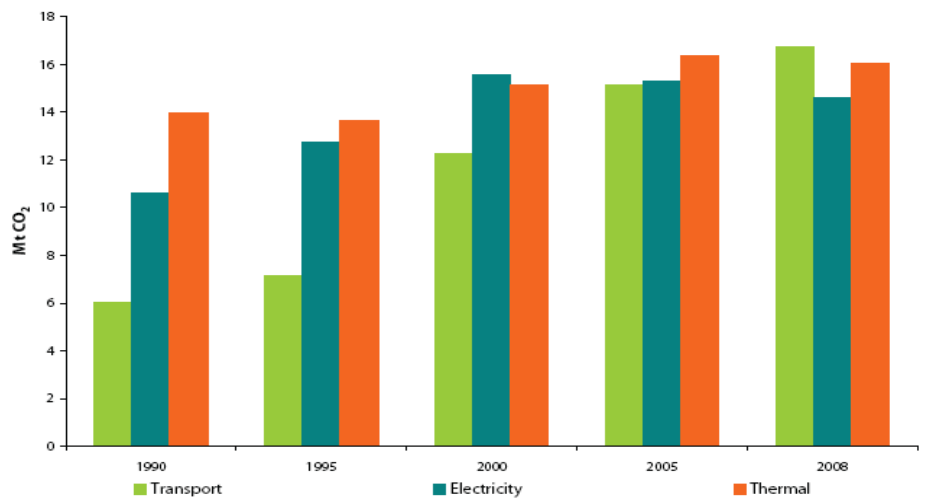
The predominance of light delivery vehicles within the goods vehicles category is evident from Figure 4. If these are excluded, the profile of vehicles in the >2 tonnes category emerges, as shown in Figure 5.

Taken together, these figures demonstrate the growing, but still relatively insignificant, number of >12 tonne HGV's on Irish roads throughout the period 1990-2008. This vehicle segment contracted in both absolute and relative terms in 2009, as Table 8 indicates.

It can be seen that Heavy Goods Vehicles over 12 tonnes unladen weight comprise just 9,000 vehicles out of a national vehicle fleet of almost 2.5 million.

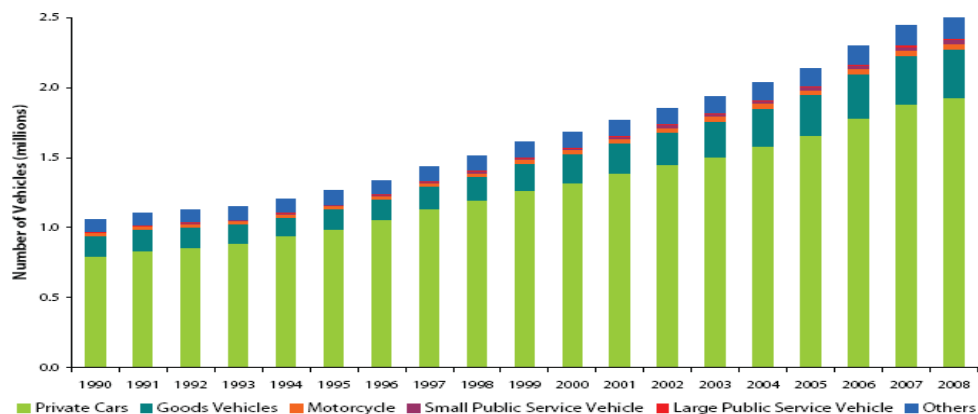
Comparing private car and freight in terms of energy consumption and CO<sub>2</sub> emissions, at the total sectoral level the respective contributions are presented in the following Figures 6 and 7.

**Figure 2. Energy-Related CO<sub>2</sub> Emissions by Mode of Application 1990-2008**



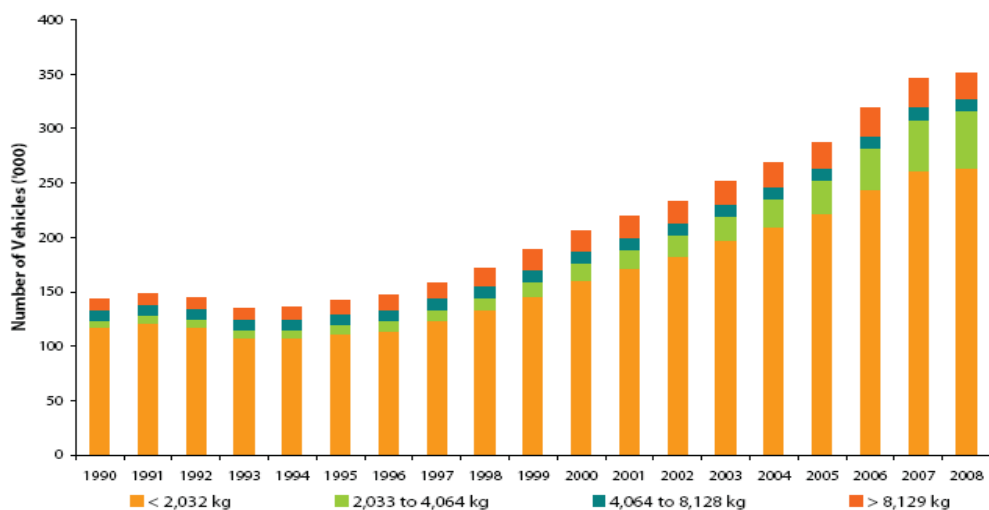
Source: *Energy in Ireland-2008*

**Figure 3. Composition of the Road vehicle Fleet 1990-2008**



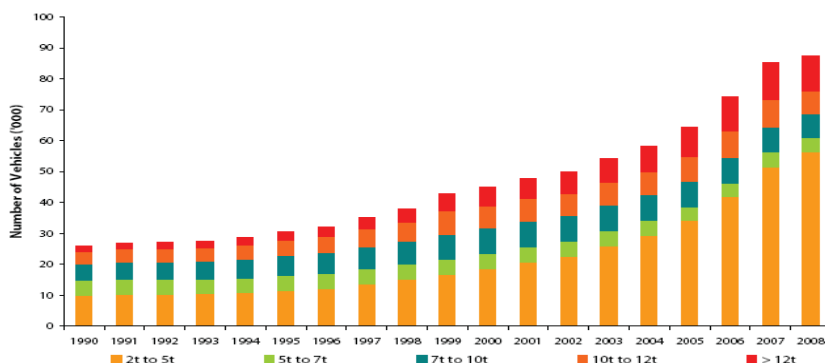
Source: *Energy in Transport -2009*

**Figure 4. Composition of Goods vehicles by Unladen weight 1990-2008**



Source: *Energy in Transport -2009*

**Figure 5. Composition of Heavy Goods Vehicles by Unladen weight 1990-2008**



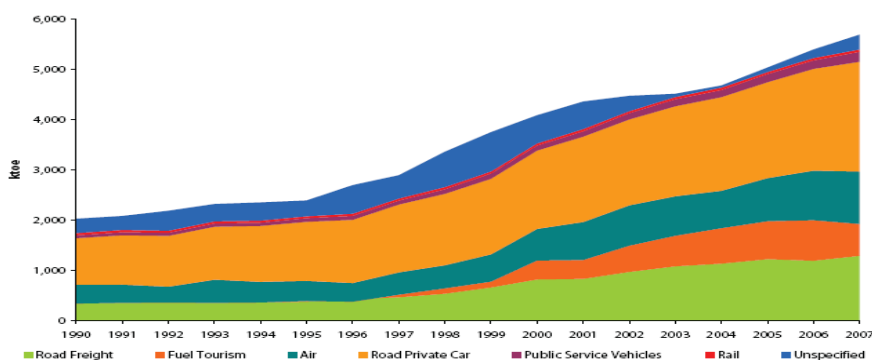
Source: *Energy in Transport -2009*

**Table 8. Composition of the Road Vehicle Fleet 2008/2009**

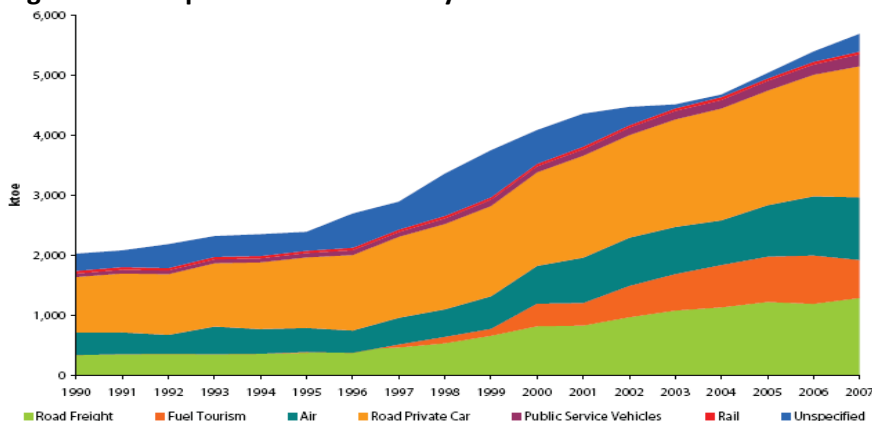
	2008	2009
Private Cars	1,924,281	1,902,429
Goods Vehicles	351,307	343,940
Others	221,980	221,291
Total	2,497,568	2,467,660
>12 tonne	11,123	9,079
% Of Total	0.45	0.36

Source: *Department of Transport Bulletin of Vehicle and Driver Statistics 2008 & 2009*

**Figure 6. Transport Final Energy by Mode 1990-2007**



**Figure 7. Transport CO2 Emissions by Mode 1990-2008**



Reflecting the significance of the private car in Irish energy consumption and emissions generation, national policy in relation to road use has understandably been directed towards private car use, via a multiplicity of investment and incentive initiatives, for example:

- VRT and Road Tax regimes changed from engine capacity to CO2 emissions
- Investment in public passenger bus and rail transportation infrastructure and capacity to encourage modal shift
- Demonstration budgets and incentives for hybrid and electric vehicles
- Smarter Travel programmes, cycle paths
- Spatial planning to reduce work related commuting etc



*Joe Reynolds is Chairman of Reynolds Tankers Group. Award winning Reynolds Logistics provides a specialised transport and distribution service for the oil industry in Ireland.*

*Part 2 of this article will appear in the next issue of Supply Chain Perspectives*



# Delivering Effective Retail Supply Chain Networks

By Gerrit-Jan Steenbergen, Zetes

## Introduction

Visibility and traceability are no longer buzzwords and it's interesting to consider the reasons why this change has occurred.

From the 1980s until 2008, rises in the transportation of goods mirrored overall economic growth, with 75% of movement occurring in Europe. The recession brought a decline of 10-12% in early 2009, but this has stabilised and by 2011, experts anticipate transportation levels will return to 2008 levels.

Together with transportation volumes, improved availability of online networks is also contributing to traceability and visibility expectations. In the first half of 2010, more than 315 million smart phones were sold, up 50% on 2009 levels.

Another trend is the changing expectation for traceability among consumers who want information on the origin of their products, constituent raw materials and product components. And they expect better overall product quality as well. Simply having products available to buy is no longer enough as discerning consumers look 'behind the brand' to make their purchasing decisions.

Environmental concerns have also influenced companies to optimise their use of resources in response to social expectations. Green initiatives seeking

to improve utilisation of warehouse, freezer and truck space are widespread, spurred by both a desire to do good and cut operational costs.

For suppliers, there is a demand for traceability to drive logistics efficiency, quality and visibility. The availability of 'always on-line' information creates an early warning system to reduce out-of-stocks, shrinkage or delivery problems and more targeted recalls.

Overall, the emphasis on improving the customer experience using technology whilst seeking to cut operational costs is a trend occurring across Europe. Many retailers have already invested in self-service scanning, self-checkout, smart shelf labeling or queue busting systems.

## From Supply Chain to Demand Pull Network

Increasing customer influence has transformed the traditional supply chain (source-make-deliver-buy) model from a push channel to a pull channel with the customer firmly in control. In the retail sector, companies like Nike are responding by allowing customers to customise shoes.

This re-emphasises the right product, right place, right time, right price mix. Balance requires a dynamic interaction

between information and physical flows to ensure customer demands are met with just the right amount of stock. Decisions over which technology to use e.g. RFID, traditional barcodes or imaging, are mostly driven by a cost/benefit analysis and ease of integration to existing systems.

The examples below highlight why visibility is important for a networked supply chain.

## Flexibility

No longer can goods only be returned to the store of purchase. Now customers can choose to buy online and collect from a local store, or buy from one store, return to another or a repair centre or the web.

## Forecasting

This can be an expensive activity and will not necessarily yield the corresponding value invested, especially for smaller retailers with correspondingly smaller amounts of capital tied up in stock. Regardless of a retailer's size, data accuracy remains the biggest issue. Whilst technology is driving better choice of the correct algorithms to produce a more reliable forecast, performance can only be as good as the underlying data. As an alternative to planning from forecasts, 'visible' networks can be built based on the ability to supply according to previous activity thus creating a 100% demand-driven supply network.

For example, vendor managed inventory (VMI) systems are straightforward to introduce whereby the vendor is completely responsible for the product, has direct access to the retailer's systems to monitor sales or stock levels and then creates replenishment orders based on demand, stock levels and existing inbound purchase orders. Because the vendor is provided with direct access to real time data generated via picking or replenishment requests, which are in turn triggered by store sales, this can be a more accurate method. Working in this way can reduce inventory levels and eliminate out of stocks, significantly reducing costs for the retailer. In addition, it offers additional benefits to both stakeholders because the retailer does not need to allocate resources to manage merchandise as it is handled by the vendor, who in turn, benefits from having direct access to valuable information which allows them to smooth their own supply chain, thus further reducing costs.

#### **Manufacturer driven vs. customer driven promotions**

Many manufacturers are increasingly operating retailer and customer led promotions in which the promotion is tailored according to the preferences or shopping habits of the local clientele. And in return for co-operating and supplying the manufacturer with sales data, the retailer benefits with discounted stock prices. Alternatively, manufacturer and retailer work in partnership

based on anticipated demand. So for example, after Kate Middleton wore a navy dress as her engagement to Prince William was announced, clothing suppliers to Tesco were fast to react with a near identical garment available in their stores within days. Achieving this needs the supply chain to be very tightly integrated between manufacturer and retailer but when the collaboration works well there is a much greater likelihood of delivering value for all stakeholders.

#### **Focusing on adding value to customers vs. straight cost-reduction**

Cutting costs used to be the motivation behind investment in the supply chain whereas in the future, the emphasis needs to be on delivering added value to specific customer groups. For instance, retailers are starting to understand that customers buying premium products will value traceability information verifying the origin and quality of their goods above other customers just looking for the lowest cost products.

#### **Building 'always on-line' visible supply networks**

Traditional barcodes are still used for identification of products but slowly, interest in serialised packaging is creating applications for the 2D barcode. To reduce time to market, many retailers in Europe have implemented voice picking and are expanding their use of voice-directed working in the warehouse. And smaller, more spe-

cialized retailers are following suit, but seeking 'out of the box' voice solutions that are quick to implement and show an investment payback.

Unlike voice, RFID is still not a mass-market technology and among luxury retailers, is mainly used for tracking returnable assets or to prevent counterfeiting. Internet shopping has brought increased demand for proof of delivery systems, and now, a newer market for 'payment on delivery' alternatives. Some retailers have also created innovative applications for RFID in the store - Prada for instance has created an RFID based personal shopping experience in which customers in the fitting rooms can see the garments they have selected being modeled on the catwalk. The RFID tags on each garment simply trigger the automatic selection of different pre-loaded videos – an ingenious yet simple idea which is proving very effective.

#### **Conclusion**

In the end, picking a technology is the easy part. More challenging is enabling the retailers, suppliers and other network members to use technology to operate effective supply chain networks.

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