THE CHANGING FACE OF DISTRIBUTION

THE SHAPE OF THINGS TO COME





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INTRODUCTION

Originally coined the logistics "blue banana", Europe's primary distribution corridor has already transformed into multiple corridors in response to EU expansion and new motorway additions. As the sector addresses increasing freight volumes, rising transport costs, labour shortages, and road congestion, Europe's logistics bananas are set to evolve further.

Eurostat forecasts that demand for freight transport in Continental Europe will almost triple (182%) between 2010 and 2050. Higher operating costs associated with negative environmental impacts of freight transport of which most address road (estimated to increase by 40% in 2030 and 80% in 2050) are putting pressure on companies to adapt their transport modes, supply chains, and fuel sources. Meanwhile, labour pools are shrinking and road congestion is intensifying on Europe's motorways. According to a recent Inrix study¹, Europe's top ten traffic hotspots could generate over €205 billion of economic cost by 2025. **182**%

EUROSTAT FORECASTS THAT DEMAND FOR FREIGHT TRANSPORT IN CONTINENTAL EUROPE WILL **ALMOST TRIPLE (182%)** BETWEEN 2010 AND 2050

40%

TRANSPORTATION OPERATING COSTS ESTIMATED TO INCREASE BY **40%** IN 2030 AND 80% IN 2050



EUROPE'S TOP TEN TRAFFIC HOTSPOTS COULD GENERATE OVER **€205 BILLION** OF ECONOMIC COST BY 2025

Inrix Research interprets real-time speed data for cities in Europe to establish annual measures of congestion

As the eCommerce trend continues to take root across Europe, finished goods as a share of total freight is increasing which in turn, is leading to growth in total freight volumes. Taking into account tightening EU regulations and severe road congestion along prime distribution corridors, supply chains will increasingly exploit combined transport modes where possible as their availability, reliability, flexibility, and cost improve over the long term.

Deal or no deal, Brexit in any form will undoubtedly modify established distribution patterns between the UK and Europe. Despite over two decades of investments to improve infrastructure connectivity, goods will no longer flow freely to and from the UK from the Continent nor through the UK from the Republic of Ireland. Industry 4.0 and other technological innovations offer hope in the form of feasible solutions to help ease the mounting pressure on Europe's logistics and manufacturing sectors. Increasingly automated operating and monitoring systems that work through the Internet of Things (IoT) and Big Data processes will make it possible for more decentralized European production and distribution.

FREIGHT VOLUMES ARE INCREASING

The EU-28 (UK included) is now facing a 22% rise² in freight activity over the next decade. Relying principally on road transport, which has represented more or less 75% of total goods movement in the EU since 2011³, is no longer feasible.



FREIGHT TRANSPORT DEMAND FORECASTS, 2000 TO 2050

Source: European Commission's EUTRIM and Cushman & Wakefield

2 European Commission, EU Reference Scenario Model, 2016

3 Eurostat (2017), BSL Transportation analysis

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2,300 BILLION

IN EUROPE, ROUGHLY **2,300 BILLION TONS PER KILOMETRE** OF DOMESTIC AND OUTBOUND GOODS ARE CURRENTLY BEING MOVED

3,382 TONS

THE HIGHEST SHARE OF FREIGHT TRANSPORT IS **CARRIED BY ROAD**, REPRESENTING **3,382 TONS PER CAPITA IN EUROPE**

9.1%

IN TERMS OF VOLUME OF FREIGHT TRANSPORTED ON EUROPE'S ROADS, **FINISHED GOODS GREW THE FASTEST AT 9.1%** BETWEEN 2014 AND 2016, SLIGHTLY AHEAD OF **EQUIPMENT (AT 8.5%)**⁴

> DURING THE SAME PERIOD, THE VOLUME OF BOTH COAL CRUDE PETROLEUM AND NATURAL GAS DECREASED

RISING TRANSPORT COSTS

Diminished resources, costly extraction techniques, unanticipated natural disasters, and political upheaval are all contributing to rising oil prices. Oxford Econometric forecasts that oil prices will rise on average by 3.1% annually over the next 10 years. Despite this forecasted increase (albeit at a slow rate), oil price volatility poses more of a concern for the sector. While some alternative energy sources may pick up some of the slack created by diminishing oil reserves and growing intolerance for diesel, a major energy conversion is not likely to be achieved before 2030. Going forward, however, it will be tightening regulations on road transport targeting CO₂ emissions and congestion that are expected to have a greater impact on increasing transportation costs.

Increasingly sophisticated government sponsored tracking and measurement systems will become the norm across Europe. Such systems will increasingly oblige companies to disclose all types of emissions, such as CO₂, nitrogen oxide, and noise that they produce along with congestion charges and other tolls that are already in place in many of Europe's densely populated cities. New costs associated with negative environmental impacts will be allocated to users and therefore, will need to be factored into overall transport costs.

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GLOBAL TRANSPORTATION ENERGY PRICES, 2018 TO 2050

Source: Annual Energy Outlook 2018, US Energy Information Administration

GREEN SOLUTIONS TACKLE NEGATIVE ENVIRONMENTAL IMPACTS

In Europe, motorway and city congestion levels are reaching crisis levels which is also exacerbating both air and noise pollution especially near and in cities.

In addition to tightening regulations that prohibit or increase the cost of traditional freight transport by lorry and van, EU-, State-, and city-level programs are encouraging the use of other transport modes and green-powered vehicles through direct funding, subsidies, and/ or tax deferrals or credits. While electric and hybrid vehicles are starting to replace diesel-powered lorries and vans, the speed of the shift to electric and other forms of renewable energy is slow for a number of cited reasons. Most relevant to the logistics industry are the high cost of batteries and therefore, vehicles (especially medium- and heavy-duty lorries), delay in establishing charging infrastructure, and legal responsibility impediments.



GLOBAL ENERGY EXPENDITURES, 2018-2050

Source: US Energy Information Administration

LARGE-SCALE PRODUCTION OF ETRUCKS IN EUROPE BEGINS NEXT YEAR



Daimler and Volvo are among companies delivering the first all-electric lorries in Europe. Daimler has produced eight Fuso eCanter light-weight lorry prototypes to German logistics and transport firms including DHL, DB Schenker, Rhenus and Dachser. Developed for primarily urban distribution, the eCanter lorry responds a growing concern for noise and air pollution in Europe's inner cities. Largescale production of the eCanter lorry is planned for next year, with the first deliveries slated for 2020. Daimler is also working on the bigger all-electric eTruck, which has a 26 ton capacity and a 200 kilometre range.

A McKinsey study estimates that electric and diesel-powered commercial vehicles will reach cost parity by 2025 based on various assumptions. Other alternative fuels to diesel that are deemed viabale in Europe include natural gas, and hydrogen fuel cells that each have slightly different time frames to reach cost parity than electric rechargeable batteries. However, should the opportunity to cut costs for electric or alternatively powered vehicles arise sooner, a competitive logistics sector could drive a more rapid shift as commercial vehicle operators focus on cost more intensely than passenger car owners. Additionally, since fleets of lorries usually adopt more efficient and consistent routes, developing an effective charging-point plan beyond Western and Northern Europe is achievable.

CARMAKERS LAUNCH PAN-EUROPEAN CHARGING NETWORK



In 2017 BMW, Daimler, Volkswagen, and Ford joined forces to create a charging network initiative called lonity that will fund the first 20 High-Power Charging (HPC) stations in Germany, Norway and Austria. Based on current eCar battery distances, the stations will be located at 120 kilometre intervals along major motorways. Ionity plans a total of 100 stations across Europe by 2018 and 400 stations by 2020.

LABOUR SHORTAGES AND ATTRACTING NEW TALENT

Labour is a critical component of any logistics or manufacturing supply chain. Notwithstanding the efficiencies achieved through automation, sorting and picking activities especially in eFulfilment centres, remain very labour intensive. Meanwhile, demographic trends are exacerbating already tight labour supplies and leading to increases in the cost of traditional labour. The post-baby boom's drop in birth rates across Europe has made it especially difficult for the logistics and manufacturing sectors to replace retiring workers. Recent Eurostat data shows that the share of employees nearing retirement age (i.e. 50-64) in the road transport sector is higher than the average share for other industry sectors. Shortages exist at all levels – from lorry drivers to pickers in eFulfilment centres.



TOTAL AND RETIREMENT AGE POPULATION GROWTH, 2010-2030

Source: Oxford Econometrics and Eurostat

Technology and automation has the potential to fill in the gaps by significantly reducing reliance on low skilled labour. However, simultaneously, innovation is creating the need to hire high skilled workers who can manage complex equipment and IT processes. To source higher skilled talent, the manufacturing and logistics sectors must compete with other industry sectors that can offer employees more attractive amenities including finished office space in urban settings.

Over the next decade, the challenge for both the manufacturing and logistics sectors will be sourcing higher skilled talent to work in plants and warehouses.

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More recently, to attract IT specialists and data analysts, a number of manufacturers such as Audi, Boeing and Cisco, are not just relocating plants but are partnering with universities, colleges, and technical schools to identify which skills students need. In addition to accessing talent graduating from the program, GE is having direct influence on the curriculum by identifying the skills required to develop innovation in its plant.

Location decisions for both manufacturers and 3PLs have prioritized proximity to traditional labour pools. In the Czech Republic, GE Aviation partnered with Czech Technical University to support the production of new engines in its Prague plant.

TECHNOLOGY'S ROLE IN MANUFACTURING AND LOGISTICS

Leading the way, the manufacturing sector is already successfully integrating automation and Industry 4.0⁵ innovation into their production processes.

Using IoT technologies to connect equipment that is located in different plants all over the world, has not only made global performance measurements possible, but has also increased productivity while significantly reducing costs. Remote monitoring through the IoT within the context of rising transport costs suggests that a decentralized plant model would future-proof most manufacturers against both increasing transport and labour costs.

Technological adoption has been slower for the logistics industry which must contend with complex, multi-link B2B and B2C supply chains while navigating EU regulations and legal impediments. With currently 73% of consumers living in urban areas, the final links of B2C supply chains must prioritise consumers and therefore transport modes that provide speed and flexibility. Meanwhile, usually involving an entry point to Europe such as ports and airports (roughly 50% and 25% respectively of the total value of Europe's international trade), the top end of B2B and B2C supply chains is increasingly focusing on proximity to multimodal connections, especially for pan-European or regional distribution.

73%

OF CONSUMERS LIVING IN URBAN AREAS



OF ENTRY TO EUROPE VIA PORTS



OF ENTRY TO EUROPE VIA AIRPORTS

Innovations such as robotic technology exists but the net gain in production is often too low to justify the high cost, especially in distribution warehouses. Another important innovation with the potential to replace the highest cost component of transport – drivers, autonomous vehicles and vessels could have an immediate cost benefit for all freight transport modes. However, legal impediments connected to public domains are likely to take years to resolve. The advantages afforded by autonomous transport innovations are already observable at major seaport terminals in Rotterdam and Hamburg which unlike motorways and roads, offer controlled spaces for testing and eventual, implementation.

E-BARGE PROTOTYPE CURRENTLY BEING TESTED IN EUROPE



In an effort to move more freight off of motorways, five ebarge prototypes (52 metres long that can carry 24 20 foot containers) are being tested along inland waterways in Belgium and the Netherlands. Designed to be autonomous, the boats were developed by Port Liner, a Dutch manufacturer, with €7 million in EU subsidies and funds from the ports of Antwerp, Amsterdam, and Rotterdam. The prototypes currently being tested can run for 15 hours, while six 110 metre long barges that can carry 270 containers will be capable of 35 hours of autonomous driving. The project is aiming at removing as many as 23,000 lorries off of congested motorways.

5 These include automation, 3D printing, additive manufacturing, nanomaterials, advanced robotics, and artificial intelligence.

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PORTS ARE IDEAL TESTING GROUNDS FOR ROBOTS. IT IS A CONTROLLED AREA WITH LOTS OF SPACE

MARKUS KUECKELHAUS, DHL

"DRONE SHIPS" COMPLEMENT TECHNOLOGY AT SEAPORTS



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Rolls-Royce is developing crewless cargo vessels or "drone ships" that are controlled from land. Similar to fully automated terminals at Rotterdam and Hamburg ports, "drone ships" are expected to be safer, more efficient, and less expensive than crew-manned vessels.

AUTOMATION AND AUTONOMOUS VEHICLES ARE SUCCESSFULLY INTEGRATED AT EUROPE'S LARGEST SEAPORTS



In the 1990s, to shield against growing adverse labour-related impacts, the ports of Rotterdam and Hamburg took a huge leap of faith and started to invest in technology and more specifically, automation, as a long term solution. Unlike motorways where the risk of accidents with private vehicles is high, ports offer secure and controlled spaces for testing automated and autonomous equipment and vehicles. This explains why Automated Guided Vehicles (AGVs) and Commercial Autonomous Vehicles (CAVs) have already made an invaluable contribution to production and safety reduction at Europe's major sea ports since being implemented over the last two decades. Similar secure testing criteria for AVs found in ports holds true for ships in seaways (short and long), barges in inner waterways, and trains on dedicated rail freight networks.

Since 1993, the Delta/Sealand Container Terminal at the port of Rotterdam became the first container terminal in the world to operate Automated Guided Vehicles (AGVs) to drive the containers between Ship-to-Shore (STS) cranes and the stacking cranes. As other terminals at Rotterdam port became fully automated, hundreds of dock worker jobs became redundant. Aside from the more recent worker strikes that have negatively impacted overall productivity, longer-term, automation is proving to reduce costs, improve safety, and increase efficiencies that will enhance productivity. Since this early start, navigation systems and battery technology have improved, AGVs are now fully electric. With fewer parts than the diesel engine, electric AGVs are more efficient to maintain.



USING TECHNOLOGY TO REDUCE TRANSPORTATION COSTS

With transportation costs accounting for half of total logistics costs, a competitive logistics industry is motivated to find ways to reduce these costs. For pan-European distribution, increasing real estate costs through multiple warehouses has been an effective way to reduce transport distances. However, complex consumer-centric supply chains that emphasize parcels rather than pallets, speed, and destination flexibility are contributing to rising transport costs.

50.3%

COMPOSITION OF LOGISTICS COSTS



Source: Establish, Inc./HWD & Grubb & Ellis Global Logistics

SELF-DRIVING VEHICLES WILL BE A GAME CHANGER FOR SUPPLY CHAINS

EVERYTHINGSUPPLYCHAIN.COM

Green solutions and technology offer optimism that greater distribution efficiency is possible. Alternative fuels and multi-modal transport address volatile fossil fuel prices as well as rising tolls and other costs associated with negative environmental impacts. Once legalized in Europe, autonomous technology has the potential to make a transformative impact on rising lorry driver wages tied to driver shortages. While difficult to quantify the impact of all of these solutions on transportation costs, approximating the cost savings of autonomous technology alone provides a starting point. Based on an EU Commission study, wage costs associated with drivers represent between 33% - 38% of total transportation costs in Western Europe. Elimination of this cost could reduce the transportation portion of total logistics costs to an average of 32%.

IS COMBINED TRANSPORT FEASIBLE?

EU-level directives and subsidies that encourage sustainable transport practices such as multi-modal or combined transport have been in place since 1992 when the EU Council established common rules for combined transport of goods between Member States. Beyond developing special freight transport corridors, combined transport offers one of the only solutions that could address Europe's acute motorway congestion problem. FORECASTED TRUCK CONGESTION IN 2020



Source: Joint Research Centre

However, obstacles exist to achieving these objectives. Since barges, sea vessels, and trains require dedicated infrastructure, their ability to reach final destinations either for B2B or B2C deliveries is limited to impossible. By contrast, road transport can reach virtually any destination. Only road transport can effectively respond to demanding online shoppers who want fast deliveries to their homes. Currently, over 70% of road transport for predominantly final links in supply chains, cannot be replaced by another transport mode. Given eCommerce growth forecasts, this is unlikely to change.

EUROPE'S INNER WATERWAY NETWORK



Source: Stockcargo



Branching to Hamburg



 Branching with rivers
Elbe and Hawel direction to Germany Czech Branching of Rhine
river direction to Sabel port Switzerland

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For this reason, a number of ongoing initiatives concerning infrastructure, vehicles/vessels, and freight⁶ that aim to improve the cost, speed, availability, and overall efficiency of alternatives to road transport are focusing on long distance haulage. Of most relevance to pan-European freight transport, the TEN-T 2007-2013 Core Network Corridor (CNC) program already invested €8.013 billion in 30 Priority Projects to facilitate the movement of both goods and people along Europe's major transport corridors. Planned for completion by or before 2030, CNC projects include the creation, construction, enlargement, and extension of motorways, inner waterways and seaports as well as larger scale projects targeting rail transport.



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OF **ROAD TRANSPORT** FOR PREDOMINANTLY FINAL LINKS IN SUPPLY CHAINS, CANNOT BE REPLACED BY ANOTHER TRANSPORT MODE

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IF YOU PROVIDE GOOD ALTERNATIVES FOR ROAD TRANSPORT, YOU WON'T HAVE ANY TRAFFIC PROBLEMS

JAIME LERNER, ARCHITECT

ANOTHER INITIATIVE, THE EURASIA FREIGHT TRAIN OR **"IRON SILK ROAD"**, BEGAN ITS REGULAR SERVICE IN JULY 2014 AND NOW CONNECTS **35 CHINESE** CITIES WITH **34 EUROPEAN CITIES**

THOUGH STILL REPRESENTING ONLY 1% OF THE TOTAL 200.3 MILLION7 TEU OF GOODS SHIPPED FROM CHINA, THIS EURASIA RAIL ROUTE VIA DUISPORT HAS CREATED A NEW EU ENTRY POINT FOR IMPORTS FROM CHINA, A NEW RAIL NETWORK TO OTHER DESTINATIONS IN EUROPE, AND HAS ENHANCED THE USE OF INNER WATERWAY TRANSPORT FROM DUISPORT TO OTHER PORTS ALONG THE RHINE AND CONNECTING WATERWAYS SUCH AS THE DANUBE

DUISPORT, ALREADY **EUROPE'S LARGEST INLAND PORT** AND MULTI-MODAL HUB LOCATED IN DUISBURG, GERMANY, IS NOW THE EUROPEAN TRANS-SHIPMENT AND GATEWAY DISTRIBUTION POINT FOR GOODS TRADED WITH CHINA

BASED ON THE EU TRANSPORT DIRECTIVE'S 2030 OBJECTIVE TARGETING LONG DISTANCE TRANSPORT (I.E. >300 KM), 30% OF CURRENT ROAD TRANSPORT WILL BE REPLACED BY EITHER RAIL OR BARGE OR BOTH

THE REMAINING **50% OF INCOMING GOODS** ARE DISTRIBUTED IN THE REGION BY ROAD (A SIGNIFICANT LOWER SHARE THAN THE **EU LEVEL OF 75%**)

AT DUISPORT, UP TO 50% OF ALL INCOMING CARGO IS GATEWAY GOODS WITH BETWEEN 10-20% DISTRIBUTED BY BARGE AND 20-30% DISTRIBUTED BY RAIL

> IF THE EU MEETS ITS 2030 TARGET, THAN RAIL AND BARGE'S SHARE OF **TOTAL TRANSPORT** WOULD REACH **47%**, SLIGHTLY BELOW DUISPORT

6 Standardizing freight modules across transport modes that can be more easily grouped or separated.7 2017 annual

FROM CHINA TO GERMANY BY TRAIN



Source: Deutshe Bahn



THE SHAPE OF FUTURE LOGISTICS BANANAS

Over the next decade, a total of eight primary logistics bananas are likely to emerge. Some of the banana corridors have already taken shape while timing for others to be fully operational depends on the availability and reliability of both infrastructure and multi-modal links as well as the outcome of current legal impediments and future trade agreements.

1 | BLUE BANANA

The original blue banana focusing international trade through Benelux ports. Though the terms of Brexit remain uncertain, the EU Commission has already decided to remove the UK portion form the TEN-T transport corridor system, cutting off any links with the island that will require border controls. The growing importance of Mediterranean ports is likely to extend the blue banana to include Genoa, Italy.

2 | UK BANANA

Post-Brexit, when the UK's maritime, road, and rail networks officially cease to be part of the TEN-T's North Sea-Mediterranean corridor, UK supply chains will be increasingly domestically focused. Brexit is expected to increase the logistics industry's reliance on UK ports.

3 | IRISH BANANA

EU subsidized rail and motorway infrastructure from the port of Cork, Ireland to the border with Northern Ireland (including Dublin) will remain in the TEN-T North Sea-Mediterranean corridor. A new short-sea shipping route is being established between the ports of Cork and Dublin in Ireland and the ports of Zeebrugge and Antwerp in Belgium and Rotterdam in the Netherlands. It is likely that the small capacity of Zeebrugge port will redirect demand for space to nearby Ghent, Belgium or even Zeelande, Netherlands.⁹

NEW BANANA MARKETS

4 | IBERIAN BANANA

Available skilled and lower cost labour pools in Spain and Portugal are already attracting German automobile manufacturers. Markets along the TEN-T "Atlantic" corridor (new rail lines and multi-modal connections) such as Bordeaux, Valencia, and Lisbon will benefit from an increase in distribution traffic between Germany, Benelux, France, and the Iberian Peninsula over the next 5-7 years.



5 | CE BANANA

TEN-T motorway and rail developments in Central Europe have already improved distribution along this existing corridor. Beyond 2030, the planned maritime Eurasia route from China will connect to the port of Venice via Piraeus, Greece which could eventually increase traffic along this distribution banana. Should this corridor eventually extend to Northern Italy, it may connect to the original blue banana via Bologna and Milan.

6 | NORDIC BANANA

Distribution along this corridor that connects the port of Hamburg with Copenhagen and Malmo will improve substantially with the 2021 completion of Rodby-Puttgarden tunnel that will be accessible to both lorries and freight trains.

7 | BLACK SEA BANANA

A future distribution banana that will be connected to Banana 5 once TEN-T Rhine-Danube rail and motorway network's branch connecting Budapest with the Black Sea are completed. As a result, Romanian markets such as Bucharest, are expected to play a crucial role in this distribution corridor.

8 | BALTIC BANANA

The Baltic's growing importance as a manufacturing location will depend on the construction of TEN-T motorway road and rail networks that will connect this region with Finland, Poland, Czech Republic, and Germany. Since significant infrastructure investment is necessary, this distribution corridor is likely to develop over the long term. Two private sector funded tunnels have been proposed to connect Tallinn, Estonia and Helsinki, Finland, though realisation will likely be after 2030. Vilnius in Lithuania is centrally located along this logistics banana.

8 The two ports recently merged to create the "North Sea Port"

EMERGING MARKETS

As a changing logistics and manufacturing landscape reshapes distribution patterns across Europe, new markets will emerge over the short- and long-term. Similar to established logistics hubs along distribution bananas, these emerging markets are aligned to benefit from a rise in demand for space. The experience at Duisport demonstrates that new trade routes supported by multi-modal infrastructure investment (public and private) will lead to a gradual increase in freight volumes, and therefore a rise in demand for warehouse space. Using the Duisport experience as a benchmark, we can postulate how multi-modal connectivity might impact growth in demand for space in these markets. In the years preceding the Eurasia rail link, Duisport's warehouse stock grew at a CAGR of 7% compared to 17.4% during the following years. Since 2014, eCommerce has been the main driver of demand for space which already led to a 71.2% increase in total stock when 637,000 square metres of new space was developed. Though difficult to confirm, this new demand coincides with the 2014 opening of the Eurasia rail terminal.

EMERGING LOGISTICS HUBS 2019-2030

Whereas Duisport is a pan-European hub, most of the markets listed below are likely to emerge as regional and national distribution hubs. For this reason, while freight volumes are expected to increase in these locations, they will likely to be significantly smaller than at Duisport where Eurasia rail container volumes increased from 25,000 TEU in 2014 to 141,000 TEU in 2016, and are expected to reach 617,000 TEU in 2027.

SHORT TERM (1-5 YEARS)	FUTURE MARKET ADVANTAGES	DISTRIBUTION BANANA
Dublin, Ireland	Port, new trade route, population density	Irish
Cork, Ireland	Port, new trade route, population density	Irish
North Sea Port, Belgium & Netherlands	Enlarged port, available land, new trade route; multi-modal connectivity	lrish
Bordeaux, France	Enhanced multi-modal connectivity; population density; new distribution banana	Atlantic
Valencia, Spain	Port, multi-modal connectivity; population density, labour availability; lower wages; new distribution banana	Iberian
Lisbon, Portugal	Port; multi-modal connectivity; population density; labour availability; lower wages; new distribution banana	Iberian
Genoa, Italy	Port; enhanced multi-modal connectivity	Blue
Bologna, Italy	Enhanced multi-modal connectivity	CE
Copenhagen, Denmark	Enhanced multi-modal connectivity; population density; port	North Sea
Malmo, Sweden	Enhanced multi-modal connectivity; population density; port	North Sea

DISTRIBUTION WAREHOUSE STOCK AT DUISPORT, 2007-2017



Source: Duisport

LONG TERM (6-12 YEARS)	FUTURE MARKET ADVANTAGES	DISTRIBUTION BANANA
Northern Italy	Ports, along an extended distribution banana; population density; enhanced multi-modal connectivity	CE
Ljubljana, Slovenia	Along extended distribution banana; population density; enhanced multi-modal connectivity; labour availability; lower wages	CE
Ostrava, Czech Republic	Along extended distribution banana; population density; enhanced multi-modal connectivity; labour availability; lower wages	Baltic
Bucharest, Romania	Along extended distribution banana; population density; enhanced multi-modal connectivity; labour availability; lower wages	Black Sea
Vilnius, Lithuania	New distribution banana; population density; enhanced multi- modal connectivity; labour availability; lower wages	Baltic
Tallinn, Estonia	New distribution banana; population density; enhanced multi- modal connectivity; labour availability; lower wages	Baltic

CONCLUSION

As the experiences at Rotterdam port, Duisport, and the German recharging initiative demonstrate, realisation and timing depend on a successful public/private sector partnership. With traditional long haul transport reaching breaking point, all parties committed to the seamless flow of goods into, out of, and across Europe are under pressure to work together. So it is only a question of time for EU logistics stakeholders to come up with solutions for long distance transport. Making road transport more sustainable is not a debate. By 2030, all primary motorway corridors will need to offer charging stations for alternative fuels and other green technology. But to remain feasible in the future, road transport must be autonomous since it can potentially alleviate motorway congestion through effective use of offpeak hours while also reducing transport costs by eliminating drivers. A first step to circumventing legal impediments may be to take advantage of existing dedicated rail infrastructure to demonstrate how autonomous transport offers enhanced safety and cost efficiency. Less congested inner waterways and maritime passageways may mean that barges and ships could be next in adopting autonomous technology. Future logistics bananas are drawn with alternative fuels and multi-modal transport in mind. The challenge for both public and private sectors is to make these sustainable solutions both financially beneficial and seamless.

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