

CONCEPT OF STRATEGIC ACTIONS IN THE FIELD OF LOW-CARBON ACCESSIBILITY OF THE WARSAW/MODLIN AIRPORT

D.T3.1.4 – Building the strategy for Warsaw
airport long-term mobility integration into the
Functional Urban Area



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1. INTRODUCTION

The LAirA project (Landside Airports Accessibility) focuses on the challenges of ensuring multimodal landside accessibility of Central European airports as part of an integrated, smart and low-carbon transport system. The aim of the project is to reduce the energy consumption of airports and their hinterland and the negative environmental impact resulting from their operation. This objective is to be achieved by changing the transport behaviour of airport employees and passengers, including actions identified in innovative low-carbon mobility strategies for public entities. The LAirA project covers seven main thematic areas: electric mobility, railway connections to airports, walking and cycling, shared mobility, intelligent transport systems, wayfinding and public road transport. One of the elements of the project is to develop a concept of strategic actions in the field of low-carbon landside accessibility of the Warsaw/Modlin airport.

The concepts of strategic actions intend to integrate airports with their functional urban areas, thus reducing greenhouse gas emissions through joint mobility management, involving airports, local and regional authorities, institutions, transport operators and associations. The LAirA project will also allow for the development of an international procedure for the propagation of its solutions in other functional urban areas of Central Europe which plan to develop their own strategies.

The LAirA project has been implemented since May 2017 under the Interreg Central Europe programme. The Mazovian Office for Regional Planning participates in the project as a partner. It is responsible for, among others, conducting analyses concerning mobility in the functional area of the Warsaw/Modlin airport and developing a concept of strategic actions aiding in the creation of an integrated transport system for the airport and its functional area.

1.1 Objectives and scope of the study

The aim of the concept of strategic actions is to use the experience and knowledge of the LAirA project partners for the development of an integrated low-carbon mobility system in the functional area of the Warsaw/Modlin airport.

The concept of strategic actions is addressed to stakeholders at the local, regional and national level, organisational units, Warsaw/Modlin airport authorities, companies and non-governmental organizations. All of their actions and opinions contribute to the future of the area surrounding the airport and to the sustainability of the project effects. The provisions of the concept of strategic actions are intended to promote the solutions included therein. Therefore, they do not impose the obligation to implement the indicated actions on municipalities and entities specified in the concept. However, as a set of best practice and solutions, they may help to develop strategies, plans and programmes for the organisation of transport systems.

A long-term horizon is included in the concept of strategic actions. This is partially due to the fact that striving to implement a lasting development model requires long-term actions. It is also due to the need for consistent implementation of the actions developed within the framework of the project in order to achieve the expected results.

From a supra-regional perspective, the LAirA project aims to develop transnational standards for concepts of strategic actions serving to integrate airports with their urban functional areas in order to reduce the greenhouse gas emissions generated by travel to and from the airport. The target group of the international concept of strategic actions includes all the institutions, organisations and persons who play a part in mobility management within the functional areas of airports.

1.2 Description of Warsaw/Modlin airport and its transport functions

1.2.1. Basic information

Warsaw/Modlin International Airport is a civil airport, operating short and medium range scheduled flights of low-cost airlines and charter flights. The airport was opened in 2012. It is located in Nowy Dwór Mazowiecki (Nowy Dwór Mazowiecki County, Mazovia region). It is the second airport, after Chopin Airport, serving the Warsaw metropolitan area. In 2018, the airport served 3.1 million passengers.

The airport is owned by the Mazowiecki Port Lotniczy Warszawa-Modlin company, whose shareholders are: the Military Property Agency (34.43%), 'Polish Airports' State Enterprise (30.39%), the Mazovia Region (30.37%) and the city of Nowy Dwór Mazowiecki (4.81%).

FIGURE 1. PLAN OF THE WARSAW/MODLIN AIRPORT



Source: Airport website, <https://www.modlinairport.pl/strona/plan-lotniska-0>

[Translation of Fig. 1: droga startowa o dlugosci 2500 m z mozliwoscia przedluzenia - runway with a length of 2500 m with the possibility of extension; terminal obsluga samolotow tanich linii i charterow – terminal low-cost airlines and charter flights; plyta postojowa – apron; plyta odlodzeniowa - deicing apron; TWR – Tower; LSRG - Airport Fire Brigade; prog – barrier]

TABLE 1. NUMBER OF PASSENGERS 2012-2018

Year	2012	2013	2014	2015	2016	2017	2018
Warsaw/Modlin Airport	857 481	344 566	1 703 743	2 589 286	2 859 191	2 931 503	3 080 699

Source: Polish Civil Aviation Authority [Urząd Lotnictwa Cywilnego]

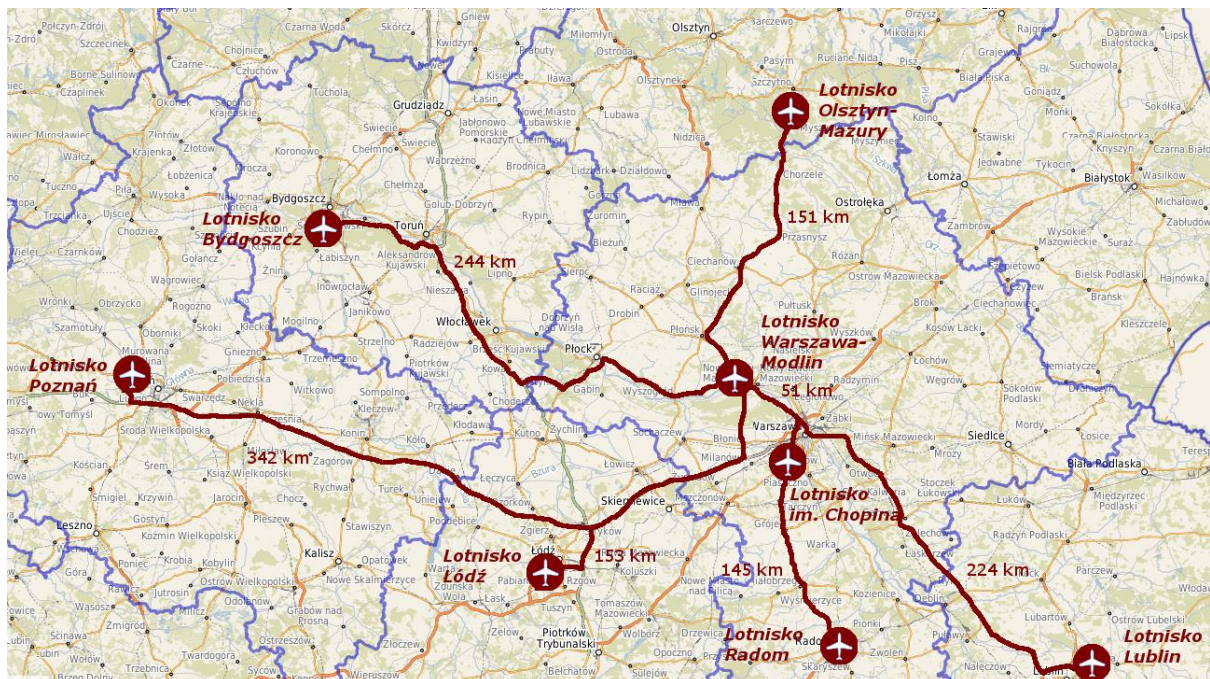
1.2.2. Location of Warsaw/Modlin airport

Warsaw/Modlin Airport is located 3 km to the north-west of the city centre of Nowy Dwór Mazowiecki, near the S7 route connecting Warsaw and Gdansk. The location of the airport in relation to the nearest airports and the distance from these airports by road are shown on the map below. There is a direct railway connection between Modlin train station and Warsaw Chopin Airport with one pair of trains running every hour.

The location of the Warsaw/Modlin airport should be considered beneficial due to the fact that:

- the distance from airports which may provide competition (with a similar traffic structure, with a dominant share of low-cost airlines) is at least 150 km;
- the airport is well connected by roads;
- the airport is located close to the Warsaw metropolitan area and is well connected to its affluent market;
- the airport has access to labour resources in towns within its functional area.

FIGURE 2. LOCATION OF THE WARSAW/MODLIN AIRPORT IN REFERENCE TO THE NEAREST AIRPORTS



Source: Analysis of the multimodal mobility system in the Mazovia airport FUA, The Mazovian Office for Regional Planning [MBPR], 2017

[Translation of Fig. 2: Lotnisko – airport]

1.2.3. Description of the Warsaw/Modlin airport functional area

The functional area of the Warsaw/Modlin airport covers the area of three municipalities:

- Nowy Dwór Mazowiecki
- Zakroczym,
- Pomiechówek

These municipalities directly surround the Warsaw/Modlin airport (which is located administratively within Nowy Dwór Mazowiecki) which is a justification for establishing such boundaries of the functional area. The municipalities provide a naturally connected functional area and should cooperate closely. One of the aims of such cooperation is creating a common investment area around the Warsaw/Modlin airport.

This analysis also includes Warsaw due to the role it plays in the development of the Warsaw/Modlin airport and its functional area.

Basic information about the four analysed local government units is presented in the table below.

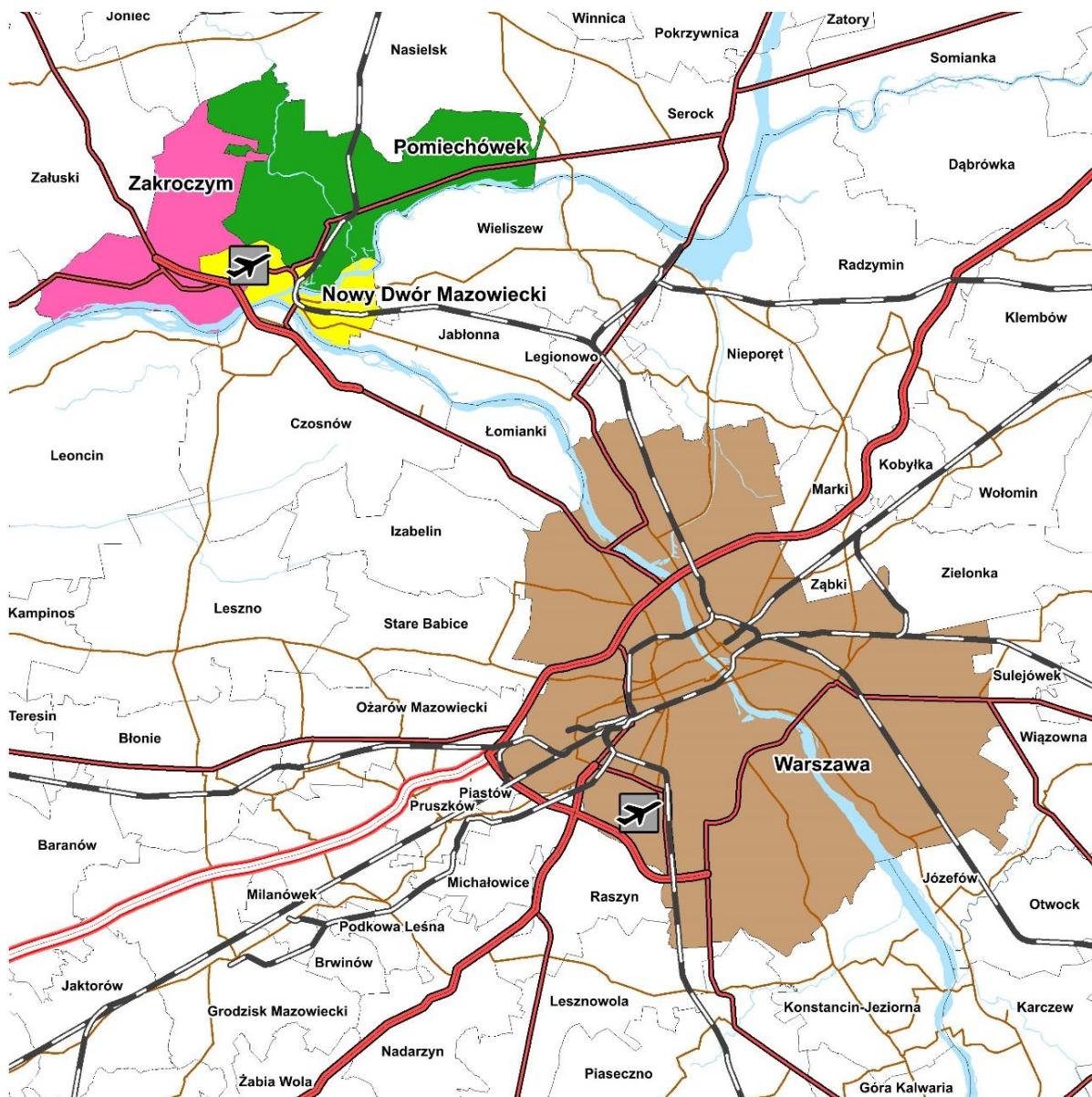
TABLE 2. BASIC INFORMATION ABOUT THE ANALYSED LOCAL GOVERNMENT UNITS (2018)

Name	Municipality type	Area	Population	Population density
Nowy Dwór Mazowiecki	urban municipality	28 km ²	28 647	1 015 pop./km ²
Zakroczym	urban-rural municipality	72 km ²	6 082	85 pop./km ²
Pomiechówek	rural municipality	103 km ²	9 092	89 pop./km ²
Warsaw	city with county rights	517 km ²	1 777 972	3 437 pop./km ²

Source: Statistics Poland (GUS)

A map of the Warsaw/Modlin airport functional area along with Warsaw is presented below.

FIGURE 3. WARSAW/MODLIN AIRPORT FUNCTIONAL AREA



Source: Prepared by the Mazovian Office for Regional Planning

2. METHODOLOGY

This concept of strategic actions utilises materials and documents developed within the LAirA project. The first analysis, prepared by the project team in September 2017, concerned mobility plans and policies within the functional area of the Warsaw/Modlin airport. The analysis focused on strategic documents relating to the spatial development and transport policies of the region and local spatial development policies. For the purpose of this concept of strategic actions, recent changes in these documents were also taken into account.

Another document used in the preparation of the concept is entitled "Analysis of the multimodal mobility system in the Mazovia airport FUA". It was prepared in October 2017 by an external company, with the participation of members of the LAirA project team. It was commissioned by the Mazovian Office for Regional Planning. The analysis presents in detail

the available possibilities of reaching the airport and also exposes the existing difficulties and deficiencies. Changes that have recently occurred in this area have also been taken into account while preparing this concept.

The next stage serving to identify the mobility characteristics within the airport's functional area was an analysis of needs, expectations and behaviours of passengers and airport employees. The employee survey was conducted in cooperation with the Mazowiecki Port Lotniczy Warszawa-Modlin company between 23 March and 6 April 2018. Both paper forms (PAPI) and online forms (CAWI) were used. A total of 247 people took part in the survey, which amounts to about ¼ of all the people employed at the airport. The passenger survey was conducted between 24 and 28 April 2018 using paper forms (PAPI). A total of 507 questionnaires were filled in. The reports presenting the needs, expectations and behaviours of passengers and airport employees were delivered in May 2018.

The abovementioned studies provided a diagnosis of the current situation and served to identify the main challenges and opportunities for developing low-carbon mobility. On this basis a long-term vision for Warsaw/Modlin airport was formulated as well as the objectives necessary for its implementation. Afterwards, a set of activities which would contribute to the fulfilment of these objectives and the implementation of the vision were put forth, bearing in mind the solutions implemented or in the process of implementation by other partners, making use of the set of best international practice and the analyses commissioned exclusively for Warsaw/Modlin airport.

3. DIAGNOSIS OF THE TRANSPORT SITUATION OF THE WARSAW / MODLIN AIRPORT

3.1 Analysis of strategic documents concerning mobility within the functional area of the Warsaw/Modlin airport

This chapter presents the findings of the analysis of mobility plans and policies concerning the functional area of the Warsaw/Modlin airport. The analysis covers the documents of municipalities located within the functional area, but also of the county of Nowy Dwór Mazowiecki and the regional government of Mazovia. Additionally, the documents of the capital city of Warsaw were analysed. This was due to the importance of the Warsaw/Modlin airport to the Warsaw metropolis and its supplementary function to the Warsaw Chopin Airport.

Local governments are obliged by national legislation to draw up plans and policies concerning transport or containing issues related thereto:

a) on the basis of the Spatial Planning and Land Development Act¹:

- the regional spatial development plan (regional government),
- studies of conditions and directions of spatial development and local spatial development plans (municipal governments);

(b) on the basis of the Act on Principles of Development Policy²:

- development strategy (regional government);

c) on the basis of the Act on Public Transport³:

- plan of sustainable development of public transport (all levels of local and regional government, if the criteria specified in the act are met).

The analysis also contains conclusions based on the analysis of development programmes of various branches of transport. They were conducted by the Mazovian regional government of its own initiative or within the framework of the international cooperation.

3.1.1. Analysis of strategic documents at the regional level

The following regional-level documents were analysed:

- *Development Strategy of the Mazowieckie Voivodeship 2030. Mazovia as an Innovative Region*⁴,
- *The Spatial Development Plan for Mazovia*⁵,

¹ The Spatial Planning and Land Use Management Act of 27 March 2013, Dz. U. from 2018 item 1945 (Ustawa z dnia 27 marca 2013 roku o planowaniu i zagospodarowaniu przestrzennym, Dz. U. z 2018 poz. 1945.)

² Act on Principles of Development Policy of 6 December 2006, Dz. U. from 2018 item 1307. (Ustawa z dnia 6 grudnia 2006 roku o zasadach prowadzenia polityki rozwoju, Dz. U. z 2018 poz. 1307.)

³ Act on Public Transport of 16 December 2010, Dz.U. from 2018 item 2016. (Ustawa z dnia 16 grudnia 2010 roku o publicznym transporcie zbiorowym, Dz.U. z 2018 poz. 2016.)

⁴ Resolution No. 158/13 of the Regional Assembly of Mazovia of 28 October 2013 on the Development strategy of the Mazovia region until 2030 (Uchwała nr 158/13 Sejmiku Województwa Mazowieckiego z dnia 28 października 2013 r. w sprawie Strategii Rozwoju Województwa Mazowieckiego do 2030 roku.)

⁵ Resolution No. 22/18 of the Regional Assembly of Mazovia of 19 December 2018 on the Spatial Development Plan for Mazovia. (Uchwała nr 22/18 Sejmiku Województwa Mazowieckiego z dnia 19 grudnia 2018 r. w sprawie Planu zagospodarowania przestrzennego województwa mazowieckiego.)

- *The Sustainable Public Transport Development Plan for the Mazovia region*⁶,
- *Programme of Development and Technological Modernization of Rail Transport in the Mazovia region*⁷,
- *Programme of Development of Civil Aviation Infrastructure in the Mazovia region*⁸,
- *The Integrated Regional Polycentric Development Plan for the Warsaw Modlin Airport Catchment Area*⁹.

Conclusions:

1. The spatial policy of Mazovia is defined and implemented within the framework of the regional development strategy (hereinafter: Strategy). The Spatial Development Plan for Mazovia (hereinafter: Plan), with the urban development plan of the Warsaw functional area being its integral part, is a tool for its implementation at the regional level. It is implemented by providing directions of spatial development and appropriate investment tasks.
2. The mobility-related policy directions and actions specified in the Strategy are aimed at creating conditions encouraging the use of sustainable means of transport.
3. Rail transport is indicated as the key branch of transport in the Strategy. It will be developed through the construction, modernization and expansion of linear and nodal infrastructure, improvement of the standards of maintenance, restoring unused railway lines to operation, as well as purchasing and modernizing the rolling stock.
4. Integration of transport systems has been identified as a necessary condition of improving travel quality. This includes tariff and ticketing integration, coordination of timetables and providing effective transfer points/hubs. Also indicated is the need to increase the competitiveness and efficiency of public transport by creating dedicated bus lanes or setting traffic lights appropriately. In order to facilitate transfers, it is recommended to develop "park and ride" and "bike and ride" parking facilities.
5. The Strategy also contains provisions regarding the development of pedestrian and bicycle mobility, including the construction of cycling routes of interregional, regional and local importance.
6. In terms of road infrastructure, the Strategy promotes activities aimed at eliminating car traffic from cities through the construction of bypasses or zone calming of traffic in built-up areas.

⁶ Resolution No. 217/14 of the Regional Assembly of Mazovia of 3 November 2014 on Sustainable Public Transport Development Plan for the Mazovia region (Uchwała Nr 217/14 Sejmiku Województwa Mazowieckiego z dnia 3 listopada 2014 r. w sprawie Planu zrównoważonego rozwoju publicznego transportu zbiorowego dla Województwa Mazowieckiego.)

⁷ Resolution No. 116/5/14 of the Regional Assembly of Mazovia of 16 December 2014 on the adoption and consultation of the Programme of Development and Technological Modernization of Rail Transport in the Mazovia region (Uchwała nr 116/5/14 Zarządu Województwa Mazowieckiego z dnia 16 grudnia 2014 roku w sprawie przyjęcia i poddania konsultacjom projektu Programu rozwoju i modernizacji technologicznej transportu szynowego w województwie mazowieckim.)

⁸ Resolution No. 117/5/14 of the Regional Assembly of Mazovia of 16 December 2014 on the adoption and consultation of the Programme of Development of Civil Aviation Infrastructure in the Mazovia region (Uchwała nr 117/5/14 Zarządu Województwa Mazowieckiego z dnia 16 grudnia 2014 roku w sprawie przyjęcia i poddania konsultacjom projektu Programu rozwoju infrastruktury lotnictwa cywilnego w województwie mazowieckim.)

⁹ Document prepared by the MBPR in the framework of the project "airLED: Local economic development within airport catchment areas", 2016.

7. The Plan, in accordance with the directions and actions formulated in the Strategy, also contains investment tasks related to the development of railway transport within the functional area of Warsaw. This includes the construction of a railway line to the Warsaw/Modlin airport (with an extension to Płock in the longer term). Moreover, both the transport plan and the railway programme propose a specific public transport offer after the construction of the line. The Programme for the Development and Technological Modernization of Rail Transport puts forth train services to the airport every 30 minutes - available interchangeably as agglomeration trains and regional accelerated ones from Płock.
8. Plans for the rail connection between Płock and Warsaw have evolved towards the construction of the link via the CPK [Solidarity Transport Hub], planned by the national government. In this situation, a joint variant of the connection between Płock and Warsaw should be defined, utilising both lines: a joint route from Płock to the planned crossing of the Vistula River near Wyszogród by the line from the CPK [Solidarity Transport Hub]. From this point, the line should be separated into two: one to Modlin and one to the CPK. They would form a western railway bypass of Warsaw, closing the system of ring lines around the Warsaw node.
9. The Plan posits as necessary the provision of transfer hubs, both at the airport and in Nowy Dwór Mazowiecki.
10. The Plan defines a network of bicycle routes – including supra-regional routes along the banks of the Vistula River within the functional area of Warsaw. The regional routes would service the cities around the capital. A connecting route would run on the bridge on the Vistula River along the S7 road.
11. The Plan identifies investment projects in road infrastructure that would improve road accessibility of the functional area: construction of the S7 and S10 expressways, reconstruction of regional road No. 631 and construction of bypasses of the Pomiechówek and Jabłonna cities. The administrator of national roads, in line with the plans specified in the concept of the Solidarity Transport Hub, plans the construction of the bypass of Warsaw. It would include the S10 road as its northern element. The approximate route of the S10 road from national road no. 7 on the Żaluski - Zakroczym section to the vicinity of Serock has been determined during the ongoing works on the corridor study of this road and on the bypass concept.
12. The Plan identifies the area around the Warsaw/Modlin airport within the functional and spatial structures of the functional area of Warsaw. To this area are addressed the activities consistent with the Integrated Regional Polycentric Development Plan for the Warsaw/Modlin Airport Catchment Area.¹⁰
13. The Integrated Regional Polycentric Development Plan for the Warsaw/Modlin Airport Catchment Area includes actions concerning the further development of the airport: the terminal, aprons, runway. Activities for the development of transport infrastructure were also identified. They are consistent with the provisions of the Spatial Development Plan for Mazovia.

¹⁰ Document prepared by the MBPR in the framework of the "airLED: Local economic development within the airport functional areas" project, 2016.

14. In the regional documents, there are no provisions concerning the promotion of electromobility, ridesharing or vehicle rental.

3.1.2. Analysis of strategic documents at the metropolitan level

The following documents were analysed:

- *Strategy for the Development of the Warsaw Metropolitan Area until 2030*¹¹.
- *Strategic Action Plan for the Warsaw Metropolitan Area - Strategic Guide 2.0*¹².

Conclusions:

1. The strategic documents at the metropolitan level indicate walking, cycling and public transport, in particular rail transports, as the primary means of transport in the Warsaw Metropolitan Area [WMA]¹³. The main problem with the WMA's transport services is the poor organisation and integration of the transport system in terms of infrastructure and tariffs.
2. The WMA Strategy therefore identifies as strategic objective #1 the development of a smart integrated public transport network in the WMA. The Strategic Action Plan also emphasizes the key role of cooperation between local governments and the regional one for a common transport policy in the WMA and better coordination of organizational, transport, trade, tariff and infrastructure issues.
3. What is important from the point of view of this Concept, the promotion of multimodal and low-carbon transport solutions by the EU has been identified as an opportunity for the development of the WMA in the "Transport and Infrastructure" area. As an example of a transport and infrastructure project, the Strategy points to the improvement of low-carbon public transport airport access services (in terms of the number and quality of connections).
4. Both the Strategy and the Action Plan provide support for the implementation of car sharing/urban car system solutions in the WMA.

3.1.3. Analysis of strategic documents at the local level

The following documents were analysed:

- *Development Strategy of the Nowy Dwór County for 2015-2030*¹⁴,
- *Development Strategy of the City of Nowy Dwór Mazowiecki for 2018-2030*¹⁵,

¹¹ <http://omw.um.warszawa.pl/wp-content/uploads/2015/09/Strategia-Rozwoju-Obszaru-Metropolitalnego.pdf>

¹² <http://omw.um.warszawa.pl/wp-content/uploads/2018/09/Plan-dzia%C5%82a%C5%84-strategicznych-dla-metropolii-warszawskiej.pdf>

¹³ The Warsaw Metropolitan Area (OMW) specified in the Strategy includes the functional area of the Warsaw/Modlin airport, i.e. Warsaw and the municipalities: Nowy Dwór Mazowiecki, Pomiechówek and Zakroczym.

¹⁴ Resolution No. XIV/89/2015 of the Nowy Dwór County council dated 30 December 2015 on the implementation of the Development strategy of Nowy Dwór County for 2015-2030 (Uchwała nr XIV/89/2015 Rady Powiatu Nowodworskiego z dnia 30 grudnia 2015 roku w sprawie przyjęcia Strategii Rozwoju Powiatu Nowodworskiego na lata 2015-2030).

¹⁵ Resolution No. XXXVIII/451/2018 of the city council of Nowy Dwór Mazowiecki dated 6 March 2018 on the adoption of the Socio-economic development strategy for Nowy Dwór Mazowiecki for 2018-2030 (Uchwała Nr

- *Development Strategy of the Pomiechówek Municipality for 2016-2020*¹⁶,
- *The Strategy of Sustainable Development of the Zakroczym Municipality until 2020*¹⁷,
- *The #Warsaw2030 Strategy*¹⁸,
- *The study of conditions and directions of the spatial development of the city of Nowy Dwór Mazowiecki*¹⁹,
- *The study of conditions and directions of spatial development of the municipality of Pomiechówek*²⁰,
- *The study of conditions and directions of spatial development of the municipality of Zakroczym*²¹,
- *The study of conditions and directions of the spatial development of the capital city of Warsaw*²².

Conclusions:

1. Some documents regarding the functioning of the airport have become obsolete (the development strategy of the municipality of Zakroczym, the study of conditions and directions of spatial development of the city of Nowy Dwór Mazowiecki).
2. Each of the analysed documents, prepared by local governments within the functional area of the airport, identified the functioning of the airport as a significant opportunity for the social and economic development of the city/municipality/county.

XXXVIII/451/2018 Rady Miejskiej w Nowym Dworze Mazowieckim z dnia 06 marca 2018r. w sprawie uchwalenia Strategii rozwoju społeczno-gospodarczego Miasta Nowy Dwór Mazowiecki na lata 2018-2030).

¹⁶ Resolution No. XVI/148/2016 of the municipal council of Pomiechówek dated 11 April 2016 on the adoption of the Development strategy of the Pomiechówek municipality for 2016-2020 (Uchwała Nr XVI/148/2016 Rady Gminy Pomiechówek z dnia 11 kwietnia 2016 r. W sprawie: przyjęcia Strategii Rozwoju gminy Pomiechówek na lata 2016-2020).

¹⁷ Resolution No. 110/XXII/2004 of the municipal council of Zakroczym dated 15 July 2004 on the adoption of the Strategy of sustainable development of the Zakroczym municipality until 2020 (Uchwała nr 110/XXII/2004 Rady Gminy Zakroczym z dnia 15 lipca 2004 roku w sprawie: przyjęcia Strategii Zrównoważonego Rozwoju Gminy Zakroczym do 2020 roku).

¹⁸ Resolution No. LXVI/1800/2018 of the Council of the Capital City of Warsaw dated 10 May 2018 on the adoption of the strategy of development of the Capital City of Warsaw to 2030 (Uchwała nr LXVI/1800/2018 Rady m. st. Warszawy z dnia 10 maja 2018 r. w sprawie przyjęcia strategii rozwoju miasta stołecznego Warszawy do 2030 roku).

¹⁹ Resolution No. XIII/173/99 of the city council of Nowy Dwór Mazowiecki dated 30 December 1999 on the adoption of the Study of conditions and directions of the spatial development of the city of Nowy Dwór Mazowiecki (Uchwała XIII/173/99 Rady Miejskiej Nowego Dworu Mazowieckiego z dnia 30 grudnia 1999 roku w sprawie uchwalenia studium uwarunkowań i kierunków zagospodarowania przestrzennego miasta Nowy Dwór Mazowiecki).

²⁰ Resolution No. LIII/305/10 of the municipal council of Pomiechówek dated 27 October 2010 on the change of the Study of conditions and directions of the spatial development of the Pomiechówek municipality (Uchwała Nr LIII/305/10 Rady Gminy Pomiechówek z dnia 27.10.2010 r. w sprawie: zmiany studium uwarunkowań i kierunków zagospodarowania przestrzennego gminy Pomiechówek.)

²¹ Resolution No. XI/78/2011 of the municipal council of Zakroczym dated 30 December 2011 on the adoption of the Study of conditions and directions of the spatial development of the Zakroczym municipality (Uchwała Nr XI/78/2011 Rady Gminy Zakroczym z dnia 30 grudnia 2011r. w sprawie uchwalenia studium uwarunkowań i kierunków zagospodarowania przestrzennego gminy Zakroczym).

²² Resolution No. LXII/1667/2018 of the Council of the Capital City of Warsaw dated 1 March 2018 on the change of the Study of conditions and directions of the spatial development of the Capital City of Warsaw - stage 2 (Uchwała nr LXII/1667/2018 Rady m. st. Warszawy z dnia 1 marca 2018 r. w sprawie uchwalenia zmiany Studium uwarunkowań i kierunków zagospodarowania przestrzennego m.st. Warszawy - etap II).

3. The airport is indicated as an important element of the transport system of the municipality/city/county. It is, however, considered mainly at a supralocal scale (served by national roads and railway lines). Therefore, an undertaking that is most frequently mentioned in the documents is improving the accessibility of the airport by the construction a direct railway connection (a link from the Modlin railway station).
4. The problem of the airport's transport is considered to be related to activities exceeding the local scale. The impact of the airport's functioning on the local scale (among other things, being an important employer in terms of commuting to work or creating potential supplementary functions – i.e. the hotel industry) is not taken into account.
5. Most of the analysed documents, prepared by local governments within the airport's functional area, identified a low accessibility of the airport by means of local mass transport. However, the formulated policies are often general and refer to the whole area of municipality/city/county rather than provide solutions specific to the airport transport service. Only the study of conditions and directions of the spatial development of the municipality of Zakroczym identified the need to provide a bus connection with the planned railway station at the Warsaw/Modlin airport.
6. The documents prepared by the local governments within the functional area of the airport identify the need to expand the cycling infrastructure in order to facilitate travel, including journeys outside the municipality. For example, the local government of Nowy Dwór Mazowiecki formulates tasks concerning cycling traffic that will integrate various parts of the city (including the airport). It also aims to create connections with neighbouring municipalities by means of bike lanes and pedestrian and bicycle bridges.
7. The local government documents from the airport FUA recognize threats stemming from the increase in car traffic and the need for pedestrian infrastructure to be developed, both in quantitative and qualitative terms.
8. The documents of the capital city of Warsaw do not refer to the links between the city and the Warsaw/Modlin Airport.

3.2 Analysis of the multimodal mobility system within the functional area of the Warsaw/Modlin airport

The following conclusions were drawn based on the analysis of the multimodal mobility system within the functional area of the Warsaw/Modlin airport:

1. Between 2012 and 2018, the number of air operations and passengers at the airport has been steadily increasing. The airport management estimates that there are around 1,200 employees working at the airport. There is a potential for organising suitable public transport services and for car sharing and renting solutions.
2. The airport does not have a railway connection. The nearest station - Modlin - is located 5 km away from the airport. A bus service between the station and the airport is available. The bus connection is coordinated with the timetable of Mazovian Railways (Koleje Mazowieckie) trains and runs 2-3 times per hour. There are mobility problems at the Modlin station for people with disabilities and for those carrying large luggage (footbridge over the tracks being an obstacle, faulty elevators). The ongoing design works concerning the construction of a railway line directly to the airport are an

opportunity to improve its accessibility. In the long term, an extension of the line in the direction of Płock is planned.

3. Local bus transport service is available in Nowy Dwór Mazowiecki and Pomiechówek. There are private buses running from Zakroczym to Warsaw, via Nowy Dwór Mazowiecki. The main drawback of the current system of bus lines is the lack of a local airport service. In Legionowo, there is a Legionowianin Card available, which allows the residents to reduce the cost of long-term tickets in the second ticket zone of ZTM [Zarząd Transportu Miejskiego w Warszawie - Warsaw Transport Authority]. This may encourage the residents of Legionowo to use public transport. So far, however, there are no ZTM connections to the Warsaw/Modlin airport or even the northern side of the Narew River.
4. The bus connection between the airport and Warsaw is provided by a single company. Long distance connections (in the direction of Olsztyn, Suwałki, Białystok, Lublin, Łódź, Toruń, Włocławek, Płock) are handled by seven companies. The bus stops at the airport are located at the second lane from the terminal exit.
5. The airport can be reached from Warsaw using national roads No. 7 and 62 (on the left side of the Vistula River), national road No. 61 and regional road No. 630 (on the right side of the Vistula River). Travel time ranges from 45 to over 60 minutes. The construction of the S7 expressway between Czosnów and Trasa AK in Warsaw may shorten this time. Reaching the airport from the surrounding municipalities does not take much time. The S10 road is planned to be built north of the airport.
6. In the vicinity of Modlin station there is Park and Ride car park managed by the city of Nowy Dwór Mazowiecki. The park can accommodate 140 cars and provides roofed bicycle racks. It may be used by those who leave their vehicles and continue their journey by public transport or bicycle from the municipal bicycle rental system. The maximum duration of one free parking is two days from the time of registration of the entry²³.
7. Cycling routes to the airport do not provide an adequate level of comfort and safety. There is a lack of adequate infrastructure - bicycle paths and lanes running along the roads ensuring the shortest connections between the airport and towns within its functional area. It should be noted that recently the cycling infrastructure in Nowy Dwór Mazowiecki has significantly improved. However, the geometrical parameters of the new cycling route from the railway station to the airport do not provide conditions for safe and comfortable cycling at the majority of intersections. The key section along the bridge crossing on the Narew River is still missing.
8. There is a public bicycle system in Nowy Dwór Mazowiecki. Until 2019 it was an inconvenient, inflexible and time-consuming system. However, it was replaced by a 4th generation self-service public bicycle system, which does not require returning the bike to a station. The area of functioning of the Nowy Dwór Municipal Bicycle covers the area of the airport. However, leaving a bicycle there costs PLN 2, as there are no dedicated stations at the airport. The Veturilo system operating in Warsaw has no significance to the transport system to/from the Warsaw/Modlin airport. This is due to the significant

²³ Resolution No. IV/59/2019 of the City Council of Nowy Dwór Mazowiecki dated 14 May 2019 regarding the regulations of the Park and Ride parking lot at Kolejowa Street in Nowy Dwór Mazowiecki.

distance between the airport and the nearest Warsaw public bicycle station. Both systems are not compatible with each other.

9. It is not possible to reach the airport safely on foot from any of the three towns in its FUA. Safe pedestrian infrastructure is present only on certain parts of the potential pedestrian routes to the airport. Those walking from the northern part of Nowy Dwór Mazowiecki can use the separate cycling infrastructure mentioned in point 6.
10. On the Warsaw - Warsaw/Modlin airport route there is a joint "Airport Ticket". It enables passengers to use the trains and buses operated by Mazovian Railways between the centre of Warsaw and the Warsaw/Modlin airport. The lack of an option to purchase a return ticket at a reduced price is a disadvantage. The price of a monthly airport ticket is also significantly higher than the standard price of Mazovian Railways tickets. This is especially true in the case of journeys from towns closer to the airport than Warsaw.
11. Public transport tickets are distributed at the airport through traditional channels, such as the ticket sales points of Mazovian Railways and ModlinBus. Additionally, ticket machines of the Mazovian Railways are present in the baggage collection hall and in the open area of the terminal. Tickets for transport operated by ZTM [Zarząd Transportu Miejskiego w Warszawie - Warsaw Transport Authority], Mazovian Railways and Modlin Bus are available for purchase via websites and applications.
12. One can rent a car at the airport. There are nine representatives of rental companies. The fleet consists mostly of cars with conventional motor drives (petrol or diesel engine, a few are hybrid vehicles).
13. There are no solutions present at the airport that would encourage the use of electric vehicles (e.g. charging stations for electric cars or bikes).
14. There are several carsharing systems available in Warsaw. The parking lot situated in front of the terminal is included in the operating zone of one company providing its services in Warsaw and in selected surrounding towns. The fleet of this company consists mainly of hybrid vehicles.
15. The airport has 600 parking spaces for short-term parking at the PA1 parking lot (in front of the terminal) and 500 spaces for long-term parking at the PA7 (outside the airport). The PA3 car park is available for both employees and passengers as a medium-term car park. Employees can also use the PA5 and PA6 car parks, containing almost 200 parking spaces, and the car park located at the main control point (100 parking spaces). Parking lots are paid for by the company's employees by means of subscription. Several bicycle racks are available near the terminal entrance, also at the end of the bicycle path. Employees also have racks at 5 airport buildings at their disposal.
16. There are a number of applications that allow for planning journeys to the airport. A lot of them, thanks to the GPS module, allow to keep track of the trip. The lack of a unified naming convention of the Warsaw/Modlin airport in various travel-planning applications poses a problem. Different websites and applications identify the airport in different ways.

FIGURE 4. PLAN OF THE PARKING AREAS AROUND THE WARSAW/MODLIN AIRPORT



Source: Airport website, <https://www.modlinairport.pl/strona/parking>

3.3 Analysis of passengers' needs, expectations and behaviour²⁴

The majority of passengers (83%) travelled to the airport alone or in the company of one person. The main means of transport was the car, which was chosen by as many as 41% of the respondents. The second option was a bus, which was indicated by 35% of all respondents. Another important means of transport was a train, used by 14% of those arriving at the airport (in combination with further public transport).

Factors such as travel comfort, the sales system and availability were of key importance for the choice of the car as means of transport (private or rented). Similar factors also determined the use of taxis (availability was the most important in this case - 25%). The cost and availability were the main factors for choosing public transport. The ecological sustainability of the means of transport was usually not taken into account at all. The highest share of answers concerning this aspect was recorded in the case of train and bus travel, but it was still very low (below 1.5%). The respondents paid more attention to practical aspects of travel (comfort, availability, travel time) than environmental issues.

Due to the high number of respondents from larger urban centres (e.g. Warsaw - 22% of those departing, Białystok - 10%, Łódź - 6%), it was these cities that accounted for the largest share of passengers using the various analysed means of transport. The majority of people travelling by train and further public transport come from Warsaw (75%). The bus was the most popular among travellers from Warsaw and Białystok (29% and 17%, respectively).

As far as travel to/from the airport is concerned, road marking/signage at the airport and punctuality of buses were the most positively assessed. The availability and frequency of trains received the worst marks.

²⁴ The survey among passengers of Warsaw/Modlin Airport was conducted on behalf of the Mazovian Office for Regional Planning in Warsaw. The PAPI method was used in the survey. The survey was conducted among 507 passengers (252 incoming and 255 outgoing) from 24.04.2018 to 28.04.2018.

The survey respondents were asked to indicate factors that could make them resign from using cars to travel to and from the airport. Nearly $\frac{3}{4}$ of them expressed their willingness to change means of transport. They indicated a number of actions that would result in them choosing more environmentally friendly solutions. Creating direct railway connections to the centre of Warsaw was the most popular (this answer was chosen by 26% of respondents). Setting up a railway station at the airport itself (15% of answers) was a related aspect. A bus stop closer to one's home would motivate 12% of the arriving passengers to give up their car. On the other hand, 8% of the arriving passengers considered it important to have a railway stop closer to their homes.

There were no significant correlations between the age of departing passengers and their chosen means of transport to the airport. However, the highest percentage of people who declared that they were not willing to change the means of transport from/to the airport was recorded among people aged 14-17 and 36-45. Older people (aged over 65) were more likely to be motivated to make such a change by the development of railway and bus infrastructure. This included direct train connections to the city centre and bus stops closer to their homes. The idea of establishing direct railway connections to the city centre was by far the most popular among people aged 18-25 (indicated by as many as 41% of respondents in this age group).

Direct train connections to the city centre and higher frequency of buses/trains were chosen mainly by passengers travelling to Białystok and Warsaw. New bus connections were mainly indicated by passengers travelling to Łomża, Warsaw and Białystok. A railway stop at the airport would convince people travelling to Łódź and Radom to give up travelling by car.

Both arriving and departing passengers make little use of traditional land transport timetables. Checking for connections on the internet and using visual passenger information system is most common. A similar trend is observed for airline ticket purchases, in the case of which the Internet is the dominant medium.

There is a moderate interest in using a mobile application facilitating travel designed for the Warsaw/Modlin airport. 39% of all respondents expressed their willingness to use such an application.

3.4 Analysis of employees' needs, expectations and behaviour²⁵

The sources of the surveyed employees' journeys to the airport are very diverse. Due to the town's proximity, the majority of employees are residents of Nowy Dwór Mazowiecki (1/3 of the surveyed). Some of the employees living in this city go to work on foot or by bus (as the only means of transport). Moreover, the employees living in this city account for the majority of the recorded bicycle commuters (2/3 of the airport employees who declared cycling). The farther from Nowy Dwór Mazowiecki, the lower the share of alternative means of transport, and the greater the share of people travelling by car. Other towns from which a significant share of employees commutes are Legionowo (almost 8% of the surveyed employees) and Płońsk (5% of the surveyed employees). Despite the relatively short distance from the airport, all the respondents living in these towns commute by car (alone or with company).

²⁵ The survey among the employees of Warsaw/Modlin Airport was conducted on behalf of the Mazovian Office for Regional Planning in Warsaw, with the support of the airport manager. PAPI and CAWI methods were used in the study. The survey involved 247 employees of Warsaw/Modlin Airport. The study was conducted from 23.03 to 06.04.2018.

A high number of employees come from Warsaw - almost 16% of the respondents. They are responsible for a relatively high share of commutes by bus and train (depending on the part of the city from which they travel, these means of transport are used by up to 67%).

It is difficult to identify other main sources of the airport staff's commutes. Their places of residence are diversified and a significant part of the staff commutes from a large number of smaller towns and cities. This fact significantly hinders the possibility of developing recommendations which could reduce the modal share of journeys by the car as the main means of transport for employees. Currently, as many as 87% of all the surveyed employees travel to work by car (as a driver or passenger).

In terms of commutes lasting less than 90 minutes, travelling by car, as a driver without passengers, was by far the most frequent response. The largest share of car travellers is visible among those whose commute takes 45 minutes or less. As the commuting time increases, so does the number of those choosing "train + bus" response. "Train + bus" was the most frequently chosen means of transport in the case of journeys longer than 90 minutes. Some of the respondents (not exceeding 13% of the total) travel by car with other airport employees. These journeys are shorter than 60 minutes. It takes employees up to 30 minutes to reach the airport on foot.

The significance of greenhouse gas (CO₂) emissions generated by the airport was another of the examined issues as their level is affected by commutes to/from the airport. More than 42% of respondents assessed this problem as important or very important. Moreover, over ¼ of the respondents confirmed their willingness to give up travelling by car to the airport in a few strictly defined cases in order to reduce the scale of the emission problem. The idea of creating a railway station at the airport was a popular option. It would be an argument for giving up the car for almost 30% of respondents (the availability and frequency of trains and buses were the main problems pointed out in the evaluation of this means of transport). An increase in the frequency of bus and train journeys (slightly over 14%) and a bus stop closer to their place of residence (9%) were also relatively important. A fairly large number of respondents (6.9% and 6.6%, respectively) pointed to the improvement of cycling infrastructure and the location of a railway station closer to the place of residence. Approximately 23% of the respondents stated none of the above would cause them to give up travelling by car.

The increase in the accessibility of rail and bus transport may be the main possibility of reducing the use of the car as a means of transport. The unused potential of cycling is also visible and can be released if the cycling infrastructure is improved, both in terms of quality and quantity.

The most important aspects that could result in some employees deciding to stop travelling by car (a railway stop at the airport, a railway stop closer to home) were usually indicated by the residents of Warsaw and Legionowo. On the other hand, a significant (numerically) group of employees, including some from Płońsk, expressed the need for faster bus/train transfers.

The high interest in railway transport among the inhabitants of Warsaw, Legionowo and Płońsk results from the fact that through these towns and cities run railway lines. It can be assumed that if the accessibility of this type of transport was expanded to other towns (which

currently do not have access to railway infrastructure), some of the commuters therefrom would change their means of transport.

The need for improvement of cycling infrastructure to the airport was reported primarily by employees living in its immediate vicinity, i.e. in Nowy Dwór Mazowiecki, Pomiechówek, Zakroczym and Kazuń Polski. However, the cycling potential is higher and is not limited only to these locations. Some of the answers came from people travelling from longer distances, e.g. Nasielsk.

3.5 Chances and opportunities for developing low-emission mobility to the airport

In terms of electric mobility:

- availability of EU funds for low-carbon public transport investments;
- low air quality within the Warsaw functional area, inspiring the implementation of low-emission transport measures;
- favourable demographic structure and demographic forecast of the Warsaw functional area (especially an inclination to innovations among young people);
- large potential for the development of the alternative fuel vehicles market in the Warsaw functional area;
- the functioning of alternative motor drive vehicle sharing systems in Warsaw and within its functional area;
- emphasis on the development of electromobility in national strategic documents and provisions favouring low-carbon means of transport in regional documents.

In terms of railway connections to the airport:

- the proximity of a long-distance railway line with connections to many cities in the country;
- the inclusion of the construction of a railway line to the Modlin Airport station in the strategic and planning documents of the region;
- a high percentage of passengers making tourist trips, which determines their way of planning their arrival and return from the airport and facilitates identification of their needs;
- availability of the Mazovian Railways' offer for employers, enabling partial reimbursement of season railway tickets;
- functioning of the "Airport ticket" offer which includes railway and public transport in Warsaw and is attractive in terms of prices;
- the presence of the Mazovian Regional Government in the ownership structure of both the airport and the regional railway carrier;
- highlighting the need for integration of transport systems in the regional documents, including tariff and ticketing compatibility and coordination of timetables;
- recognising the problem of railway accessibility of the airport in the documents of local governments within the functional area;
- high quality of railway rolling stock operating on airport connections.

In terms of pedestrian and bicycle traffic:

- emphasis on the promotion of non-motorised traffic in documents at the regional and local level (mainly in the area of cycling infrastructure);
- development of cycling infrastructure within the functional area of the airport in line with the plan of Integrated Territorial Investments;
- plans for the development of cycling infrastructure in Pomiechówek: construction of 25 km of bicycles tracks, bicycle rental points;
- significant share of airport employees commuting from within the functional area of the airport, potentially increasing the share of non-motorised journeys.

In terms of intelligent transportation systems:

- the growing popularity of mobile applications used for journey planning, ridesharing and vehicle sharing;
- availability of information and technological solutions for new applications.

In terms of public transport:

- bus stop for long-distance journeys located at the terminal;
- good condition of the bus fleet operating long-distance connections to the airport;
- significant share of airport employees commuting from within the functional area of the airport, representing a potential for the organisation of employee transport or its integration into urban transport;
- the presence of the authorities of Nowy Dwór Mazowiecki in the ownership structure of the airport;
- availability of EU funds for investments related to the development of low-carbon public transport solutions in cities and the local government of Pomiechówek having obtained such funds for the purchase of electric buses;
- recognition of the problem of low public-transport accessibility of the Warsaw/Modlin airport in the local government documents within the functional area;
- the functioning of local bus transport in Nowy Dwór Mazowiecki and Pomiechówek;
- freedom of the transport organizers in formulating requirements for the standards and technical parameters of the bus fleet operating the connection between the airport and Modlin railway station.

3.6 Challenges and obstacles for developing low-emission mobility to the airport.

In terms of electric mobility:

- lack of infrastructure for charging electric vehicles in the immediate vicinity of the airport;
- the low-cost status of the airport which does not correspond to the current perception of electromobility as a premium service;
- the functional detachment of the airport from Nowy Dwór Mazowiecki which makes it difficult to achieve synergy in joint transport investments;
- high costs of infrastructure maintenance, purchase and operation of electric vehicles;

- low cost-effectiveness of investments in low-carbon public transport due to low vehicle utilisation;
- lack of single standard of infrastructural solutions for electric vehicles;
- limited range of electric vehicles and insufficiently developed network of charging points in the region hindering long-distance commuting;
- lack of privileges and visible incentives at the national level for users of electric vehicles;
- low level of individual electromobility in Poland;
- low level of energy security of Warsaw resulting from a growing demand for electricity and a low degree of diversification of energy sources.

In terms of railway connections to the airport:

- difficulties in transfers at Modlin station for people with reduced mobility and for people with heavy luggage despite the station's modernisation;
- congestion in trains arriving at Modlin station during peak hours;
- functioning of the "Airport Ticket" offer only for one-way travel and without discounts;
- risk of another route being chosen for the planned railway connection of CPK [Solidarity Transport Hub] with Płock;
- uncertain nature of railway investments with a tendency to delays.

In terms of pedestrian and bicycle traffic:

- deficiencies and poor quality of pedestrian and bicycle infrastructure, not encouraging non-motorised journeys to the airport;
- lack of station (parking zone) of the Nowy Dwór Municipal Bicycle at the airport;
- inefficient location of office and transport facilities in the airport area, resulting in the need to travel by car also during work.

In terms of intelligent transportation systems:

- small and dispersed (in terms of place of residence and working hours) commuting traffic to the airport, making it difficult to plan common journeys;
- the lack of a unified naming convention of the airport in travel-planning applications;
- fragmentation of the market for mobile applications due to the multiplicity of solutions and their national character;
- security concerns of users in relation to applications storing their personal data and to the functionality of mobile payment services.

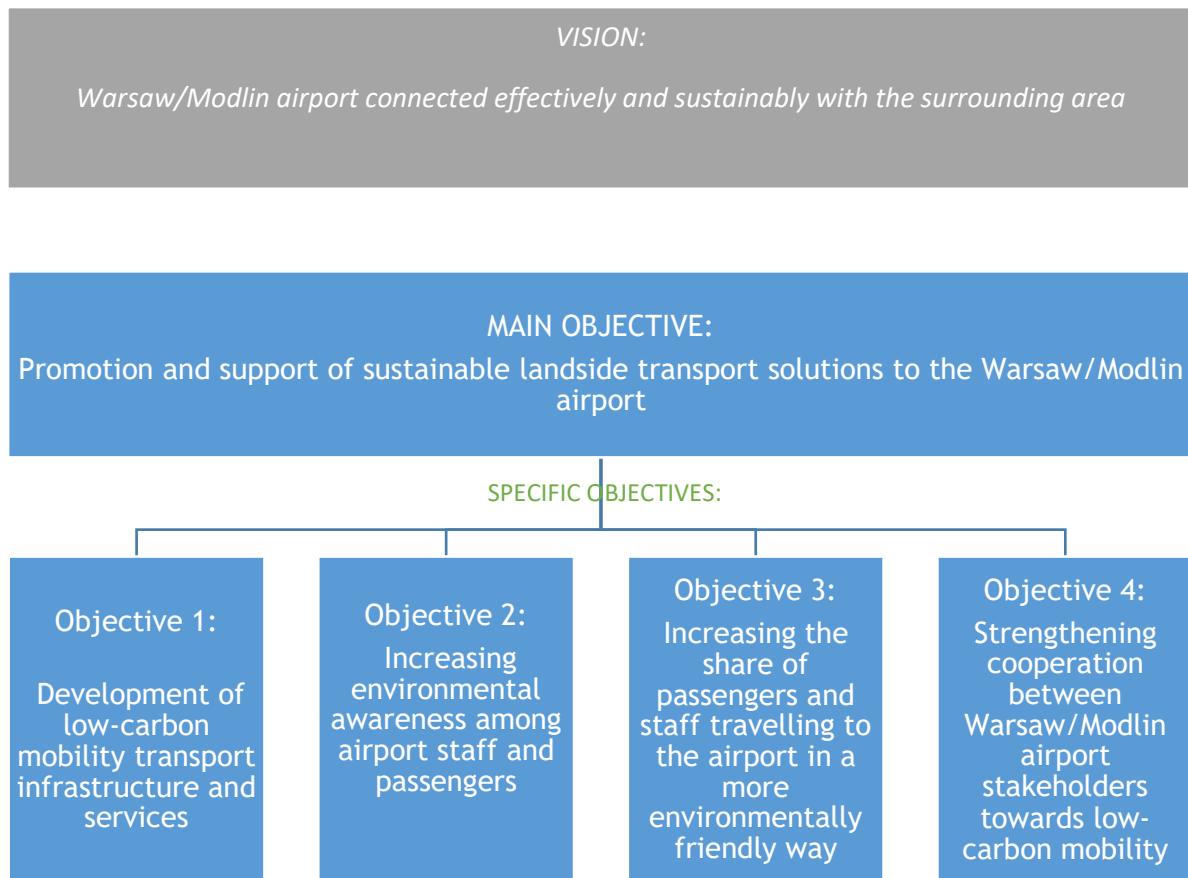
In terms of public transport:

- airport parking system strengthening the competitiveness of individual transport through attractive parking conditions (also for private parking lots situated outside of the airport);
- urban sprawl within the Warsaw Metropolitan Area reducing the effectiveness of organised public transport services;
- transport habits of a significant part of inhabitants of Warsaw functional area oriented towards car journeys, strengthened by the airport's location within the

reach of the expressway network and the planned investments in the S7 expressway;

- high susceptibility of road transport to congestion and potential delays, in particular in the case of a transport policy aimed at increasing the share of car journeys;
- lack of public transport services to the airport organised by the local governments of Nowy Dwór Mazowiecki and Pomiechówek;
- lack of tariff and timetable integration of public transport in the municipalities of the functional area.

4. VISION AND OBJECTIVES



The Concept's vision and objectives are consistent with those of the LAirA project. The idea behind the Concept is to promote ideas, solutions and best practice aimed at improving the accessibility of the Warsaw/Modlin airport while reducing greenhouse gas emissions resulting from journeys to and from the airport. The proposals and recommendations in the Concept are to aid the development of a multimodal, integrated, effective and low-emission transport system in the functional area of the Warsaw/Modlin airport, making use of the latest technological advances in this area. Such an approach results from the current requirements and demands in the field of environmental and climate protection. They are emphasised on the global level, especially in the European Union.

The main objective of the Concept is to promote and support environmentally friendly solutions within the transport system of Mazovia, with particular emphasis on the functional area of the Warsaw/Modlin airport. This is expected to result in a reduction of greenhouse gas emissions, including CO₂, resulting from journeys to the Warsaw/Modlin airport.

The above is to be achieved mainly through the development of low-carbon mobility infrastructure and through changes in the travel behaviour of passengers and employees. For any change to take place, people's willingness to participate in it is essential. Therefore, in addition to the development of appropriate infrastructure and services, a specific objective is to build environmental awareness among airport users and staff. High quality transport infrastructure and services combined with a high level of environmental awareness should contribute to achieving Objective 3, i.e. to *increase the share of passengers and staff*

travelling to the airport in a more environmentally friendly way. An important element for the implementation of the main objective is also the cooperation of relevant institutions responsible for transport policy and obtaining stakeholder support for the proposed actions. This is why the fourth specific objective was formulated as *strengthening cooperation between Warsaw/Modlin airport stakeholders to achieve low-carbon mobility.*

Taking into account the existing problems and challenges as well as the chances and opportunities, this concept of strategic action focuses on the development of public transport and the improvement of conditions for non-motorised traffic. Expanding the offer of transport services, improving pedestrian and bicycle infrastructure in the functional area of the airport as well as conducting information and motivation activities proved to be most effective. The document does not include any activities dedicated to electromobility. It does not exclude them, however, as together with the implementation of the provisions of this document they may result in synergy.

This Concept is based on the current knowledge, trends and experience gained and analyzed within the LAirA project. The vision is also consistent with the policy of the Regional Government of Mazovia. The vision is consistent with both the development policy of the region and with the directions of development of the Warsaw/Modlin airport, of which the regional government is a shareholder.

TABLE 3. INDICATORS OF THE ACHIEVEMENT OF SPECIFIC OBJECTIVES

No.	Indicators	Objective	Expected trend
1	The number of towns and villages from which a bicycle journey to the airport is possible by a coherent, direct, attractive, safe and comfortable route	1	↑
2	Number of towns and villages from which the airport can be reached on foot by a coherent, direct, attractive, safe and comfortable route	1	↑
3	Average daily number of public transport connections to the airport from towns and villages within its functional area with no more than one transfer and waiting time not longer than 10 minutes.	1	↑
4	Share of passengers travelling to the airport by public transport	2, 3	↑
5	Number of parking subscriptions purchased by airport employees per 100 employees	2, 3	↓
6	Share of employees commuting by car to the airport (alone, with no other passengers)	2, 3	↓
7	Number of joint mobility services delivered in cooperation by two or more entities (joint ticket, bus service, public bicycle system, etc.)	4	↑
8	The number of implemented joint or coordinated infrastructure investments conducive to low-carbon mobility solutions (construction of bicycle lanes, pedestrian and bicycle paths between municipalities, bus stops, etc.).	4	↑

5. ACTIVITIES

5.1 Pilot activities

5.1.1. Carpooling application for employees of the Warsaw/Modlin airport

Based on the results of the survey conducted among airport employees, which showed that 86% of employees commute to work by car, a pilot of a carpooling application was organized. The mobile phone app is a platform facilitating a common journey by pairing drivers with potential passengers commuting to work via a similar route and at a similar time of day.

The aim of the pilot is to test the application in the conditions of the Warsaw/Modlin airport and to check whether its use will contribute to reducing the number of journeys by car to work, thus reducing greenhouse gas emissions from road transport. The aim of the pilot is also to identify the factors behind the results and to collect arguments for and against the possible prolongation of the use of the application. This includes conclusions leading to the modification of the application.

The launch of the application took place on 5.06.2019 with a presentation of its functions and an information campaign addressed to all the entities operating at the airport. After 3 months of application testing, a survey was conducted among the employees of Warsaw/Modlin airport. A total of 50 responses were received.

The statistics and survey results indicate that the employees of the Warsaw/Modlin airport are not interested in using the carpooling application to find a person with whom they could commute. The main reason is a reluctance to change their established transport habits and behaviours. Different working hours and the lack of people travelling from the same direction are also a problem. However, the survey indicated that some people already commute with other employees and do not need an application to do so.

It should be noted that due to the limited size of the Warsaw/Modlin airport, it is easier for employees to establish personal contacts and relationships, without having to use the application. The carpooling platform therefore seems to be a good tool, but for newly established airports, where interpersonal contacts have not yet been developed sufficiently. Large airports (with many entities and employees), where people do not know each other, can also benefit from such a solution.

5.2 Suggested undertakings and recommendations

Objective title: Development of transport infrastructure and services conducive to low-carbon mobility	Objective number: 1
Undertaking: Promoting and supporting public transport - providing railway connections between the Warsaw/Modlin airport and Warsaw	Undertaking number: 1
Undertaking origin: <input type="radio"/> transfer ²⁶ <input checked="" type="radio"/> new solution <input type="radio"/> other	
Description	
<p>The undertaking is aimed at ensuring direct railway connections between the airport and Warsaw. It is also aimed at providing as convenient connections as possible in Warsaw and Modlin with other cities in the metropolitan area and in the region. This will allow for full use to be made of the strengths of rail transport, i.e. shorter journey times to Warsaw, high quality of rolling stock and wide offer of rail connections, including long-distance ones, from Modlin train station.</p> <p>In the prospect of the further modernisation of the Warsaw Railway Junction²⁷ (including the construction of additional tracks on railway lines no. 3, 8 and 9), the possibility of extending the routes from the airport to Warsaw further, in the direction of Żyrardów, Piaseczno or Sochaczew, should be taken into account.</p> <p>After the construction of the railway line, the existing offer of Mazovian Railways for employers, which enables partial reimbursement for the purchase of a long-term ticket for railway connections, will become available. The presence of the regional government of Mazovia in the ownership structure of both the airport and the railway carrier operating regional connections in Mazovia should increase the likelihood of implementation of this solution.</p> <p>The construction of a railway line to Płock is definitely an opportunity for the development of air-rail connections to the Warsaw/Modlin airport in the long-term perspective.</p>	
Minimum range of activities	
<p>Organisation of railway connections between Warsaw and the Warsaw/Modlin airport by the Regional Government of Mazovia:</p> <p>Required (stage I):</p> <ul style="list-style-type: none"> • after the railway line to Modlin Airport station is built: <ul style="list-style-type: none"> ○ providing connection every thirty minutes; ○ maintaining convenient railway connections between airports trains and ones from the Modlin station towards Ciechanów and Sierpc; ○ ensuring convenient railway connections in Warsaw between airport trains and ones from Siedlce, Dęblin, Radom, Żyrardow and Sochaczew. <p>Recommended (stage II):</p>	

²⁶ Adapting a solution known from another participating airport or from a set of good practices developed within the project,

²⁷ Kierunki rozwoju sieci kolejowej w Warszawskim Węźle Kolejowym. Master Plan dla transportu kolejowego w aglomeracji warszawskiej [Directions for the development of the railway network in the Warsaw Railway Junction. Master Plan for railway transport in the Warsaw metropolitan area], PKP PLK S.A. Warsaw, 2019.

<ul style="list-style-type: none"> • after the railway line from Modlin Airport station to Płock is built: <ul style="list-style-type: none"> ○ providing connection between Warsaw and Płock through the Warsaw/Modlin airport every 60 minutes; ○ exploiting the possibility of providing Warsaw – Warsaw/Modlin airport connections every 20 minutes; ○ ensuring convenient connections, as in Stage I or extending the routes towards Żyrardów, Piaseczno or Sochaczew.
<p>Entities responsible</p>
<p>Regional Government of Mazovia– contracting rail services Mazovian Railways Ltd. – providing rail services PKP PLK Inc.[Polish State Railways] – developing and maintaining the infrastructure</p>
<p>Estimated budget and resources</p>
<p>The budget of the activity depends on the regulations of PKP PLK Inc. Possible sources of financing:</p> <ul style="list-style-type: none"> • EU funds for investments related to low-carbon public transport • funds from the budget of the Regional Government of Mazovia • funds from the Mazovian Railways budget
<p>Expected results and measures of success</p>
<ul style="list-style-type: none"> • Increasing the potential of railway airport services by providing such a connection and increasing the frequency of connections • Increasing the efficiency of offered connections <p>Indicator:</p> <ul style="list-style-type: none"> • Number and frequency of railway connections between Warsaw and the airport - two pairs of trains per hour in stage I and four pairs in stage II
<p>Time frame</p>
<p>The undertaking can be implemented after the construction of a railway line to the airport (stage I) and its extension to Płock (stage II), within the framework of the annual train timetable preparation.</p>
<p>Consistency with regional and local documents</p>
<p>The activity is in line with the <i>Development Strategy of the Mazowieckie Voivodeship 2030. Mazovia as an Innovative Region</i>. Policy direction: increasing transport accessibility within the region, action 13.1. Increasing the competitiveness of railway transport in relation to road transport by improving the quality of infrastructure, rolling stock and services.</p>

Objective title: Development of communication infrastructure and services conducive to low-carbon mobility	Objective number: 1
Undertaking: Promoting and supporting public transport - organising employee transport within the public transport system of Nowy Dwór Mazowiecki	Undertaking number: 2
Undertaking origin: <input type="radio"/> transfer <input checked="" type="radio"/> new solution <input type="radio"/> other	
Description	
<p>The activity consists of providing a bus connection between Warsaw/Modlin airport and Nowy Dwór Mazowiecki within the framework of the functioning local system of public transport. It is an answer to the identified transport weaknesses of the area, i.e. lack of public transport connections from, among others, Nowy Dwór Mazowiecki and lack of transport solutions for employees organized by the airport.</p> <p>The connection of the city with the airport should not be based on the previously existing solution (line 10 requiring a further transfer at the border of the city) but on the use of the existing network of connections (extension of lines 11 and 12 and possibly L11 i L41). Such an arrangement will also allow for controlling the efficiency of connections on an ongoing basis as it is significantly affected by the intensification of suburbanisation processes. In effect, the bus routes need to be continually adapted to the city growth. Both the airport employees and passengers travelling from Nowy Dwór Mazowiecki will be able to take advantage of the connections. Such connections will also make it possible to mitigate the effects of the functional detachment of the airport from Nowy Dwór Mazowiecki.</p> <p>In the longer term, extending the coverage of public transport services of Nowy Dwór Mazowiecki to the remaining municipalities located within the functional area should be considered. This requires adequate co-financing of public transport by these municipalities.</p>	
Minimum range of activities	
<p>Required:</p> <ul style="list-style-type: none"> • Organisational activities <ul style="list-style-type: none"> ○ Extension of bus 11 and 12 routes, ○ Establishment of cooperation between the employers based at the Warsaw/Modlin airport and the operator of public transport in Nowy Dwór Mazowiecki, ○ Setting the terms for the transport of employees of Mazovian Airport Warsaw-Modlin when they sign job contracts, ○ Change in the markings of stops and vehicles. <p>Recommended:</p> <ul style="list-style-type: none"> • Activities aimed at informing workers about the possibility of using employee transport. <p>Possible:</p> <ul style="list-style-type: none"> • Activities aimed at encouraging workers to use employee transport (e.g. by ticket subsidies). • Activities aimed at expanding the public transport services of Nowy Dwór Mazowiecki and Pomiechówek to the remaining municipalities in the functional area 	

- e.g. on the basis of agreements between these municipalities.
Entities responsible
<p>Mazovian Airport Warsaw-Modlin Ltd. – ensuring favourable conditions for bus entry into the airport, defining the times when transport services are required, possibly co-financing the connections</p> <p>Local government of Nowy Dwór Mazowiecki – providing bus connections</p> <p>Employers based at the Warsaw/Modlin airport – determining the demand for transport, arranging agreements with an operator, possible co-financing of transport services</p> <p>Local governments of the Zakroczym and Pomiechówek municipalities – possible co-financing of transport services (if extended to these municipalities or a common organisation of transport is established)</p>
Estimated budget and resources
<p>Estimated cost of activity:</p> <ul style="list-style-type: none"> • up to 5 PLN/bus-kilometres travelled • up to 90 thous PLN/year <p>Possible funding sources:</p> <ul style="list-style-type: none"> • funds from the budget of the Warsaw/Modlin airport • funds from the budget of Nowy Dwór Mazowiecki • funds from the budgets of Zakroczym and Pomiechówek • funds from the budgets of employers based at the Warsaw/Modlin airport • funds from the National Fund for the Development of Bus Services
Expected results and measures of success
<ul style="list-style-type: none"> • Eliminating the consequences of the functional detachment of the airport from Nowy Dwór Mazowiecki • Increasing the regularity of commuting by public transport by the employees residing within the functional area of the airport • Changing transport behaviour towards the use of public transport <p>Indicators:</p> <ul style="list-style-type: none"> • Increase in the share of employees commuting to work by public transport • Number of lines and frequency of bus services
Time frame
Up to 12 months (changes in budgets need to be taken into account)
Consistency with regional and local documents
The activity corresponds with the need for improvement of the accessibility of local transport identified in the development strategy of Nowy Dwór Mazowiecki and other municipalities of the functional area. It also corresponds with the need for public transport connections between individual parts of Nowy Dwór Mazowiecki, identified in the study of conditions and directions of the spatial development of the city.

Objective title: Development of communication infrastructure and services conducive to low-carbon mobility	Objective number: 1
Undertaking: Promoting and supporting low-carbon transport - building a system of bicycle routes to as many towns located within the functional area of the airport as possible	Undertaking number: 3
Undertaking origin: <input checked="" type="radio"/> transfer <input type="radio"/> new solution <input type="radio"/> other	
Description	
<p>The undertaking is aimed at creating a system of direct bicycle connections from the towns within the functional area to the airport. It is a response to the survey results that indicated an untapped potential of cycling commuters to the airport. It would be released by the quantitative and qualitative improvement of the cycling infrastructure. The routes should first connect the airport with the most densely populated areas in Nowy Dwór Mazowiecki, Zakroczym and Pomiechówek. This will also allow for improving the relations between municipalities.</p> <p>Bicycle routes connecting the airport and the surrounding towns do not have to rely entirely on separate bicycle infrastructure (bicycle paths, including those independent of the road system). These may also be bicycle lanes or streets with traffic calming measures and/or low motor vehicle traffic. The main criteria that should be met by such routes, in accordance with the Dutch C.R.O.W. guidelines are: consistency (no gaps in routes), directness (coefficient of route elongation in relation to the shortest one available no greater than 1.2), attractiveness (including visibility, lighting), safety (including visibility and lack of changes of the route's position from one side of the road to the other) and comfort (including even asphalt surface, preserving of the road verge and minimum radius of curves)²⁸.</p> <p>The airport should provide bicycle parking facilities in the vicinity of all buildings, as close to their entrances as possible in order to ensure that cycling is an attractive option. Bicycle racks should allow the wheel and bike frame to be fastened with one short clasp and should be covered with a roof. Providing charging points for electric bicycles in bicycle parking lots is advisable.</p>	
Minimum range of activities	
<p>Creating direct bicycle connections to as many towns within the functional area of the airport as possible:</p> <p>Stage I:</p> <ul style="list-style-type: none"> • Construction of a connection between the Modlin railway station and the airport • Construction of a connection between Zakroczym and Pomiechówek and the airport • Providing bicycle parking facilities directly next to each building within the airport premises <p>Stage II:</p> <ul style="list-style-type: none"> • Construction of a bicycle crossing across the Narew River along DK85 • Construction of cycling infrastructure along the southern bank of the Narew River 	

²⁸ A more detailed description of the criteria is available e.g. in the publication "Metropolia <<Silesia>> na rowerach", <https://www.katowice.eu/rowerem/PublishingImages/rowerem/dokumenty-strategiczne/Metropolia%20Silesia%20na%20rowerach.pdf>, p. 22,

<p>(using flood embankments) and its connection with the bridge over the Narew River</p> <ul style="list-style-type: none"> • Construction of cycling infrastructure along the Legionowo - Nowy Dwór Mazowiecki railway line • Building the missing cycling infrastructure along the eastern bank of the Vistula river between Jabłonna and Nowy Dwór Mazowiecki. This includes providing a paved surface of the track on the flood bank <p>Recommended:</p> <ul style="list-style-type: none"> • Providing a station of the Nowy Dwór City Bicycle at the airport and extending the scope of the system to other municipalities of the airport's functional area (Zakroczym and Pomiechówek) • Providing charging points for electric bicycles at the airport
<p>Entities responsible</p>
<p>General Director for National Roads and Motorways – development and maintenance of the infrastructure of national roads</p> <p>Counties of Nowy Dwór Mazowiecki and Legionowo – development and maintenance of the infrastructure of county roads</p> <p>Municipalities of Legionowo, Nowy Dwór Mazowiecki, Pomiechówek, Zakroczym – development and maintenance of the infrastructure of municipal roads</p> <p>PKP PLK Inc. – development and maintenance of cycling routes along railways (e.g. the Legionowo - Nowy Dwór Mazowiecki section)</p> <p>Polish Waters [National Water Management Authority] – development and maintenance of cycling routes on flood embankments (along the Narew and Vistula Rivers – connection with Legionowo)</p> <p>Mazovian Airport Warsaw-Modlin Ltd. – providing bicycle parking facilities in the vicinity of airport buildings</p> <p>Regional Government of Mazovia – defining standards for functional cycling infrastructure</p>
<p>Estimated budget and resources</p>
<p>The budget of the activity depends on the selected infrastructural solutions. Separate roads for bicycles in urban areas may cost approximately PLN 400,000/km. The costs of alternative solutions may be lower.</p> <p>Possible funding sources:</p> <ul style="list-style-type: none"> • EU funds for low-carbon transport investments • funds from the budgets of road managers, including local governments • funds from the budget of the railway operator • funds from the airport budget (airport nodal infrastructure)
<p>Expected results and measures of success</p>
<ul style="list-style-type: none"> • Increase in the share of employees commuting by carbon-free transport <p>Indicators:</p> <ul style="list-style-type: none"> • Number of employees cycling to work - occupancy of bicycle parking lots
<p>Time frame</p>
<p>The undertaking can be implemented in the current financial perspective (Stage I) and in</p>

the next one (Stage II).

Consistency with regional and local documents

The activity is in line with the *Development Strategy of the Mazowieckie Voivodeship 2030. Mazovia as an Innovative Region*. Policy direction: Development of means of transport friendly to the environment and inhabitants, action 15.2. Increasing the modal share of pedestrian and bicycle traffic; action 15.3. Increasing the level of road traffic safety, including provision of neighbourhood traffic-calming zones in built-up areas

The measure is in line with the need to expand the infrastructure for cycling, also in order to facilitate travel between municipalities which is mentioned in the local documents.

Objective title: Development of communication infrastructure and services conducive to low-carbon mobility	Objective number: 1
Undertaking: Promoting and supporting low-carbon transport - providing the staff with bicycles for travelling between facilities on the airport grounds	Undertaking number: 4
Undertaking origin: <input type="radio"/> transfer <input checked="" type="radio"/> new solution <input type="radio"/> other	
Description	
<p>The activity is aimed at ensuring fast and comfortable travel between different facilities located at the airport, some of which are more than a kilometre apart. Providing bicycles dedicated to travel between buildings will take away one of the arguments for commuting by car to work, i.e. the need to cover long distances between buildings.</p> <p>In addition to the purchase of bicycles, the airport should provide bicycle parking facilities in the vicinity of all buildings, as close to their entrances as possible. This is to ensure that cycling is an attractive mobility option. Bicycle racks should allow the wheel and bike frame to be fastened with one short clasp and should be covered with a roof. (Action included in Undertaking no. 3).</p>	
Minimum range of activities	
<ul style="list-style-type: none"> • Determining the scale of demand for travel between facilities at the airport • Purchase of an adequate number of bicycles fitted with mudguards, derailleurs and baskets/panniers • Establishing bicycle use rules and making them available to the employees <p>Possible extension:</p> <ul style="list-style-type: none"> • Purchase of a cargo bicycle when larger-sized goods transport between facilities is needed 	
Entities responsible	
Mazovian Airport Warsaw-Modlin Ltd.	
Estimated budget and resources	
<p>The budget of the task depends on the number and model of selected bicycles. The price of a single bicycle can be estimated at 1200 PLN.</p> <p>Possible funding sources:</p> <ul style="list-style-type: none"> • funds from the Warsaw/Modlin airport budget • possible co-financing from other entities whose employees would use the bicycles 	
Expected results and measures of success	
<ul style="list-style-type: none"> • A decrease in the number of car journeys to the airport and within its grounds <p>Indicators:</p> <ul style="list-style-type: none"> • Number of employees using company bicycles at the airport 	

Time frame

The solution can be implemented within 2-3 months.

Consistency with regional and local documents

The activity is in line with the *Development Strategy of the Mazowieckie Voivodeship 2030. Mazovia as an Innovative Region*. Policy direction: Development of means of transport friendly to the environment and inhabitants, action 15.2. Increasing the modal share of pedestrian and bicycle traffic.

Objective title: Increasing the share of passengers and staff travelling to the airport in a more environmentally friendly way.	Objective number: 3
Undertaking: Promoting and supporting public transport – extending the "Airport Ticket" offer	Undertaking number: 5
Undertaking origin: <input type="radio"/> transfer <input checked="" type="radio"/> new solution <input type="radio"/> other	
Description	
<p>The activity consists of the extension of the "Airport Ticket" which offers a journey to or from the airport together with a transfer from the Modlin railway station and includes rail and public transport in Warsaw.</p> <p>The offer should allow for purchasing a ticket for a return trip with a lower price compared to the cost of two single journeys. This is important, as many passengers make tourist trips, which determines the way they plan their travel. For them, the possibility of purchasing a return ticket may significantly increase the attractiveness of rail transport. Encouraging the purchase of a return ticket will also reduce the risk of a change in a decision as to the means of transport used when returning.</p> <p>Thanks to the identified strong points (functioning of the railway operator's booth in the terminal which enables the purchase of tickets and obtaining information on railway connections, availability of a ticket machine and unambiguous marking of the bus carrying passengers from the railway stop - the colour of Mazovian Railways), the offer will also be attractive for foreigners.</p>	
Minimum range of activities	
<p>Required:</p> <ul style="list-style-type: none"> • Modification, approval and implementation of new terms and conditions of the offer allowing for purchasing a ticket for a return trip at a 8-15% lower price compared to the cost of two single journeys²⁹. <p>Recommended:</p> <ul style="list-style-type: none"> • Conducting information and promotion activities through the existing channels of communication of the Mazovian Railways. 	
Entities responsible	
Regional Government of Mazovia – financing of rail transport Mazovian Railways Ltd. – preparing the details of the offer, ticket sales	
Estimated budget and resources	

²⁹ Koleje Mazowieckie and Koleje Śląskie offer the "return" ticket as part of the "there and back again" offer, cheaper by 15% than two single tickets. The offer of the Łódź Agglomeration Railway includes a tour ticket for which a 30% discount applies if the "there" and "back" journeys are made on the same route. In the offer of Koleje Małopolskie, the airport return ticket is cheaper by PLN 2 compared to the price of two "outward" tickets, i.e. 8-11%.

Estimated cost of the activity:

- cost of information and promotion activities - 60 thousand PLN/3 months³⁰
- cost of reduced revenues from ticket sales (possible to balance through increased revenues due to greater interest in the offer)

Possible funding sources:

- funds from the budget of Mazovia

Expected results and measures of success

- Increase in interest in air-rail connections, in particular among passengers making short tourist and business trips

Indicators:

- Increase in the share of passengers travelling to the Warsaw/Modlin airport by public transport

Time frame

Around 3-12 months

Consistency with regional and local documents

The activity is in line with the *Development Strategy of the Mazowieckie Voivodeship 2030. Mazovia as an Innovative Region*. Policy direction: Development of means of transport friendly to the environment and inhabitants, action 15.1. Increasing the attractiveness and scope of multimodal passenger transport and supporting sustainable public transport solutions.

The measure is in line with the #Warsaw2030 strategy - strategic goal 3. Functional space, operational goal 3.3. Using a friendly transport system. This is due to the fact that people arriving at the Warsaw/Modlin airport most often go to Warsaw³¹.

³⁰ Price list of advertising space of Koleje Mazowieckie KM sp. z o.o. (Ltd.), valid from 23 May 2016

³¹ Analysis of needs and behaviours related to passenger mobility, Warsaw/Modlin Airport, 2018, p. 21.

Objective title: Increasing the share of passengers and staff travelling to the airport in a more environmentally friendly way.	Objective number: 3
Undertaking: Promoting and supporting public transport – appointing a "mobility agent"	Undertaking number: 6
Undertaking origin: <input type="radio"/> transfer <input checked="" type="radio"/> new solution <input type="radio"/> other	
Description	
<p>The undertaking will involve the appointment of a mobility agent at the Warsaw/Modlin airport. A mobility agent is a person whose task is to help passengers to use IT devices and tools facilitating mobility, such as the ticket machine of Mazovia Railways, mobile applications for sharing journeys, renting vehicles, etc. Passengers' support should cover, among others, registration in the application, creating accounts, assistance in mobile payments. It should be available in the baggage collection area or at the exit from the airport.</p> <p>The solution will help to overcome possible obstacles, such as the diverse age structure of passengers and their lower inclination to use mobile solutions or the lack of a unified naming convention of the airport in travel-planning applications. The activities of a mobility agent will also help to reduce concerns about the use of current mobile solutions.</p> <p>Such a solution also has an advantage over the existing information points due to the incomplete range of information provided by them, e.g. the inability to obtain information about the trains of operators other than Mazovian Railways.</p>	
Minimum range of activities	
<p>Required:</p> <ul style="list-style-type: none"> • Purchase of mobile devices and clothing for staff acting as mobility agents at airports, • Recruitment and training of 4 employees speaking at least one foreign language. <p>Recommended:</p> <ul style="list-style-type: none"> • Public relations (press conference, press releases) and information activities at the airport (posters, leaflets) about the possibility of using the assistance of a mobility agent. <p>Possible:</p> <ul style="list-style-type: none"> • Using wayfinding solutions to direct passengers to the mobility agent (arrows, indicators and other signs making it easier to reach the mobility agent's working area). 	
Entities responsible	
Mazovian Airport Warsaw-Modlin Ltd. – employment and organisation of the agents' work Application operators/distributors – possible co-funding	
Estimated budget and resources	

Estimated costs of the activity:

- cost of purchase of mobile devices and clothing - PLN 10,000
- salaries - approx. 20,000PLN/month (this cost can only be partially covered by Mazovian Airport Warsaw-Modlin Ltd. The remaining part may be financed by charging the operators and distributors of applications)

Possible sources of funding:

- resources from the Warsaw/Modlin airport budget
- public-private partnership formula

Expected results and measures of success

- Reducing fears and doubts regarding the use of current mobile solutions
- Increasing the use of shared mobility and public transport

Indicators:

- Number of people benefiting from the mobility agent's assistance per month/year

Time frame

Around 3 months.

Consistency with regional and local documents

The activity is indirectly in line with the *Development Strategy of the Nowy Dwór Mazowiecki County*. The priority for the county in the field of transport until 2030 is to encourage the use of the most effective and sustainable means of transport. The strategy indicates that in order to achieve this, the competitiveness and efficiency of public transport should be increased. The mobility agent at the Warsaw/Modlin airport may significantly contribute to the increase in the number of people using public transport. This applies both to passengers and airport employees.

By leading to an increase in public transport journeys, the measure is also indirectly in line with the #Warsaw2030 strategy- strategic goal 3. Functional space, operational goal 3.3. Using a friendly transport system. This is due to the fact that people arriving at the Warsaw/Modlin airport most often go to Warsaw³².

³² Analysis of needs and behaviours related to passenger mobility, Warsaw/Modlin Airport, 2018, p. 21.

Objective title: Increasing the share of passengers and staff travelling to the airport in a more environmentally friendly way.	Objective number: 3
Undertaking: Promoting and supporting public transport – a board informing about the time of travel to Warsaw by various means of transport	Undertaking number: 7
Undertaking origin: <input type="radio"/> transfer <input checked="" type="radio"/> new solution <input type="radio"/> other	
Description	
<p>The undertaking requires the installation of a board informing about the time of travel to Warsaw (the destination of the largest share of airport passengers³³). The activity is a supplement to the missing infrastructure for intelligent transport systems at the airport. It will facilitate the selection of a specific means of transport and the corresponding mobile solution. This will particularly benefit shared mobility and public transport. The board should contain the following categories of information:</p> <ul style="list-style-type: none"> • time of travel to the centre of Warsaw, updated every 15 minutes; • types of vehicles: car, railway and bus connection, Modlin Bus; • the departure times of buses of Mazovian Railways and Modlin Bus; • approximate cost of travel (for cars - the cost of a taxi). 	
Minimum range of activities	
<p>Required:</p> <ul style="list-style-type: none"> • Investment activities <ul style="list-style-type: none"> ○ Purchase, shipment and installation of the board and its software (including the license to use the Google Maps API). • Organisational activities <ul style="list-style-type: none"> ○ The organisation of a public procurement for the purchase and installation of the board together with its software installation. <p>Recommended:</p> <ul style="list-style-type: none"> ○ Training of employees in basic operation of the board (software) ○ Providing Polish and English language versions ○ Proper placement of the board, making it easy to locate by people heading from the airport to Warsaw <p>Possible:</p> <ul style="list-style-type: none"> • Utilization of wayfinding solutions to point to the board (arrows, indicators and other signs making it easier to reach the board's location). 	
Entities responsible	
Mazovian Airport Warsaw-Modlin Ltd. – purchase, installation and maintenance of the board.	
Estimated budget and resources	

³³ Analysis of needs and behaviours related to passenger mobility, Warsaw/Modlin Airport, 2018, p. 21.

Estimated costs of the activity:

- cost of purchase and installation of the board - PLN 40-45 000

Possible sources of funding:

- resources from the Warsaw/Modlin airport budget

Expected results and measures of success

- Facilitating the choice of the right means of transport and the corresponding mobile solution
- Increasing the use of shared mobility and public transport
- Making the public aware of the attractiveness of the public transport offer

Indicators:

- Number of people using the board per month/year

Time frame

Around 3 months.

Consistency with regional and local documents

The activity is in line with the #Warsaw2030 strategy - strategic goal 3. Functional space, Operational goal 3.3. Using a friendly transport system. This is due to the fact that people arriving at the Warsaw/Modlin airport most often go to Warsaw.³⁴ Passengers arriving at the Warsaw/Modlin airport most often go to Warsaw, therefore the activity aimed at encouraging them to use public transport is important to realizing Objective 3 of the strategy. Getting from the Warsaw/Modlin airport to Warsaw by public transport can encourage passengers to travel around the city using such means of transport.

³⁴ Analysis of needs and behaviours related to passenger mobility, Warsaw/Modlin Airport, 2018, p. 21.

Objective title: Increasing the share of passengers and staff travelling to the airport in a more environmentally friendly way.	Objective number: 3
Undertaking: Promoting and supporting public transport – changing the system of payments for the employee transport	Undertaking number: 8
Undertaking origin: <input type="radio"/> transfer <input checked="" type="radio"/> new solution <input type="radio"/> other	
Description	
<p>The undertaking involves changing the parking regulations and prices for airport employees by switching from a system of annual subscription to a system of single payments. It is also necessary to introduce the possibility of purchasing a season ticket (in place of the single ticket system) for the railway and Mazovian Railways bus connection to the airport, including the possibility of purchasing a season ticket to the airport from locations other than Warsaw (in particular from Legionowo and Nowy Dwór Mazowiecki).</p> <p>The activity is aimed at changing the fixed transport behaviour by changing the character of the employee commuting systems. Currently, the "Airport Ticket" is available only from Warsaw. When travelling from Legionowo or Nowy Dwór, it is necessary to purchase a separate monthly ticket for the train and the Mazovian Railways bus. This means that the monthly cost of travel from Legionowo to the airport is almost the same as from any stop in Warsaw (PLN 235 and 255, respectively), which makes it non-competitive with car travel.</p>	
Minimum range of activities	
<p>Required:</p> <ul style="list-style-type: none"> • Changing the parking regulations and price list for airport employees by switching from a system of annual subscription to a system of single payments. • Modification, approval and implementation of new terms and conditions of the standard Mazovian Railways season ticket offer by including the bus connection between the Modlin railway station and the airport terminal. <p>Recommended:</p> <ul style="list-style-type: none"> • Realizing this undertaking along with undertaking 1.2. Organization of employee transport within the public transport system of Nowy Dwór Mazowiecki, e.g. through the mutual acceptance of bus tickets <p>Possible:</p> <ul style="list-style-type: none"> • Promotional activities encouraging employees to use public transport 	
Entities responsible	
Mazovian Airport Warsaw-Modlin Ltd. – changing the parking regulations and prices Mazovian Railways Ltd. – providing the possibility to purchase any season ticket including the transfer between the Modlin station and the airport (not only from Warsaw).	
Estimated budget and resources	
Estimated cost of the activity: cost of information and promotion activities - 30 000 PLN/3 months	

Possible sources of funding:

- resources from the Warsaw/Modlin airport budget

Expected results and measures of success

- Increasing the regular use of public transport by employees from Warsaw and Nowy Dwór Mazowiecki
- Changing transport habits towards the use of public transport

Indicators:

- Increase in the number of employees commuting to work by public transport

Time frame

From 3 to 12 months.

Consistency with regional and local documents

The activity is indirectly in line with the *Development Strategy of the Mazowieckie Voivodeship 2030. Mazovia as an Innovative Region*. Policy direction: Development of means of transport friendly to the environment and inhabitants, action 15.1. Increasing the attractiveness and scope of multimodal passenger transport and supporting sustainable public transport solutions.

Incentives for employees to use public transport for commuting will increase its modal share. This will have a positive impact on its cost-effectiveness. The activity is in line with the *Development Strategy of Nowy Dwór Mazowiecki County*. The priority for the county in the field of transport until 2030 is to encourage the use of sustainable and effective means of. The strategy indicates that in order to achieve this, the competitiveness and efficiency of public transport should be increased.

6. SUMMARY

Vision: Warsaw/Modlin airport connected effectively and sustainably with the surrounding area

Objective	Name of the undertaking	Entities responsible	Budget	Time frame	Comments
<i>Objective no. 1. Development of communication infrastructure and services conducive to low-carbon mobility</i>	<i>Activity no. 1</i> Promoting and supporting public transport - providing railway connections between the airport and Warsaw	Regional Government of Mazovia Mazovian Railways Ltd. PKP PLK Inc.	The budget depends on the regulations of the PKP PLK Inc.	The solution can be implemented after the construction of a railway line to the airport (stage I) and its extension to Płock (stage II)	-
	<i>Activity no. 2</i> Promoting and supporting public transport - organising employee transport within the public transport system of Nowy Dwór Mazowiecki	Mazovian Airport Warsaw-Modlin Ltd. Nowy Dwór Mazowiecki Employers based at the Warsaw/Modlin airport	<ul style="list-style-type: none"> • up to 5 PLN/bus-kilometre • up to 90 000 PLN/year 	Up to 12 months	The activity is also in line with Objective 4. Strengthening the cooperation of Warsaw/Modlin airport stakeholders for low-carbon mobility

Objective	Name of the undertaking	Entities responsible	Budget	Time frame	Comments
	<p><i>Activity no. 3</i> Promoting and supporting low-carbon transport - building a system of bicycle routes to as many towns located within the functional area of the airport as possible</p>	<p>General Director for National Roads and Motorways</p> <p>Counties of Nowy Dwór Mazowiecki and Legionowo</p> <p>Municipalities of Legionowo, Nowy Dwór Mazowiecki, Pomiechówek, Zakroczym</p> <p>PKP PLK Inc.</p> <p>Polish Waters</p> <p>Mazovian Airport Warsaw-Modlin Ltd.</p> <p>Regional Government of Mazovia</p>	<p>The budget of the activity depends on selected infrastructure solutions. Separate bicycle paths in urban areas may cost approximately PLN 400,000/km. The costs of alternative solutions may be lower.</p>	<p>A solution that can be implemented in the current financial perspective (Stage I) and in the future one (Stage II)</p>	<p>The activity is also in line with Objective 3 Increasing the share of passengers and staff travelling to the airport in a more environmentally friendly way.</p>
	<p><i>Activity no. 4</i> Promoting and supporting low-carbon transport - providing the staff with bicycles for travelling between facilities on the airport grounds</p>	<p>Mazovian Airport Warsaw-Modlin Ltd.</p>	<p>approx. 1200 PLN/bicycle</p>	<p>2-3 months</p>	<p>The activity is also in line with Objective 3 Increasing the share of passengers and staff travelling to the airport in a more environmentally friendly way.</p>

Objective	Name of the undertaking	Entities responsible	Budget	Time frame	Comments
Objective no. 3. <i>Increasing the share of passengers and staff travelling to the airport in a more environmentally friendly way.</i>	<i>Activity no. 5</i> Promoting and supporting public transport – extending the "Airport Ticket" offer	Regional Government of Mazovia Mazovian Railways Ltd.	cost of information and promotion activities - 60 000 PLN/3 months cost of reduced revenues from ticket sales	Approx. 3-12 months	-
	<i>Activity no. 6.</i> Promoting and supporting public transport – appointing a "mobility agent"	Mazovian Airport Warsaw-Modlin Ltd. Operators/distributors of the application	cost of purchase of mobile devices and clothing - PLN 10 000 salaries - approx. 20 thousand PLN / month	Approx. 3 months	The activity is also in line with Objective 2 Increasing the environmental awareness of airport employees and passengers
	<i>Activity no. 7</i> Promoting and supporting public transport – installing a board informing about the time of travel to Warsaw by various means of transport	Mazovian Airport Warsaw-Modlin Ltd.	cost of purchase and installation of the board - PLN 40-45 000	Approx. 3 months	-
	<i>Activity no. 8</i> Promoting and supporting public transport – changing the system of payments for the employee transport	Mazovian Airport Warsaw-Modlin Ltd. Mazovian Railways Ltd.	cost of information and promotion activities - 30 000 PLN/3 months	Approx. 3-12 months	-