



# TRANSNATIONAL STRATEGY

GUIDELINES ON LOW CARBON EMISSION LANDSIDE ACCESSIBILITY TO AIRPORTS

## SUMMARY



# Summary

While the major infrastructure for Central European airports will take funding, planning and time to implement, there are many low-investment and high impact changes that can be made to provide ease of use. LAirA (Landside Airport Accessibility) Strategy lays out its findings regarding mobility and information which present mobility alternatives to make eight airports in Central Europe smarter and greener.

Airport passengers and employees should be offered several transport options in order to make an informed choice. As consumers become increasingly concerned with environmental impact, cities and airports that have not modernised transportation may suffer a tourism decline.

## Introduction to LAirA's Transnational Strategy

The magnitude of the growing mobility of European citizens and tourists visiting from abroad has continually increased the trend of air traffic (10% per year in the EU). In order to reduce the carbon footprint associated with air travel, local policy makers and communities need to take action in the area of landside accessibility across Europe.

LAirA aims to address serious climate concerns precipitating across Central Europe and beyond in relation to travel to and from airports. The LAirA project addresses the mobility integration of airports to be coupled with multimodal solutions to offer smart and low carbon land transport from major city centres and its commuting zones, referred to as functional urban areas (FUAs).

The 30-month project lasted between May 2017 and October 2019 aimed to reduce the environmental impact of transport activities by changing mobility behaviours of 56 million passengers and 39,000 employees across eight airports in Central Europe, specifically; Budapest, Dubrovnik, Milan, Poznan, Stuttgart, Vienna and Warsaw.

The Transnational Strategy is the third and final phase of the project, focusing on identifying actions for sustainable land transport and access at LAirA airports with the final objective of reducing the CO<sub>2</sub> emissions. In order to achieve this goal, the strategy brings together local and regional authorities and airports to build their capacity and facilitate joint planning and implementation of low carbon mobility solutions. The approach integrates seven key thematic areas including electric mobility, air-rail links, walking and cycling, shared mobility, information technology systems, wayfinding and public transportation.

Airports and authorities are only the first port of call in developing mobility alternatives. Policy makers, communities and individual citizens need to be aware of environmental targets and the critical role each of them plays in reaching those goals, including transportation choices.



## Airports of LAirA

The Transnational Strategy assessed the situation across eight airports situated in different functional urban areas, each with their own unique size, land surface area, inhabitants and airport landside accessibility.

**Budapest** Airport provides for basic access by road as well as by bus. While the airport connects to an East/West rail line, there is currently no connection to the city centre. Investments into additional railway access would reduce the carbon footprint of the airport and add more ease of transport for employees and travellers.

**Milan** Airports are integrated into a sophisticated road and rail transport system, however, a congestion problem still remains. Investments into updated environmentally-friendly transport as well as cycling infrastructure and increased electric mobility would propel the region forward.

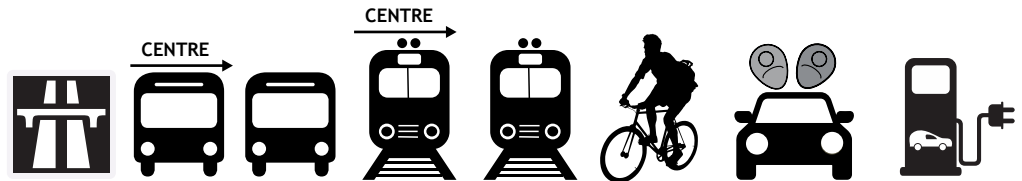
**Poznan** Airport is connected to the city by bus but the service leaves a lot to be desired. One of the first steps to improving the accessibility of the airport is to increase the frequency and reliability of the bus service. This would create a more positive image of the bus service, allowing for greater mass use of the service by passengers and employees. This, in turn, would make the airport more environmentally friendly.

**Modlin** Airport is only accessible by road. Developments in the region should include an extension of the railway line to the airport and additional investment into regional bus services to increase the direct accessibility of the airport to the city centre.

**Vienna** Airport has a clear goal of 100% of passengers utilising rail-bound and eco-friendly transport by 2030. Additional investment needs to be made into electric infrastructure including charging points at the airport and in the city centre. Vienna's approach is forward-thinking and offers a solution to a declining number of passengers paying for parking at the airport.

**Stuttgart** Airport has seen an increase in travellers that is predicted to exceed 14 million passengers by 2030. In order to accommodate these growing figures, developments will need to be made across all transport methods. A lack of regular transport service has left employees and travellers with limited options and caused significant motorway congestion.

**Dubrovnik** Airport relies heavily on private car service which has left no eco-friendly alternatives. In order to keep pace with the demands of annual tourist number, investments need to be made in alternative transport options including car-sharing, public transport and railway to increase the accessibility of the airport. Greener options should also be considered such as electric mobility and the creation of cycling infrastructure.



Airport	Highway access	Bus access to city centre	Bus Access	Railway access to city centre	Railway access	Smart mobility (Cycling)	Car-Sharing	Electric mobility
Liszt Ferencz, Budapest	x	x	x		x			
Malpensa, Milan	x	x	x	x	x		x	x
Linate, Milan	x	x	x	x	x		x	
Poznań-Ławica, Poznan	x	x	x			x	x	x
Modlin, Warsaw		x	x					
Vienna, Vienna	x	x	x	x	x	x	x	
Stuttgart, Stuttgart	x	x	x	x	x	x	x	
Dubrovnik, Dubrovnik	x	x	x					x

*Modalities of access to and from LAirA airports*



## Transnational Potential

**L**AirA project partners believe that transnational cooperation represents a catalyst for implementing smart solutions regionally and more broadly across Europe. While the eight airports reviewed in our Transnational Strategy had unique challenges, there were a few recurring issues across all regions to enhance and increase the use of public transport. For example, 50% of the LAirA airports do not have railway access directly to the city centre. There is only one airport, Stuttgart, that provides a garage with charging stations for e-vehicles. All of the airports reviewed lacked soft mobility infrastructure, such as walking and cycling paths connecting the city centre, and services to encourage their employees to share their rides.

**LAirA presents many potential areas for amelioration in its green ambitions:**

**Higher use of public transport:** extending the service lines and frequency of public transport is crucial across all LAirA airports as well as green modernisation and timetable harmonisation.

**Building railway infrastructure:** railway connections to the city centre are a major concern for Milan, Linate, Poznan Lawice, Warsaw, Modlin and Budapest airports, and would serve to greatly increase accessibility while reducing the overall carbon footprint.

**Electric mobility:** landside infrastructure, with a focus on electric mobility, is a potential for every airport. Electric operated cars, taxis and bikes provide a greener solution and can reduce CO<sub>2</sub> emissions. Central European airports should provide charging stations and garages equipped for electric vehicles. Electric car-sharing services could provide new sources of revenue for every partner airport. Development of electric mobility should be emphasised in national and local level strategic documents.

**Soft mobility (walking, cycling):** all of the LAirA partners have expressed a particular interest in soft mobility (pedestrian and cycle facilities and infrastructure). Every LAirA airport has an issue with employees living 1-15km away from the airport, each commuting by car, which makes them a target group for soft mobility modes. The increase of soft mobility would significantly reduce private car traffic with a single passenger, particularly regarding short trips.

**Ride-sharing:** ride-sharing reduces the number of private car trips and can serve as a beneficial solution for airport employees. Many European airports have not invested in ride-sharing services and there is potential for every partner airport to invest in electric vehicle sharing as a future low carbon solution.

Combating environmental concerns is a top priority for Europe. In fact, increased attention on the environment has led many cities to develop specific infrastructure and services dedicated to soft mobility as an eco-friendly solution. LAirA has a unique opportunity to facilitate transnational cooperation between policy makers and communities to make behavioural and structural changes across Europe that will create modern, sustainable and environmentally conscious options which will ease the travel between airports and city centres.

## Transnational Challenges

**T**ransnational cooperation is vital to improving coordination among the existing services of public transport available in Central Europe. The enhancement and upgrade of these services has been deemed critical for the development of regional airports and, as such, requires coordinated strategies, concepts and management tools as a means to overcoming outdated infrastructure and the detachment across borders to create intermodal systems of transport facilities. This, in turn, will enhance the efficiency and reliability of transport in the region as well as reduce the overall carbon emissions in the region. Coordinated strategies in this area will serve as the foundation for future sustainable infrastructure with a clear focus on the effective and eco-friendly transportation of passengers and airport employees to and across Central Europe.

**Traffic congestion:** most of the partners have serious land use and traffic congestion problems on all levels, which continues to increase.

**Noise and air pollution:** the traffic congestion mentioned above has led to increased noise and air pollution, a great concern for the LAirA project. While many forms of transportation contribute to pollution, LAirA sees an opportunity to reduce the carbon pollution produced by private cars as the prime target. This approach, however, may be highly problematic due to the amount of revenue gained by airports. Parking is the number one source of non-aeronautical revenue for airports and the targeting of cars in order to decrease emissions may not be easily accepted.

**The infrequency of public transport:** airport employees and travellers need reliable transport solutions including timetables that are suitable during off-peak hours. This problem has been particularly evident in Stuttgart, Vienna and Warsaw where public transport timetables are often not suited for employees that work in shifts, and has created a serious challenge when convincing employees to switch to sustainable transport.

**Problems in behaviour change:** due to the low quality and often lack of the infrastructure to support pedestrians and cycling connections between the airport and city centre, employees and passengers are left with limited transport options and often choose a vehicle as the most efficient mode of travel. Development of this infrastructure also requires extensive investment and has been an ongoing challenge for almost all partner airports.

**Lack of a clear alternative:** environmental issues are becoming an increasingly important social issue across Europe. LAirA must take into consideration the carbon footprint created from landside transport and work with local and national policy makers to create eco-friendly alternatives.

The challenges referenced above have only continued to grow over time and as tourism and travel to and from Europe continues to flourish, transportation problems will persist. According to an EU fact sheet, in 2017, the number of international tourist arrivals reached 1.32 billion worldwide of which 51% were in Europe. Finding effective solutions to address transport as it relates to the climate crisis is imperative.

The statistics regarding the consumption and mass use of products relating to carbon emissions in the region show startling trends and have, largely, served as the basis for the enhanced cooperation between the multiple partners of LAirA. This project can serve as the basis for the enhanced cooperation between many airports and experts in Europe, where knowledge and information can be shared to improve development and where views and arguments can be expressed in order to reach compromises where all parties can be satisfied.



## Short-Term Steps to Reach LAirA Objectives

Having previously established the objectives of LAirA's transnational strategy, four short-term actions have been decided upon to ensure straightforward implementation. Our goal is to accomplish the below actions across the regions within one-two years of the project finalisation:

- 1. Applications (Apps) with real-time data on different modes of transport and their schedules for passengers:** many passengers and employees have access to a smartphone and applications (apps) that can be leveraged to provide information about transportation alternatives and timetables. Milan Airport has piloted an app with some success. The development of a mobile application requires a short-term investment and will meet two of LAirA's objectives: encouraging the use of low carbon mobility and preserving the environment.
- 2. Pre-trip and on-trip information for arriving passengers on low carbon ways of leaving the airport:** coordination between airlines, public transport operators, taxi companies and local authorities in an effort to provide passengers and employees with transportation options is an easy to implement step that requires minimal investment. Display screens in-flight, located at baggage claim, or posted on airline websites is a low-cost solution to equip passengers and employees with their transportation options. Creating on-trip and arrival information will meet two of LAirA's objectives: offering value to the public sector and preserving the environment.
- 3. Employee awareness-raising on low carbon mobility:** airport employees may not be aware of the environmental impacts of their daily commute or the available transport options. The creation of educational materials and eco-friendly transport options will raise awareness of the importance of environmental preservation, public health and the local identity around the cities where employees live and work. Awareness-raising concerning local employees will meet two of LAirA's objectives: soft mobility as a way of accessing the airport as well as preserving the environment.
- 4. Shared mobility hubs in the functional area of the airport for passengers and employees:** shared services as we have seen with UberPool, DriveNow, UberJump and Lime offer eco-friendly ride-sharing, car-sharing and bike-sharing solutions to passengers and employees alike. Cooperation between airports and private operators has the potential to create new partnerships for airport transportation services and would increase awareness of these services. These systems provide low-cost trips for passengers and employees, show an immediate improvement in the air quality at the permanent measuring stations and meet two of LAirA's main objectives: investing in the infrastructure for electric mobility and vehicle-sharing systems as well as preserving the environment.



## Medium to Long-Term LAirA Objectives

The following are the medium- and long-term interventions that should be the legacy of the LAirA project in developing green airports in terms of surface access:

**Enhancing public transport:** this step requires continued investment to change airport behaviour and to be able to reduce capacity and bottleneck issues by introducing new and fast direct connections to airports. This is a long-term goal for LAirA, with the timeline set for 2040. Investment in this area will serve to meet one of LAirA's main objectives: improving and investing in the public transport sector to make it more appealing and accessible.

**Strategy for battery management:** the cradle to a grave scenario for lithium-ion batteries is unacceptable. A sustainable plan for reusing and recycling must be implemented before any bigger changes in the ratio between electric and gas/diesel vehicles occur. This new step will serve to meet one of LAirA's main objectives: the preservation of the environment. This step has been given a timeline to be in place by 2040.

**Investments in electric mobility infrastructure:** appropriate charging infrastructure is a must-have for the switch to electric mobility. Investment in this manner is an important move that can be introduced by all airports. LAirA's second objective: investment in the infrastructure for electric mobility and vehicle-sharing systems. This step, when introduced by airports, has the possibility of being in full effect by 2030.

**Investments in soft mobility infrastructure:** appropriate cycling infrastructure is a key step in the move to soft mobility. This should be a move introduced by all partners, at least for the surrounding areas to accommodate employees living in the vicinity. Development in this way would increase the attractiveness of cycling and attract people to make use of the infrastructure available. Currently, cycling is not an attractive method for transport in most areas due to the lack of facilities at airports for cyclists (showers, storage, etc.) Improvement in this area is crucial in order to encourage employees to cycle to work. Such measures could be in place by 2040 and serve to meet the third objective of LAirA: soft mobility as a way of accessing and leaving the airport.

# Recommendations

The recommendations of LAirA project are:

- **Invest** in a common approach on smart mobility to and from airports;
- **Develop** personalised strategies, supported by policy makers, authorities and local communities, to promote low carbon mobility to and from cities;
- **Provide** core funding to build eco-friendly, low carbon modes of transport for all traveling/commuting through LAirA airports;
- **Build** an awareness-raising campaign to encourage all passengers to use environmentally friendly modes of transport;
- **Ensure** that behavioural changes in transport from travellers and airport employees work in tandem in order to see the impact;
- **Continue** to strengthen partnerships across Central European airports.

## Ease of Use

Seamless integration between transportation and airports is key. It becomes essential to build efficient modes of transport as passengers will need to feel they are on quick, reliable and convenient transportation in and out of the airport. The proposed mobility options need to be both readily available and easy to use/access to ensure the success of these low carbon mobility options.

## Communication

Globalisation has brought the world closer through air travel, and the time to amplify investment and communication on important role travel has on the environment is now. Our transnational strategy document has laid a foundation for communication. The document offers a solution to deliver awareness-raising campaigns to employees, passengers, airports, travel companies, tourist boards and cities to encourage eco-friendly transportation options throughout Central Europe.

## Investment in infrastructure and facilities

With the ever-increasing demand for mobility, environmental issues are becoming the major challenges to overcome. The development of infrastructure and facilities, as suggested in this report, play an essential role in stimulating economic growth, sustainability and job creation. Investing in low carbon, interconnected transport and sustainable development around airports will improve environmental performance, making progress towards lower emissions and environmental targets.

## Investment by Europe

The EU has introduced a trillion-euro finance plan to rethink Europe's economy, transport and energy sectors in an effort to become a world leader on clean technologies. The European Commission's funding will include augmented money from the EU's long-term budget, loans from the European Investment Bank and InvestEU. Low carbon transportation options and eco-friendly infrastructure updates to European airports are clearly aligned with the current policy priorities. LAirA has a strategic advantage to have a seat at the table with key stakeholders and policy makers to make informed future decisions on low carbon transportation solutions.

# Detailed Mobility Solutions at LAirA Airports

## Budapest, Hungary

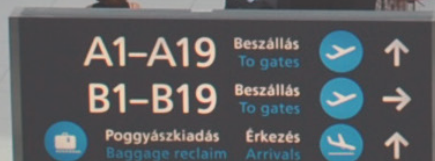
Liszt Ferenc International Airport in Budapest accommodates what is considered the largest functional urban area in Hungary, with nearly three million inhabitants. The area is easily accessible from almost the entirety of Hungary as well as large parts of neighbouring Austria, Slovakia, Ukraine, Slovenia, Serbia, Romania, Croatia and Slovenia - all within a three-hour drive. A total of 13 million people are in the proximity of Budapest Airport.

Budapest Airport connects to the city centre by two public bus lines and a major motorway. There is no direct railway connection, yet there are two major East-West railway corridors along the country's borders.

The Hungarian government is currently building a train station and corridor under terminal two of the airport to provide seamless integration between the existing East-West lines. The new railway service is expected to be implemented between 2022 - 2023.

**Budapest Airport has set five key intervention areas to reach their vision of sustainable urban mobility:**

- Improving accessibility of the Budapest Airport to the city centre and surrounding regional areas;
- Mobility development to be created within the capital or beyond the boundary of the airport district;
- Improving mobility connections within the Budapest Airport district;
- Strengthening the sustainable mobility solutions of the Liszt Ferenc International Airport;
- Raising awareness and improving communication.





# Milan, Italy

The two Milan Airports, Linate and Malpensa, are located in the Lombardy region of Italy with a population of over ten million inhabitants. The airports located across this region host more than 40% of the regional population in their FUA.

Future aims for the Milan Airports' landside accessibility have been set by the SEA Group, which is responsible for the management of the two airports, providing all services and related activities.

Their vision entails Linate and Malpensa to be the greenest Italian airports as well as the heart of northern Italy's mobility networks while being equipped with the technologies and infrastructure for the best customer mobility services.

As part of the vision, the following objectives are to be pursued by 2030:

- Reducing traffic congestion on the local road network;
- Adapting the airports' business models to new mobility paradigms, which means enhanced use of public (increase to 40%) and shared mobility needs;
- Delivering and improving the landside airports' infrastructure.

# Poznan, Poland

Henryk Wieniawski Poznań-Lawica International Airport is one of the oldest airports in Poland. This airport is also the seventh-largest Polish airport with a functioning urban area of one million inhabitants and accounts for about 1.5 million passengers a year.

In a bid to improve the accessibility of the airport, four proposals have been suggested:

- Introducing electric buses;
- Building a city bike station near the airport to encourage employees use (the first 20 minutes of the ride will be free of charge);
- Enhancing the use of electric cars and car-sharing services;
- Launching a tramline from the airport to the city centre.



# Modlin, Poland

**M**odlin Airport in Warsaw is a civil airport opened in 2012, servicing flights of short and medium-range of low-cost airlines and charter flights. In 2018 the airport served 3.1 million passengers.

The main objective of Modlin Airport is to build environmental awareness among airport users and staff. It is to be achieved by the development of low carbon mobility infrastructure and through changes in the travel behaviour of passengers and employees. The strategy will be built upon by expanding the offer of public transport as well as improving pedestrian and bicycle infrastructure in the functional area. It is expected to result in a reduction of greenhouse gas emissions caused by journeys to the Modlin Airport.

**The main objective of Modlin Airport is to promote and support environmentally friendly solutions within the transport system of the Mazovia region through the following actions:**

- Developing low carbon mobility infrastructure;
- Creating changes in the travel behaviour of passengers and employees;
- Building environmental awareness among airport users and staff;
- Reducing greenhouse gas emissions, including CO<sub>2</sub>, resulting from journeys to the Warsaw/ Modlin Airport.

# Vienna, Austria

**V**ienna Airport is located 20 km from the City of Vienna in the province of Lower Austria. It is situated in a functional urban area (FUA) with a total population of over 2.7 million inhabitants. The airport is well connected by rail and by road, including public transport and car, from Vienna, Linz and Graz. However, the airport has experienced some challenges in developing cycling infrastructure around the airport.

Vienna has set out several objectives in their ambition to have 50% of their outbound passengers use rail-bound transport modes for accessing the airport. The other half of commuting by eco-friendly road transport modes such as electric or alternative-fuel-taxis, joint rides and eco-friendly busses.

**Objectives of Vienna Airport:**

- CO<sub>2</sub> neutrality of the airport by 2030;
- A higher share of rail-bound transport modes for accessing the airport by 2030;
- A higher percentage of e-vehicles among taxis that access the airport;
- A higher rate of bicycle users among airport commuters.



# Stuttgart, Germany

**S**tuttgart Airport is located in the Stuttgart functional urban area, with a population of over 1.95 million inhabitants (data from 2014). The airport is located about 13 km south of Stuttgart. Overall, it is very well connected to its functional urban area by multiple transport services. However, a new rail project is planned to enhance the accessibility of the airport as well as an extension to the existing rail line.

The airport expects around 14 million passengers by 2030, which is the growth of around 41%. As such, it is looking for investments into public transport that will need to accommodate such masses with an expectation for the public transport share to increase from 23% to 45% between 2019 and 2030.

**Stuttgart predicts that passengers and employees will need to change their mobility behaviour. Stuttgart Airport has two aims:**

- Reduction of CO<sub>2</sub> emissions within the region;
- Development of sustainable public transport to and from the city centre as well as throughout the Stuttgart functional urban area.

# Dubrovnik, Croatia

**D**ubrovnik Airport is located in the southernmost county, Dubrovnik-Neretva. The county is cut-off from the rest of Croatia because of the proximity of the coastline to the Bosnia and Herzegovinian border. This region is to a large extent economically reliant on the tourism industry.

Currently, the airport can only be accessed by road. Pedestrian and cycling infrastructure has yet to be developed. Railway access is not presently discussed due to the narrow passageway between the coastline and border with Bosnia and Herzegovina. The area presents a problem of passengers choosing to use private cars for convenience with nearly 50% of passengers arriving by private car (a mode of transport that could easily be replaced by a shuttle bus).

**The airport of Dubrovnik aims to develop forms of sustainable transport in the area, with particular aim set on cycling, walking and electric mobility, by achieving several objectives:**

- Reducing the proportion of employees travelling alone by car to the airport;
- Increasing in the use of shared mobility and soft mobility modes;
- Improving the efficiency and sustainability of the public transport sector.



# Picture sources

## **Budapest Airport**

Ato 01, [https://en.wikipedia.org/wiki/Budapest\\_Ferenc\\_Liszt\\_International\\_Airport#/media/File:Liszt\\_Ferenc\\_Repuloter\\_2-es\\_terminal\\_varocsarnok\\_06.JPG](https://en.wikipedia.org/wiki/Budapest_Ferenc_Liszt_International_Airport#/media/File:Liszt_Ferenc_Repuloter_2-es_terminal_varocsarnok_06.JPG)

## **Milan Malpensa Airport**

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## **Stuttgart Airport**

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## **Dubrovnik Airport**

ZL Dubrovnik, <https://www.croatiaweek.com/dubrovniks-new-airport-terminal-nears-completion/>

## More about LAirA

<https://www.interreg-central.eu/Content.Node/LAirA.html>

LAirA (Landside Airport Accessibility) is financially supported by the European Union's Interreg Central Europe programme, which is a European cohesion policy programme that encourages cooperation beyond borders. LAirA is a 30-months project (2017-2019), with a total budget of €2.3 million.

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