

European Internal Demand Shifts

Key Takeaways:

- › Rising economic growth in Eastern Europe over the next decade will impact the European logistics market and put increased pressure on the region's infrastructure.
- › The development of a modern road and rail network in Eastern Europe is essential to helping it meet its economic potential.
- › Currently road is the dominant mode for freight transport in Europe, especially for short to medium distances.
- › For medium to long distance freight, rail can be a competitive transport mode, however expensive and time consuming modal shifts are a major issue.
- › Proposed EU environmental policies will impact the road-based logistics industry, as a key focus will be on attributing environmental costs directly to responsible parties.
- › We can expect changes in the modal split of freight transport in Europe. Road will remain the dominant transport mode, however, EU environmental legislation may create some shift towards rail on medium to long journeys.
- › Green and ethical sourcing strategies have already had a significant impact and they will remain a key factor throughout the whole supply chain.



With strong economic growth forecast for Central and Eastern Europe over the next decade, a reshuffling of European logistics markets is expected. In order to assist in making this growth a future reality, vital improvements in infrastructure are needed.

In this paper we look at infrastructure development across the key internal transport modes, and how this fits within the EU's vision for freight transport across the continent, with particular reference to likely environmental impacts in the future.



ROAD FREIGHT: THE KEY INTERNAL MODE

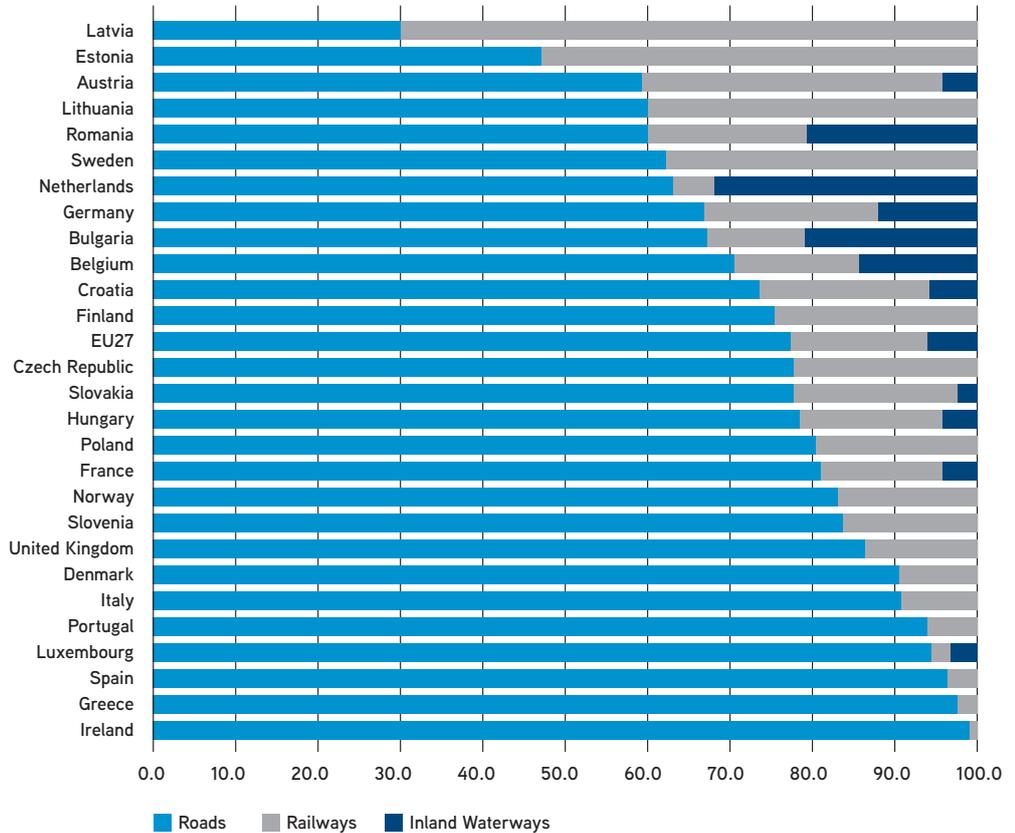
Road transport is a component of all supply chains. In most European markets it is virtually the only mode, as Figure 1 shows. Latvia and Estonia are the only countries where road is not the dominant mode of transport.

From a supply chain perspective, road transport provides an efficient, cost-effective means of delivering goods from source – factory or port of entry – to destination. While goods are unitised, the main carrier will be the Heavy Goods Vehicle (HGV). Once a container load has been broken down, a whole range of road vehicles are used, from soft-sided trucks to light goods vehicles – the white van of urban legend.

As the majority of freight is transported by road, alterations to driver hours and working time legislation have changed the choice of optimum inland location for logistics providers, especially for those seeking to distribute on a pan-European basis.

By law, 4.5 hours is the maximum permissible drive time for an HGV before a break has to be taken, a time that also represents the optimum threshold for a one-day round-trip. Although road journeys are an inexact science due to traffic delays and congestion, anywhere between 4 and 4.5 hours drive one-way is regarded as optimum. To date this has significantly impacted upon where the concentrations of logistics activity are located, especially the larger facilities providing regional distribution services.

FIGURE 1 – INTRA-EU27 INLAND FREIGHT TRANSPORT - MODAL SPLIT 2009



Source: Eurostat

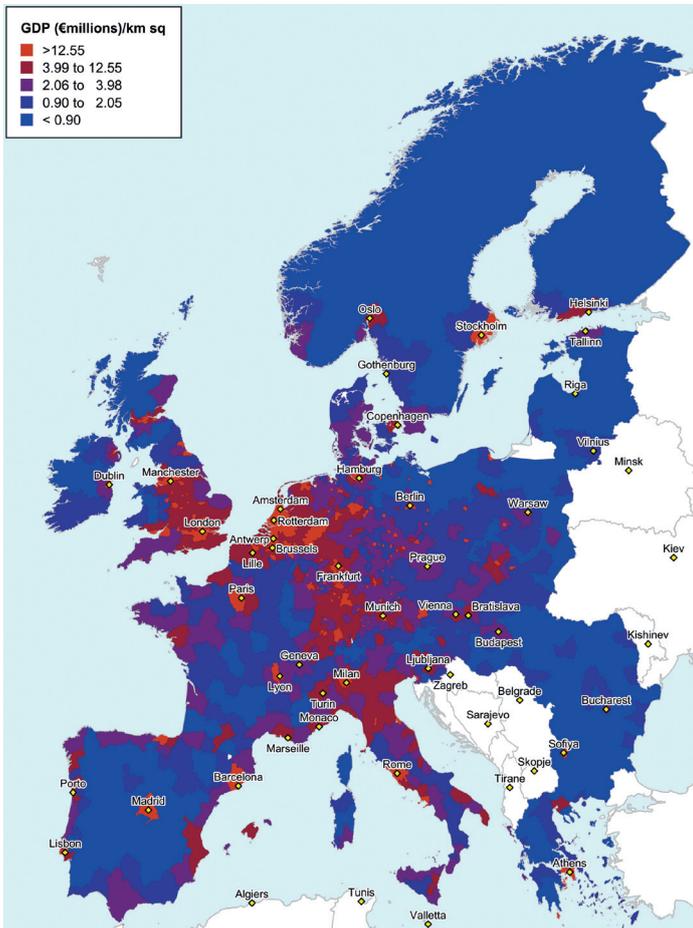
SHIFTS IN EUROPE'S INTERNAL DEMAND AND PRODUCTION

Looking at the distribution of GDP across Europe (Figure 2), it is clear that the most important area is the crescent that sweeps from the south east of the UK, through the low countries, western Germany and the northern part of Italy. France has centres of activity around Lille, Paris, and in areas bordering western Germany, Italy and Switzerland. There are equally high levels across the Nordic countries, but in smaller concentrations. The same goes for the major Russian cities of Moscow and St Petersburg.

These concentrations of activity have determined the location of the European logistics market to date, particularly as a result of drive-time needs. While dramatic changes in Western Europe's distribution of GDP are not expected in the next decade, rising economic growth in Eastern Europe will give rise to the need for changes in the logistics infrastructure that serves it. As we can see from Figure 3, the concentration of activity in places such as the Czech Republic and Poland is set to rise, with pockets of growth in Slovakia, Hungary and Romania.

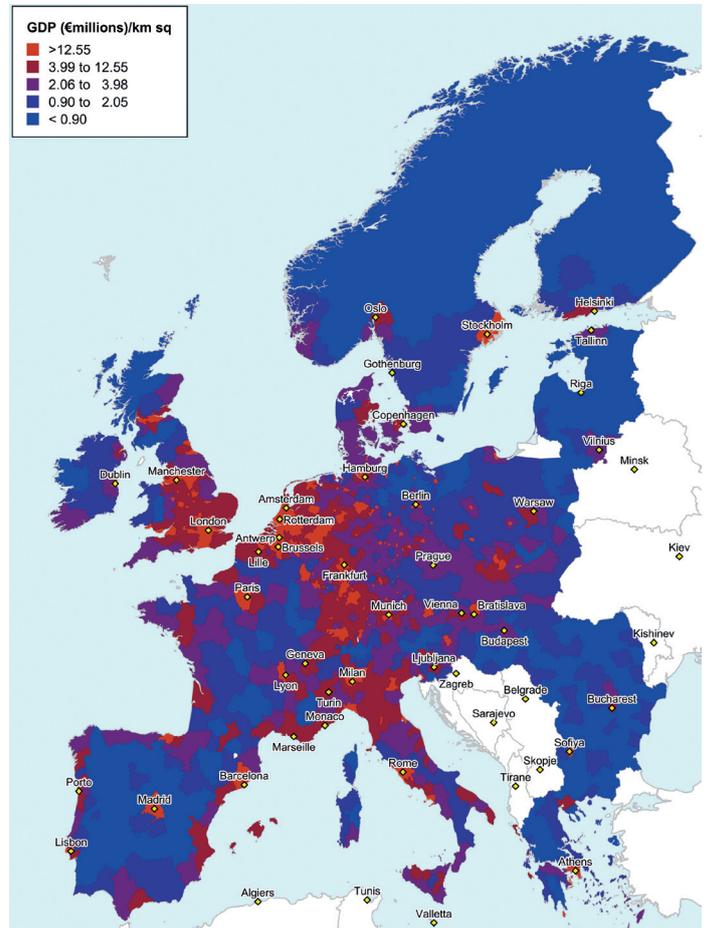
The extent to which these Central and Eastern locations can grow, not only to serve national logistics needs, but also function as effective bases from which other Western European locations can be served, will be driven predominantly by improvements in road and rail infrastructure, and the competitive/legislative pressures between them.

FIGURE 2 – EUROPE'S GDP - 2011



Source: Experian

FIGURE 3 – EUROPE'S GDP - 2020



EU Policy – Driving Changes in Intra-European Linkage:

- › The Helsinki Corridors (see Figure 4) underpin the efforts of the European Bank for Reconstruction and Development (EBRD) to improve access between eastern and western markets.
- › Almost all the significant infrastructure development since 1994 has taken place within the Helsinki framework.
- › The majority of the corridors are working to some degree, even though some have a way to go in order to meet the standards and infrastructure that are planned. In the east and south-east of Europe, in particular, a lot more development needs to take place in order to meet expectations.
- › The concept of a pan-European transport policy and corridors took shape prior to the first Pan-European Transport Conference in 1991. The purpose was to speed up the development of transport routes throughout Europe and to contribute to smoother economic exchanges.
- › The corridors are a framework for focusing investment in multi-modal transportation. To an extent they re-emphasise the dominance of road over other modes of transport, but at the same time they represent an imbalance that can begin to be corrected.

KEY INFRASTRUCTURE DEVELOPMENTS – RAIL AND ROAD

Road Infrastructure

Generally speaking, the main road network in Western Europe is good, while in Eastern Europe it is poor. Some east European roads, particularly those in the Czech Republic and the Baltic states, are of a high standard, as are many of those in Croatia and Hungary. Others, particularly those in Poland and Belarus, are not – but improvements are being made.

The development of a complete motorway network is a priority for all central and east European countries as the many expressways that currently exist are simply not designed to facilitate a large volume of HGV traffic due to their lower load-bearing capacity. That is why the majority of major planned roads, extensions, expansions and improvements are focused on Eastern Europe, especially roads connecting Eastern Europe with Western Europe. These include the east-west German link roads and the Berlin-Brest road.

The most significant improvements are being carried out in Poland. The majority of the A1 highway, an important part of the Baltic-Adriatic Axis, will be completed in 2013. And the A2 highway has recently connected the Polish cities of Poznan, Lodz and Warsaw with Germany. However, the eastern part of the road remains at the planning stage and is not expected to be ready until between 2015 and 2020. These improvements will be critical in expanding the potential distribution locations of logistics operators across the central and Eastern European belt.

Rail Infrastructure

In many respects a resurgent rail freight industry cannot be restricted to just one region, since rail distribution works best over medium to long distances. Nevertheless, significant investment is required in Europe to cope with long-term decline. There is also a danger that funds for rail investment will be diverted to high speed passenger services rather than freight services.

In 2008 the EU identified a European rail freight network based on existing and projected flows of goods. For these corridors, investment co-operation between infrastructure managers and the member states should result in an optimised, Europe-wide system.

Most of the corridors are at an advanced planning stage. They're also being co-ordinated by a new body – RailNet Europe. Each corridor has its own objectives. For example, along the Rotterdam – Genoa corridor, the aim is to double the volume transported between now and 2020, and increase punctuality by 26% while reducing transport time by 20%.

Overall, the measures will facilitate 28 billion freight tonne-kilometres each year to be transported by rail rather than road.

FIGURE 4 – THE HELSINKI CORRIDORS

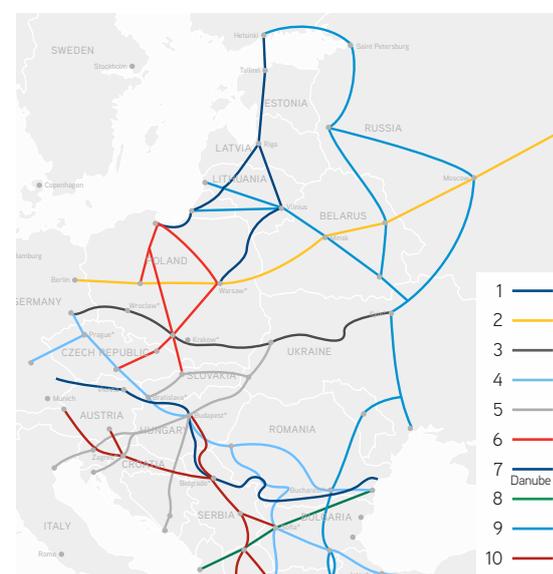
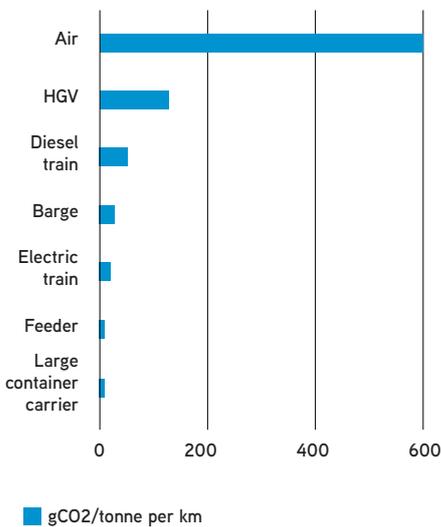


FIGURE 5 – CO2 EMISSIONS BY MODE ON COMPARABLE JOURNEYS



Source: ADEME, Defra, IFEU

EU POLICY – ENERGY AND THE ENVIRONMENT

The downsides of a mainly road-based distribution system are principally congestion and pollution, and to a growing degree – fuel cost. As Figure 5 demonstrates, transporting goods via HGV emits far more CO2 than equivalent journeys made by other transport modes, except air.

Consequently EU policy prioritises rail and water transport over road and air transport, in order to reduce congestion, pollution and carbon emissions. A 2011 White Paper* published by the EU sets out a number of key objectives for 2050:

- > No more conventionally-fuelled cars in cities;
- > 40% use of sustainable low carbon fuels in aviation. At least a 40% cut in shipping emissions;
- > A 50% shift in medium-distance intercity passenger and freight journeys from road to rail and waterborne transport.

All these objectives are intended to contribute to a 60% cut in transport emissions by the middle of the century, and reduce oil dependency significantly. Clearly, they are also likely to have a significant impact on a largely road-based logistics industry.

In terms of actual implementation, the White Paper sets out a framework for the “internalisation” of all costs to road vehicles. This will include internalising infrastructure costs and congestion costs, but most importantly CO2 pollution (depending on the extent to which any future fuel taxes manage to fully attribute these costs to the vehicle).

Given the increased focus on the environmental damage of any journey (especially by road), with the cost borne by taxes, this may well switch the argument in favour of rail, with road use reserved for the beginning and end of a journey.

TRANSPORT COSTS BY MODE

Figure 6 shows relative pricing for the main leg of a journey. These prices are approximate, because of the complexity of pricing models and the discounts available for regular loads and back loads, for example. It is clear, however, that prior to factoring in the cost of modal shifts, rail and inland waterways are more cost-effective transport methods than road over medium distances.

FIGURE 6 – COMPARING TRANSPORT MODE RELATIVE COSTS

| CASE STUDY | MODE | LOAD | EXPECTED PRICE | SOURCE |
|----------------------------|-------|-------|----------------|----------------|
| Long Distance | | | | |
| Shanghai – Felixstowe | Sea | FCL | £1,285 | Freightnet.com |
| Shanghai – Heathrow | Air | 100kg | £400 | Freightnet.com |
| Medium Distance | | | | |
| Wroclaw – Barking railhead | Road | FCL | £2,000 | Freightex.com |
| Wroclaw – Barking railhead | Rail | FCL | £1,400 | DB Schenker |
| Barking – Preston | Road | FCL | £476 | Freightex.com |
| Constanta – Budapest | Rail | FCL | £250 | Viadonau |
| Constanta – Budapest | Water | FCL | £350 | Viadonau |
| Constanta – Budapest | Road | FCL | £925 | Viadonau |

FCL = Full Container Load (Approximately 22,000 kg).

* Roadmap to a Single European Transport Area - Towards a competitive and resource efficient transport system

GREEN SUPPLY CHAINS

Despite the heavy reliance on road transport as the most flexible and cost-effective mode over the past century, the cost and emission efficiency advantage of rail over road for medium distances (allowing for switching between modes) should start to alter how goods are transported across Europe in the future.

It is estimated that for non-bulk rail to break even against road transport, it must travel around 300 km. Part of the reason for this is that rail has higher levels of fixed costs than variable costs, which means the marginal cost of going an extra mile by rail is much lower once the costs of loading on and off the train have been paid. Rail is also a great fit for intermodal shipping as it offers the best containerized fit between shipping and the hinterland. Rail is also easy to electrify and therefore has a key role to play in hitting EU carbon targets.

So while transport planners have sought to minimise modal shifts in order to increase efficiency, thus favouring road-based solutions, this will have to change if and when additional environmental costs are attributed more directly to road freight. Although road freight will start to benefit from the use of bio-fuels and scheduling so as to increase load efficiency, the EU proposal is to limit road freight to 300km journeys at most.

So from an environmental and cost perspective, the ideal scenario for European logistics would appear to be:

- > Sea freight to be point of entry for Europe;
- > Road for intermediate distribution up to 300 km;
- > For longer distribution use rail;
- > Rail to larger hubs on city peripheries where ideally you can link to local rail and tram infrastructure;
- > Inner city distribution off the back of mini hubs in urban environments.

One key element of the supply chain which is required to enable this, is the development of more efficient multi-modal hubs in and around major trading sea-ports and large cities and conurbations. Of equal importance is the development of inner-city infrastructure to allow for greener distribution in urban environments.

Newly-green strategies of logistics providers have already had a significant impact on the supply chain, as evidenced by fleet replacement, modal shifts to rail, and, to a limited extent, warehouse improvements.

Major developers such as Prologis and Goodman have committed to sustainable property development. They are aiming to minimise negative impacts on local areas and reduce environmental footprints through lowering usage of energy and water, increased recycling and responsible waste disposal solutions. Notable examples of sustainable warehousing include, Prologis Park Turin 2 in Italy delivered for Huhtamaki, which received LEED® Gold certification in 2011; and a warehouse built in 2010 for DSV by Goodman within the Munich Airport Logistics Centre. The property is one of the most energy efficient warehouses in the Munich region and the developer is preparing a case for DGNB certification.



Prologis Park Turin 2

Lower costs suggest a role for rail, but road's flexibility to win-out

522 offices in 62 countries on 6 continents

United States: 147
Canada: 37
Latin America: 19
Asia Pacific: 201
EMEA: 118

- €1.3 billion in annual revenue
- 116 million square meters under management
- 12,300 professionals

Mark Charlton
Head of Research & Forecasting UK
TEL +44 20 7487 1720
EMAIL mark.charlton@colliers.com

Damian Harrington
Director of Research | Eastern Europe
TEL +420 226 537 624
EMAIL damian.harrington@colliers.com

Tom Grounds
EMEA Senior Research Analyst
TEL +44 20 7344 6519
EMAIL thomas.grounds@colliers.com

COLLIERS INTERNATIONAL EMEA HEADQUARTERS

9 Marylebone Lane
London W1U 1HL
United Kingdom

TEL +44 20 7935 4499
EMAIL emea@colliers.com

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CONCLUDING COMMENTS

It is clear that, across Europe, rail is the mode of policy choice, particularly over road. However, EU policy looks somewhat ambitious in this respect, aiming for a 50% shift in medium-distance passenger and freight journeys from road to rail and waterborne transport, with policy detail on how this will be affected thin on the ground.

On the plus side, however, for journeys over 300km rail is already cheaper, and more environmentally efficient, and with policy shifts in the future this mode of transport will become increasingly prevalent over these distances. From a demand perspective, major corporates are very keen to reduce their environmental footprint, and rail will support this over medium distances from a cost perspective.

Carefully managed projects such as the EU-funded CREAM Project, managing integrated rail services between Istanbul and the Benelux countries are a key step forward. The intermodal Bosphorous Europe Express (BEEEX) between Istanbul, Ljubljana and Munich has been key in enabling increased trade between Germany and Turkey to occur using rail as the key mode.

Looking forward, the coordination of future cross-border investment in key rail corridors by RailNet Europe should allow further expansion of freight transport via rail.

The increasing development of rail-connected warehousing also makes it more efficient, with some of the largest logistics developers committed to providing these facilities in order to serve clients with environmental targets to hit.

At present, however, due to the lack of appropriate modal shift infrastructure outside of Europe's core port and distribution centres, rail cannot compete with road. Road is far more ubiquitous and flexible as a means of consistent transport across all of Europe. Equally, investment is going into more environmentally friendly road vehicles, which will push back a little on the shift to rail.

To conclude, the extent to which infrastructure and legislative support is brought to bear across the EU in favour of rail will be the key influence in the long-run. In Russia, where EU policy has no influence, rail freight will be left to the whims of the market, so progress remains to be seen. This despite the fact that for trans-national Russian traffic, rail freight would appear to be the obvious choice.

ROADS TO MAINTAIN DOMINANCE, BUT INVESTMENT IN "GREEN" VEHICLES VITAL

