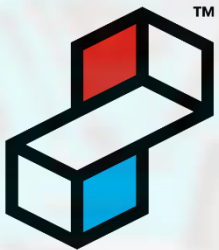


Transport and Logistics

Sectoral study
Trends in terms of occupations
and skills

In collaboration with:



**CLUSTER
FOR
LOGISTICS**

LUXEMBOURG

ADDING VALUE IS THE KEY.



November 2021

Introduction (1/2)

In an increasingly complex labour market, driven by technological, environmental and societal transitions, the skills gap is a major concern for governments, businesses and society as a whole.

In-depth analyses of the trends in occupations and skills of the Luxembourgish labour market are crucial in order to better understand, anticipate and address this skills gap. In this context, the Ministry of Labour, Employment and the Social and Solidarity Economy (MTEESS) and the Public Employment Service (ADEM) have initiated sectoral studies, which are part of ADEM's Future Skills Initiative and the partnership for employment between ADEM and the Luxembourg Employers' Association (UEL).

Work conducted in the ADEM/UEL partnership working groups has confirmed the lack of data (comprehensive and of good quality) on skills in demand and available in Luxembourg (and in the Greater Region), both in public administrations and in the private sector. ADEM currently has the richest data on this subject, stemming from the job vacancies that are declared by companies and from matching indicators between vacancies and jobseekers. It should be noted that this data is limited to the job vacancies actually declared to ADEM, which does not cover all the vacancies in Luxembourg, despite the legal obligation to declare every vacancy. Our sectoral studies are therefore not pretending to be representative of the Luxembourgish labour market as a whole; they are a first attempt at a granular and extensive analysis to create more transparency on this particular market.

The sectoral studies cover seven sectors: 1) finance, 2) industry, 3) construction, 4) hospitality/horesca, 5) commerce, 6) transport and logistics, and 7) crafts. In order to validate the conclusions from the analyses (especially given that the data is not comprehensive of the whole market), ADEM collaborated with the corresponding employers' organisations that represent each sector. For this sectoral study of the Transport and Logistics sector, ADEM thanks the *Cluster for Logistics* and the *Groupement Transports* for their collaboration and fruitful exchanges.

Introduction (2/2)

Each sectoral study includes 1) an introductory chapter with the definition of the sector's scope and an overview of key figures, 2) a summary of qualitative trends in the sector (technological, societal and other), 3) an analysis of trends in occupations (key occupations, growing and declining occupations, shortages) with a list of occupations to be prioritised and audiences to be targeted for reskilling/upskilling, 4) an analysis of the in-demand skills in the sector's job offers, and 5) a glossary.

The target readers of these studies are both employers, who will find a benchmark of the situation and trends in their sector, and employees/jobseekers who will be able to better adapt to these trends.

The findings of our studies should help us to:

- introduce new instruments to address the skills gap;
- define and implement targeted training/upskilling/reskilling actions;
- guide career choices;
- develop the national skills strategy (which is currently handled by the *Skillsdësch* with the support of the OECD).

These sectoral studies are only a starting point. They will of course have to be complemented by and confronted with other analyses carried out through new ADEM collaborations or by different actors in the ecosystem.



Isabelle Schlessler
Director of ADEM

Perspectives of the Cluster for Logistics and Groupement Transports



Malik Zeniti
Director of the Cluster for Logistics Luxembourg

"The government's decision in 2006 to promote economic diversification by investing in the logistics and supply chain sector has had a direct impact on employment and job demand. To meet the basic demand of the sector, initial education institutions started to offer qualifications such as DAP or *Diplôme de technicien* (DT) in logistics. This has been completed by the introduction of university level courses such as the "Master in Logistics and Supply chain management", even though the demand for these specific professions in a very open market, which includes the Greater Region, was not yet known. Then, international companies experienced an expansion of their workforce into freight organisation and planning roles, previously not common in Luxembourg. The last 18 months of the Covid-19 pandemic have highlighted the importance of new skills in the fields of stock organisation and international flow of masks, protective products or anti-Covid vaccines. Industry and commerce, and in particular e-commerce, are now faced with having to manage volatile demands, where artificial intelligence and digitalisation are having disrupting impacts and changing supply and demand. The analysis of such trends is the purpose and the importance of this sectoral study, which the Cluster strongly encourages and appreciates."

"We would like to thank ADEM for conducting a sectoral study on the Transport and Logistics sector. It is an important exercise that allows us to visualise the development of the sector, the impacts of the emergence of new technologies, and to analyse the labour needs and new skills that are required. The study will thus allow to target the training and guidance of jobseekers. We believe that a regular exchange between companies in the sector and ADEM is important to train and guide jobseekers towards the specific needs identified in their respective domains.

We especially notice a lack of qualified employees and truck drivers, and we are counting on a good collaboration with ADEM to reduce this gap, to promote our sector and, above all, to draw the attention of young people to the Transport and Logistics sector, as it is a sector of systemic importance and with great prospects."



Marianne Welter
President of the Groupement Transports

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1. Definition of the sector and key figures



Definition of the sector

For this sectoral study, the sector is defined according to the NACE code, the European Statistical Classification of Economic Activities. The Transport and Logistics sector is defined by the NACE category H. This includes *land transport* (including rail and road transport, passenger and freight transport), *water transport* (passenger and freight), *air transport* (passenger and freight), *warehousing and support activities for transport*, as well as *postal and courier activities*.

H TRANSPORTS ET ENTREPOSAGE

49	Transports terrestres et transport par conduites	51	Transports aériens
49.1	Transport ferroviaire interurbain de voyageurs	51.1	Transports aériens de passagers
49.10	49.100 Transport ferroviaire interurbain de voyageurs	51.10	51.100 Transports aériens de passagers
49.2	Transports ferroviaires de fret	51.2	Transports aériens de fret et transports spatiaux
49.20	49.200 Transports ferroviaires de fret	51.21	51.210 Transports aériens de fret
49.3	Autres transports terrestres de voyageurs	51.22	51.220 Transports spatiaux
49.31	49.310 Transports urbains et suburbains de voyageurs		
49.32	49.320 Transports de voyageurs par taxis	52	Entreposage et services auxiliaires des transports
49.39	49.390 Autres transports terrestres de voyageurs n.c.a.	52.1	Entreposage et stockage
49.4	Transports routiers de fret et services de déménagement	52.10	52.100 Entreposage et stockage
49.41	49.410 Transports routiers de fret	52.2	Services auxiliaires des transports
49.42	49.420 Services de déménagement	52.21	52.210 Services auxiliaires des transports terrestres
49.5	Transports par conduites	52.22	52.220 Services auxiliaires des transports par eau
49.50	49.500 Transports par conduites	52.23	52.230 Services auxiliaires des transports aériens
50	Transports par eau	52.24	52.240 Manutention
50.1	Transports maritimes et côtiers de passagers	52.29	52.290 Autres services auxiliaires des transports
50.10	50.100 Transports maritimes et côtiers de passagers	53	Activités de poste et de courrier
50.2	Transports maritimes et côtiers de fret	53.1	Activités de poste dans le cadre d'une obligation de service universel
50.20	50.200 Transports maritimes et côtiers de fret	53.10	53.100 Activités de poste dans le cadre d'une obligation de service universel
50.3	Transports fluviaux de passagers	53.2	Autres activités de poste et de courrier
50.30	50.300 Transports fluviaux de passagers	53.20	53.200 Autres activités de poste et de courrier
50.4	Transports fluviaux de fret		
50.40	50.400 Transports fluviaux de fret		

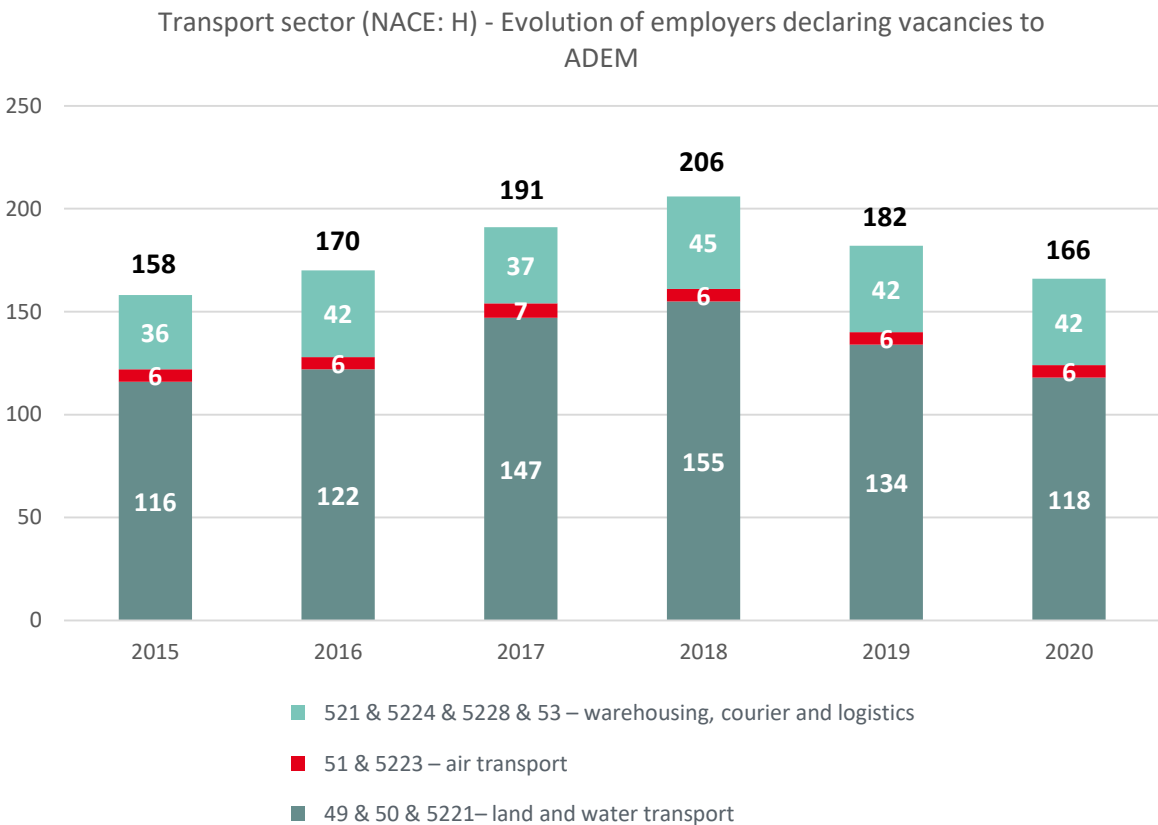
Source : <https://statistiques.public.lu/catalogue-publications/nace/PDF-NACE-2.pdf>

ADEM's key figures of the sector (1/2)

Our analysis in this study is based on job vacancies reported to ADEM by employers in the Transport and Logistics sector (NACE category H).

The following graph illustrates the number of employers in the sector who have reported job vacancies to ADEM, and the evolution of this number over the 2015-2020 period.

In 2020, about 1,400 companies operated in this sector in Luxembourg¹. 166 of them declared their vacancies to ADEM in 2020, most of which were in *land and water transport*, followed by *warehousing, courier and logistics*.



The number of employers reporting vacancies increased from 2015 to 2018, before declining again, especially in land transport.

Source: job vacancies declared to ADEM

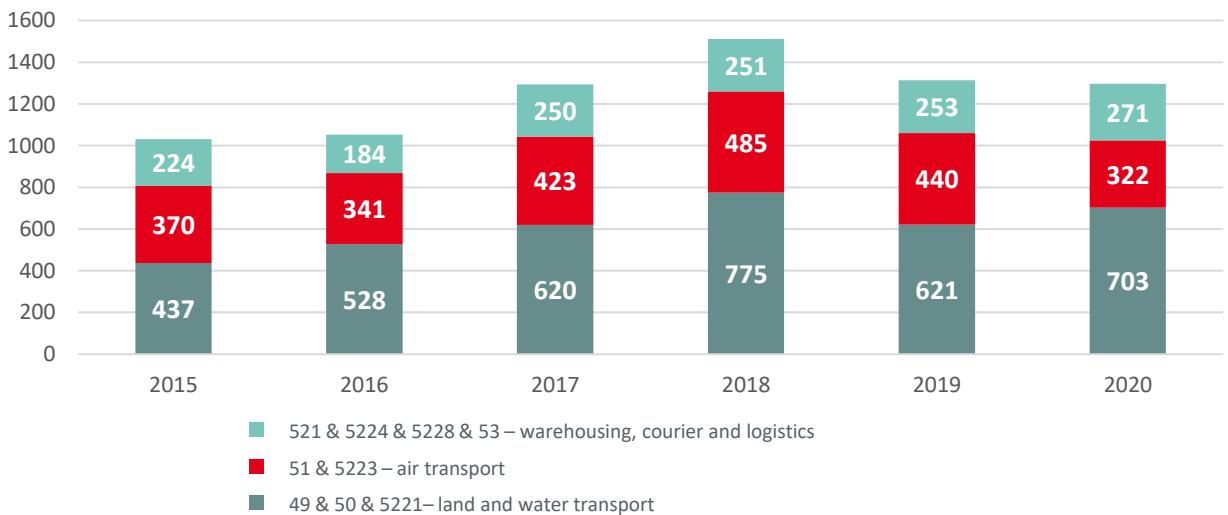
¹ <https://statistiques.public.lu/catalogue-publications/repertoire/2020/repertoire-entreprises-luxembourgeoises.pdf>

ADEM's key figures of the sector (2/2)

Let us now look at the evolution of the number of job positions declared by these employers, excluding positions related to employment measures. Jobs declared via interim agencies are also excluded as they fall under a different sector.

We note that positions were growing steadily from 2015 to 2018, followed by a decline in 2019. It appears that the pandemic mainly impacted positions in air transport, which was offset by an increase in positions in land transport.

Transport sector (NACE: H) - Evolution of job positions declared to ADEM



Job positions declared to ADEM (excluding employment measures)	2015	2016	2017	2018	2019	2020
H - TRANSPORTATION AND STORAGE	989	1027	1252	1443	1266	1235
Land and water transport (49+50+5221)	437	528	620	775	621	703
Air transport (51+5223)	370	341	423	485	440	322
Warehousing, courier and logistics (521+5224+5229+53)	224	184	250	251	253	271

By comparison, actual recruitment in the sector (based on the entry declarations that employers make to the Centre Commun de la Sécurité Sociale (CCSS)) amounted to 8,140 in 2018, 8,060 in 2019 and 6,690 in 2020.¹ This difference is explained by the fact that a recruitment is not necessarily preceded by a vacancy publication, and that not all vacancies are declared to ADEM (despite the legal obligation).

According to the Cluster for Logistics, for companies operating in the field of *land and water transport*, some of the people recruited as "captains" are declared in Luxembourg, but never actually work in the country. The same applies to many truck drivers. These are therefore jobs that are included in the CCSS entry declarations but are only very rarely declared to ADEM.

Source: job vacancies declared to ADEM, expertise of ADEM employer advisors and the Cluster for Logistics and Groupement Transports

¹<https://adem.public.lu/fr/marche-emploi-luxembourg/faits-et-chiffres/statistiques/igss/Tableaux-interactifs-flux-emploi.html>

2. Sectoral trends



Experts' perspectives

ADEM's Employer Advisors for the Transport and Logistics sector

"Our role within the Employer Service department, set up at the end of 2013, is to best serve our clients in the Transport and Logistics sector – at least those who, aware of the legal obligation and their social responsibility, declare their job vacancies to ADEM. This collaboration continuously leads to recruitments, with financial support from ADEM where applicable. The direct contact with our clients allows us to react quickly and constructively. In their search for candidates, whatever their level of qualification, companies have increasingly high requirements. Even though the qualifications searched by employers do not always match those of our jobseekers, the number of companies that work with ADEM continues to grow. The close relationship we have with the Cluster for Logistics and the Groupement Transports also gives us a better view of the trends in terms of occupations and skills our clients are looking for."



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Conseillère employeurs



Cluster for Logistics

"The growth in demand has enabled the Luxembourg airport to become the 6th largest cargo airport in Europe. Rail transport is also growing. Sea freight and the Silk Road - by rail –are not sufficient to meet the demand. These are examples underlining the importance of having logistics specialists for different modes of transport. The regulations have changed in Europe and the shortage of truck drivers is affecting the sector greatly. The sector has to adapt to the logistic stocks and flows in industry and commerce, taking into account not only the economic factors but also the fight against global warming. The optimisation of transport modes and the anticipation and planning of customer demand will be important skills for the Transport and Logistics sector in the years to come. "

Malik Zeniti, Cluster Manager, Cluster for Logistics

Groupement Transports

"The Transport and Logistics sector has been suffering for years from a lack of qualified personnel, especially truck drivers. This shortage is currently intensifying due to the economic recovery, retirement trends and a general lack of interest for these professions among young people. We estimate that this lack of staff is holding back the development of the supply chain and thus slowing down the economic recovery in the post-Covid-19 phase.

The ADEM sectoral study confirms the strong demand for certain occupations in the sector, but also reveals the diversity in the professions, in the skills that are required and in the career prospects in the sector.

Ambitious decarbonisation targets, the expansion of multimodal transport and the digitalisation will create new professional domains in the Transport and Logistics sector. We encourage jobseekers to inform themselves and consider a career in this dynamic sector. In an increasingly globalised world, the Transport and Logistics sector is gaining in importance and offers attractive opportunities."

Antoine Ries, CLC Advisor, Groupement Transports

Main trends (1/2)

Technological trends

- Investments in smart mobility and transport systems: projects such as the [Cross Border Test Bed](#) between Luxembourg, France, Germany and Belgium, the [Data Task Force](#) and the [Mobility Innovation Campus in Bissen](#)
- Real-time data to help manage traffic flows, identify the best transport routes and provide information to users across logistics networks
- Increasing warehouse automation
- Autonomous vehicles with robotic assistance
- Use of drones to deliver goods in the coming years

Societal trends

- Incentives for shared mobility: car-sharing initiatives such as CARLOH in Luxembourg City and free public transport in Luxembourg
- Impact of e-commerce: customer expectations in terms of speed, flexibility, less (or zero) shipping costs, same-day/next-day delivery, transparency, visibility of their order at all times (the pandemic has accelerated these trends and changed shopping habits)
- Demand for easier travel for disabled and elderly people (launch of a new booking application "[Adapto.lu](#)" end of August 2021)

Legal / regulatory trends

- New VAT rules applicable to e-commerce from 1st July 2021: the exemption from value added tax (VAT) for the import of goods with a total value not exceeding 22 euros is abolished (many businesses have expressed an interest in making their declaration in Luxembourg)
- Increased regulations to reduce greenhouse gas emissions by 55% and produce more renewable energy (EU "Fit for 55" directive)
- Social security regulations: registration of truck drivers in their country of residence, if they drive more than 25% of the time outside Luxembourg. This strongly affects Luxembourg-based companies with non-resident staff.

Main trends (2/2)

Environmental trends

- Electrification of transport systems and reduction of emissions
- [Lean & Green](#) programme and label
- Optimising last-mile delivery in urban areas, taking advantage of new transport sharing technologies particularly with the aim to reduce emissions and resource consumption¹

Economic trends

- Covid-19 impact: in air transport, turnover increased by +5% year-on-year in the first eight months of 2020, compared to a 47% decrease in the Eurozone (although passenger traffic at Findel airport fell sharply). In freight, there was +5% in volume compared to 2019 in the first ten months. In land transport, Luxembourg companies saw a decline in activity (-6% year-on-year turnover in the first eight months).²
- Luxembourg's strategic geographical position: the airport is an important air cargo hub in Europe (6th airport in 2020) and offers direct access to motorways reaching any European city in less than 24 hours. CFL offers multimodal connections to the main EU hubs (towards Spain, Poland and Northern Europe) and launched its first rail line to China in early 2019. Linked to the rail, motorway and inland waterway networks, Mertert's port offers additional access to other inland areas and the North Sea.³

Employment trends

- In the field of logistics, companies often use temporary employment agencies for small assignments → less transparency on actual recruitment
- Recruitment is heavily dependent on apprenticeships (competition with older, more mature German workforce due to different educational backgrounds)
- High dependence on foreign labour and strong gender imbalance⁴
- Competition between national companies and the public sector for certain profiles (e.g. bus drivers)

Sources: research, exchanges with the Cluster for Logistics & Groupement Transports

¹ <https://meco.gouvernement.lu/fr/publications/strategie/strategie-ons-wirtschaft.html>

² <https://statistiques.public.lu/catalogue-publications/note-conjoncture/2020/PDF-NDC-02-20.pdf>

³ https://assets.kpmg/content/dam/kpmg/lu/pdf/2019/kpmg-customer_experience_report_2019.pdf

⁴ <https://adem.public.lu/fr/marche-emploi-luxembourg/faits-et-chiffres/statistiques/igss/Tableaux-de-bord.html>

3. Occupation-level analysis



Occupation-level analysis: method

The aim of this chapter is to analyse the composition of the job vacancies in the Transport and Logistics sector in terms of occupations, trends (growth, decline, emergence, stability) in these occupations and the degree of talent shortage. All occupations (sector-specific or transversal) recruited by employers in the sector are considered in this analysis.

This analysis is based solely on ADEM data, i.e. job positions declared to ADEM by employers from the Transport and Logistics sector (cf. page 9). This excludes employment measures and vacancies reported by temporary work agencies ("agences d'intérim"), where we have no information on the employers nor the sector they are attached to.

Vacancies that have not been declared to ADEM are not included in the analysis. We are aware of the limitations of this approach as the vacancies reported to ADEM do not cover all the vacancies/actual recruitments in the market and are therefore not fully representative.

For this reason, we do not draw conclusions on the total number of recruitments in Luxembourg by occupation; we only analyse *relative* figures: the proportion of the different occupations among all jobs declared by the sector, the growth trend of the jobs declared for an occupation, the degree of talent shortage of an occupation by comparing the number of declared vacancies to the number of eligible candidates among jobseekers.

To analyse growth trends, we compare the years when ADEM's coverage rate (of actual market recruitments) remains sufficiently comparable.

Despite these precautions, the relative analyses (proportions, trends, shortages) are still not entirely representative.

We have therefore collaborated with the Cluster for Logistics and the Groupement Transports to confront our data with their knowledge of the reality of the sector. These collaborations allowed us to place our quantitative analyses into a context and add qualitative input and explanations.

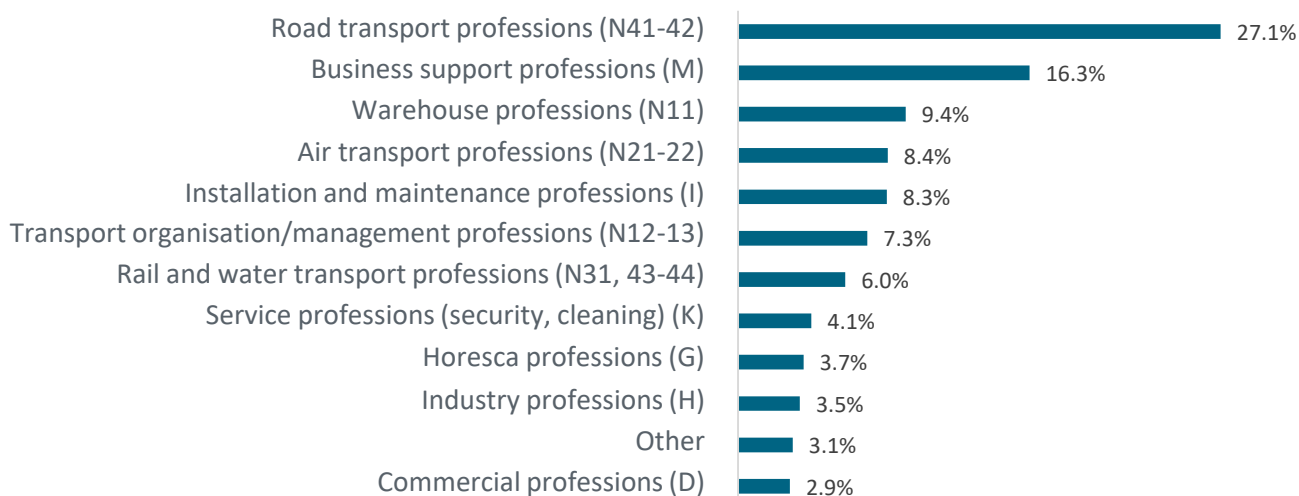
In the future, and in order to considerably improve the reliability of our studies, it is essential that the rate of job vacancies declared to ADEM increases and corresponds better to the actual reality of the labour market. And this not only for the purpose of finding the right candidates, but also to increase the transparency of the labour market and the possibility to analyse real market needs, trends and shortages.

To structure the occupations in our analyses, we base ourselves on the ROME classification, which ADEM has used since 2014 to categorise its vacancies according to a typology of occupations. The ROME classification includes different levels of granularity, and the level used in our analyses varies according to what is considered most useful. For each reference to an occupation ("métier" according to ROME) or function ("appellation" according to ROME) used in this document, a description is provided in Chapter 5.

Distribution across categories of occupations

First, we present the distribution of jobs declared by the Transport and Logistics sector (over the 2015 - 2020 period) across the different occupation categories. These categories are based on the ROME classification. *Road transport professions* are the most representative category in the sector, with 27% of the positions declared to ADEM. They are followed by *business support professions* (secretaries, accountants, IT specialists, etc.) at 16%, *warehouse professions* (forklift operators, etc.) at 10%, *air transport professions* (pilots, service staff, etc.) at 8%, *installation and maintenance* (of trains, aircrafts, etc.) at 8%, *transport organisation and management professions* (logisticians, supply chain managers, etc.) at 7%, and *rail and sea transport professions* at 6%. The remainder is divided between professions of various *services* (security and cleaning), *horesca* (e.g. airline cooks, etc.), *industry, commerce* and others.

Transport sector (NACE: H) – distribution of declared job positions across occupational categories (2015-2020)



The evolution of this distribution over time shows a (proportional) increase in the industry, installation and maintenance professions. Rail (and inland waterway) transport shows large fluctuations. The weight of road transport professions has decreased from 30.9% in 2017 to 22.6% in 2020. This is due to the pandemic but also because of recruitment difficulties. Air transport professions were heavily impacted in 2020 by the pandemic.

Categories of occupations	2015	2016	2017	2018	2019	2020
Commercial professions (D)	3.3%	2.7%	2.8%	2.7%	3.6%	2.3%
Horesca professions (G)	4.9%	5.6%	5.0%	3.9%	2.3%	1.0%
Industry professions (H)	2.7%	2.5%	2.2%	3.6%	4.6%	4.9%
Installation and maintenance professions (I)	6.9%	6.5%	8.9%	6.4%	8.6%	12.4%
Service professions (security, cleaning) (K)	8.2%	3.1%	4.3%	2.7%	5.5%	1.7%
Business support professions (M)	16.3%	18.0%	13.8%	16.5%	17.5%	16.2%
Air transport professions (N21-22)	11.7%	10.9%	6.6%	10.9%	10.3%	0.6%
Road transport professions (N41-42)	25.2%	26.9%	30.9%	28.8%	27.3%	22.6%
Rail and water transport professions (N31, 43-44)	2.9%	4.0%	5.3%	10.7%	1.0%	10.4%
Transport organisation/management professions (N12-13)	5.9%	10.0%	10.1%	5.3%	7.8%	4.9%
Warehouse professions (N11)	9.3%	6.5%	8.1%	5.6%	9.2%	17.7%
Other	2.7%	3.2%	2.0%	2.8%	2.4%	5.3%

Most in-demand occupations ("Top 15")

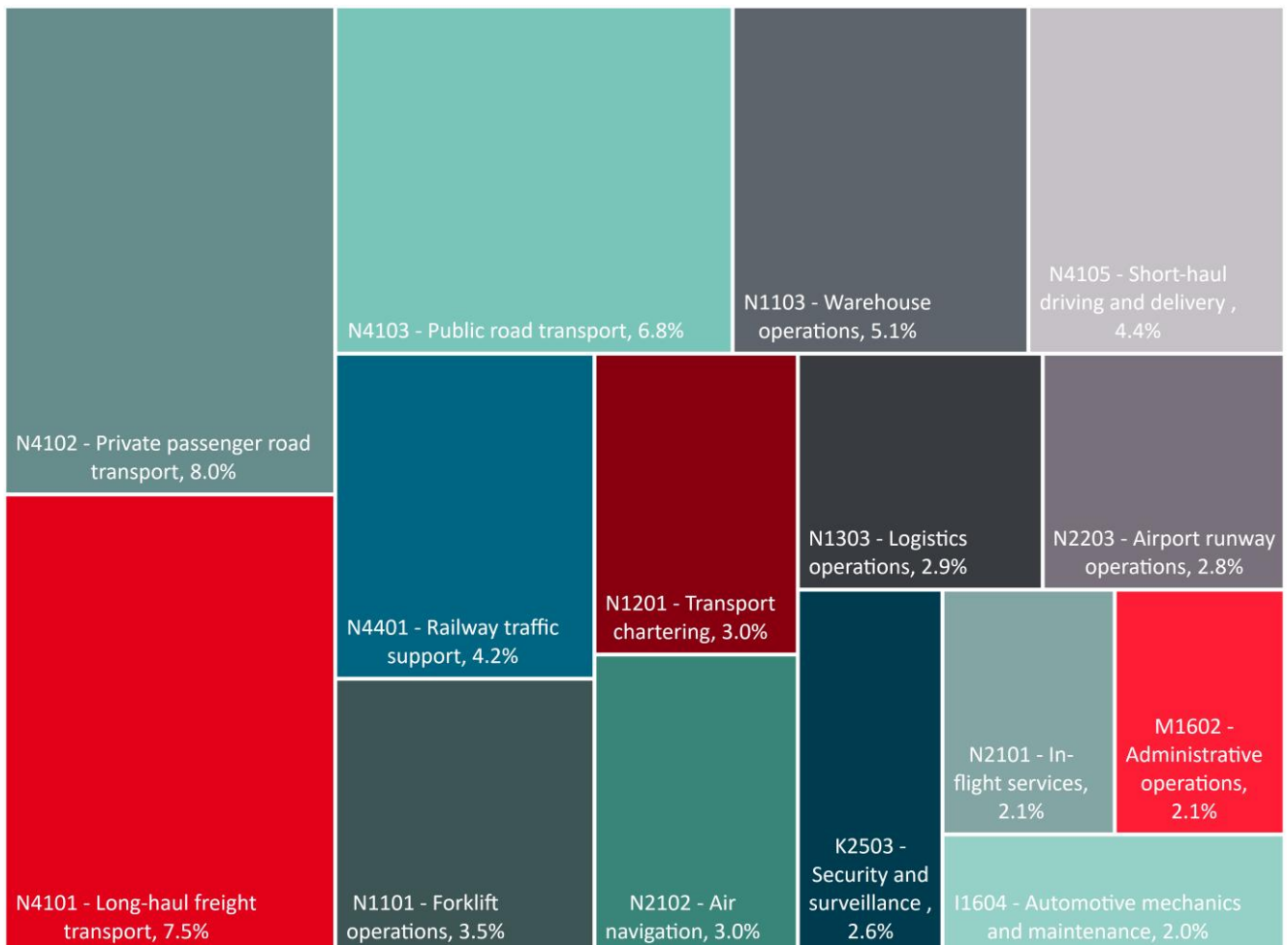
The following illustration reveals the "Top 15" most in-demand occupations (level 3 of the ROME reference system) as well as their proportional share among all the job positions declared by this sector over the 2015-2020 period.

The graph shows a certain balance of proportion among the most in-demand occupations in the sector. On the first spot are private passenger (taxi/shuttle...) drivers with 8%, followed by long-haul truck drivers with 7.5% and bus drivers with 6.8%. They are followed by 4. warehouse staff (5.1%), 5. short-haul delivery drivers (4.4%), 6. railway traffic agents (4.2%), 7. forklift drivers

(3.5%), 8. charterers (3%), 9. pilots (3%), 10. logisticians (2.9%), 11. airport runway staff (2.8%), 12. security guards (2.6%), 13. air hostesses/stewards (2.1%), 14. administrative staff and 15. mechanics (2%).

According to the Cluster for Logistics, *air transport*, includes some profiles that are more versatile, merging different functions (such as warehouse worker and airport ramp agent). In addition to this, companies operating in this field sometimes exchange staff with certain licences or qualifications between each other, depending on their needs.

THE OCCUPATIONS MOST IN-DEMAND IN THE TRANSPORT AND LOGISTICS SECTOR (2015 - 2020)



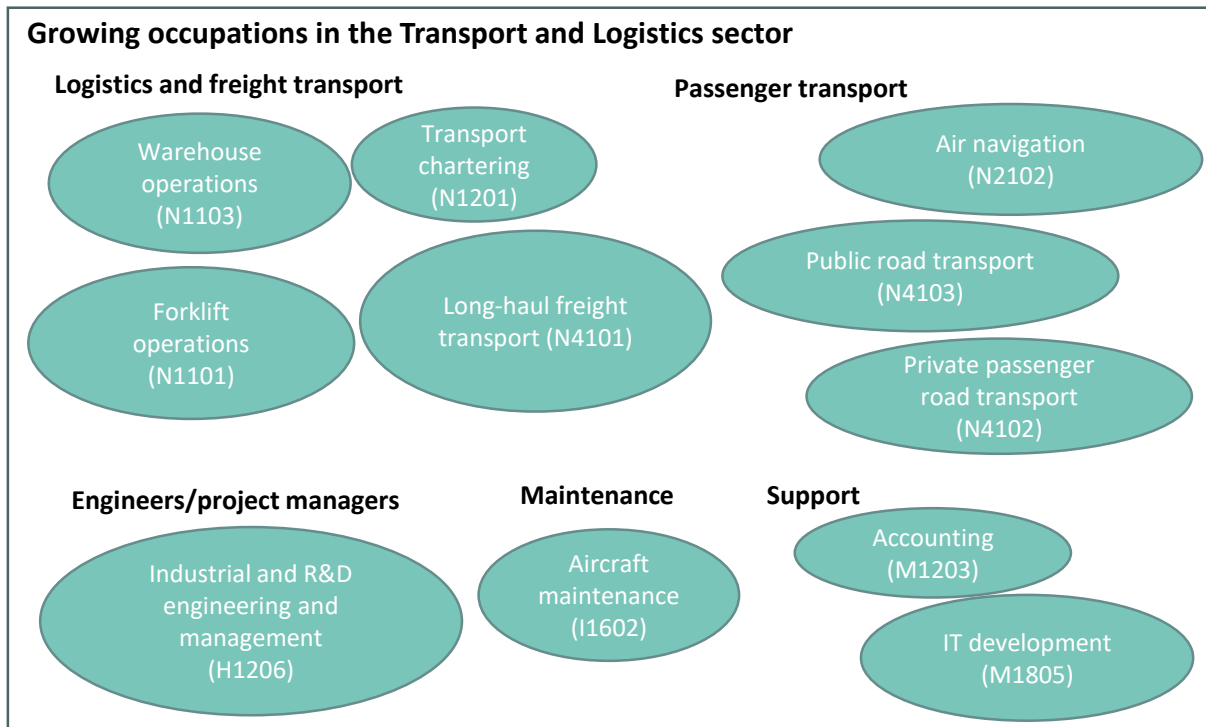
Note: the definitions of the occupations are available in Chapter 5 (ROME Glossary)

Source: job vacancies reported to ADEM

Growing occupations (1/4)

Following the analysis of the distribution, we consider the trends (growth, decline, emergence, stability) for the different occupations recruited by the Transport and Logistics sector, starting with growth.

The following illustration shows the 11 occupations for which a growth trend in demand from employers has been identified, based on the vacancies reported to ADEM.



Three indicators have been considered for this list:

1. the evolution of the occupation's proportional share among all the jobs declared by the sector;
2. the evolution of declared job positions between 2015 and 2019 (illustrated by the Trendline); to be noted that the year 2020 has been excluded from this analysis because of the particularities created by the pandemic;
3. the contribution to growth between 2016 and 2019, i.e. the rate by which the occupation contributed to the growth of all jobs reported by the sector between 2016 and 2019 (this indicator takes into account both the growth trend and the importance of this occupation to the sector).

The data for the three indicators is detailed below for the 11 occupations for which a growth trend has been identified (given that these conclusions are based on our own judgement, we share the data transparently, allowing the reader to draw their own conclusions).

The trend is also based on a view of the past (2015 - 2020 period) and does not take into account possible developments that could influence the trend in the future.

Growing occupations (2/4)

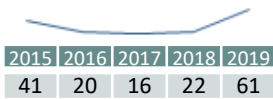
Logistics and freight transport

Warehouse operations (N1103)

Evolution of proportion in sector

2015	2016	2017	2018	2019	2020
4.15%	1.95%	1.28%	1.52%	4.82%	16.68%

Trendline ¹



Contribution to growth ²
+17.2%

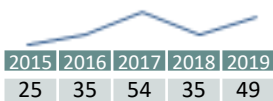
Warehouse staff have experienced growth, particularly in 2019 and 2020, in terms of job volumes (trendline) and proportional share compared to other occupations in this sector. This occupation has thus contributed strongly (17.2%) to the growth in jobs in the sector between 2016 and 2019. With the increase in online orders during the pandemic and the import of masks and disinfectants, the proportional share of this occupation has almost quadrupled in 2020.

Transport chartering (N1201)

Evolution of proportion in sector

2015	2016	2017	2018	2019	2020
2.53%	3.41%	4.31%	2.43%	3.87%	1.62%

Trendline ¹



Contribution to growth ²
+5.9%

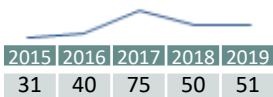
Demand for charterers, who organise the transport of goods by appropriate means of transport, was growing (but fluctuating) between 2015 and 2019, in terms of proportion and volume. This occupation has become much less representative in 2020.

Forklift operations (N1101)

Evolution of proportion in sector

2015	2016	2017	2018	2019	2020
3.13%	3.89%	5.99%	3.47%	4.03%	0.57%

Trendline ¹



Contribution to growth ²
+4.1%

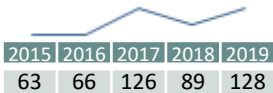
For forklift operators, who often work in large warehouses, there was a period of growth from 2015 to 2017, followed by a slight decline in 2018. The contribution to 2016/2019 growth remains positive. In contrast, this occupation declined in 2020 (potentially in the context of the pandemic, but also due to automation).

Long-haul freight transport (N4101)

Evolution of proportion in sector

2015	2016	2017	2018	2019	2020
6.37%	6.43%	10.06%	6.17%	10.11%	5.67%

Trendline ¹



Contribution to growth ²
+25.9%

Truck drivers contributed strongly (25.9%) to the growth in jobs reported by the sector between 2016 and 2019, due to their importance in the sector (page 17). They have been experiencing fluctuating growth since 2016, but were strongly impacted by the pandemic (border closures).

Source: job vacancies declared to ADEM, expertise of ADEM's employer advisors and the Cluster for Logistics and Groupement Transports

¹ Illustration of the evolution of the volumes of job positions declared between 2015 and 2019

² Contribution of the occupation to the growth of all job positions declared by the sector between 2016 and 2019

Growing occupations (3/4)

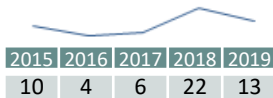
Engineers/project managers

Industrial and R&D engineering and management (H1206)

Evolution of proportion in sector

2015	2016	2017	2018	2019	2020
1.01%	0.39%	0.48%	1.52%	1.03%	1.30%

Trendline ¹



Contribution to growth ²

+3.8%

The demand for industrial engineers has been growing in the Transport and Logistics sector, particularly since 2017. As they do not account for much in terms of volume, they have contributed only slightly to the growth in positions in the sector.

Passenger transport

Public road transport (N4103)

Evolution of proportion in sector

2015	2016	2017	2018	2019	2020
5.26%	7.89%	5.19%	8.18%	6.87%	7.21%

Trendline ¹



Contribution to growth ²

+2.5%

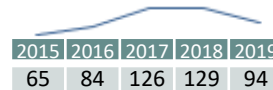
Bus drivers have gained in volume and proportion in the sector since 2015. It is likely that this occupation will continue to grow as the transport network expands in response to population growth and environmental challenges.

Private passenger road transport (N4102)

Evolution of proportion in sector

2015	2016	2017	2018	2019	2020
6.57%	8.18%	10.06%	8.94%	7.42%	6.32%

Trendline ¹



Contribution to growth ²

+4.2%

For private transport (taxi/shuttle) drivers, demand has also increased between 2015 and 2018, and remained fairly stable after that. The contribution to growth remains positive at 4.2%.

Air navigation (N2102)

Evolution of proportion in sector

2015	2016	2017	2018	2019	2020
0.51%	4.87%	1.52%	5.13%	5.21%	0.24%

Trendline ¹



Contribution to growth ²

+6.7%

The recruitment of pilots is done in vagues and often through other channels rather than through ADEM, which explains the fluctuations. However, a growth trend is apparent, although it was severely interrupted by the pandemic.

Source: job vacancies declared to ADEM, expertise of ADEM's employer advisors and the Cluster for Logistics and Groupement Transports

¹ Illustration of the evolution of the volumes of job positions declared between 2015 and 2019

² Contribution of the occupation to the growth of all job positions declared by the sector between 2016 and 2019

Growing occupations (4/4)

Maintenance

Aircraft maintenance (I1602)

Evolution of proportion in sector

2015	2016	2017	2018	2019	2020
1.92%	1.07%	2.72%	2.49%	1.58%	1.05%

Trendline ¹

2015	2016	2017	2018	2019
19	11	34	36	20

Contribution to growth ²

+3.8%

Demand for aircraft mechanics and technicians grew from 2016 to 2018, followed by a decline in 2019. The contribution to growth remains positive.

Support

Accounting (M1203)

Evolution of proportion in sector

2015	2016	2017	2018	2019	2020
1.82%	1.17%	1.44%	1.94%	2.05%	1.38%

Trendline ¹

2015	2016	2017	2018	2019
18	12	18	28	26

Contribution to growth ²

+5.9%

Demand for accountants in Transport and Logistics companies has also grown from 2016 to 2019, contributing 5.9% to the growth in jobs in the sector over this period.

IT development (M1805)

Evolution of proportion in sector

2015	2016	2017	2018	2019	2020
1.11%	1.17%	0.96%	1.18%	1.34%	2.83%

Trendline ¹

2015	2016	2017	2018	2019
11	12	12	17	17

Contribution to growth ²

+2.1%

More recently, IT developers have also experienced strong growth in demand – this in the context of the 'smart mobility' vision (see page 12). In 2020, they have strongly increased in proportion compared to other professions in the sector, which were more affected by the pandemic.

Source: job vacancies declared to ADEM, expertise of ADEM's employer advisors and the Cluster for Logistics and Groupement Transports

¹ Illustration of the evolution of the volumes of job positions declared between 2015 and 2019

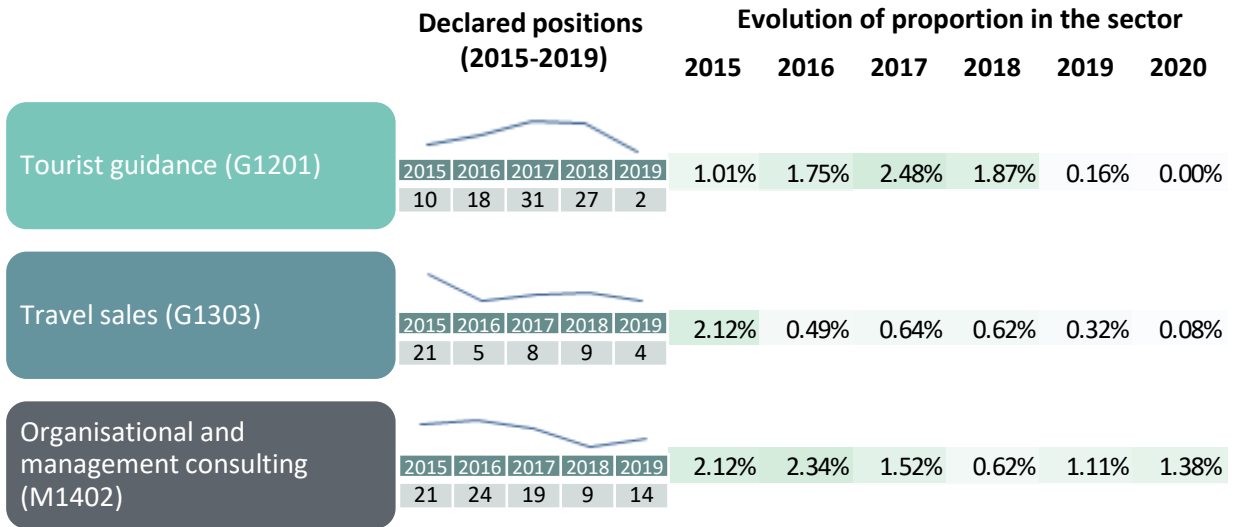
² Contribution of the occupation to the growth of all job positions declared by the sector between 2016 and 2019

Declining occupations

In the Transport and Logistics sector, few occupations show a clear decline.

Some, such as tourist guides and travel sales agents, have reached volumes and proportions of almost 0 in 2020 in the context of the pandemic, but were already declining before that.

For (organisational) project managers, the decline can be explained by a trend of outsourcing such roles to external consultants.



Source: job vacancies declared to ADEM, expertise of ADEM's employer advisors and the Cluster for Logistics and Groupement Transports

Emerging occupations

As for emerging occupations, i.e. occupations which were not or hardly in demand in the sector 5 years ago but which are beginning to appear/increase in job vacancies, our data provides some leads.

The following illustration shows some of the occupations that have emerged in the Transport and Logistics sector job vacancies: experts in industrial/logistics process methods (including supply chain managers), road maintenance and monitoring officers, building maintenance workers (for example at the airport or warehouses), electricians, janitors (a role that differs somewhat from security guards, who are more outsourced to external service providers), as well as IT experts.

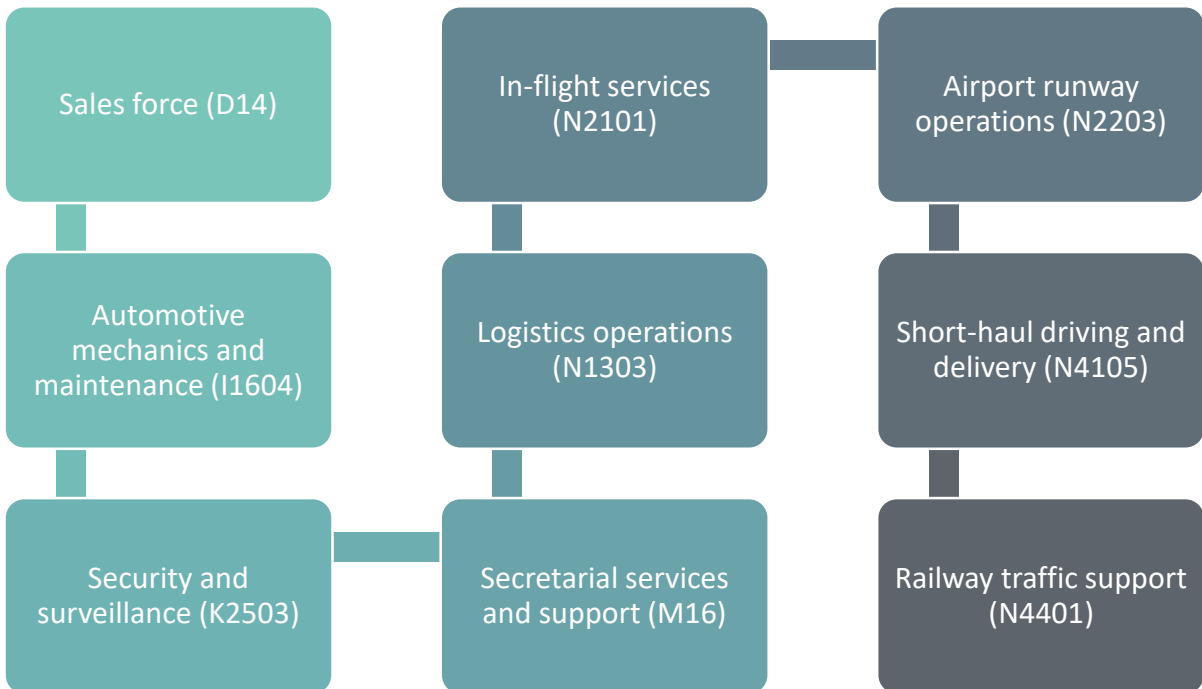
	Declared positions					
	2015	2016	2017	2018	2019	2020
Industrial process methods (H14)	3	1	6	7	19	4
Road maintenance and monitoring (I1202)				4	2	11
Building maintenance (I1203)	2	1	2	3	21	34
Electrical maintenance (I1309)	2	2	8	5	14	26
Janitorial services (K2501)			1	6	4	3
IT consulting and contracting (M1806)	1	4	4	9	4	7

It should be noted that this quantitative analysis remains limited and does not necessarily capture all the trends, partially because it is restricted to the existing ROME codes which do not always include newer occupations. We therefore added a qualitative dimension to the analysis, based on exchanges with the sector experts (Cluster for Logistics and Groupement Transport). As a result, other emerging occupations/functions are to be added, such as process methods engineers (H1206 & H1401), data analysts and artificial intelligence specialists (M1805) and purchasing specialists (M1101).

Occupations with no particular trend

For other (significant) occupations in the sector, no particular trend has been identified over the 2015 - 2019 period, i.e., declared job positions were fairly stable or fluctuated too much to identify a clear trend.

This is the case for the occupations below.



Source: job vacancies declared to ADEM

Impact of the pandemic on occupations

The Covid-19 pandemic has certainly had an impact on the Transport and Logistics sector, with some occupations being more affected than others.

The illustration below shows the occupations with the largest declines in job volumes and proportional share between 2019 and 2020 (but we have excluded occupations that were already declining before 2020). The declines may be linked to the pandemic, but this cannot be said with certainty. Demand for security staff, for example, has declined in this sector due to the outsourcing of this role to external security agencies (overall/cross-sector, the demand for this occupation increased in 2020). Air transport occupations (pilots, service staff, runway operations, etc.) were clearly strongly impacted.

	Declared positions		Comparison of proportion in 2020 with 2019
	2019	2020	
Security and surveillance (K2503)	39	5	-86.86%
Forklift operations (N1101)	51	7	-85.93%
Transport chartering (N1201)	49	20	-58.16%
In-flight services (N2101)	13		-100.00%
Air navigation (N2102)	66	3	-95.34%
Airport runway operations (N2203)	45	2	-95.44%
Long-haul freight transport (N4101)	128	70	-43.94%

Other occupations experienced the opposite, i.e. an exceptional increase in demand in 2020:

	Declared positions		Comparison of proportion in 2020 with 2019
	2019	2020	
Compliance inspection (H1301)	4	6	53.77%
Industrial Health Safety Environment - HSE - management and engineering (H1302)	2	9	361.30%
Road maintenance and monitoring (I1202)	2	11	463.81%
Building maintenance (I1203)	21	34	65.97%
Electrical maintenance (I1309)	14	26	90.38%
Legal advice (K1903)	5	8	64.02%
Information systems administration (M1801)	9	14	59.46%
IT development (M1805)	17	35	111.05%
Warehouse operations (N1103)	61	206	246.18%
Railway transport (N4301)	7	41	500.42%
Railway traffic support (N4401)	4	87	2129.60%

Note: this is an anomaly because recruitment for this occupation occurs in vagues and fluctuates every year.

Occupations with the greatest shortage of candidates (1/2)

After analysing the growth trends, we now focus on the shortage level for the various occupations recruited in the Transport and Logistics sector. To assess the degree of shortage, three indicators are taken into account for the 2018 - 2020 period:

1. the average number of matches (= definitive proposals of candidates by ADEM advisors) made per declared position;
2. the rate of declared job vacancies to which no suitable candidates (among the available jobseekers) could be proposed;
3. A direct comparison between registered jobseekers registered under this specific occupation (candidates) and the number of positions reported for the occupation (across all sectors).

Example	Average matches/position (18-20)	Rate of unmatched vacancies (18-20)	Candidates/position (18-20)
	0.7	26%	0.6

These three indicators provide a complementary perspective on the level of shortage. The candidates/position comparison shows how many jobseekers are theoretically looking for a job in this occupation compared to the number of declared positions (an indicator below 1 indicates a basic lack of hypothetical candidates for the occupation). On the other hand, the average of the matches and the rate of unmatched vacancies give an indication of the (mis-)match of qualifications/skills between positions and candidates.

Occupations that are not significant in the sector at all (i.e. very few declared positions) are excluded from the shortage analysis.

The occupations for which the degree of shortage appears to be strongest (based on the three indicators: very few matches on average, high rate of unmatched vacancies, candidates/position < 1) are listed on the following page.

They include planning professions (engineers, project managers, supply chain managers, etc.), aviation professions (aircraft mechanics, pilots, etc.), railway professions (train drivers, traffic support officers, etc.) and IT professionals.

(Other occupations may also be experiencing labour shortages, but the list of occupations on the next page is limited to those that appear to be most affected).

Occupations with the greatest shortage of candidates (2/2)

	Average matches/position (18-20)	Rate of unmatched vacancies (18-20)	Candidates/position (18-20)
Industrial and R&D engineering and management (H1206)	1.0	49%	0.6
Supply chain and procurement management (H1401)	0.7	79%	0.9
Aircraft maintenance (I1602)	0.7	65%	0.4
IT development (M1805)	1.5	38%	0.3
Air navigation (N2102)	0.4	29%	0.6
Railway transport (N4301)	0.5	33%	0.1
Railway traffic support (N4401)	0.3	38%	0.1
Long-haul freight transport (N4101)	2.6	17%	1.2

It can be noted that the shortage of truck drivers (long-haul freight transport, N4101) does not appear as severe as for other occupations based on these indicators. This is due to the fact that this occupation is often recruited from abroad, and the positions are therefor not necessarily declared to ADEM. However, based on feedback from industry representatives, this is an occupation in serious shortage of candidates and we have therefore included it.

Attention: there might still be a skills shortage

Occupations with a surplus of candidates

In contrast, some occupations have a surplus of candidates, i.e. more jobseekers are registered for the occupation than there are declared positions.

This does not mean that employers do not experience shortages in these occupations. A surplus of candidates that theoretically fit the vacancy does not exclude a shortage in terms of skills, and employers may still have difficulty finding "the right candidate".

Occupations with a surplus of candidates (as well as a rather high average matches/position rate and a lower rate of unmatched vacancies) are listed below.

These are occupations that require fewer specialised skills, such as reception, administrative and short-haul delivery professions.

	Average matches/position (18-20)	Rate of unmatched vacancies (18-20)	Candidates/position (18-20)
Reception activities (M1601)	3.6	15%	3.9
Administrative operations (M1602)	7.7	9%	4.3
Secretarial services (M1607)	9.0	4%	1.7
Private passenger road transport (N4102)	5.9	1%	2.8
Short-haul driving and delivery (N4105)	8.5	4%	3.4

Conclusion of the occupation-level analysis (1/2)

On the basis of the preceding analysis, we are now able to draw some cautious conclusions on which occupations should be given priority in career guidance, initial and continuous training and talent attraction. This also provides a framework for identifying the target groups to whom training and guidance for upskilling and reskilling should be offered in priority. These conclusions are based on the trend (growth, decline, stability, emergence) and the level of shortage identified for the occupation. Since these are strictly based on the past however (2015-2020), it is useful to add a third, more future-oriented dimension: the risk of automation of the occupation.

This indicator is here based on a study conducted by researchers at Oxford University¹, which estimated (in 2017) the risk of automation for 702 different occupations (according to the SOC benchmark, used in Anglo-Saxon countries). The method of this study and the results are certainly debatable, but it is still the most comprehensive and granular analysis of the automation risks for such a variety of occupations. To use this study, we have therefore linked our ROME occupations to the closest SOC occupation. Given the limitations of this study, we have not used the precise figure for the risk of automation but rather a classification (high, low, moderate, etc.), which should only give an indication of the potential future evolution of the occupation.

Priority occupations

The following occupations, which - on the basis of our analysis - are experiencing a shortage and/or a growth trend, and are not too strongly under risk of automation in the near future, can be considered as priority occupations in career guidance, training (initial and continuous) and talent attraction.

Occupations	Positions 2018-2020	Trend	Shortage	Risk of automation ¹
H1206 - Industrial and R&D engineering and management	51	growth	shortage	low
H1401 - Supply chain and procurement management	19	emergence	shortage	moderate
I1602 - Aircraft maintenance	69	growth	shortage	moderate
M1805 - IT development	69	growth	shortage	low
N4101 - Long-haul freight transport	287	growth	shortage	moderate
N4103 - Public road transport	294	growth	balanced	moderate

Note: The profession of pilots was also both growing in demand and in strong shortage, but was excluded from the list of priority occupations due to the substantial impact of the pandemic.

¹ Frey, C.B., Osborne, M. (2017): The future of employment: How susceptible are jobs to computerisation? FACILITONS L'EMPLOI Technological Forecasting and Social Change, Volume 114.

Conclusion of the occupation-level analysis (2/2)

Priority target groups (for upskilling and reskilling)

The following occupations are, based on the data, experiencing a surplus of candidates, a risk of automation and/or a downward trend. Candidates working in these occupations or originating from them (in the case of jobseekers) can be targeted as priority groups in training and guidance for upskilling or reskilling trajectories. The last column of the table provides some examples of potential upskilling/reskilling trajectories. These remain purely indicative and should be evaluated and developed further with the social partners.

Occupations	Trend	Shortage	Risk of automation ¹	Upskilling/reskilling trajectories
M1601 - Reception activities	stability	surplus	high	D1401 - Commercial assistance, N2101 - In-flight services
M1602 - Administrative operations	stability	surplus	high	H1403 - Supply chain and procurement support operations, M1605 - Technical assistance, M1101 - Purchasing
M1607 - Secretarial services	stability	surplus	high	D1401 - Commercial assistance, M1605 - Technical assistance
N4102 - Private passenger road transport	growth	surplus	rather high	N4103 - Public road transport, N4101 - Long-haul freight transport
N4105 - Short-haul driving and delivery	stability	surplus	moderate	N4101 - Long-haul freight transport

¹ Frey, C.B., Osborne, M. (2017): The future of employment: How susceptible are jobs to computerisation? Technological Forecasting and Social Change, Volume 114. FACILITONS L'EMPLOI

4. Skills-level analysis



Skills-level analysis: method

The job vacancies declared to ADEM contain a wealth of information regarding skills required by Luxembourg-based companies. This information exists mainly in an unstructured format (as job descriptions). The only structured data that exists in a comprehensive and reliable way are the languages and level of experience required.

In order to make use of this unstructured data, ADEM decided to collaborate with an external provider (based in Europe) who has developed a text mining (automated text analysis) approach to extract structured data on the skills mentioned in the job vacancy descriptions. This model is widely used by the European Commission in its Skills-OVATE project and has proven to be sufficiently reliable for this type of analysis.

However, it should be noted that text mining techniques are still in a development phase and may generate errors or miss certain information. A distinct advantage is the ability to analyse large volumes of text in a very short amount of time and at a low cost.

The model also works in different European languages (English, French, German...).

In May 2021, ADEM shared the descriptions of 142,000 job offers (years 2015 - 2021¹) with the provider and obtained the results in June 2021. 1.28 million mentions of specific skills were identified in these job offers.

For a majority of the identified skills, the service provider has made the link with the ESCO skills reference framework. This makes it possible to analyse the skills according to a hierarchy of granularity and different categories (Attitudes & Values, Skills, Knowledge). The ESCO hierarchy

also has some limitations (e.g. overlaps between attitudes & values and skills & knowledge, hierarchy choices that are sometimes difficult to understand...) but has the advantage of being a granular and internationally recognised reference framework.

Language skills are excluded from the text mining analysis because ADEM possesses structured (more reliable) data on languages that was analysed separately.

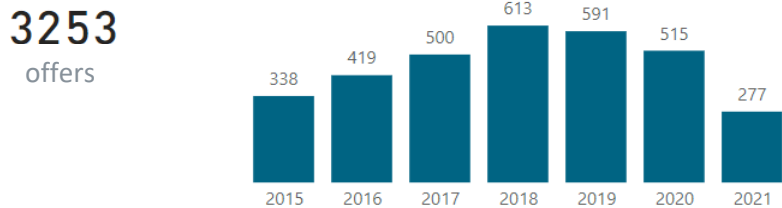
The results give an indication of the skills in demand by Luxembourg-based companies, by sector (NACE) and by occupation (ROME), as well as the evolution of this demand over time. It should be noted, however, that a job vacancy advertisement does not necessarily provide a complete picture of the skills that are actually required to perform a job: it is often written in a particular way to appear more attractive and therefore rarely includes the less "marketable" skills (e.g. stress management) nor the more technical skills of the job which might appear obvious.

While this data will be used for more in-depth analysis, ADEM takes advantage of these sectoral studies to give a first overview of the skills advertised by the sector and for some key occupations in this particular sector (as well as trends in the evolution).

¹ The year 2021 includes data until the end of April

Skills-level analysis: Transport and Logistics

Among the 13,875 job vacancies declared to ADEM (2015 - April 2021) by employers in the Transport and Logistics sector and including at least a minor job vacancy description, only included explicitly mentioned skills (identifiable by text mining). The following graph shows the distribution of these offers over the years.



It should be noted that in the Commerce sector, the rate of job offers without (identifiable) skills information is higher than for other sectors.

Among these 3,253 job vacancies that showed results, we can specify to what degree a specific skill or a category of skills has been identified (at least once).

The graph below shows these rates according to the different categories of the ESCO classification (at their highest hierarchy level (ESCO 0):

- **Attitudes and values:** in 75% of the job vacancies at least one mention of *attitude* or *value* was identified
- **Knowledge:** the overall rate of vacancies in which at least one mention of a specific *knowledge* has been identified is around 74%.
- **Skills:** the overall rate of vacancies in which at least one mention of a specific *skill* has been identified is around 81%.
- There remain 5% of vacancies in which a skill has been identified that was not linked to the ESCO framework (this data is excluded from the analysis hereafter).

For all three categories, the requirements have fluctuated, but those relating to *knowledge* and *skills* have generally gained in importance.

ESCO 0	2015	2016	2017	2018	2019	2020	2021	Total
⊕	4%	5%	4%	5%	3%	6%	6%	5%
⊕ attitudes and values	80%	78%	73%	70%	74%	76%	77%	75%
⊕ knowledge	70%	76%	72%	71%	76%	75%	81%	74%
⊕ skills	81%	84%	79%	80%	80%	82%	87%	81%

The remainder of this chapter presents the most in-demand skills (distinguishing between "attitudes & values" and "skills & knowledge") mentioned in the job vacancies of the Transport and Logistics and for some key occupations within the sector (as well as the trends in their evolution).

Most in-demand attitudes & values in the Transport and Logistics sector

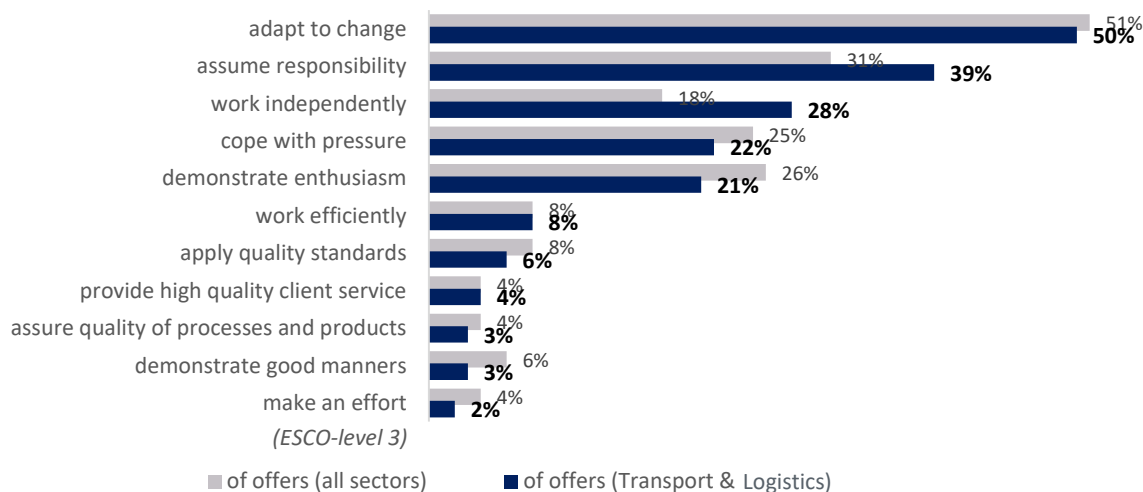
The graph below presents the attitudes and values that are the most in demand in job vacancies declared by employers in the Transport and Logistics sector over the 2015 - 2021 (until April) period. These skills are captured at the ESCO level 3 and the definitions can be found on the classification's [website](#).

The graph shows, in blue, the percentage of job offers in the Transport and Logistics sector in which the skill was mentioned and, in grey, the percentage of all job offers (across all sectors) in which the skill was mentioned.

The most in-demand value/attitude was adapting to change (which is the case for the majority of sectors), with half of the job descriptions mentioning it. Assuming responsibility and working independently were in greater demand than for other sectors on average, while the other attitudes and values were slightly less in demand.

Top attitudes & values (2015 - 2021)

Transport and Logistics sector

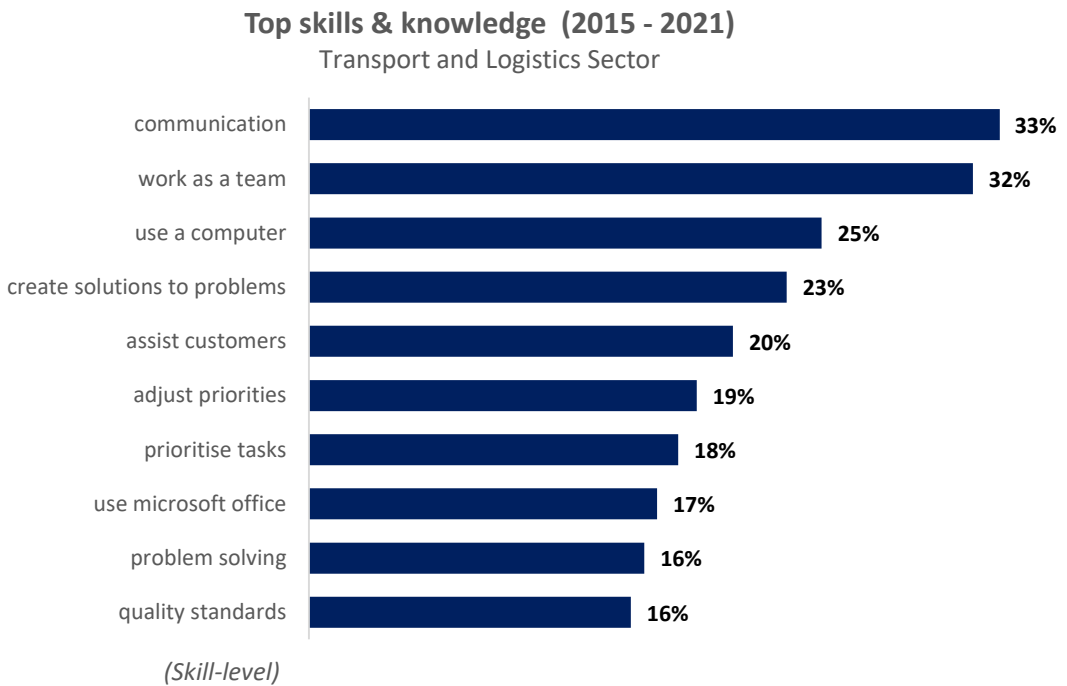


As for the evolution, we observe an increase in demand for assuming responsibility, working independently, demonstrating enthusiasm (= motivation) and professionalism (demonstrating good manners).

Evolution of top attitudes & values	Year						
	2015	2016	2017	2018	2019	2020	2021
adapt to change	54%	49%	49%	48%	50%	52%	52%
assume responsibility	41%	39%	37%	36%	39%	42%	45%
work independently	24%	27%	25%	31%	29%	28%	28%
cope with pressure	23%	25%	27%	22%	21%	19%	19%
demonstrate enthusiasm	20%	17%	21%	21%	23%	22%	23%
work efficiently	6%	8%	9%	8%	7%	9%	9%
apply quality standards	7%	8%	8%	4%	4%	5%	4%
provide high quality client service	5%	4%	5%	4%	3%	1%	4%
assure quality of processes and products	5%	4%	4%	2%	2%	3%	1%
demonstrate good manners	3%	3%	1%	1%	3%	4%	6%
make an effort	4%	1%	2%	2%	2%	3%	1%

The most in-demand skills & knowledge in the Transport & Logistics sector (1/2)

Skills and knowledge are captured at the most granular level of the ESCO. In the Transport and Logistics sector, personal skills (communication, teamwork, problem-solving, priority management) and digital skills (using a computer, using microsoft office) are mentioned most frequently. Quality standards are also important. Technical skills, on the other hand, vary strongly between jobs and do therefore not feature in the top skills & knowledge.



The evolution shows a general growth in demand for the majority of these skills since 2015. Computer use and problem solving have particularly increased in importance.

		2015	2016	2017	2018	2019	2020	2021
<u>Evolution of top skills & knowledge</u>	communication	32%	33%	36%	34%	33%	31%	32%
	work as a team	33%	29%	31%	31%	31%	35%	35%
	use a computer	17%	24%	22%	21%	26%	29%	34%
	create solutions to problems	20%	21%	22%	21%	23%	28%	27%
	assist customers	23%	24%	24%	22%	17%	15%	21%
	adjust priorities	14%	19%	21%	18%	20%	19%	19%
	prioritise tasks	14%	19%	20%	17%	19%	18%	18%
	use microsoft office	15%	18%	15%	15%	16%	17%	24%
	problem solving	15%	14%	17%	14%	17%	18%	19%
	quality standards	18%	16%	17%	14%	13%	17%	14%

Most in-demand skills & knowledge in the Transport & Logistics sector (2/2)

In addition to the top skills mentioned on the previous page, others can be identified as emerging skills (having a growth trend, but still not very significant in volume).

Emerging skills

	2015	2016	2017	2018	2019	2020	2021
Personal skills							
analyse problems for opportunities	3%	4%	4%	5%	5%	6%	8%
develop creative ideas	6%	5%	5%	7%	7%	9%	7%
manage time	9%	10%	8%	8%	9%	11%	11%
Interpersonal skills							
lead a team	6%	6%	5%	7%	5%	9%	11%
be attentive	1%	0%	1%	2%	2%	5%	5%
use positive language	2%	2%	10%	12%	13%	15%	13%
Digital skills							
business ICT systems	1%	1%	2%	1%	1%	3%	3%
administer ICT system	1%	2%	1%	1%	1%	3%	3%
computer programming	1%	2%	1%	3%	1%	4%	5%
integrated development			1%	1%	2%	3%	3%
SQL	1%	1%	1%	1%	1%	2%	3%
database	1%	2%	2%	2%	2%	3%	3%
process data	0%	2%	2%	3%	2%	2%	3%
use spreadsheets	8%	10%	8%	9%	9%	9%	15%
office software	7%	13%	11%	9%	14%	12%	17%
Technical skills							
maintenance and repair	2%	3%	3%	3%	3%	3%	7%
mechanics	1%	1%	1%	1%	1%	2%	3%
engine components	1%	1%	1%	1%	1%	1%	3%
technical drawings	1%	1%	1%	0%	1%	1%	3%
Management skills							
project management	5%	7%	5%	6%	6%	14%	10%
cost management	3%	3%	3%	2%	4%	3%	5%
Marketing skills							
digital marketing techniques		0%	1%	1%	2%	1%	2%
social media marketing techniques	1%	2%	1%	1%	2%	2%	3%

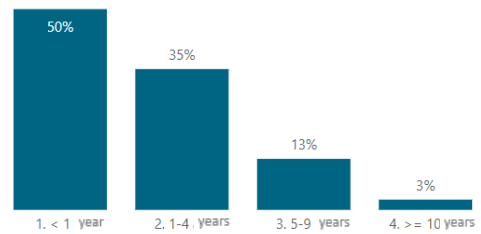
Languages and experience required in the Transport and Logistics sector

Alongside the unstructured data extracted by text mining, the job vacancies also include structured data on the languages and years of experience required for the position. This data is analysed hereafter based on the 3,253 vacancies taken into account (2015 - April 2021).

Experience requirements (2015-2021)



Duration of required experience (2015-2021)



In the Transport and Logistics sector, half of the job offers (51%) have explicitly required experience. Of these, most require little experience (< 1 year) (50%) or a short experience of 1 to 4 years (35%). 13% of vacancies ask for experience of 5 to 9 years and only 3% require experience ≥ 10 years. These expectations have increased over the 2015-2021 period: Looking only at the offers from the past two years, 55% of them required experience, of which only 46% required experience < 1 year).

Language proficiency is structured according to the [CEFR](#) (Common European Framework of Reference for languages) levels, which captures the requirements for the three official languages (Luxembourgish, French and German) as well as English.

French is the most in-demand language in the sector. 77% of the offers require knowledge of French (33% even require a C-level, i.e. "proficient user"). 9% consider it an asset and 14% do not require it at all.

English is compulsory in 63% of the offers, German in 57% and Luxembourgish in 34%.

Language requirements are therefore quite high in this sector.

Language requirements (2015-2021)

Luxembourgish	A	B	C	Total
0. None	45%			45%
1. Asset		7%	11%	21%
2. Compulsory		4%	20%	34%
Total	45%	11%	31%	100%

French	A	B	C	Total
0. None	14%			14%
1. Asset		2%	5%	9%
2. Compulsory		6%	38%	77%
Total	14%	8%	43%	100%

English	A	B	C	Total
0. None	28%			28%
1. Asset		2%	5%	8%
2. Compulsory		4%	30%	63%
Total	28%	7%	35%	100%

German	A	B	C	Total
0. None	27%			27%
1. Asset		6%	8%	16%
2. Compulsory		5%	31%	57%
Total	27%	11%	39%	100%

Skills profiles of several key occupations (1/3)

Supply chain and procurement management (H1401)

The supply chain management occupation was identified as a growing occupation with a shortage of candidates (see page 29).

Top skills

In general, the demand for attitudes/values is considerably higher for this occupation than for the sector as a whole. Adapting to change, assuming responsibility and coping with pressure are the most in-demand ones.

In terms of skills & knowledge, communication skills were identified for three quarters of the declared vacancies. This was followed by problem solving, teamwork, computer/software use and managing priorities.

Growing skills

For the skills below, a growth trend has been identified.

	2015	2016	2017	2018	2019	2020	2021	
Job-specific skills	purchase raw material supplies	13%	17%	25%	21%	24%	29%	47%
	maintain relationship with suppliers	13%	13%	21%	16%	8%	15%	27%
	quality standards	9%	13%	29%	32%	29%	51%	33%
Personal skills	cope with pressure	53%	46%	58%	37%	47%	67%	80%
	meet commitments	59%	50%	50%	63%	84%	96%	82%
	solving problems	47%	42%	38%	32%	45%	60%	60%
	work independently	16%	13%	8%	11%	24%	18%	38%
	demonstrate enthusiasm	38%	21%	25%	21%	53%	44%	67%
Interpersonal skills	prioritise tasks	19%	33%	25%	42%	34%	45%	51%
	develop creative ideas	31%	17%	29%	26%	18%	40%	42%
	communication	72%	42%	58%	63%	63%	82%	96%
	work as a team	13%	21%	42%	32%	42%	73%	69%
	assist customers	9%	8%	13%	16%	16%	45%	38%

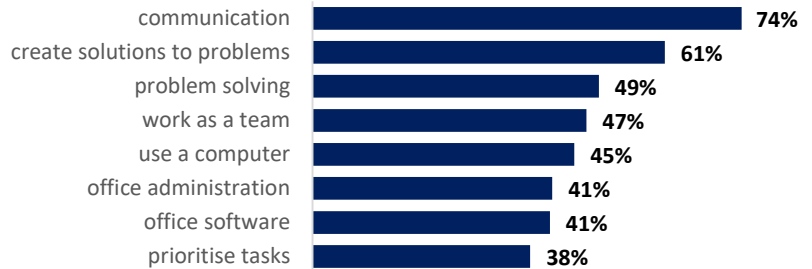
Top attitudes & values (2015 - 2021)

Supply chain and procurement management (H1401)



Top skills & knowledge (2015-2021)

Supply chain and procurement management (H1401)



Skills profiles of several key occupations (2/3)

Aircraft maintenance (I1602)

Aircraft mechanics and technicians are another growing occupation with a shortage of candidates (see page 29).

Top skills

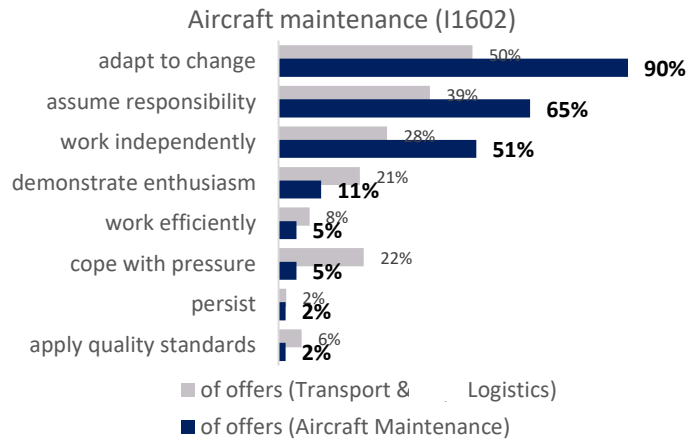
Here, adapting to change, assuming responsibility and working independently stand out as the most frequently required values/attitudes, much more so than for the sector average.

In terms of skills and knowledge, interpersonal skills, such as teamwork and communication, as well as assertiveness and the ability to lead others were most in-demand. In order to work in these occupations, one must also be able to apply quality standards and willing to work in shifts.

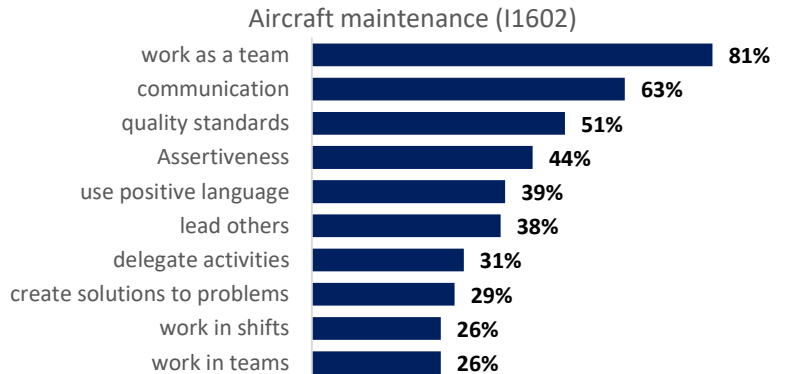
Growing skills

For the skills below, a growth trend or an emergence has been identified.

Top attitudes & values (2015 - 2021)



Top skills & knowledge (2015 - 2021)



		2015	2016	2017	2018	2019	2020	2021
Job-specific skills	composite materials				13%	7%	7%	14%
	assume responsibility	53%	55%	57%	70%	64%	80%	86%
Personal skills	develop creative ideas	12%	9%	5%	39%	43%	47%	14%
	persist						7%	14%
Organisational skills	meet commitments	53%	55%	57%	70%	64%	80%	86%
	prioritise tasks	6%	18%	5%	17%	14%	53%	29%
Service skills	assist customers		9%				13%	29%
	be attentive					7%	7%	14%

Skills profiles of several key occupations (3/3)

Long-haul freight transport (N4101)

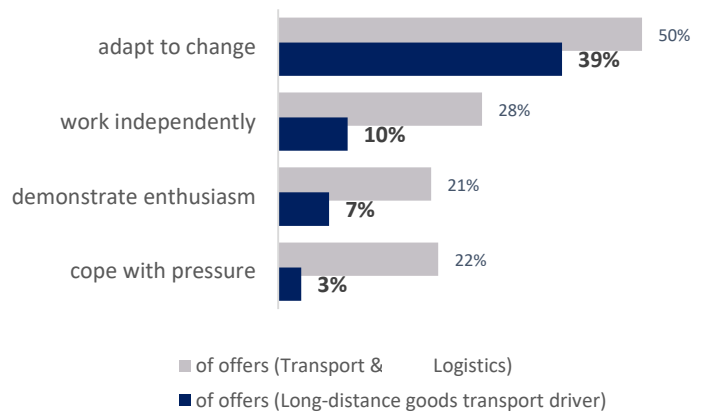
Another occupation that should be prioritised, with both growth and shortage (see p.29), is that of truck drivers.

Top skills

Only four values/attitudes emerge from the data (adapting to change, working independently, enthusiasm and coping with pressure) and these were still less required than for the sector in general.

Top attitudes & values (2015-2021)

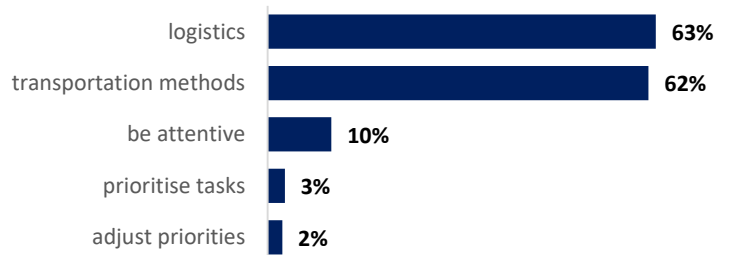
Long-haul freight transport (N4101)



In terms of skills and knowledge, we note job-specific skills such as logistics knowledge, transportation methods knowledge, but also the ability to be attentive and to manage priorities.

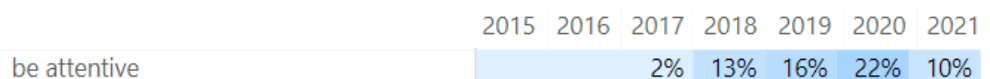
Top skills & knowledge (2015 - 2021)

Long-haul freight transport (N4101)



Growing skills

The only skill that clearly grew over the period was the ability to "be attentive".



Conclusion of the skills-level analysis

The text mining approach has enabled us to transform unstructured text into structured data that can be put to use. Although a job advertisement generally does not provide a complete image of the skills actually required to do a job, it contains insightful information on what skills the employers in Luxembourg decide to put on the forefront. Given that a job advertisement is often a projection of the company into the near future, it also provides insights into future requirements.

Based on the analysis in this chapter, we can observe that many of the skills have gained in importance over the considered timeframe in the Transport and Logistics sector.

Personal/interpersonal and digital skills stand out as particularly in-demand, and to a lesser extent also skills specific to the occupation or to the sector. It is important to note that in our analysis, job-specific skills are probably underestimated compared to transversal skills, both because the text mining model finds it easier to identify transversal skills that appear more often in general and because job advertisements tend to mention transversal skills more often whereas job-specific skills might be considered an obvious requirement for a specific job.

These results of our skill-level analysis can be used to enrich the current training offer in Luxembourg, for example by integrating more transversal skills into the various existing trainings.

However, for the reasons mentioned above, these results need to be complemented by other analytical methods and with qualitative input from experts on the different occupations.

The results will also enable employers in the sector to reflect on the role of these skills in their company, and jobseekers to position themselves during the job application process (CV, cover letter, job interview) in relation to these skills.

5. Glossary of ROME occupations



Glossary of ROME occupations

This glossary aims to facilitate the understanding of all ROME labels used in the document. It includes, per ROME occupation, examples of functions (“appellations” in the ROME terminology) as well as a definition. The [ADEM website](#) enables the user to search for all ROME occupations and to find further details, such as typical activities and required skills. The ROME code in the table refers directly to the ROME page for that occupation.

Code	Occupation	Functions	Definition
D14 - Sales force	Occupational group, covering:		
		<ul style="list-style-type: none"> • D1401 - Commercial assistance • D1402 - Commercial relations with professional clients • D1403 - Commercial relations with private individuals • D1404 - Commercial relations in vehicle sales • D1406 - Sales force management • D1407 - Technical-commercial relations • D1408 - Telesupport and telesales 	
G1201	Tourist guidance	<ul style="list-style-type: none"> • Tourist guide 	Accompanies people on sightseeing tours or visits to help them discover sites (geographical, historical, cultural, etc.), in accordance with the rules of safety of goods and people. May lead conferences. May accompany on sports activities (horseback riding, climbing, etc.).
G1303	Travel sales	<ul style="list-style-type: none"> • Travel agent • Travel counsellor 	Informs and advises customers on tourism products (travel, rentals, services, etc.) and carries out all or part of the sales operations (reservations, issuing of transport tickets, administrative follow-up, etc.), according to the commercial objectives of the organisation. Can put together a tourist offer on request. May carry out telephone sales. May coordinate a team.

Code	Occupation	Functions	Definition
H1206	Industrial and R&D engineering and management	<ul style="list-style-type: none"> • Research and development manager in industry • Industrial studies manager • Industrial engineer • ... 	Designs and finalises new products or new technologies. Develops existing ones, with the aim of commercial development and innovation in an industrial environment. Defines the means, methods and techniques for developing and implementing research results. May supervise and coordinate a project, a team, a service or a department.
H1301	Compliance inspection	<ul style="list-style-type: none"> • Compliance inspector • Compliance technician 	Carries out technical and normative checks and inspections with the aim of monitoring, ensuring regulatory compliance and reliability of equipment, materials, industrial installations and public buildings. May coordinate a team.
H1302	Industrial Health Safety Environment -HSE- management and engineering	<ul style="list-style-type: none"> • Occupational health and safety officer • Health and safety engineer in industry 	Defines the safety policy (safety at work, working conditions, environmental protection), implements it and monitors it in accordance with Health, Safety and Environmental standards and regulations. May coordinate a team. May manage a department.
H14 - Industrial process methods	Occupationnel group, covering: <ul style="list-style-type: none"> • H1401 – Supply chain and procurement management • H1402 – Industrial process management • H1403 – Supply chain and procurement support operations • H1404 – Industrial process support 		
H1401	Supply chain and procurement management	<ul style="list-style-type: none"> • Head of manufacturing planning • Manufacturing production planner • Manufacturing scheduler-launcher-planner 	Organises and supervises the scheduling, planning and management of production, with the aim of optimising and coordinating the flow of products and information, in accordance with the needs and requirements of costs, deadlines and quality. May lead a team or department and manage the budget.

Code	Occupation	Functions	Definition
<u>I1202</u>	Road maintenance and monitoring	<ul style="list-style-type: none"> • Road maintenance worker 	Monitors the viability (condition, cleanliness, safety, etc.) of the road network and equipment. Carries out safety and maintenance work in accordance with safety rules and operating requirements (flow, traffic, etc.). May coordinate the activity of a team.
<u>I1203</u>	Building maintenance	<ul style="list-style-type: none"> • Building maintenance worker • Building maintenance technician • Fire extinguisher installer 	Carries out the maintenance and upkeep of public buildings and spaces (communal premises, hospitals, retirement homes, schools, office premises, etc.) in accordance with safety regulations. May manage the supply of equipment and consumable goods.
<u>I1309</u>	Electrical maintenance	<ul style="list-style-type: none"> • Maintenance electrician • ... 	Carries out preventive or corrective maintenance on electrical equipment or installations, based on electrical diagrams or layout plans, in accordance with safety rules and regulations. May carry out installation or modification operations on electrical equipment. May coordinate a team.
<u>I1602</u>	Aircraft maintenance	<ul style="list-style-type: none"> • Aircraft maintenance mechanic • Aircraft maintenance technician 	Carries out maintenance, inspection and preventive and corrective maintenance on aircrafts in accordance with inspection protocols and aviation regulations. May carry out inspections during layover and major maintenance operations. May coordinate a team.

Code	Occupation	Functions	Definition
I1604	Automotive mechanics and maintenance	<ul style="list-style-type: none"> • Car mechanic • Car repairman / towing service • Truck mechanic • Automotive electrician • Automotive technical expert • Garage owner • Car washer • ... 	Carries out repairs, overhauls and periodic inspections of private or industrial motor vehicles in accordance with safety rules and regulations. May carry out breakdown repairwork and road tests of vehicles. May coordinate a team.
K1903	Legal advice	<ul style="list-style-type: none"> • Lawyer • Tax specialist • Head of legal department 	Advises and informs natural or legal persons in legal and judicial matters, draws up legal documents and manages litigation. May orally present the defence of clients during pleadings, may ensure the legal security of companies. May train people in his/her speciality and keep them up to date by monitoring information.
K2501	Janitorial services	<ul style="list-style-type: none"> • Janitor • Guardian of premises 	Welcomes and provides information to the public, visitors and users of premises (buildings, establishments, premises, etc.) and monitors access, surroundings and attendance in accordance with the requirements of safety, peace and quiet, cleanliness, etc. May carry out the upkeep and maintenance of premises and surroundings. May coordinate teams of maintenance/technical staff.
K2503	Security and surveillance	<ul style="list-style-type: none"> • Security guard • Airport security officer • Parking supervisor • Bouncer 	Monitors and protects premises and property and prevents malicious acts and disturbances to the peace and quiet of premises and persons in accordance with security regulations. May manage a team.

Code	Occupation	Functions	Definition
M1101	Purchasing	<ul style="list-style-type: none"> • Buyer 	Researches and selects products and suppliers according to the company's purchasing strategy and negotiates commercial contracts according to cost, time and quality objectives. May develop a purchasing strategy for the company. May coordinate a team.
M1203	Accounting	<ul style="list-style-type: none"> • Accountant • Fund accountant • Accounting clerk 	Records and centralises the commercial, industrial or financial data of an organisation in order to draw up balances of accounts, profit and loss accounts, balance sheets, etc. in accordance with legal requirements. Checks the accuracy of accounting entries and reports on the economic situation of the organisation. May carry out activities relating to payroll and personnel management. May coordinate the activity of a team or manage an organisation.
M1402	Organisational and management consulting	<ul style="list-style-type: none"> • (Organisational) project manager • Head of sustainability and CSR - Corporate Social Responsibility • Head of quality 	Advises and assists company managers in developing strategies for transformation, adaptation and change management. Designs organisational and managerial change processes (human, technological, financial, IT, quality, safety, etc.) according to the expected objectives. May coordinate the activities of a team or manage a department.
M1601	Reception activities	<ul style="list-style-type: none"> • Receptionist • Information desk clerk 	Welcomes, informs and directs people at the reception area (station, company, etc.) or at the switchboard and issues passes, badges, tickets, invitations, etc. Can manage mail (collection, distribution, etc.), simple administrative tasks (filing, computer entry, typing of pre-established letters, etc.). May coordinate a team.

Code	Occupation	Functions	Definition
M1602	Administrative operations	<ul style="list-style-type: none"> Administrative clerk 	Carries out routine administrative work (checking documents, typing and formatting pre-established letters, following up on administrative files, etc.) according to the organisation of the organisation or department. May be in charge of reprography and archiving activities. May be responsible for the reception of the organisation.
M1607	Secretarial services	<ul style="list-style-type: none"> Administrative assistant Secretary Legal secretary 	Carries out the administrative processing of files (typing letters, formatting documents, etc.) and transmits information (e-mail, notes, faxes, etc.) on behalf of one or more departments or a manager, depending on the company's organisation. May take charge of the complete follow-up of files (maintenance contracts for equipment, the organisation, etc.). May coordinate a team.
M1801	Information systems administration	<p>Administrator</p> <ul style="list-style-type: none"> of IT of databases of servers of network - telecom of computer security 	Administers and ensures the functioning and operation of one or more hardware or software elements (tools, networks, databases, messaging, etc.) of the company or an organisation. Ensures the consistency, accessibility and security of information. May coordinate a team.
M1802	IT expertise	<ul style="list-style-type: none"> IT methods engineer IT systems architect Cloud architect IT security architect IT auditor, IT security Expert penetration tester IT security manager 	Advises the company's IT and telecoms management on new technical developments and solutions (choice of software, hardware, network, etc.), with the goal of optimising and matching IT and telecoms resources with users' needs. Provides support (security, quality, methods, etc.) and technical assistance to the company's IT or telecoms teams (production, development), users and customers. Ensures compliance with quality and safety standards and procedures. May intervene directly on all or part of a project in his/her field of expertise.

Code	Occupation	Functions	Definition
M1803	IT management	<ul style="list-style-type: none"> IT Director IT Manager Head of IT Department 	Manages an IT (or telecom) organisation, department or service and defines the evolution of information and telecoms systems, according to the functional needs and strategy of the company. Supervises the design, implementation and operational maintenance (quality, security, reliability, costs, deadlines) of IT services and telecom systems. Supervises and manages IT projects.
M1804	Telecom engineering	<ul style="list-style-type: none"> Telecom network architect Telecom design and support engineer ... 	Produces, designs and develops technical solutions for telecommunications networks (telephony, multimedia, IT, etc.), according to the needs and strategy of the company or client. May coordinate a team or a project.
M1805	IT development	<ul style="list-style-type: none"> IT project manager Web developer Software developer Business intelligence developer - analyst IT functional analyst Computer application integrator Software tester... 	Designs, develops and finalises an IT application project, from the study phase to its integration, for a client or a company according to functional needs and specifications. May lead development projects. May coordinate a team.
N1101	Forklift operations	<ul style="list-style-type: none"> Forklift operator Aerial work platform operator 	Operates a mounted handling machine (forklift, stacker, etc.) for moving, loading/unloading, storing/unstoring, supplying, removing loads (goods, products, equipment, etc.), in accordance with quality procedures, safety rules and time requirements. May carry out other operations linked to the running of a warehouse (reception and control of products, stock-keeping, preparation of orders, inventory, etc.) or a production or distribution site (packaging, etc.). May lead a team of workers (temporary workers, trainees, etc.).

Code	Occupation	Functions	Definition
N1103	Warehouse operations	<ul style="list-style-type: none"> • Warehouse worker • Warehouse assistant • Packing machine operator • Shipping logistics employee • Stock manager • Order picker 	<p>Carries out reception, storage, stock-keeping, order preparation and dispatch operations for goods, products, raw materials, etc. in accordance with quality procedures, health and safety rules and deadlines. Can carry out handling operations using light handling equipment (pallet truck, hand truck, trolleys, shopping trolleys, etc.) or self-propelled machines (forklift truck, etc.). Can carry out specific operations (packaging, simple assembly, packing, supplying production lines, etc.) and carry out sales operations at the counter.</p>
N1201	Transport chartering	<ul style="list-style-type: none"> • Charterer • Head of the chartering department 	<p>Organises the transportation of goods by appropriate means of transport (road, air, sea, rail, river). Buys and sells national and/or international transport services on behalf of clients, in accordance with transport regulations and commercial objectives (quality, cost, lead time). May coordinate the activities of a team within the chartering department of a company.</p>
N1303	Logistics operations	<ul style="list-style-type: none"> • Logistician • Logistics assistant 	<p>Plans, organises and controls all or part of the logistics operations (reception, storage, order preparation, supply, dispatch of goods, products, etc.) of a site (logistics platform, production unit, etc.) or a department, in accordance with requirements (deadlines, quality, costs, etc.), regulations and health and safety rules. May take part in carrying out logistics operations and intervene in a specialised field (stock management, supply, etc.). May coordinate the activity of a team.</p>

Code	Occupation	Functions	Definition
N2101	In-flight services	<ul style="list-style-type: none"> Air hostess/steward 	<p>Implements safety (operation of on-board equipment, etc.) and passenger comfort measures (welcoming, service provision, etc.) on board the aircraft, in accordance with aeronautical regulations and commercial requirements (quality, deadlines, etc.). May lead one or more cabin crews and provide training. May carry out additional activities (cabin cleaning, baggage loading, etc.) depending on the type of flight.</p>
N2102	Air navigation	<ul style="list-style-type: none"> Aircraft pilot Helicopter pilot 	<p>Pilots an aircraft (plane, helicopter, etc.) to transport passengers, freight, mail, etc. or to carry out an aerial activity (photography, agricultural spraying, rescue, etc.), according to technical (fuel, weather, etc.), operational (condition of the aircraft, flight plan, etc.) and financial parameters, in accordance with aviation regulations and the rules on the safety of goods and people. May train pilots on the ground on a simulator, in-flight or check technical knowledge in-flight. May supervise a crew.</p>
N2203	Airport runway operations	<ul style="list-style-type: none"> Airport runway operator Airport baggage handler 	<p>Carries out loading/unloading (baggage, freight, etc.), refuelling (energy, air, water) and assistance with the movement of aircraft on runways (aircraft arrival/departure), in accordance with airport safety and security rules and service requirements (cost, deadlines, quality). May drive special equipment (pushers, gangways, light vehicles, etc.) on airport runways. May lead a runway team.</p>

Code	Occupation	Functions	Definition
N4101	Long-haul freight transport	<ul style="list-style-type: none"> • Truck driver • Dump truck driver • ... 	Drives a heavy road vehicle (maximum total weight authorised - greater than 3.5 tonnes) in order to transport goods (products, vehicles, etc.), over medium or long distances, in accordance with labour and road transport regulations and customer satisfaction requirements (deadlines, compliance, etc.). Carries out operations related to transport (securing loads, issuing documents, checking goods, etc.). May carry out loading/unloading operations and follow-up maintenance on the vehicle.
N4102	Private passenger road transport	<ul style="list-style-type: none"> • Taxi driver • Driver accompanying persons with reduced mobility • Shuttle bus driver for less than 9 persons • Private driver 	Carries out passenger transport services (transfer of various clients, tourist groups, etc.) using a light vehicle (capacity of less than 9 people), in accordance with road regulations, the rules governing the safety of goods and people, and the requirements of time and quality. May transport animals on behalf of a client.
N4103	Public road transport	<ul style="list-style-type: none"> • Bus driver • Tramway driver 	Carries out public passenger transport in urban, interurban, regional, national or international services, in accordance with road regulations, the rules governing the safety of goods and people and the requirements of time and quality. May carry out operations in the context of sightseeing trips (itinerary, hotel services, customs formalities, tourist commentary, etc.).

Code	Occupation	Functions	Definition
N4105	Short-haul driving and delivery	<ul style="list-style-type: none"> • Delivery driver • Warehouse driver • Dump truck driver • Food delivery driver • ... 	Delivers or collects goods, parcels, materials, waste, etc. from a predefined route and within a restricted geographical area. Carries out the delivery route using a light vehicle or a heavy goods vehicle in accordance with road transport regulations and customer satisfaction requirements (deadlines, quality, etc.). Carries out operations related to the delivery (route, loading/unloading of goods, issuing of delivery documents, etc.). May carry out specific operations (preparing orders, assembling furniture, collecting money, carrying meals, etc.).
N4301	Railway transport	<ul style="list-style-type: none"> • Train driver • Metro driver 	Drives a vehicle on rails (train, metro, etc.) in order to transport passengers or goods, in accordance with railway regulations, the rules governing the safety of goods and people and the requirements of the service (timetables, passenger comfort, operation of equipment, etc.). May perform manoeuvres on the railway. May supervise a team of drivers.
N4401	Railway traffic support	<ul style="list-style-type: none"> • Railway traffic officer • Railway traffic manager • Railway traffic technician • Station manager 	Monitors and coordinates the movements of passenger or goods trains (arrival/departure, signals, switches, track protection, etc.) in accordance with the rules governing the safety of goods and people, traffic requirements (timetable, speed, etc.) and unforeseen events (breakdown, technical incident, delay, etc.). May organise the activity of one or more operational units (station, terminal, etc.). May coordinate the movement of trains (traffic regulation in the Central Command Post -CCP-, etc.) on one or more lines (metro, train, etc.). May manage a team.

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ADEM launched the Future Skills Initiative in October 2020 as a framework that integrates the various projects related to the anticipation and development of future skills with the aim of employment preservation. This initiative is based on three pillars:

1. Conduct and contribute to national and sector-level studies on labour market developments and skills shortages,
2. Introduce new upskilling/reskilling programmes for jobseekers,
3. Raise awareness among employers when it comes to the importance of workforce planning (which includes proactively investing in the skills and employability of their employees) and develop a new programme to support employers in upskilling/reskilling their employees.

November 2021