

# Cover Story

## Logistics



# An essential link in Luxembourg's economic diversification

TEXT Catherine Moisy

TRANSLATION FROM FRENCH Martin Davies

When we think about logistics, we usually think of trains, boats, trucks, containers... We sometimes forget that the sector also includes storage and warehousing as well as all the professions that make supply chains fluid so that goods arrive at their places of transit, use or consumption: planning, packaging, order preparation, handling, insurance, customs clearance and even tracking. It all adds up to a very complex range of activities and skills without which it would simply not be possible to keep the economy running, because logistics link suppliers and their customers in all other sectors. Most of them are dependent on an efficient, fast, secure logistics chain, under control and, if possible, linked to their information systems. In addition, the sector is extremely sensitive to developments in world trade, itself sensitive to geopolitical upheavals. Recent history has seen several events shake up supply chains. This month's cover story reviews the many assets that Luxembourg benefits from in this context, not the least of which is its political and regulatory stability.

— To begin with, trade became globalised thanks to advances in transportation. Globalisation then accelerated as new technologies made it possible to work remotely. This globalisation has in turn made it necessary to constantly improve logistics capacities across the world to meet the needs of companies managing production sometimes far from the centres of demand and this, on a just-in-time basis. This is how efficient, reliable, flexible and fast logistics have become an essential key success factor for developed economies and an increasingly differentiating asset for Luxembourg. The country is in fact ideally located at the heart of a consumption area called the "Blue Banana", which concentrates 60% of European gross domestic product and which extends from Milan to Liverpool via Switzerland, France, Germany, Luxembourg, Belgium and the Netherlands. Most of this vast area can be reached from Luxembourg in a maximum of one day, thanks to the country's cutting-edge infrastructure, whether by land, air or river or sea transport. Luxembourg, due to its small size and thanks to its industrial history, has long acquired solid expertise in import-export operations, vital for its economy and a major commercial advantage for its partners.

For all these reasons, successive governments in Luxembourg have decided that logistics should be an integral part of the country's economic diversification strategy, both to support this diversification and as a successful sector in its own right. There is therefore a national "logistics and transport" plan aimed at developing cutting-edge infrastructure and transforming Luxembourg into a centre of excellence in certain niches of logistics, thus differentiating itself from other countries by offering specific services with high added value and by identifying categories of counter-cyclical products and/or in line with other priority sectors identified by the Government (health, automotive, etc.). Added to this is a multimodal strategy aimed at intelligently connecting the different modes of transport together.

## A force that has been building for 20 years

If logistics in Luxembourg was first driven by the country's industrial activities, it today serves a much broader base encompassing transit businesses in neighbouring countries, and even more distant ones. To achieve this, the country has given itself the means to become a partner of choice,

thanks to a truly proactive investment policy in the logistics sector over the last twenty years. The figures illustrate the impressive progress of the sector. According to Statec figures, employment here has more than doubled, going from 10,967 people working in transport and warehousing in 2005, to 12,906 in 2011 and 29,200 in 2021. These jobs now represent a little more than 5% of domestic salaried employment. The number of active companies has also increased, multiplying by almost 1.5. In 2021, there were 1,028 active companies compared to 694 in 2005. Over the same period, the added value of the sector has been multiplied by almost 3, from 1,518 million euros in 2005 to 4,105 million in 2021, (STATEC figures), making the sector a real success story.

To achieve these good results, the country has focused on both the transport and logistics aspects. The approach was based on strategic monitoring, work on the administrative and regulatory framework, the facilitation of the installation of new activities, the development of skills and the promotion of the country as a logistics hub, while developing a network of different types of transport and ensuring their connections

*“Trade has become globalised thanks to advances in transportation.”*



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through multimodal platforms close to storage sites. Thus, significant land area has been devoted to the development of large, dedicated sites, notably in Contern and Bettembourg/Dudelange. To professionalise the sector, it was also during these years of intense development (in 2009 precisely) that the Cluster for Logistics (C4L) was created to serve as a platform for exchange between the different actors and that several training courses were launched to meet the sector's growing need for qualified labour.

Between 2004 and 2010, existing infrastructures were developed, completed and improved. In the rail sector, there was the creation of Lorry-Rail (CFL group) to operate railway highways for unaccompanied semi-trailers, towards the south of France, i.e. over 1,000 km, and the extension of the terminal to containers. In the air sector, there was the extension of LuxairCARGO's capabilities.

From 2010, new infrastructures have been built. Development work on the port of Mertert was launched and in 2012 the Eurohub south site (Dudelange/Esch sur Alzette) began development and construction. In September 2023, Franz Fayot, then Minister of the Economy, celebrated on site the completion of this project which, over more than 10 years developed nearly 200,000m<sup>2</sup> of storage space over 52 hectares. This cutting-edge site has found a buyer for all of its capabilities, with the arrival of major players such as Transalliance, Fedex, Arthur Welter but also Auchan and Colruyt who have their dispatching platforms there. At the same time, work has been undertaken both on the motorway network and the rail network to increase capacity and optimise transport lines and axes; the airport has reviewed its facilities to be able to accommodate larger aircraft and to facilitate transshipment from planes to trucks for faster processing.

### Multimodal and intercontinental hub

Luxembourg's logistics infrastructures therefore now cover an extremely wide range of services meeting the needs of both national and international industrial and commercial customers. All means of transport and very large storage capacities are closely interconnected in this network. Luxembourg thus has an international airport, road and rail networks well oriented towards neighbouring countries and beyond, a river port on the Moselle and two logistics centres, one in the south and the other in centre of the country, offering a total of more than 350,000m<sup>2</sup> of storage and goods processing areas.

Luxembourg airport is the 6th European freight platform, with a processing capacity of 1.2 million tonnes of goods per year. One of the big advantages of this airport is that cargo and passenger transport are completely separated, which makes the cargo activity more fluid because it is not necessary to alternate arrivals there for security reasons. Dangerous substances (lithium for example) never cross passengers because the flows are distinct. Furthermore, everything is done to process the goods as quickly as possible. A 58,000m<sup>2</sup> logistics centre is located just 108 m from the runway where the planes land. It is equipped with 113 truck loading docks and the highway is just behind it. Unloading from planes and loading onto trucks can be done in just two hours: for example, for goods destined for France, it is sometimes faster to transit through Luxembourg than through Paris. Added to speed is security and safety.

The major international air freight operators are almost all present at Findel (China Airlines, Emirates, Qatar Airways, etc.) in addition to the two national operators Cargolux and LuxairCARGO who can thus offer their services alone or with foreign partners. These collaborations make it possible to organise the transit of goods to all continents

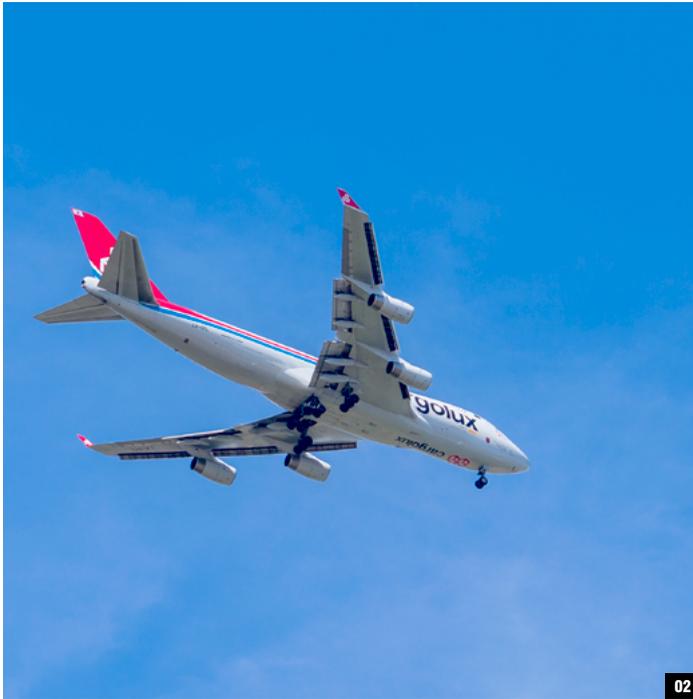
on a daily basis. Airport facilities include facilities for “specific needs” goods: refrigeration facilities at different temperatures for perishable goods including flowers, warehouses for bulky goods, live animals or even precious goods, etc.

Although there are already 90 regular international connections and 30 flights per week between Luxembourg and China, the airport is not saturated and still has slots available. Luxembourg also offers a whole network of road feeders, i.e. a fleet of trucks which connect Findel to other European airports or other logistics centres, in a spirit of multimodality. Luxembourg is ideally located at the crossroads of the most important road corridors in Europe, whether towards the South with the Rotterdam-Luxembourg-Basel-Genoa junction or the Antwerp-Luxembourg-Lyon-Barcelona connection or towards the East with the Le Havre-Luxembourg-Giessen corridor (Germany).

### On rail or on water

The national railway company, via its subsidiary CFL cargo, has 80 locomotives and 3,200 wagons for freight transport. With this rolling stock, the company ensures 210 freight train departures per week. New rail highways are being studied based on the model of the pioneering Lorry-Rail line which connects Luxembourg to Boulou in France, near the Spanish border, in just 14 hours, instead of 20 hours by road. The CFL multimodal subsidiary, which designed and manages the Eurohub Sud logistics centre, has a processing capacity of 300,000 containers and 300,000 semi-trailers per year. This logistics centre, in addition to handling and transshipment of cargo, provides warehousing, if necessary, shipments, customs clearance or tailor-made engineering according to customer needs.

With its motorway network and its rail network, Luxembourg is extremely well



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connected to the ports of the North Sea and those of the Baltic, as well as to the Iberian Peninsula.

For certain goods, boat connections are most appropriate. The road and rail networks are also connected to the port of Mertert through which specific cargoes of heavy bulk products (steel or iron for example), petroleum products and even construction materials arrive. The port has a surface area of 150.000m<sup>2</sup> and the barges passing through it provide connections with Duisburg in Germany and Antwerp in Belgium. Here again, the site offers a complete range of services ranging from connection with road and rail to tailor-made solutions including secure warehouses, freight tracking and customs clearance.

The last pieces of the puzzle are the two large logistics centres: the Euro Hub South already mentioned which offers a storage area of 200,000m<sup>2</sup>, between the railway line and the A13 motorway, in addition to housing the multimodal CFL complex and the Eurohub Centre in Contern which offers an additional 152,500m<sup>2</sup>, well connected to the airport and the port of Mertert. On these two sites, logistics operators, manufacturers or commercial brands can rent space or build their own facilities.

### The assets of Luxembourg

In terms of logistics, Luxembourg's assets are not limited to this robust set of

**01.** The proximity of the runway and the logistics centre of Luxembourg airport makes it possible to unload/load a cargo in two hours.

© Cargolux

**02.** Cargolux is the largest European airline specialising in cargo. It operates a fleet of 30 Boeing 747-400s and 747-8s. Cargolux serves 70 destinations and travels around the world 5-6 times per week with frequent transpacific flights.

© LuxairCARGO



### Benny Mantin

Director, Luxembourg Centre for Logistics and Supply Chain Management (LCL)

*"Our students have no problem finding a job."*

### In 2017, the University of Luxembourg joined forces with MIT in Boston to create LCL, which offers a Masters in Logistics. Why such a partnership?

The government of Luxembourg had identified logistics as a lever for economic diversification in the country. The infrastructure was already well developed but an academic component was missing. It turns out that the then Rector of the University, Rainer Klump, had already been in contact with MIT in his previous role. He therefore proposed to get closer to this institute whose expertise in logistics is recognised worldwide. We adapted the studies to our own needs but the partnership gives us a valuable network, with MIT present in Spain, Colombia, China and Malaysia. The reputation of MIT is also an asset in attracting candidates and research projects. Finally, the partnership allows us to have leading speakers for our workshops, conferences, etc.

### Which profiles is your Master aimed at and do you have enough candidates?

Our master's degree lasts one year, full-time. It is aimed at people who are already experienced but without a diploma or who wish to acquire new skills to qualify for higher positions. The registration fees are quite high but we offer very generous scholarships and the price does not seem to be a real obstacle for candidates. For our foreign candidates, however, the cost and lack of availability of accommodation unfortunately constitute real obstacles.

### What are the opportunities at the end of the two semesters of study?

Our candidates come from all over the world and around two thirds of them stay in Luxembourg or the Greater region. They have no problem finding a job because there are many interactions with companies during the course. Amazon, Cargolux, AIMMS, ASML, Lux-Airport, Bolt etc are among the companies that recruit our students. The positions occupied by our alumni are very varied. They can work in business intelligence, price analysis, consulting, management, strategic projects, as an import agent, supply chain manager, auditor, inventory manager, planning...the possibilities are really numerous.



**Florian Grova**  
Senior Manager, Hamlet  
Consulting Luxembourg

*"The sector will continue to change with ever more efficient algorithms."*

### What does your company offer to logistics players?

Hamlet Consulting Luxembourg is a consulting firm that supports companies in optimising their operational processes and digitalising their supply chain. We operate in all sectors of activity: industry, logistics services, transport and even financial services. We apply our methods of excellence to help companies improve performance and transform their operating models. We also support them in their innovation efforts to integrate new technologies into their processes.

### How can businesses use data to improve their performance?

Improving the performance of a supply chain through data requires traceability and quality guarantee mechanisms. Data must be collected, segmented and cleaned before it can be used. The collection stage is complex and requires not only breaking down internal silos but also connecting to data from external stakeholders (suppliers, public authorities, etc.). To achieve this, it is important to have an open IT architecture that allows data to be linked and communicated with third-party systems. Finally, the data can be integrated into the models (order preparation, logistics network, routes, etc.) to find optimal solutions through to a process of continuous improvement of the models by the use of machine learning.

### In your opinion, what will be the next technological revolution in the field of logistics?

The logistics sector is already evolving in a very advanced technological environment (robots, drones, augmented reality, etc.). The sector will continue to change with ever more efficient algorithms (optimisation of routes, stocks, etc.) and increased integration of artificial intelligence. On the other hand, there is an energy revolution with the electrification of fleets and the use of hydrogen for trucks and handling equipment. Finally, regulatory obligations, such as the Corporate Sustainability Due Diligence Directive (CS3D), will push players to make their supply chain even more transparent, ethical, and low in CO<sub>2</sub> emissions. This will require strengthening collaboration with suppliers and improving the predictability of large-scale failures. Artificial intelligence can play a key role in these issues.



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infrastructures which allows it to offer multiple, tailor-made solutions to customers around the world. A series of other advantages can be cited as strong arguments for international operators to choose Luxembourg for their transit operations. Some of these assets are specific to the sector, others are valid for any economic activity considering an establishment on Luxembourg soil or a collaboration with the country. This list includes the absence of geopolitical risk; the quality of social dialogue; the presence in the country of a qualified and multilingual workforce; an accessible administration; pro-business regulations compliant in all respects with European law; a secure IT environment with numerous data centres respecting the highest standards; the MeluXina supercomputer opening the way to multiple applications and significant support from the Government for research and innovation. To these advantages must be added the existence of a true cutting-edge logistics ecosystem thanks to national and international players in transport and logistics, and the presence of service providers delivering products or services for packaging (No-Nail Boxes, AllPack Services, DuPont, etc.), warehousing and handling (Amova,

**03. 04. 05.** The port of Mertert, in the east of the country, handles heavy, bulky, liquid or bulk goods, which arrive at the port in barges. The port is very well connected to the road and rail networks.

© Denise Hastert (03) et Luxport (04 et 05)



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Transalliance, Kuehne + Nagel, etc.), IT and transaction security (CHAMP, LuxTrust, etc.) and finally a Cluster to bring together these players, C4L, which will soon celebrate its 15 years of activity and commitment to the sector.

**Niche offers...**

The government's proactive policy to actively support the logistics sector has resulted in specialisation in certain niche sub-sectors and the development of high value-added services. These activities and services display significant growth potential and a certain resilience to economic downturns because competition is lower and they also make it possible to offer sophisticated services for which customers are prepared to pay the price, which is interesting in a country where wages are high.

Two niches in particular were the subject of significant investments in 2014 and have therefore acquired 10 years of experience: pharmaceutical products and valuable goods. Indeed, a logistics centre dedicated to medicines and health products was created within Findel airport, which was the first European airport to adopt the GDP (Good Distribution Practice) standard, giving it a certain advantage over its competitors, by guaranteeing controlled temperatures, traceability and health inspections ensuring that no rodents, birds or insects damage the

products. Any pharmaceutical goods transiting Luxembourg are guaranteed to benefit from these standards from start to finish because the entire logistics chain is concerned, with around ten certified operators. Thus, certain planes are equipped with temperature sensors, 3,000m<sup>2</sup> of warehouse space consists of temperature-controlled zones, including 800m<sup>2</sup> maintained between 2 and 8 degrees and 1,600m<sup>2</sup> between 15 and 25 degrees. The products do not experience any waiting on the tarmac and highly qualified and trained staff accompany them throughout their journey. Finally, 6 loading docks for refrigerated trucks guarantee that the cold chain is never broken for products that require it.

The second niche is that of valuable goods for which a dedicated offer took shape during the construction of a free zone at the airport, especially designed to offer the best temperature and humidity conditions to preserve, store and exhibit each type of product (works of art, wine, precious metal, collectibles, etc.) and allowing the end customer to benefit from a wide variety of services on site. The place is managed by freight forwarders and agents specialised in the transport, handling and storage of valuables, who are duly approved by the Luxembourg customs authorities. It provides 22,000m<sup>2</sup> of which 1,000 are reserved for pharmaceutical products and 300 for strong rooms. A wine cellar maintained between 13 and 16 degrees completes the system.

*“Successive Luxembourg governments have decided that logistics will be an integral part of the country’s economic diversification strategy.”*

Now called Luxembourg High Security Hub, the location is highly secure, follows OECD recommendations in the fight against money laundering and terrorist financing and benefits from a 24-hour customs presence, 7 days a week, which checks each entry and exit of goods.

**...and high value-added services**

Luxembourg offers global commerce and e-commerce all the services necessary for the proper processing of goods: inventory of items, grouping, assembly when necessary, packaging and labelling in order to prepare orders for shipping throughout Europe, with guaranteed traceability of packages. Luxembourg also offers expertise and facilities regarding customs operations.

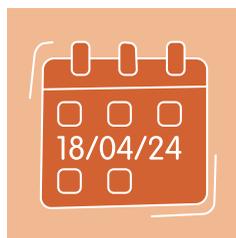
As a small country with an open economy Luxembourg has always developed its skills in import-export and transit of goods



## A European mega cluster

In 1949, several chambers of commerce and industry from 5 countries came together to form the Union of European Chambers of Commerce and Industry for Transport (UECC). The main goals of this union were the reopening of the Rhine as a waterway and the reestablishment of post-war economic ties in this region. Today, the UECC focuses its activities on European water, land and air transport policy as well as other related issues, such as market rules, regulations, environment and telecommunications. It is committed to a transport policy adapted to the needs of the economy (liberal market organisation, cross-border expansion of infrastructure, free access to all modes of transport). Having several hundred thousand members, the UECC is above all a dialogue platform. Recent topics of discussion include urban logistics and the *fit-for-55* program. Its positions and demands are communicated to decision-makers at national and European level.

■ More info: [www.uecc.org](http://www.uecc.org)



## For your calendars

On April 18, 2024, the Cluster for Logistics is organising a full day dedicated to Logistics (*Tag der Logistik*). The morning will be devoted to two company visits: Euro-Composites and IEE in Echternach. In the afternoon, participants will be offered a conference on Supply Chain Due Diligence, co-organised with the Luxembourg Centre for Logistics and Supply Chain Management (LCL) of the University of Luxembourg. This will aim to remind companies of their responsibilities throughout their supply chains. European regulations, currently being finalised, will require them to identify, put an end to, mitigate, prevent and report on the negative impacts of their activities on humans and the environment.



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and has been able to develop simplified procedures for the various administrative steps required. The country therefore offers a paperless customs environment and is an electronic freight location certified by the International Air Transport Association (IATA).

Businesses sourcing goods from outside the European Union (EU) do not need a fixed establishment in the destination country to comply with their tax obligations. In Luxembourg, they can use the services of a tax representative who takes care of VAT compliance requirements, import declarations and other formalities.

Importing goods into the EU generally results in VAT liability in the country of importation, unless the goods are placed under a specific warehousing regime. Most EU countries require immediate payment of VAT, but Luxembourg has removed this procedure. Therefore, there are no costs linked to the pre-financing of import VAT in Luxembourg. While several other EU countries authorise similar procedures upon request and under certain conditions, Luxembourg stands out with its simplified, automatic and unconditional procedure.

All these services and facilities and other valuable information for companies considering using the possibilities offered by Luxembourg logistics are brought together in a single portal, the Single Window for Logistics ([logistics.public.lu](http://logistics.public.lu)).

## What's next?

Despite the numerous advantages and strengths of the country, the sector, like others in the current international context, is faced with economic difficulties (increases in costs, particularly energy, financial costs with the rise in rates, increases in certain taxes (in Germany, motorway taxes have doubled); a fall in demand linked to a drop in industrial production and the overstocking which followed the Covid period which was immediately followed by a drop in demand from end consumers due to inflation; and increased competition between shippers). The sector has identified four major challenges to which rapid responses will be needed. Three of them are common to other sectors but with some specificities. These include the difficulty of finding qualified labour, decarbonisation and the environmental transition and digitalisation and the adoption of new technologies. The last is specific to logistics: the



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explosion of e-commerce and the need to implement solutions for the last mile and urban deliveries.

### Variety of professions, lack of candidates

Even though Luxembourg is known for having a cosmopolitan multilingual workforce (more than 170 nationalities live side by side in the country and 73% of the workforce is foreign), which is accustomed to thinking "without borders", the number 1 challenge facing logistics is the difficulty of attracting talent. This seems partly due to a lack of awareness of the diversity of professions offered by the sector and its lack of an image. Like other sectors, logistics is facing an acceleration in the retirement of the baby boomer generation and a rising population of young people who are increasingly demanding and careful about their working conditions, in particular the possibility of teleworking, which is not always possible in logistics where significant field work is necessary, in addition to administrative tasks or strategic thinking. Another element complicates recruitment, particularly of drivers: the rules to be respected in terms of social security and taxation, which create complex situations for managing a workforce that is mobile by nature. Many logistics operators are therefore (desperately) looking for their talents for today and tomorrow. To cite just one example, Transalliance has around sixty positions currently open for all types of profiles, ranging from commercial engineers to accountants, charterers (transport organisation technician, editor's note), logistical design engineers and purchasing managers, receptionists, drivers or crane operators. Examples and details on logistics professions can be listened to in the Cluster for Logistics podcasts (Logistics conversations: [www.clusterforlogistics.lu/c4l-podcast/podcast-list](http://www.clusterforlogistics.lu/c4l-podcast/podcast-list)).

**06. 07.** The logistics infrastructure includes two major hubs. That of Bettembourg -Dudelange (photo 06) is connected to the multimodal zone managed by CFL and that of Contern (photo 07) is close to the airport.

© Cluster for Logistics

**08. 09.** Certain cutting-edge infrastructures have enabled Luxembourg to develop expertise in logistics niches. Here, the High Security Hub, intended to store, exhibit and deal in valuable goods, benefits from the highest security standards.

© (08) : High Security Hub  
(09) : CDCL



**Jérôme Schank**  
Specialist Profitability  
Controlling, Cargolux

***"Logistics requires a holistic view of the value chain."***

### What made you want to complete your training with the Master in Logistics and Supply Chain Management at LCL?

My desire to complete my training with the Master in Logistics at LCL was catalysed by a student job at Luxair-Cargo. The coordination and synchronisation of different flows aroused a deep fascination in me and was the starting point for my decision to pursue a career in the field of logistics. Before delving fully into this field, I nevertheless felt the need to acquire training in business management. My commitment to logistics remained intact, which led me to undertake internships in the field of logistics during the summer periods. My enthusiasm was consolidated when I learned that a Master in Logistics would be inaugurated in Luxembourg. What particularly caught my attention was its deep roots in the business world thanks to courses with industry experts and the possibility of writing my Master thesis in collaboration with a business partner. Being part of the MIT SCALE network was the icing on the cake (MIT's Global SCALE network includes 6 centres on 4 continents, a dozen educational programmes, more than 55 university partners, 80 researchers and teachers, 150 partner companies and more than 1,200 alumni working around the world. Editor's note).

### Did you find it easy to find a job after completing the course?

After obtaining my Master's degree, I was quickly recruited by Cargolux. They offered me a thesis subject for which I developed an innovative concept using game theory to assess customer value. Subsequently, I was hired to implement this concept - an industry first. I am very grateful for this because my career at Cargolux brings me a lot of satisfaction, I feel valued and stimulated.

### What do you like about the Logistics sector?

What excites me most about logistics is its constant quest for improvement. Opportunities still exist to optimise margins, strengthen sustainability, improve service for customers. Indeed, stimulated by the context of the pandemic crisis, logistics has evolved from a necessary evil that focuses on cost minimisation, to a strategic differentiation tool that creates value for customers. I also like its interdisciplinary nature, integrating engineering, economics, operations research, etc. Logistics requires a holistic view of the value chain.



**Danilo d'Aversa**  
General Manager,  
Gulliver Luxembourg

***“Digitalising the workflow in logistics offers numerous advantages for the whole value chain.”***

#### **What services does your company provide?**

Specialising in mobile project development, Gulliver offers a wide range of custom and off-the-shelf solutions, with a particular focus on cutting-edge technologies such as AI, IoT, Cloud, etc. for back-end and front-end products. With over two decades of experience, the company has evolved from being a web and mobile application provider to offering comprehensive guidance and support for clients' digital transformation, in crucial domains such as Logistics & Transport and HR, aiming to streamline operations and enhance customer relations. During our work together, we take the customer by the hand and guide him through their digital journey.

We serve a diverse range of clients, from large enterprises to small and medium-sized ones.

Our digital solutions reach millions of users worldwide.

#### **Why is it interesting for your clients in the logistics sector to digitise their processes?**

Digitalising the workflow in logistics offers numerous advantages, changing the traditional approach and significantly improving overall efficiency with an impact on different aspects of the whole value chain. Digitalisation provides real-time visibility into the entire supply chain, allowing for precise tracking of shipments and vehicle locations. This transparency minimises delays, optimises routes, and improves overall decision-making. Digitalising logistics workflows reduces the dependency on paper and streamlines documentation processes. It enables better resource utilisation by optimising routes and personnel allocation. This results in reduced operational costs and minimised waste. Digital platforms facilitate communication and collaboration among suppliers, carriers, and customers. Logistics managers can make informed decisions based on historical performance, current trends, and predictive analytics, leading to more strategic and effective planning, leading to higher customer satisfaction. Digital systems help ensure compliance with regulations and industry standards. And finally, digitalisation sets the stage for ongoing improvements and innovations in logistics processes. Companies can embrace emerging technologies, such as AI to further optimise and future-proof their supply chain operations.



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#### **Training as a solution**

PTo train these numerous necessary talents, several training courses and diplomas have been created since 2006. The very first was the Professional Aptitude Diploma (PAD) for qualified operators in logistics which offers a three-year training in handling and 'storage. This initial training is done on a work-study basis but is also available as continuing education for adults. In 2015, a Technician Diploma (TD) was created. This is a four-year course, the first year of which is shared with the Administration and Commercial TD. The following three years are spent alternating between school and an employer. One of the great advantages of this formula is that young people can completely immerse themselves in the vocabulary specific to logistics and become familiar with English terms, the language favoured by the sector. 60 graduates have already completed this course, 90% of whom found employment immediately. The relatively general training opens the door to a complete range of functions such as warehouse manager, customs declarant, and transport administrator: all professions which can be exercised in specialised transport or logistics companies but also in industry or the trade. Holders of a DT can also continue their studies with a BTS in France or Germany because this does not yet exist in Luxembourg.

In 2017, to develop higher education courses, the University of Luxembourg and the government joined forces with MIT in Boston to create the Luxembourg Centre for

**10.** Very long trucks are not yet allowed on Luxembourg roads for safety reasons.

© Dachser CZ

**11. 12.** Investments in fleets of electric trucks (12) or with hydrogen engines (11) have an uncertain return on investment, strongly depending on the price of these new energies, the speed of equipment within charging infrastructures and the speed at which vehicle technologies themselves evolve.

© (11) : CFL multimodal  
(12) : Scania

***“An electric truck costs between 3 and 5 times more than a diesel truck.”***



Logistics and Supply Chain Management (LCL) which delivers a master's degree in logistical supply chain management; welcomes PhDs for research programmes and trains senior executives in continuing education. Every year, master's students carry out thesis projects with renowned companies (Ferrero, Amazon, Giorgetti, POST, HRS, PwC, etc.). At the doctoral level (PhD), there are also projects with ArcelorMittal and the Belgian nuclear agency and at the postdoctoral level with BASF and Cargolux. Furthermore, the partnership with MIT allows students to have access to an international network of logistics professionals.

Having noted that there is a missing link between the TD and the Master - in particular to train middle managers - the House of Training is currently studying the possibility of launching a specific continuing training programme. Until this training is available, logistics operators must focus on young recruits and develop them internally or recruit managers from other sectors and train them in their professions. Any profile curious about new experiences in a stimulating sector is welcome, especially as new skills will be necessary to support the ecological and digital transitions of the sector. Employers can also contact Adem, which offers to train job seekers in 10 weeks as handlers, order preparers, warehouse workers or delivery drivers.

In the future, to support the previously mentioned transitions, the professions will need to evolve further. For example, it will be necessary to find specialists in AI and data analysis, who will adapt their expertise

to the needs of transport and logistics, and there will also be an increasing need for experts in new energies and professionals calculating carbon footprints.

### **The necessary green revolution**

In Europe, trucks and buses traveling on the roads are responsible for a third of CO<sub>2</sub> emissions. The European Commission does not hide its high ambitions to change this situation. Gradually, the new trucks which come off manufacturers' production lines will have to reduce their emissions by 90% by 2050, with an intermediate stage of -45% for 2030. Now, producing less-polluting trucks is one thing, but being able to buy them in is another. All transport companies say it will be difficult to renew their fleets without appropriate state aid. Those that exist in Luxembourg, although they may seem generous, are in reality much lower than those of neighbouring countries. The Luxembourg government is in fact proposing to cover 40 to 60% (depending on the size of the requesting company) of the additional cost for the purchase of electric or hydrogen vehicles rather than conventional diesel vehicles, with a ceiling of 300,000 euros per economic entity and only one request authorised per year. The German system covers 80% of the additional cost, with no ceiling. However, an electric truck costs between 3 and 5 times more than a diesel truck. And the return on investment is not only not guaranteed but also difficult to calculate due to the speed of technological development which makes it difficult to predict the resale value of this

new generation rolling stock. The opportunity for investments in electric vehicles also depends on the speed of deployment of charging infrastructure, not only on the roads in Luxembourg but also in the Greater Region and beyond. Another unknown lies in the evolution of the price of electricity in the long term. A positive note, however: the new government's coalition agreement expressly provides for "assessing the current aid regime against the thresholds of the new general European block exemption regulation, to help companies decarbonise their fleets of heavy goods vehicles.

When it comes to hydrogen, things are even more unclear because its use and development are only just beginning. A first station was inaugurated at the CFL secure road centre (CRS) in the ZAE Wolser A in Bettembourg in September 2023, but at what rate will other facilities see the light of day and what about the rest of the Greater Region? Here again the uncertainties make investments in such trucks relatively risky.

Another option would be to purchase larger-volume trucks or extended trucks (Ecoliner or EMS), which combine the advantage of a 20 to 25% reduction in CO<sub>2</sub> emissions with gains in terms of the need for drivers and gains in competitiveness. However, there is a major obstacle to the deployment of such vehicles: Luxembourg's regulations are restrictive and do not authorise them at the moment, for safety reasons. This poses a real problem knowing that Belgium, Germany, the Netherlands, England as well as Spain and Scandinavia authorise them on their soil.



### Say it with pictures

New employees in the logistics sector, particularly those with immigrant backgrounds or those with learning difficulties, sometimes have difficulty mastering work processes and safety instructions. This is why the University of Augsburg (Germany) and the Supply Chain Services working group of the Fraunhofer Institute collaborated on a research project which resulted in the development of LogiPICs, a modular visual language that can be combined and personalised for the logistics sector. It allows processes to be shown and explained clearly. The training period is shortened, the quality of work improved and integration into the world of work and society facilitated.

■ More info: [www.logipics.com](http://www.logipics.com)



### Improved customer service from space

The use of satellites for fleet management and logistics is growing. The main advantage of this technology is that it can accurately track the location of vehicles, goods and personnel in real time. Through the use of GPS satellites, organisations can easily pinpoint the exact location of a vehicle or item, and even monitor its speed, direction and route. This allows businesses to respond more quickly to any delays or unforeseen incidents, improve customer satisfaction and ensure the safety of their staff. In addition to tracking location, satellites can also be used to monitor a variety of other data points. For example, temperature and humidity sensors can be used to track temperature-sensitive goods, and special sensors can detect potential hazards such as sharp turns or sudden braking. This data therefore makes it possible to combine safety, cost control and efficiency.

### Accessible solutions

Adopting multimodal road/rail routes currently seems to be the safest way to save GHG emissions over long distances. Rail emits significantly less than road transport – 0.4% of total transport emissions compared to 38% for heavy trucks and light trucks according to the European Environment Agency – and so it seems desirable to combine the two modes of transport whenever possible to avoid putting more and more trucks on the road. Luxembourg is fortunate in having a high-capacity and very efficient multimodal hub at the Eurohub South in Bettembourg.

To guide their decisions, transport and logistics operators are invited to precisely measure their carbon footprint. For this there is software and specialised consulting companies. For these investments, help is available in the form of a temporary 'Fit 4 Sustainability' aid package for any company or an 'SME Sustainability Package' reserved for SMEs. The common point of these aid schemes is that they must be requested before incurring the expenses. Logistics operators who wish to equip their buildings with photovoltaic panels to supply electricity to their buildings or their fleet can also benefit from such aid and others specific to energy savings, such as 'énoprime'. All are described on [guichet.lu](http://guichet.lu) and Luxinnovation can offer personalised support to any company needing help to put together its application.

Furthermore, the 'Lean and Green' initiative, brought to Luxembourg in 2014 by the Cluster for Logistics, is a certification programme, created in the Netherlands in 2008 and which now exists in 16 countries. Its objective is to motivate companies to reduce their CO<sub>2</sub> emissions by at least 20% in a maximum of 5 years. To do this, they must follow a four-phase process, starting with measuring their carbon footprint, then developing and implementing an action plan and finally measuring the results giving rise to a new plan of action with a view to continuous improvement. Once a year, prizes are awarded to the most successful companies. These annual meetings are an opportunity for other companies to draw inspiration from the best practices presented, which may concern vehicles (fleet renewal, choice of green fuels, low-resistance tires, etc.), drivers (eco-driving, etc.), buildings (lighting, heating, renewable energy, etc.) or the logistics chain (route optimisation, loading optimisation, etc.).

### Adopting digital tools

Situated between an increasingly robotised industrial sector and customers whose consumption patterns are increasingly shifting towards online, logistics must follow suit, especially since the digitalisation of certain processes could enable it to partly respond to the current difficulty of finding sufficient numbers of workers. In 2022, the Cluster for Logistics and the Ministry of the Economy carried out a major survey to take stock of the digital maturity of the sector. A wide variety of responses emerged depending on the specific profession or the size of the responding companies. The most frequent use of digital tools concerns transport planning, closely followed by tracking and tracing of goods throughout the supply chain. Most of the responding companies have already adopted the use of digital freight documents, others use digital in their relations with their customers or finally to facilitate operations in warehouses. The survey also revealed the existing obstacles to the adoption of these tools. The biggest barrier is lack of time or conflict with other business priorities. In second place comes the lack of internal skills to which is added a lack of knowledge of existing aid – either financial or organisational – or the feeling that this aid is too complicated to obtain. Companies are therefore demanding more knowledge sharing between peers, more networking with start-ups that can offer solutions and more support and advice. The Cluster has taken these requests into account and has put on its roadmap the organisation of more workshops, podcasts and other matchmaking with start-ups. Luxinnovation can also be a valuable resource for digitalisation advice. Furthermore, companies can use LCL master's PhD students with whom they can set up research projects.

The possibilities of applying digital tools to logistics are almost endless in all phases of the logistics chain. The use of data, for example, will make it possible in the future to predict the flow of goods much more precisely depending on the days of the week, the weather, certain returns from consumers, etc. Data and artificial intelligence will also make it possible to optimise delivery routes or loadings. Thanks to new GPS, Radio frequency identification (RFID) trackers or Internet of Things (IoT) sensors, goods can be tracked in real time and customers will be able to follow their delivery step by step. For inventory



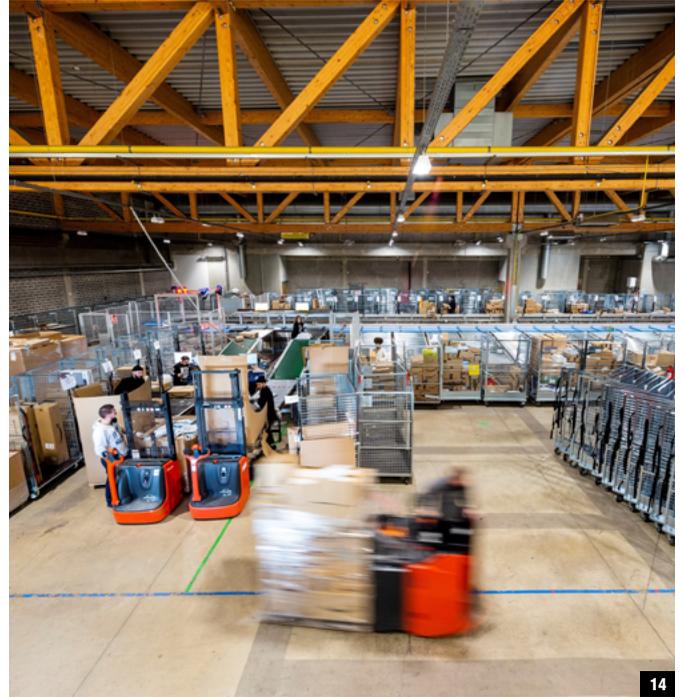
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13. New robotic technologies implemented in warehouses make it possible to densify goods by using the entire height of the buildings.

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14. In recent years, Post has acquired real expertise in the preparation and management of parcels, thus being able to respond to the explosion of e-commerce.

© Post



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management or administrative tasks accompanying the flow of goods, being able to scan batches and ensure that the data is automatically entered into inventories and information systems will represent a significant gain in time and efficiency. In warehouses and port or airport areas, tools for visualising locations, for example using augmented reality glasses, and order picking robots are becoming more and more widespread. On certain industrial or warehousing sites, autonomous vehicles or drones also represent solutions of the future. All these technologies, which still seem a little futuristic to some, can help attract young people into logistics professions. However, digitalisation means vulnerability to cyberattacks. This assumes that companies provide a budget to support technological deployments with the right dose of cybersecurity.

### The challenge of e-commerce and the last mile

In recent years, e-commerce has exploded, driven by its convenience, with consumers having access to global offers and being able to place orders at any time from any location with internet access. The phenomenon has continued to grow and was speeded up by the pandemic, but it has probably not yet reached its peak. The Luxembourg Regulatory Institute (LRI) reports an increase of 7.8% in the number of parcels processed in 2022 (16.55 million units) and of 11% in the turnover of postal services linked to package. POST, for its part, handled 7.185

million parcels, representing a market share of 43.4%, the rest being shared between 22 other parcel service providers active in Luxembourg. Most packages delivered come from abroad (95% of those processed by POST Luxembourg). Added to the very rapid increase in volumes are consumers' expectations for ever greater speed and precision in delivery time slots, with the large platforms pioneering e-commerce having set standards that have been quickly adopted. This requires logistics providers to innovate quickly to expand their processing capabilities. POST Logistics therefore offers a whole range of services specifically calibrated for international e-commerce. The company offers end-to-end solutions, with the help of certain partners such as LuxairCARGO, Lux-Airport and the customs service, from the Findel airport area to the end consumer. Parcels arriving by air, mainly from Asia, are sorted, encoded, cleared through customs and then prepared for shipping. During peak periods (from mid-November to the end of December including operations such as Black Friday or Cyber Monday) the number of packages processed can reach 130,000 per day. These packages are intended for Luxembourg but also, and above all, for France, Belgium and Germany.

On the national market, POST has developed services for the last mile: a network of 141 Pack Up collection stations has been deployed throughout the country, where it is possible to collect a package 24 hours a

day (20 to 25% packages are delivered via this network). These stations as well as other parcel collection points (post offices and spaces, partner merchants, etc.) offer the advantage of reducing the carbon footprint of urban deliveries. To go further in the decarbonisation of its services, POST recently electrified 30% of its fleet of vehicles used by postmen.

For merchants in Luxembourg, POST offers its "e-Commerce fulfilment services", a complete offer ranging from stock management to delivery and order preparation. POST also offers solutions to manage parcel returns, a corollary of the development of e-commerce. The Cluster for Logistics is very attentive to the evolution of e-commerce and the developments it requires. In its role as spokesperson for the sector, it therefore proposes to include urban logistics in the National Mobility Plan and to provide more warehouses for e-commerce in the sectoral plans of activity zones, especially since the country's large logistics zones (Eurohub South and Eurohub Centre) are reaching their limits of available land.

The logistics sector is ultimately only at the beginning of its history in Luxembourg. The ecosystem is ready to accelerate its ecological and digital transition and to welcome start-ups and talents capable of developing new services and solutions to make logistics services even more fluid for their industrial and commercial customers. —