Research for TRAN Committee -
Transport and tourism in Sweden

This overview of the transport and tourism sectors in Sweden was prepared to provide information for the mission of the Transport and Tourism Committee to the country in 2017 (17-19 July).

1. INTRODUCTION

Sweden is the third largest country in the European Union (EU) by surface area (438,574 km²) and has the largest population of the Nordic countries (9.747 million inhabitants estimated in 2015)¹. It is bordered by Norway to the west and Finland to the east. To the south, Sweden is connected to Denmark by the Øresund Bridge, the longest combined road and rail bridge in Europe. It is a combined two track rail and four lane road bridge and tunnel that crosses the Øresund Strait between the two countries. The works started in 1995 and the link was opened to traffic on 1 July 2000, with a project cost of EUR 2.7 billion².

The country became a member of the EU on the 1st of January 1995 and its political system is a parliamentary constitutional monarchy. The currency is the Swedish krona (SEK) and there is currently no target date to adopt the euro³.

The country’s unemployment rate is forecast to level off at 6.6% in 2017 and 2018 (please see Table 1 below) and in 2015, the share of women employed in transport corresponded exactly to the EU average (22%)⁴. The employment share in high-growth transport enterprises has carried on decreasing slightly over the past few years, but in 2014, it was still well above EU average⁵.

Table 1: Macro-Economic Forecasts for Sweden

<table>
<thead>
<tr>
<th></th>
<th>2015</th>
<th>2016</th>
<th>2017</th>
<th>2018</th>
</tr>
</thead>
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<td>2.2</td>
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<td>1.1</td>
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<td>1.4</td>
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<tr>
<td>Unemployment (%)</td>
<td>7.4</td>
<td>6.9</td>
<td>6.6</td>
<td>6.6</td>
</tr>
</tbody>
</table>

Source: European Commission⁶

¹ European Commission - DG MOVE (Mobility and Transport) - EU Transport Scoreboard 2016 for Sweden.
² European Commission - DG MOVE (Mobility and Transport) - Scandinavian-Mediterranean Core Network Corridor. Railway and road transport have developed quickly, mainly as a result of the increased integration between the areas in both sides of the link.
³ European Commission - DG ECFIN (Economic and Financial Matters) - Sweden and the euro.
⁴ European Commission - DG MOVE (Mobility and Transport) - Sweden Country Scoreboard - People.
⁵ European Commission - DG MOVE (Mobility and Transport) - Sweden Country Scoreboard - Internal Market.
2. GENERAL TRANSPORT

The importance of the transport system is reflected in the National Transport Plan, in which investment in the whole transport system for 2018-2029 is planned to increase by 20% compared to the previous planning period 2014-2025 (from SEK 515 billion or EUR 54.4 billion to SEK 622.5 billion or EUR 65.8 billion)7. According to the International Transport Forum, Sweden spent the equivalent of EUR 3.051 billion on inland transport infrastructure in 2014, an investment which represents 0.7% of the country’s Gross Domestic Product (GDP)8.

Sweden scores a perfect 100% as regards the transposition of EU transport directives. The number of court cases because of an alleged infringement of EU transport law has generally remained very low as of the end of July 2016. However, there are a number of pending proceedings as regards aviation9.

2.1. Renewable Energy in Transport

In 2015, Sweden had the highest share of renewable energy in transport (24% versus an EU average of 6.7%)10, largely exceeding the 10% target for 2020 imposed on all Member States by Directive 2009/28/EC11 (the Renewable Energy Directive). Sweden promotes further emissions’ reductions in the transport sector through tax measures and pilot programmes. These aim to target in particular low-carbon emission vehicles and technologies like biofuels, which have become an important element in its energy supply. Indeed, in Sweden, the main incentive for renewable energy use in transport is a tax exemption for biofuels12. By 2030, Sweden aims to reduce Greenhouse Gas (GHG) emissions from domestic transport by 70% compared to 2010 levels. Nevertheless, CO₂ emissions from transport (accounting in Sweden for 33% of its total GHG emissions and more than 50% of the emissions not included in the EU Emissions Trading Scheme) remain a particular policy challenge for the country13.

In 2015, Sweden was also in fourth place in the share of new cars using alternative fuels. Furthermore, it scored well above the EU average for the number of electric vehicle charging points for that same year14. The uptake of smart mobility and Intelligent Transport Systems (ITS) in the country was also highlighted by the European Commission, especially as there is reportedly a growing trend towards more and more cooperative ITS and driverless piloting activities15.

2.3. The Trans-European Transport Network (TEN-T)

The Scandinavian-Mediterranean Corridor is the only Core Network Corridor (CNC) of the TEN-T that crosses Sweden16 (please see Map 1 below). Not only is it the longest of the CNCs, it is also a crucial axis for the European economy, linking major urban centres in Germany and Italy to Scandinavia and the Mediterranean. The European Coordinator for this CNC is Mr Pat Cox and the sections included are rail, road, airports, ports, rail-road terminals and “Motorways of the Sea”. Key projects of this CNC include the Fehmarn Belt crossing between Denmark and Germany, and the Brenner base tunnel between Austria and Italy17.

The Connecting Europe Facility (CEF) has selected 17 projects involving Sweden in the CEF Call 2015, of which six projects are actions exclusively in Sweden totalling an estimated cost of EUR 70,483,464, with a maximum EU contribution of EUR 34,493,451 (this represents an average co-financing rate of 48.94%)18. The remaining 11 selected projects are joint projects where Sweden is one of two or several Member States involved.

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8 OECD.Stat (Organisation for Economic Co-operation and Development) - International Transport Forum - Transport infrastructure investment and maintenance spending. The International Transport Forum collects, on an annual basis from all its Member countries, data on investment and maintenance spending on transport infrastructures. Data are collected from Transport Ministries, statistical offices and other institutions designated as official data sources.
9 European Commission - DG MOVE (Mobility and Transport) - Sweden Country Scoreboard - Internal Market.
10 EUROSTAT - Statistics explained - Energy from Renewable Sources - Table 4, updated March 2017.
14 European Commission - DG MOVE (Mobility and Transport) - Sweden Country Scoreboard - Energy Union and Innovation.
15 European Commission - The European Semester Thematic Fiche 2016 - Transport (p.17).
16 European Commission - DG MOVE (Mobility and Transport) - TEN-T Country Fiche for Sweden.
17 European Commission - DG MOVE (Mobility and Transport) - Scandinavian-Mediterranean Core Network Corridor.
18 INEA (Innovation and Networks Executive Agency) website - Connecting Europe Facility - Projects by country - Sweden.
As for the completion of the TEN-T core networks in Sweden, only its inland waterways core network is complete. In 2014, the core road and conventional rail networks were more than 50% complete, however, high-speed rail still needed development.19

Map 1: The TEN-T Core Network Corridors - focus on Sweden

2.4. Transport Infrastructure Quality

Swedish transport infrastructure is rated slightly above the EU average for roads, ports and airports and slightly below the EU average for railroad infrastructure.21 In the World Economic Forum’s index of satisfaction with transport infrastructure quality, the country is ranked 11th out of the 28 Member States based on overall performance of transport infrastructure (please see Figure 1 below).22

Consumer satisfaction with transport in general in Sweden went up between 2013 and 2015. It remains however below EU average for all modes of transport.23

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19 European Commission - DG MOVE (Mobility and Transport) - Sweden Country Scoreboard - Investments and Infrastructure.
20 European Commission - DG MOVE (Mobility and Transport) - Trans-European Transport Networks - TENtec - Maps.
21 European Commission - DG MOVE (Mobility and Transport) - Sweden Country Scoreboard - Investments and Infrastructure.
22 The countries are ranked on their overall performance of transport infrastructure. The results should however be interpreted with caution, since they report a subjective view rather than an objective assessment. They can reflect the satisfaction with the density of infrastructure rather than the quality of maintenance. They also do not reflect differences observed within Member States, which can be very significant, e.g. between regions, road types (motorway, secondary, local) or ownership models (concession or national roads).
23 European Commission - DG MOVE (Mobility and Transport) - Sweden Country Scoreboard - People.
In 2016, Sweden scored second best in the EU as regards the **timeliness of shipments**\(^{25}\). Indeed, the analysis of the World Bank Logistics Performance Index (LPI)\(^{26}\) shows that Sweden is among the best performing Member States (please see Figure 2 below). One of the components of the LPI is quality of trade and transport related infrastructure (e.g. ports, railroads, roads, information technology)\(^{27}\).

**Figure 1: Satisfaction with Infrastructure Quality (2015-2016)**

- Quality of roads
- Quality of railroad infrastructure
- Quality of port infrastructure
- Quality of air transport infrastructure

**Source:** World Economic Forum\(^{24}\)

**Figure 2: Infrastructure Quality under the Logistics Performance Index (2016)**

**Source:** World Bank Logistics Performance Index\(^{28}\)

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\(^{25}\) European Commission - DG MOVE (Mobility and Transport) - Sweden Country Scoreboard - *Investments and Infrastructure*.

\(^{26}\) The Logistics Performance Index (LPI) is the weighted average of the scores of a country on six key dimensions: efficiency of the clearance process, quality of trade and transport related infrastructure, ease of arranging competitively priced shipments, competence and quality of logistics services, ability to track and trace consignments, and timeliness of shipments in reaching destination within the scheduled or expected delivery time. The LPI consists of both qualitative and quantitative measures.

\(^{27}\) European Commission - The European Semester Thematic Fiche 2016 - *Transport* (pp.9-10).

\(^{28}\) The scores demonstrate comparative performance (lowest score to highest score) from 1 to 5. Concerning the global LPI, it is worth adding that there are 23 Member States ranked in the top 50 out of the 160 countries compared by the World Bank, with Germany, Luxemburg, Sweden and the Netherlands occupying the first four places. According to the European Commission, this shows that despite increasing challenges, Member States are still performing relatively well.
3. ROAD TRANSPORT

In 2014, **passenger cars** accounted for 83.2% of passenger transport by land in Sweden, with 114.9 billion pkm\(^{29}\). This was then followed by railways (8.8%), buses and coaches (6.3%), and tram and metro (1.8%). Furthermore, in 2015, the average amount of time that Swedish car drivers spent in traffic jams was just over 20 hours per year, which is well below the annual EU average of 30 hours in road congestion\(^{30}\).

At the end of 2013, there were 2,057km of **motorways** in Sweden out of a total road network length of 216,976km in the country\(^{31}\).

In 2014, 92.5% of the haulage by vehicles registered in Sweden was national haulage, whereas only 7.5% was international haulage, moving a total of 42 billion tkm combined. The Swedish **road freight transport sector** employed 75.9 thousand people in 2013 and encompassed over 15 thousand enterprises\(^{32}\).

### 3.1. Road safety

In 2010, the EU renewed its commitment to improving road safety by setting a **target of reducing road deaths** by 50% by 2020, compared to 2010 levels. In 2015, Sweden maintained its position among the three top performers in road safety (please see Figure 3 below)\(^{33}\). However, for every death on Swedish road, there was also an equivalent of four seriously injured people, which represented a percentage increase since 2010\(^{34}\).

#### Figure 3: Mortality (road deaths per million inhabitants) in 2015, with mortality in 2010 for comparison

![Figure 3: Mortality (road deaths per million inhabitants) in 2015, with mortality in 2010 for comparison](source)

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\(^{29}\) European Commission - EU Transport in Figures - Statistical Pocketbook 2016 (pp.49-50).

\(^{30}\) European Commission - DG MOVE (Mobility and Transport) - Sweden Country Scoreboard - Energy Union and Innovation.

\(^{31}\) European Commission - EU Transport in Figures - Statistical Pocketbook 2016 (pp.78-79). For the collection of data for these statistics, the European Commission defines a country’s road network length as the sum of motorways, main or national roads, secondary or regional roads, and other roads (to be used with caution as some countries include roads without a hard surface in “other roads”).

\(^{32}\) European Commission - EU Transport in Figures - Statistical Pocketbook 2016 (pp.38-40 and pp.24-25).

\(^{33}\) European Commission - DG MOVE (Mobility and Transport) - Sweden Country Scoreboard - People.

\(^{34}\) European Transport Safety Council (ETSC) - ‘Ranking EU Progress on Road Safety’ - 10th Road Safety Performance Index Report, June 2016 (p.22).

\(^{35}\) European Transport Safety Council (ETSC) - ‘Ranking EU Progress on Road Safety’ - 10th Road Safety Performance Index Report, June 2016 (p.17). *National provisional estimates used for 2015, as the final figures for 2015 are not yet available at the time of going to print. **UK data for 2015 are GB provisional total for year ending September 2015 and Northern Ireland total for the calendar year 2015. Numbers of deaths in Luxembourg and Malta are small and are therefore subject to substantial annual fluctuation.\
3.2. The Green Highway Project

The Green Highway is a transport corridor, which aims to be free of fossil fuel and runs through three municipalities: from Sundsvall to Östersund in Sweden and then to Trondheim in Norway. The SÖT partnership seeks to develop and implement renewable energy solutions for transport systems, based on electricity, water, wind and bio-fuels. By renovating traditional petrol stations along the 450km corridor36, the Green Highway project has established filling-stations for environmentally friendly fuels and charging points for electric vehicles. It has also simultaneously developed business opportunities linked to environmentally friendly transport and infrastructure. For example, the infrastructure for four-season outdoor testing of electric vehicles along the Green Highway has been established for the car industry. As a result of the Green Highway’s cleaner transport successes, the region has become known as an even more attractive place to visit and in which to live and work.

The project was part of the EU programme Interreg IV Sweden-Norway (programming period 2007-2013) and financed by the European Regional Development Fund. The total investment for the Green Highway was EUR 1,690,000 (of which EUR 716,215 was EU funding)37. Now, there is a project called “Smart Green Region Mid Scandinavia” which is part of the Interreg V Sweden-Norway programme (programming period 2014-2020)38. The Green Highway is one of the three main parts of this new project, which is expected to last 3 years (estimated to end summer 2018). The estimated total budget for the whole project is EUR 3,644,230 (of which EUR 1,134,002 is expected to be EU funding).

3.3. LHVs and the forestry industry

The country was granted an exemption from the Weights and Dimensions Directive of 199639 allowing Longer and Heavier Vehicles (LHVs, also known as “Megatrucks”) to circulate in normal traffic40. Indeed, most public roads in Sweden are traditionally equipped for and open to LHVs, especially considering the share of LHVs in the total transported tonne-km in the country already exceeded 90% in 201041. Usually, LHVs are a maximum of 25.25 meters long and can have a GVW (Gross Vehicle Weight) of up to 60 tons. In the past, the Swedish road authorities already permitted 60-tonne trucks (20 tons more than most EU member states) but the limit increased to 64 tons in June 2015.

The forestry industry is especially interested in achieving more energy-efficient timber transport by increasing GVWs and reducing the number of trucks on the roads, thereby saving on transportation costs. Several studies have received special permissions to test timber trucks between 74 tons and 90 tons for round-wood haulage. For example42, the “ETT Modular System for Timber Transport” project undertook a trial of longer and heavier timber trucks in real-life operational circumstances in Sweden43. ETT stands for “one more stack”, so it means LHVs accommodating four stacks instead of the usual three (please see Photo 1 below). Other aims of the project included to reduce the number of transport runs, to cut diesel consumption, and to reduce emissions of fossil carbon dioxide.

Environmentally speaking, by increasing the load capacity per vehicle, the specific CO₂ emissions per transported unit decreases - some studies have measured a reduction of up to 20%. One study published in 2016 by Lund University in Sweden found that the ideal combination of length and weight of LHVs is 34 meters and 74

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36 Green Highway - A fossil fuel free transport corridor - website with summary page in English.
37 European Commission - DG REGIO (Regional Policy) - Projects - Scandinavia – developing the three-city axis.
38 Smart Green Region Mid Scandinavia - website with summary page in English.
40 Even before Sweden joined the EU in 1995, LHVs were circulating on Swedish roads.
42 Another example is the 2012 study entitled Cost benefit analysis of round wood transports using 90-tonne vehicles (summary available in English) by VTI (the Swedish National Road and Transport Research Institute) and sponsored by The Swedish Energy Agency, the Swedish Transport Administration, and the Swedish Governmental Agency for Innovation Systems.
43 Skogforsk (the Forestry Research Institute of Sweden) - “ETT Modular System for Timber Transport” project. The project involved many different players, such as forestry companies, manufacturers of vehicles and other equipment, public agencies, hauliers, research funders, etc. The “ETT Modular System for Timber Transport” project was followed by another projects entitled “ETT Demo”.

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ton - this was the combination that had the most pronounced positive impact from an economic point of view as well as regarding emissions. However, it is a controversial topic as many stakeholders in the transport sector believe there are safety concerns with the use of LHVs, especially when overtaking, and challenges include motorway service stations, petrol stations, traffic junctions, crossings and bridges that may not be designed to accommodate LHVs.

Photo 1: ETT vehicle (including timber truck, dolly, link, semi-trailer) 30 meters long, GVW 90 tons, 66-ton load capacity.

Source: ETT project

4. MARITIME TRANSPORT

In Sweden, maritime transport remains an important complementary transport mode and Swedish short sea shipping plays an essential role within the EU intermodal export chain. Given Sweden’s geographical location, maritime transport can help reduce potential capacity bottlenecks. Following the government’s action plan of 2015 for improved competitiveness of the shipping industry, the authorities introduced a tonnage tax system from January 2017. The effects of this measure are expected to materialise over the coming years, and could be assessed based on the possible increase in the fleet, potential ‘returning’ tonnage under the Swedish flag and jobs created for seafarers and within the maritime cluster as a whole.

The Port of Gothenburg is considered the gateway to Sweden for trade and freight. As the country’s largest port by far, it is responsible for handling 57% of Sweden’s container traffic. The most important challenge for Gothenburg is to keep attracting direct calls from ocean going vessels, which in practice means attracting mega-container ships that are deployed on the Asia-North Europe trade lane. These mega ships require upgrading of Gothenburg’s container terminal and improving the maritime access to the port (deepening the access channel and berth).

Maritime sea transport represents an important source of employment and revenue for Sweden: over 13,000 people were employed by the sea transport sector. In 2013, there were 767 sea transport enterprises and the sector turned over EUR 3.5 billion. Inland water transport is much less significant for Sweden with only 1,500 people employed in 478 enterprises (turnover for 2013: EUR 159 million).

44 Trivector article dated 26.04.2017. The original study was published on 25.10.2016 by Lund University and entitled: “Systemanalys av införande av HCT på väg i Sverige” (“System analysis for the introduction of High Capacity Vehicles on the road in Sweden” – summary available in English). The research project was funded by Vinnova (Swedish Innovation Agency) and the Swedish Transport Administration.
45 The Freight Ferry People - Sweden Proposes Increased Truck Weight Allowance on roads - Article dated 12/01/2017.
49 European Commission - EU Transport in Figures - Statistical Pocketbook 2016 (pp.24-26).
5. RAILWAY TRANSPORT

Despite a good overall macroeconomic performance, Sweden’s infrastructure investment situation compares rather unfavourably by international standards. The railway system in particular could benefit from increased investment in maintenance and development in large parts of the network. An inquiry regarding the organisation of the railway system from December 2015 highlighted the needs for a comprehensive strategy for its utilisation.

In 2014, there were 10,881 km of railway lines in use in Sweden (8,232 km of which were electrified, representing 75% of Swedish railway lines). The main railway gauge is 1,435 mm and the country does not currently have any high-speed railway lines. The sector is liberalised and embraces many technical innovations (e.g. open data access). The volumes are increasing and the railway system in Sweden is environmentally friendly. However, there are also persistent weak points, especially as regards the quality/robustness of rail infrastructure and the delays, which are a constant feature particularly in severe weather conditions. According to the Commission, the growth of traffic volume has outpaced investment during the last decade in Sweden, and there has been insufficient investment especially in cross-border connections.

The Swedish government has put forward specific investment plans for high-speed railways and, in the 2016 infrastructure bill, it supports the introduction of high-speed railways between the three major metropolitan regions (namely Stockholm, Gothenburg and Malmö). In recent budget proposals, the government has recognised the infrastructure-related challenges by focusing on maintaining infrastructure. While the current budget level of about EUR 0.9 billion per year remains in place for 2016-2018, a sizeable increase of about EUR 0.6 billion has been proposed for 2019 and 2020. The government is seeking broad political support for these investments, considering they would have a long-term impact on the public investment budget.

In 2014, rail passenger transport in Sweden accounted for 12.1 billion pkm, which represented only 8.8% of the modal split of passenger transport on land (please see Section 3 for the distribution among the other modes).

In Sweden, the market share of competitors of the principal rail freight undertaking is the highest in the EU (55%), which means that there is a lot of competition for the operators in the sector. In 2014, rail freight in Sweden moved 21.3 billion tkm (which is a 1.6% increase compared to the previous year). Of strategic importance for freight traffic and part of the TEN-T core railway network, the Bothnian Corridor stretches out on both the Swedish and the Finnish side of the Bothnian Gulf. It connects east-westbound and north-southbound transnational links in Sweden, Finland, Norway and Russia. Several factors currently limit the efficiency of transports along the Bothnian Corridor: steep inclines limits the speed and weight of the trains, as well as insufficient carrying capacity. The lack of capacity in general creates competition disadvantages and market obstacles for the raw material supply of EU’s industrial market. Indeed, freight traffic in the area is predicted to increase by 50% by 2050 due to the intensified raw material exploitation in northern Scandinavia. Because of this, a new railway line will be constructed entitled “the North Bothnia Line” (270 km between Umeå and Luleå). This new railway infrastructure is key to improving trans-national goods flows within EU and to/from the EU and will alleviate the current Stambanan line (part of the TEN-T comprehensive network) which has limited capacity, single track lines and bottlenecks. The project has already received CEF funding for studies (railway plans and technical designs) and the goal is to start its construction in 2018.

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50 European Commission - The Commission’s Annual Growth Survey - The European Semester - Country Report Sweden 2017. In addition to its direct impact, infrastructure investment could also serve to improve access to new areas and open up opportunities for new residential development, thus alleviating the current housing shortage.
51 European Commission - EU Transport in Figures - Statistical Pocketbook 2016 (pp.80-82).
55 European Commission - EU Transport in Figures - Statistical Pocketbook 2016 (pp.49 and 53).
56 European Commission - DG MOVE (Mobility and Transport) - Sweden Country Scoreboard - Internal Market.
57 European Commission - EU Transport in Figures - Statistical Pocketbook 2016 (p.42).
58 European Commission - DG MOVE (Mobility and Transport) - TEN-T Country Fiche for Sweden (Bothnian Corridor: Luleå – Oulu Cross-Border Rail studies and works).
59 Keep EU Cooperating website - Project: The Bothnian Corridor (divided between the Swedish side and the Finnish side), which connects northern the Northern Axis to the Nordic Triangle and to Rail Baltica - Description.
60 Baltic Press - Think Tank, Think Energy - Why is the Bothnian Corridor important? - Article dated 19/11/2013 by Przemyslaw Myszka.
61 INEA (Innovation and Networks Executive Agency) website - Connecting Europe Facility - Projects by country - Sweden - NORRBOTNIABANAN, Studies, railway plans and technical design, Phase 1: Umeå-Skellefteå - 2014 CEF Transport Call.
6. AIR TRANSPORT

In 2014, the **air passenger traffic** between Member States shows that Sweden’s most popular flying destination was Spain with over 2.8 million passengers carried, followed by Denmark (over 2.7 million) and the United Kingdom (over 2.5 million). For the same year, over 7.3 million passengers flew on domestic flights in Sweden, demonstrating the importance air transport holds at a national level\(^{62}\).

Sweden has 19 commercial airports on its territory, but only **Stockholm-Arlanda Airport** carries more than 10 million passengers per year\(^{63}\). In 2014, the airport was ranked 14\(^{th}\) major European airport in terms of passenger traffic with 22.43 million passengers carried (arriving, departing and in transit)\(^{64}\). In 2016, the airport is reporting that this number has increased to 24.7 million passengers. It also claims to have over 17,500 employees and to generate over 50,000 indirect jobs\(^{65}\).

In terms of **freight traffic**, the Stockholm-Arlanda Airport is ranked 28\(^{th}\) in the list of major European airports with 85.2 thousand tonnes of cargo and mail loaded and unloaded in 2014\(^{66}\).

The **Denmark-Sweden Functional Airspace Block** (DK-SE FAB), as defined by the Single European Sky (SES), is up and running\(^{67}\). In order to reduce airspace fragmentation in Denmark and Sweden, the Nordic Unified Air traffic Control (NUAC) was established in 2009 as the first integrated operating company in Europe that is responsible for en-route Air Traffic Management (ATM) in a FAB\(^{68}\). It is one of two established and operational initiatives (the other being the COOPANS ATM System, a common ATM platform) that allows for more efficient air navigation service within the DK-SE FAB. In the 2015 CEF Transport call, the “DK-SE FAB Operational Harmonisation” project was selected, with an estimated total cost of EUR 2,250,205 and with a maximum EU contribution of EUR 1,125,103 (representing a co-financing rate of 50%)\(^{69}\).

After ten years of developing, Saab and LFV (Luftfartsverket - Air Navigation Services of Sweden) launched in 2015 the **Remote Tower**, a remote air traffic service concept which digitises and integrates airport functions. They were the first in the world to have such a system approved for operation: on 21 April 2015 in Sweden, air traffic at Örnsköldsvik airport came under the control of the Remote Tower Centre in Sundsvall\(^{70}\). This solution for remotely operated air traffic management provides flexibility in the provision of air traffic control services and will offer major benefits in meeting the varying seasonal traffic volumes. Thanks to this technology, Scandinavian Mountains Airport (located in Rösbäcksnäs between Sälen in Sweden and Trysil in Norway) will be the first airport built in the world without a traditional air traffic control tower\(^{71}\).

7. TOURISM

In 2014, tourism’s share of Swedish GDP was 2.8%. It has been growing steadily for the last ten years and is an important contributor to the **economy and the labour market** in Sweden. Around 159,000 people were employed in the Swedish tourism sector in 2014, which represents a 22% increase since the year 2000 (compared to 10% growth in total employment over the same period). While employment in many traditional basic industries in Sweden has fallen, tourism has helped to create more jobs in a variety of service industries\(^{72}\).

In 2015, the monthly distribution of Sweden’s accommodation statistics showed that the month of July was the most popular with 20.9% of the total nights spent (over 11,435 thousand nights). Identical to the EU average, the **seasonal deviation** was 3.4 in Sweden for that year (please see Table 2 below).

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\(^{62}\) European Commission - EU Transport in Figures - Statistical Pocketbook 2016 (pp.56 and 57).
\(^{63}\) European Commission - EU Transport in Figures - Statistical Pocketbook 2016 (p.83). The second largest Swedish airport is Gothenburg Landvetter Airport, carrying between 5 and 10 million passengers per year.
\(^{64}\) European Commission - EU Transport in Figures - Statistical Pocketbook 2016 (p.59).
\(^{65}\) Stockholm-Arlanda Airport website - About the airport.
\(^{66}\) European Commission - EU Transport in Figures - Statistical Pocketbook 2016 (p.62).
\(^{67}\) EUROCONTROL - Pan-European Single Sky - FABs.
\(^{68}\) European Commission - DG MOVE (Mobility and Transport) - NUAC (Nordic Unified Air traffic Control) - LFV (Sweden) and Naviair (Denmark).
\(^{69}\) INEA (Innovation and Networks Executive Agency) website - Connecting Europe Facility - Projects by country - Sweden - DK-SE FAB Operational Harmonisation - 2015 CEF Transport Call.
\(^{70}\) SAAB Digital Air Traffic Solutions - Sweden first in the world with remotely operated air traffic management - Article dated 21/04/2015.
\(^{71}\) Air Traffic Management website - Sweden plans first airport without traditional tower - Article dated 19/12/2016.
Table 2: Nights spent at tourist accommodation establishments, 2015

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Source: European Commission73

The major challenges for Swedish tourism are connectivity and transport, profitability, destination and product development, seasonality, and sustainability. Transport is crucial and at the same time challenging because of Sweden’s large size and geographical location in northern Europe, combined with a rather small population74. Interestingly, in 2015, the domestic share of the total nights spent in Sweden accounted for 75%, while international tourists only represented 25%75. This dominant domestic tourism in Sweden links in with the high number of domestic flights shown in Section 6.

Sweden’s UNESCO World Heritage sites include 13 cultural heritage sites, one natural heritage site (High Coast / Kvarken Archipelago together with Finland), and one mixed cultural and natural heritage site (Laponian Area)76.

Officially called the Aurora Borealis, the natural phenomena of the Northern Lights can be explained as “the solar wind sends charged particles towards the Earth, and upon colliding with its atmosphere they produce energy given off as light”. Usually from November to March, the display can last for 20 seconds or can go on for hours. The further north you go, such as Swedish Lapland or the Abisko National Park77, the greater the chances of spotting the Aurora Borealis. The Midnight Sun can also be best experienced in the north of the country, where the nighttime sun is at its strongest between May and July. Although the full Midnight Sun only shines above the Arctic Circle, nights are white all over the country78.

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Disclaimer

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Feedback

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All TRAN publications:

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73 Eurostat, Statistics explained - Seasonality in the tourist accommodation sector - data extracted in October 2016. (1) Seasonal deviation is estimated as the average of the absolute deviations of monthly data points from their mean.
75 Eurostat, Statistics explained - Seasonality in the tourist accommodation sector - data extracted in October 2016.
76 UNESCO (United Nations Educational, Scientific and Cultural Organization) - The States parties - Sweden.
77 Visit Sweden website - Northern Lights, Aurora Borealis trips and holidays.
78 Swedish Lapland website - Under the Midnight Sun.