

A.T 1.2

UNDERSTANDING THE FUA ACCESSIBILITY SYSTEM TO THE AIRPORT

DT 1.2.5. Analysis of the multimodal mobility
system in the Mazovia airport FUA

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1. Description of the Warsaw Modlin Airport functional urban area

The functional urban area of the Warsaw Modlin Airport covers the area of three municipalities:

- Nowy Dwór Mazowiecki;
- Zakroczym;
- Pomiechówek.

The reasoning behind such a delimitation of the functional urban area is that these three municipalities surround the Warsaw Modlin Airport (located in the Nowy Dwór Mazowiecki municipality) and as such they should cooperate closely in order to eliminate the artificial administrative barriers to form a common investment area around the Warsaw Modlin Airport.

This analysis also includes Warsaw, due to the role played by Warsaw in the development of the functional urban area and Warsaw Modlin Airport itself.

The Spatial Development Plan of the Mazowieckie Voivodeship defines three spatial zones of Warsaw Modlin Airport. The 1st zone - the core of the area - includes the municipalities of Nowy Dwór Mazowiecki, Zakroczym and Pomiechówek, located in the Nowodworski county. The 2nd zone - direct impact area - covers areas within a radius of 20 km around the airport, and the 3rd zone - indirect impact area - covers areas within within a radius of 70 km around the airport.

The basic characteristics of the four analysed areas are provided in the table below

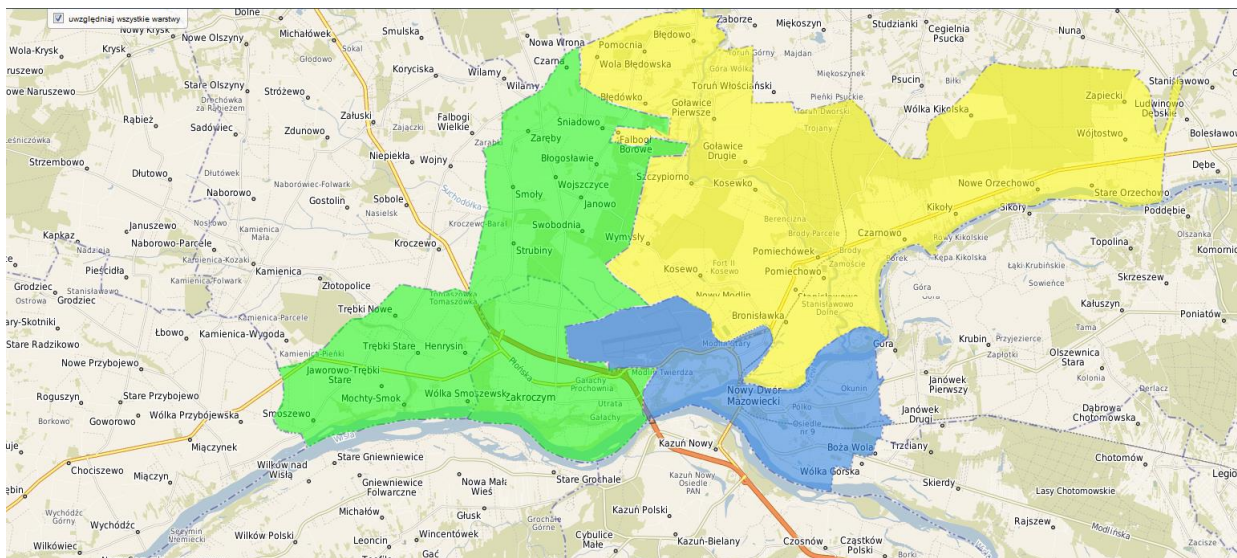
Table 1: Basic characteristics of the analysed areas (2016)

Name of the area	Nature of the municipality	Area	Total population	Population density
Nowy Dwór Mazowiecki	Urban	28.21 km ²	28 548	1 012/km ²
Zakroczym	Urban-rural	71.42 km ²	6 124	85/km ²
Pomiechówek	Rural	102.31 km ²	9 034	88/km ²
Warszawa	Urban	517.24 km ²	1 753 977	3391/km ²

Source: Central Statistical Office of Poland (GUS)

A map of the functional urban area of the Warsaw Modlin Airport and a map of the city of Warsaw are presented below.

Map 1: Functional urban area of the Warsaw Modlin Airport



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Nowy Dwór Mazowiecki municipality

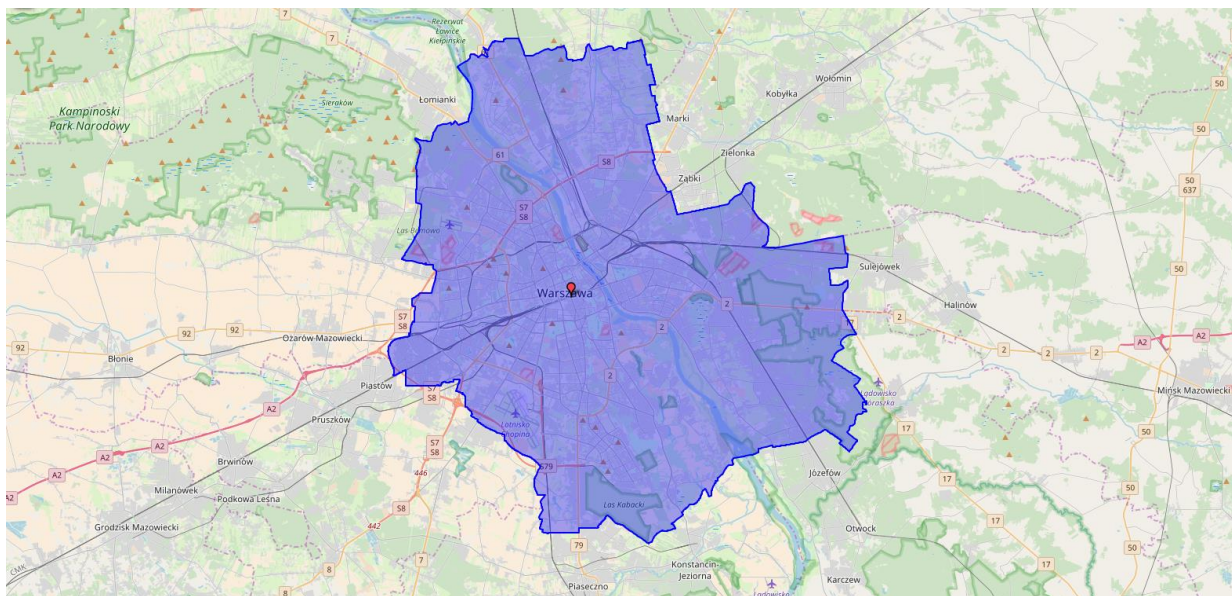
Zakroczym municipality

Pomiechówek municipality



Source: own analysis

Map 2: Warsaw municipality

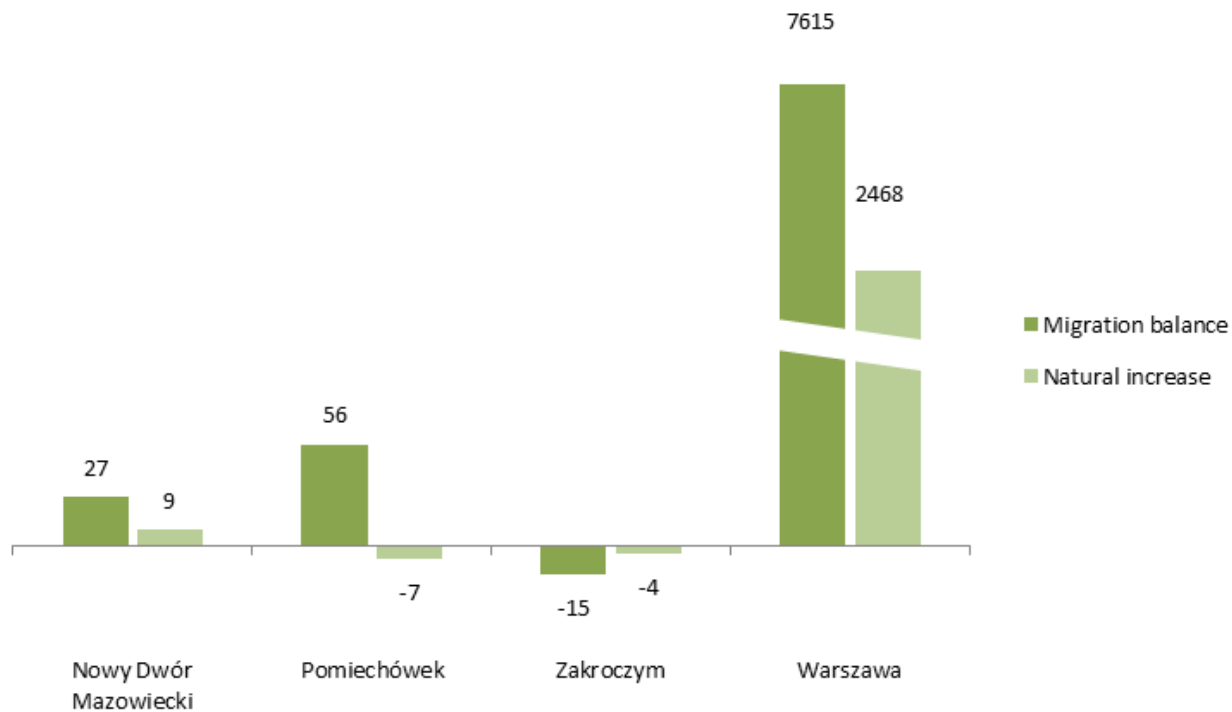


Source: www.gminy.pl

The basic population evolution figures for the analysed areas in 2016 are presented in the chart below.



Chart 1: Population evolution figures (2016)



Source: Central Statistical Office of Poland (GUS)



2. Description of the mobility system of the functional urban area and Warsaw

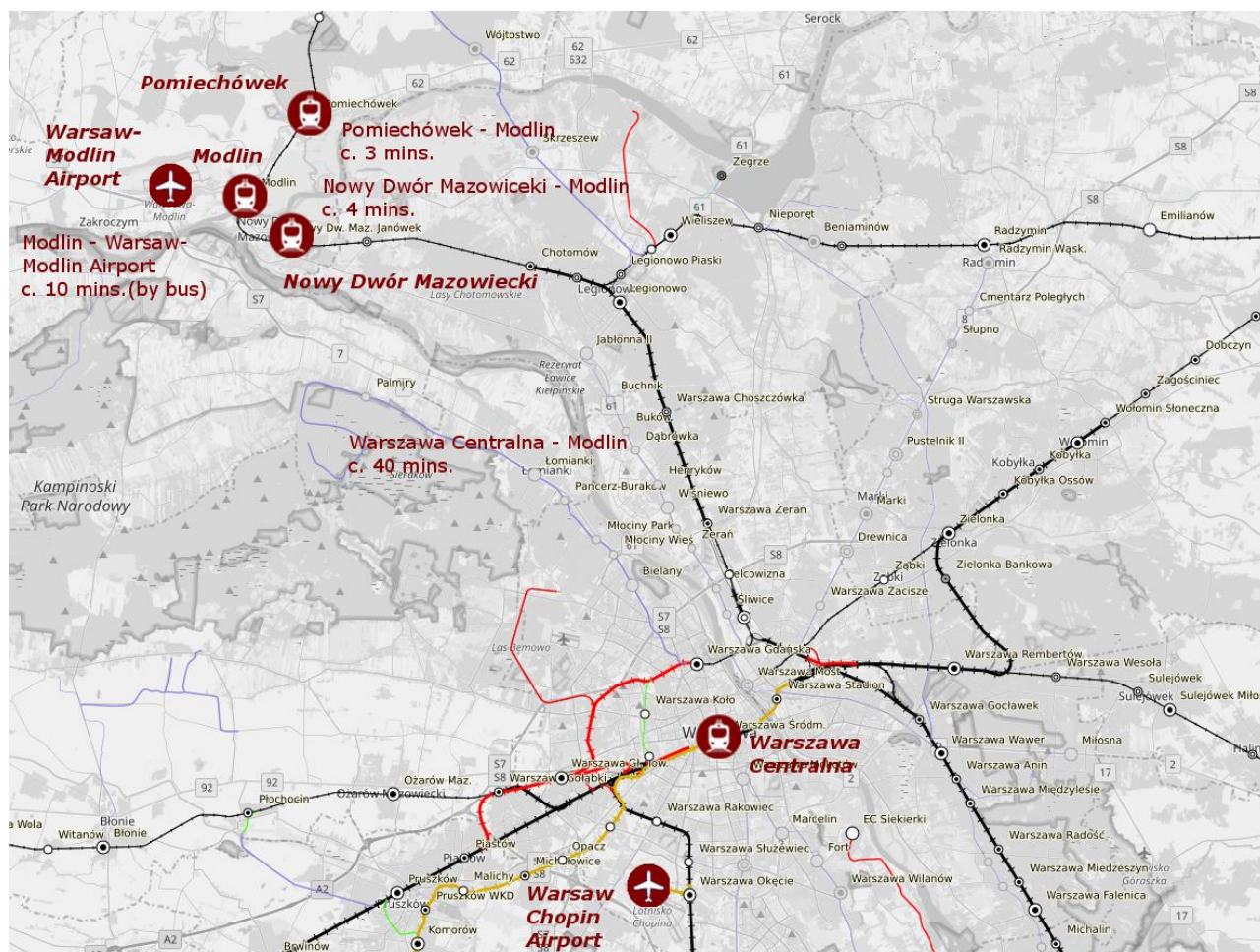
2.1. Rail links and combined train-bus links

Rail links

There is currently no infrastructure enabling direct rail access to the Warsaw Modlin Airport. The nearest train station is located in Modlin (a part of Nowy Dwór Mazowiecki, ca. 6 kilometers from the airport). This train station is used by passengers arriving at/departing from the airport using rail transport.







Currently available railway infrastructure allows connections between Modlin and Warsaw (including Chopin Airport). The trains to Warsaw pass through Nowy Dwór Mazowiecki and continue to either Warszawa Gdańska (c. 25 trains/working day) or Warsaw Central (c. 20 trains/working day) train stations. Trains are also available between Modlin and Pomiechówek (railway line No. 9). The rail routes and travel times are presented on the map below.

Map 3: Rail routes to/from Modlin train station and travel times



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Type of traffic

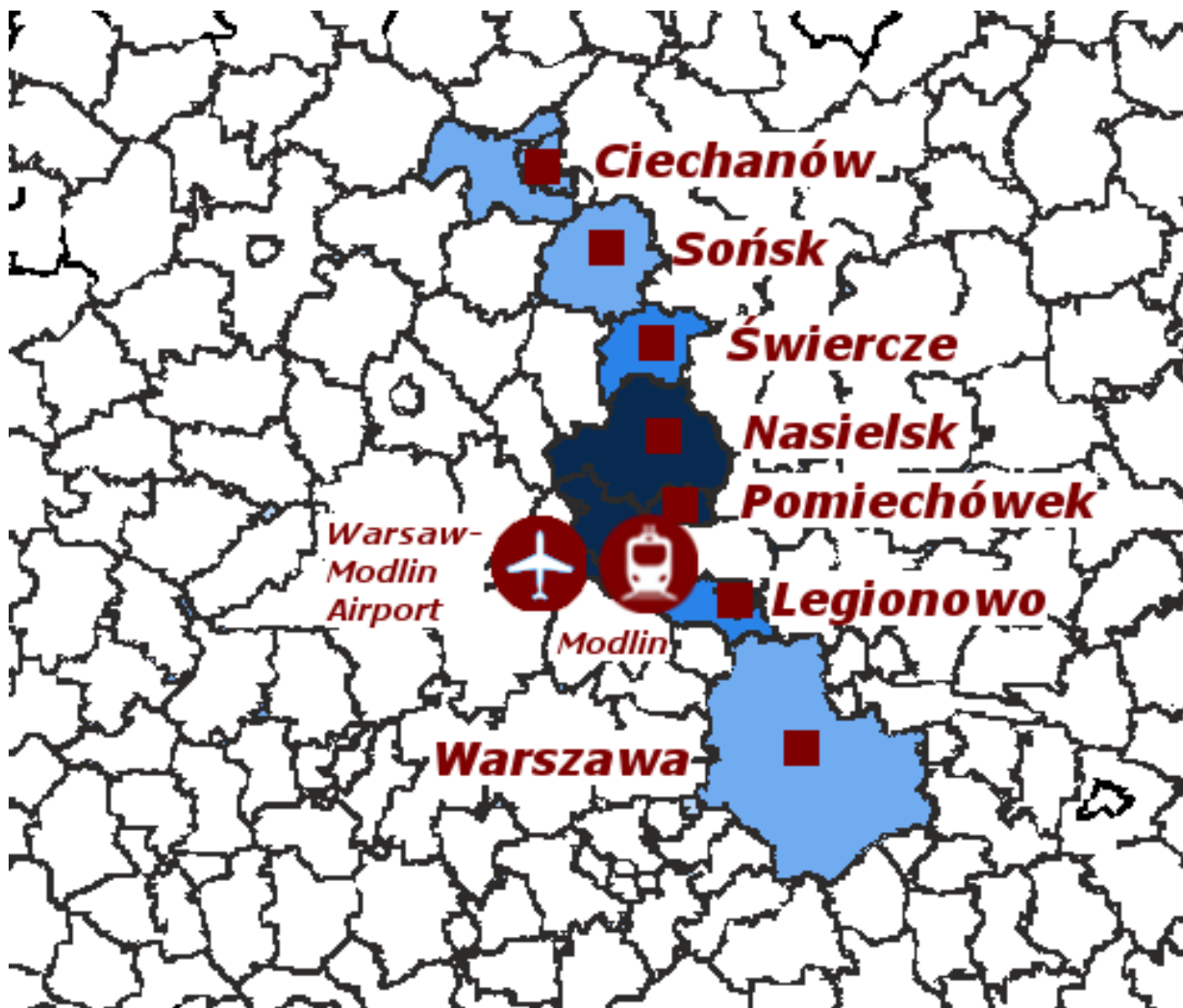
-  passenger and freight traffic
-  passenger traffic
-  freight traffic
-  weekend passenger traffic
-  seasonal passenger traffic
-  seasonal passenger and freight
-  freight and tourist traffic
-  weekend passenger and freight
-  tourist traffic
-  draisine traffic
-  out of service*

* - the Warsaw ring railway (marked on the map as out of service) currently undergoes modernization (delivery planned for 2019)

Source: own analysis, Railmap

The current system of railway infrastructure and train schedule results in travel times between Modlin train station and nearby train stations as presented on the map below.

Map 4: Train travel time to Modlin train station



Travel times

- 0 – 15 minutes
- 16 – 30 minutes
- 31 – 45 minutes



Source: own analysis

Combined train-bus links

The regional train operator, Koleje Mazowieckie, provides a bus connection from the Modlin train station to the Warsaw Modlin Airport. The bus leaves 10 minutes after the arrival of a train from Warsaw. The capacity of the bus is 102 persons in total, with 34 seats and it is enough to carry all requested passengers (based on experience so far).

A summary of details for this connection is provided in the table below.

Table 2: Details of the combined regional train-bus connections to/from the Warsaw Modlin Airport

Route	Travel time	Time available for change	Frequency	Ticket price	Means of transport
Warsaw Central - Warsaw Modlin Airport	ca. 60 mins	ca. 10 mins.	31 connections (22 by KM; 9 by other operators) per working day; 30 connections (21 by KM; 9 by other operators) per non-working day	19,00 PLN* (255 PLN for monthly ticket)	Train on the Warsaw Modlin route, bus on the Modlin-airport route
Nowy Dwór Mazowiecki - Warsaw Modlin Airport	Ca. 25 mins	Ca. 5 mins	63 connections (55 by KM; 8 by other operators) per working day; 55 connections (47 by KM; 8 by other operators) per non-working day	9,70 PLN (128 PLN for monthly ticket)	Train on the N. Dwór Mazowiecki-Modlin route, bus on the Modlin-airport route
Pomiechówek - Warsaw Modlin Airport	ca. 25 mins	Ca. 5 mins.	33 connections by KM per working day; 22 connections by KM per non-working day	9,70 PLN (128 PLN monthly for ticket)	Train on the Pomiechówek-Modlin route, bus on the Modlin-airport route

* - a shared rail-bus ticket: „Airport ticket”

1 PLN = approximately 0.25 EUR (October 2017).

Source: own analysis, Koleje Mazowieckie timetable, Koleje Mazowieckie pricelist

As the driving time on the Pomiechówek - Warsaw Modlin Airport route is very short (ca. 8 mins.) the available combined train-bus connection on this route is not attractive to travelers due to travel time. The same applies to the Nowy Dwór Mazowiecki - Warsaw Modlin Airport route. Time of travel by train is not competitive in comparison with the car.

On the other hand, the route from Warsaw to the airport is an attractive offer (competing with the offer of direct bus routes and car journeys).

Train station infrastructure

The infrastructure of the Modlin train station includes 2 platforms and 3 tracks. Both platforms are accessible only by footbridge. A ticket office is located at the station. A hostel is located on the second floor of the station building. The pictures below show the current infrastructure of the train station.

Picture 1: Modlin train station building



Picture 2: Modlin train station platforms



The Modlin train station underwent modernization in the years 2010-2011. The main train station building was restored to its former appearance and adapted to the needs of disabled people. A lift was installed to allow people with limited mobility to access the footbridge over the platforms (see picture below).

Picture 3: Lift at the Modlin train station



Unfortunately the technical condition of the lifts is poor and they are out of order (at least during the site visit on September 6, 2017), which makes it hardly possible for disabled people to move from platform to the station and vice versa.

2.2. Road network

Road infrastructure

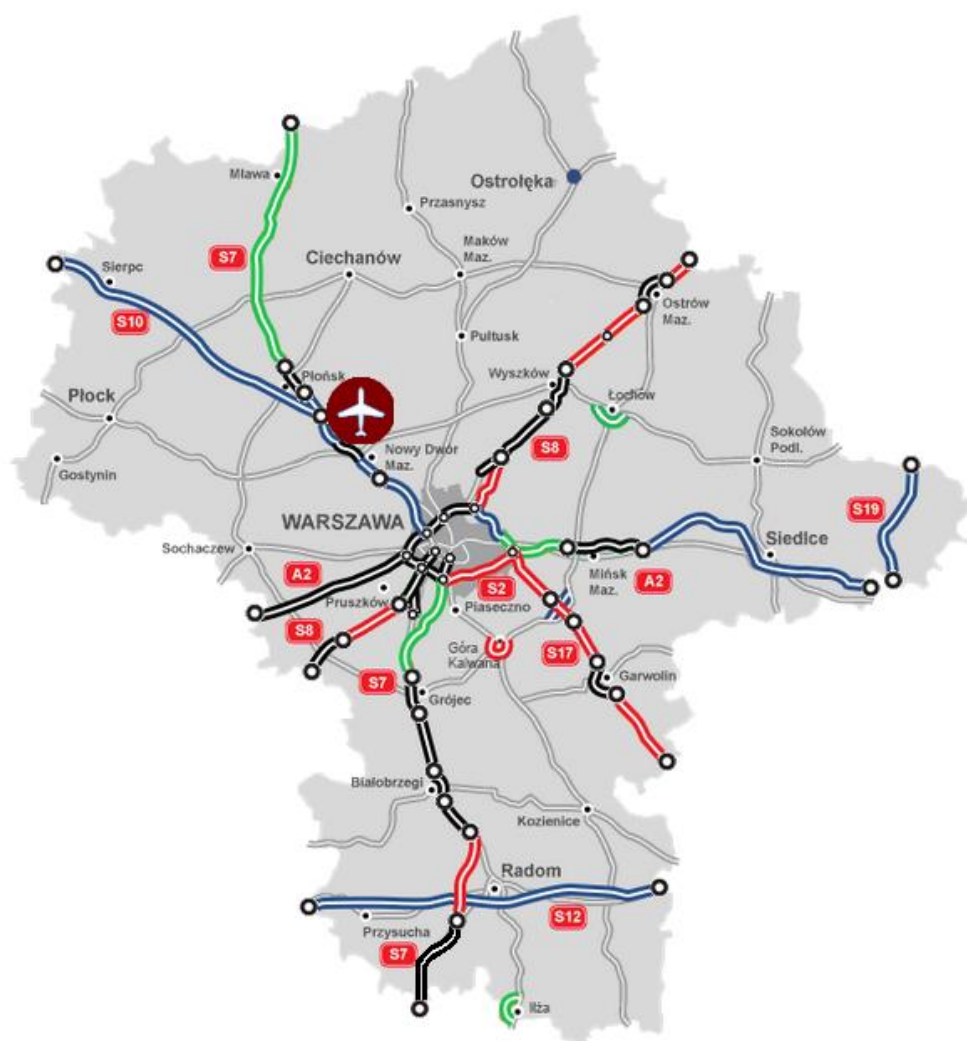
The Warsaw Modlin Airport is located 42 km to the north-west of the centre of Warsaw and 6 km to the north-west of the centre of Nowy Dwór Mazowiecki. Three important roads run in the immediate vicinity of the airport: the S7 dual carriageway linking Kraków and Gdańsk, the S10 road linking Szczecin with Płońsk and Warsaw, and national road No. 62 (Strzelno - Włocławek - Płock - Wyszaków - Sokółów Podlaski -









Siemiatycze). The airport does not have a direct connection to a motorway, but the implementation of the planned road connections will facilitate future journeys to the A2 motorway.

The map below shows the current national road system providing access to the Warsaw Modlin Airport as well as planned investments.

Map 5: Current national road system and planned investments in Mazovia



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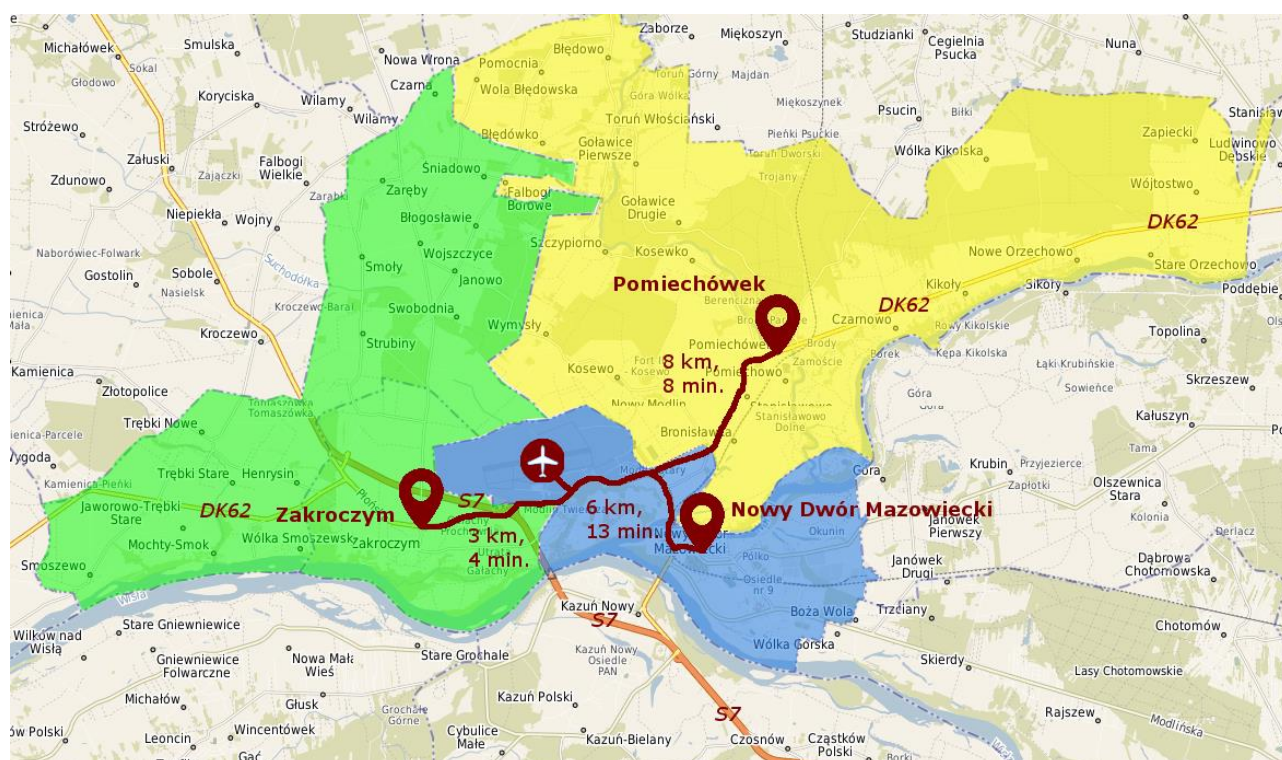
-  motorways, dual carriageways and beltways - existing
-  motorways, dual carriageways and beltways - construction stage
-  motorways, dual carriageways and beltways - tender stage
-  motorways, dual carriageways and beltways - preparation stage
-  numbering of motorways and dual carriageways
-  other existing roads

Source: General Directorate for National Roads and Highways

As can be seen on the map above, the main road linking the airport with the centre of Warsaw does not currently provide adequate standard. The off-peak travel time to the airport from the centre of Warsaw amounts to approximately 45 mins. However, due to significant traffic to and from Warsaw on this route, the travel time to the airport is very unpredictable and in peak hours can rise significantly above 60 mins. A high speed connection from the airport to the centre of Warsaw requires the construction of a dual carriageway between the existing dual carriageways: S8 in Warsaw and the S7 in the vicinity of Czosnów (south of Nowy Dwór Mazowiecki).

Road connections between the airport and other municipalities of the functional area are provided by national road No. 62, local roads and the road system around the airport. The road access map from the functional urban area to the airport is presented below. The short distances and location of the municipalities along national road No. 62 result in very short travel times to the airport.

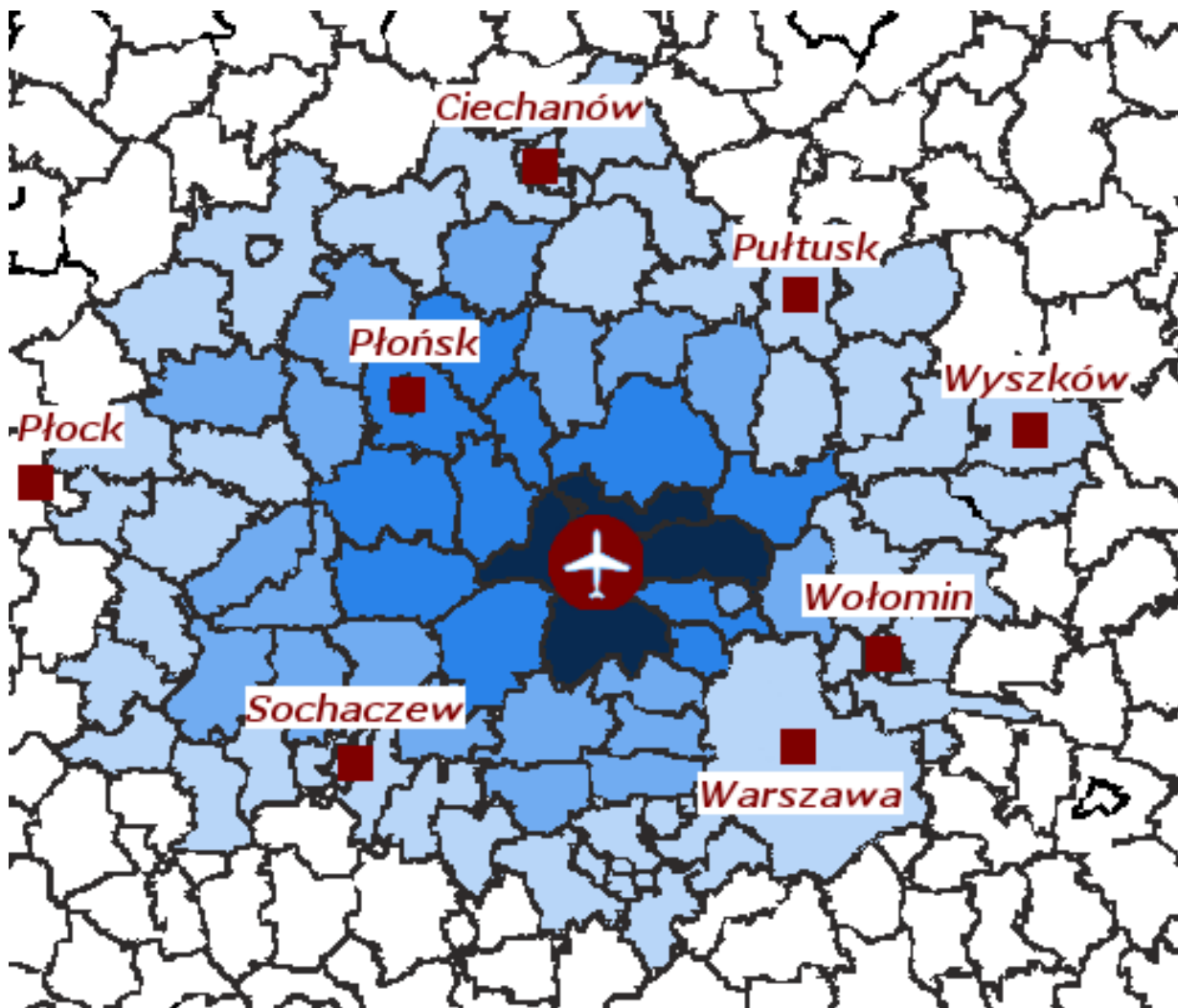
Map 6: Road access from the functional urban area to the airport



Source: own analysis, Google Maps

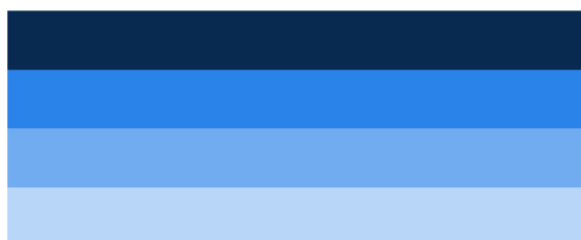
An analysis of the accessibility of the Warsaw Modlin Airport by road allows to identify the isochrones of access to the airport at the municipal level. The analysis is based on actual travel times to the airport (measured using the Google Maps web mapping service) and is conducted on a municipality level. The results are presented on the map below. The accessibility is clearly better along national road No. 7.

Map 7: Car travel time isochrones



Travel times

- 0 – 15 minutes
- 16 – 30 minutes
- 31 – 45 minutes
- 46 – 60 minutes



Source: own analysis

Cycling infrastructure

The map below presents examples of cycling routes to the Warsaw Modlin Airport from the centers of municipalities in the functional urban area. These routes run mainly along national road No. 62 and municipal roads. It is possible to use an alternative route to the national road No. 62 on the route from Zakroczym to the Warsaw Modlin Airport. In addition, there are paths for mixed pedestrian-cycling traffic available along some sections of the national road No. 62 between Ostrzykowizna and Zakroczym but the pedestrian sidewalks are being built there and there is a risk that paths for cycling will not be available

any longer. On the Pomiechówek direction there are parts of the former course of national road No. 62 available for cycling traffic.

Picture 4: Former course of the national road No. 62 available for cycling traffic



Source: Google Maps

Another challenge in biking from the Nowy Dwór Mazowiecki town centre is the need to use the Feliks Pancer bridge over the Narew river, along national road No. 85, which doesn't offer adequate space for cyclists.

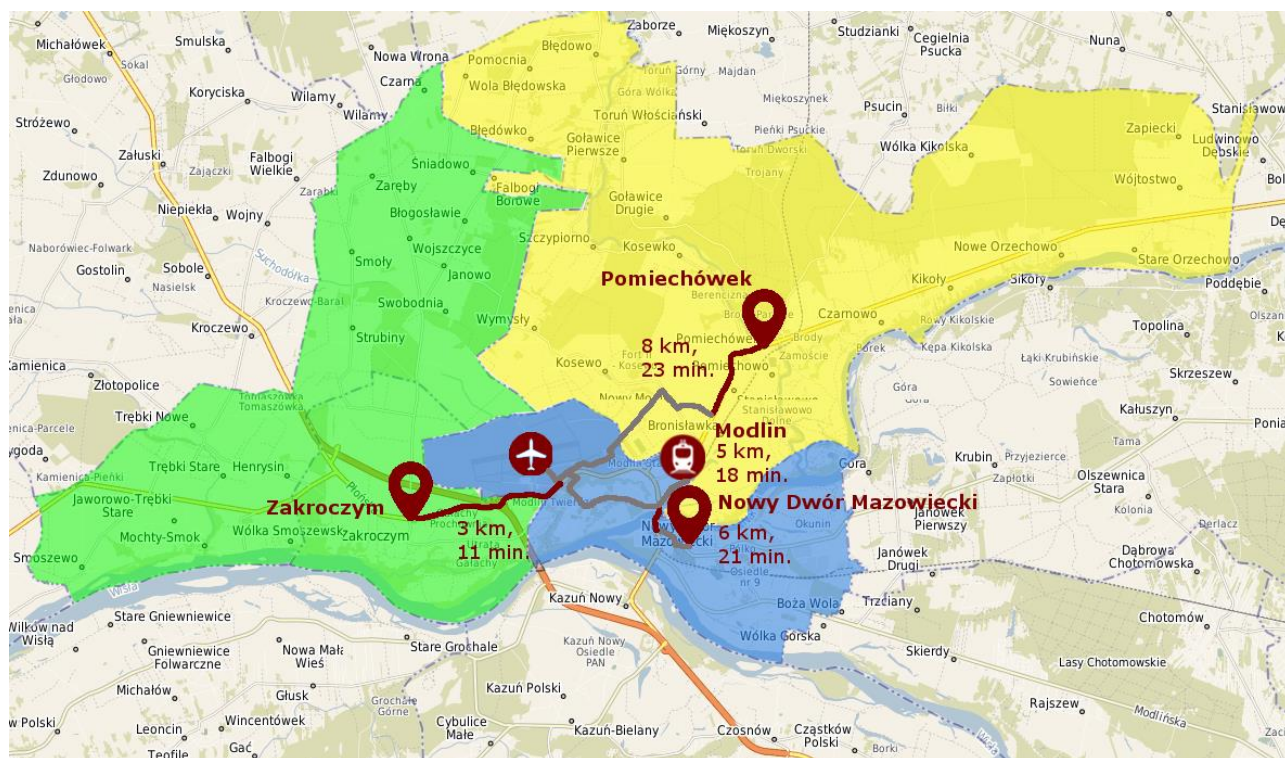
Picture 5: The Feliks Pancer bridge over the Narew river



Source: Google Maps

Due to sub optimal infrastructure dedicated to cyclists and significant car traffic on national road No. 62 & 85, the current cycling routes to the airport do not provide adequate levels of comfort and safety. There is no proper infrastructure - cycling paths, available for cyclists along the most optimal ways from key locations of the functional urban area.

Map 8: Cycling routes to the airport from the centers of municipalities in the functional urban area (the darker shade represents the parts on national roads)



Source: own analysis, Google Maps

Hypothetically, a bike ride to the Warsaw Modlin Airport from the centre of Warsaw is also possible using at least two paths:

- Along the right Vistula river floodbank (paved within the Warsaw city borders);
- Using side roads for local traffic along the S7 route.

However, the long distance to cover (ca. 40 kilometers) and lack of infrastructure dedicated to cycling on a significant stretch of these routes makes this option rather hypothetical for people using Warsaw Modlin Airport.

Pedestrian infrastructure

Despite short distances between the municipalities of the functional urban area and the Warsaw Modlin Airport there is hardly any possibility to safely reach the airport on foot, from the three municipalities. The pedestrian infrastructure, which would ensure safety to pedestrians, on potential walking routes to the airport is available on certain sections only.

2.3. Bus connections, prices, frequencies, buslanes, traffic lights priority

Within the functional urban area, public transport services are available only in Nowy Dwór Mazowiecki- 3 lines. None of the lines provide access to Warsaw Modlin Airport. Koleje Mazowieckie bus service between Modlin train station and the airport may be considered as an element of public transport service within the functional urban area. There are no bus lines (or other forms of public transportation) between Pomiechówek, Zakroczym and the Warsaw Modlin Airport.

Only one bus service operates between Warsaw and the Warsaw Modlin Airport. Modlin Bus (www.modlinbus.pl) offers direct connections from the Warsaw city centre (Defilady Square) and from the Chopin Airport in Warsaw.

Picture 6: Modlin Bus at the Warsaw Modlin Airport



The Modlin Bus timetable is adjusted to the flight schedule of the Warsaw Modlin Airport. Flight times are constantly monitored to offer the most convenient arrival times to the airport, as well as to minimize waiting time for the bus upon arrival. Currently, Modlin Bus offers 7 connections per day with 49-seat buses.

Tickets can be purchased via the Internet, from the drivers, at ticket counters at the airport, in the Palace of Culture in the center of Warsaw, and at affiliated retailers (mostly travel offices). The standard price is 39 PLN, but when booking earlier online, the prices start from 9 PLN.

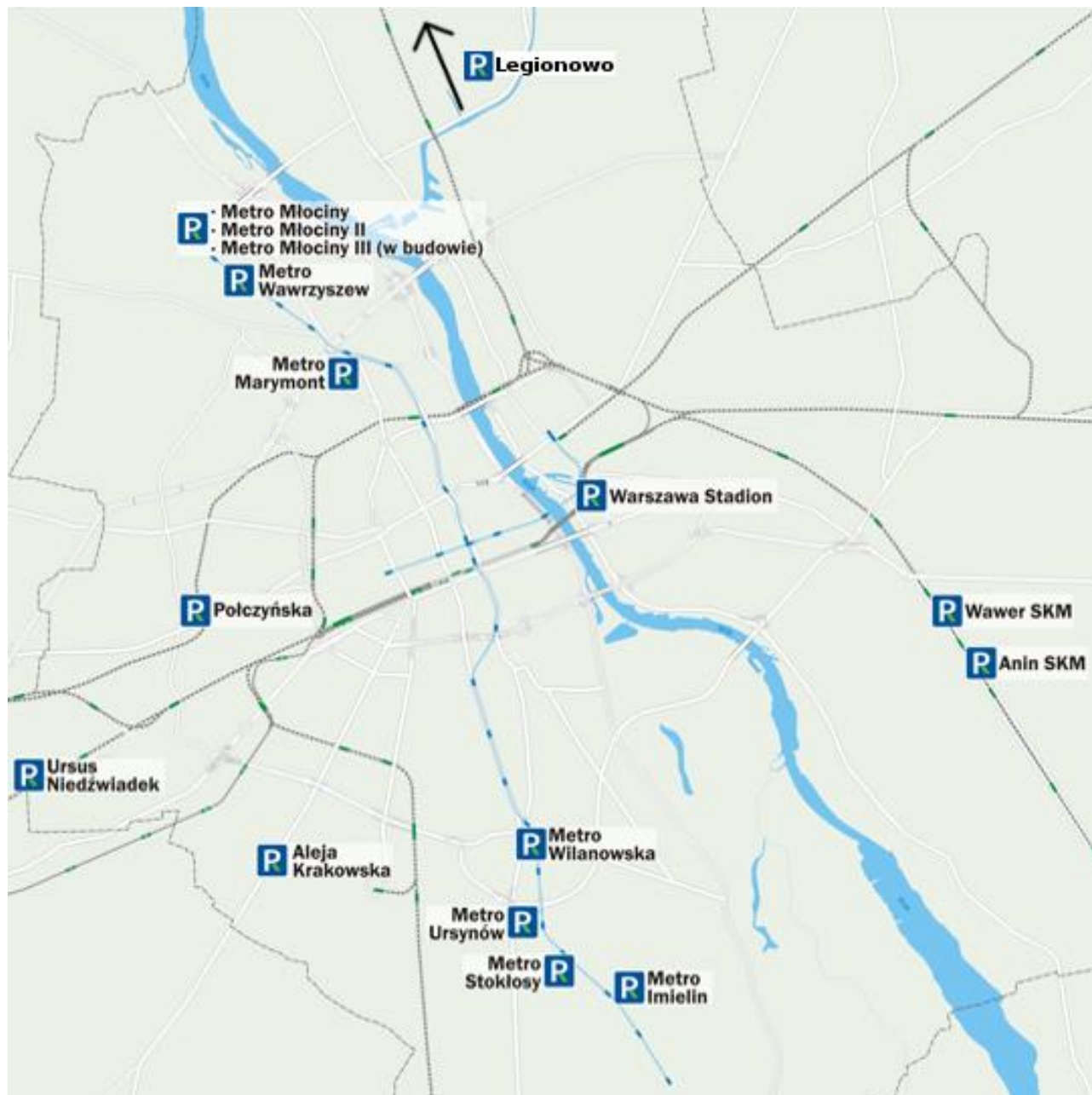
Buslanes function only on selected sections of roads within the boundaries of Warsaw.

Traffic light priority covers only the intersection of the exit from the airport and road No. 62 where priority is given for traffic to/from the airport.

2.4. “Park & ride”/”Bike & ride”

Within the functional urban area of the Warsaw Modlin Airport as defined for the purpose of this document “Park & Ride”/“Bike & Ride” facilities exist only in Warsaw.

Map 9: “Park/Bike & Ride” facilities in Warsaw against rail network



Source: ZTM Warszawa

“Park/Bike & Ride” facilities beyond Warsaw city limits are built and operated by Koleje Mazowieckie or Warszawska Kolej Dojazdowa.

Table 3: “Park/Bike & Ride” facilities beyond Warsaw city limits

PKP Brwinów	Operator: Koleje Mazowieckie Space for cars: 47 Space for bicycles: 20
PKP Celestynów	Operator: Koleje Mazowieckie Space for cars: 45 + 2 for disabled Space for bicycles: 20
WKD Komorów	Operator: Warszawska Kolej Dojazdowa Space for cars: N/A Space for bicycles: N/A
PKP Ożarów Mazowiecki	Operator: Koleje Mazowieckie Space for cars: 50 Space for bicycles: N/A
WKD Pruszków	Operator: Warszawska Kolej Dojazdowa Space for cars: N/A Space for bicycles: N/A
PKP Teresin	Operator: Koleje Mazowieckie Space for cars: 54 + 3 for disabled Space for bicycles: 6
PKP Żyrardów	Operator: Koleje Mazowieckie Space for cars: 49 Space for bicycles: N/A
PKP Mińsk Mazowiecki	Operator: Koleje Mazowieckie Space for cars: 140 Space for bicycles: 40

Source: Stowarzyszenie Integracji Stołecznej Komunikacji

The planned development of the “Park/Bike & Ride” network in the Warsaw Metropolitan Area in the current EU financial perspective is presented below.

Map 10: “Park/Bike & Ride” network in the Warsaw Metropolitan Area



Source: naszemiasto.pl

One of the already delivered facilities is Park&Ride Legionowo located next to the Legionowo train station, which has been in operation since August 2016, on the rail path between Warsaw and Modlin. It is planned to become part of a local transportation hub.

The Park&Ride system allows drivers to park their vehicles free of charge or with limited charge. A passenger must have a valid 24-hour, 3-day, 30-day, 90-day ticket or city pass for free public transportation to use the car park. Otherwise, the driver must pay 100 PLN at the exit from the car park. Park & Ride car parks can also be used by cyclists. A network of bicycle stands at P&R car parks has been created.

The city authorities wish to encourage the inhabitants of suburban areas to switch from cars to public transport. As a consequence, the whole system is aimed at handling incoming traffic to Warsaw.

Given the current public transport links between the Warsaw Modlin Airport and Warsaw (Modlin Bus, Koleje Mazowieckie), the P&R system in Warsaw is of little use for commuting to the airport because:

- The only P&R car park that operates on the direct rail/bus route from Warsaw to the Warsaw Modlin Airport is P&R Legionowo (Koleje Mazowieckie station). Its catchment area is limited to Legionowo and its surrounding;
- It makes little sense for inhabitants of Warsaw or the airport catchment area to get by car to Legionowo and change to a train which will not reach the airport terminal but require switching to a bus;
- Car parks are usually located on the outskirts of the city (with a few exceptions, including P&R Wilanowska and P&R Stadion) or in the metropolitan area;
- There is no incentive to use this solution, e.g. a shared Koleje Mazowieckie ticket for the car park, rail and bus transfer to the airport (only Warsaw public transport tickets are valid for free parking);
- The P&R system cannot be used overnight.



Only some of the mid stations on the rail route between Warsaw Central station and Modlin offer bicycle stands, which may be perceived as “Bike&Ride” facilities (Warszawa Centralna, Legionowo). There are no such facilities at Nowy Dwór Mazowiecki and Pomiechówek within the functional urban area.

2.5. Ticketing integration

Passengers travelling to/from the Warsaw Modlin Airport may, on the Warsaw centre - Warsaw Modlin Airport route, benefit from a special combined ticket: “Airport ticket”. The ticket includes a Koleje Mazowieckie train journey from Warsaw to Modlin and a Koleje Mazowieckie bus journey from Modlin to the Warsaw Modlin Airport. Warsaw centre is to be understood as all railway stations located within the city of Warsaw. Additionally, the ticket enables free of charge use of public transport within Warsaw on the day the ticket is valid for a period of 75 minutes.

Table 4: Airport Ticket pricelist

Ticket type	Price
One way ticket: Warsaw Centre - Warsaw Modlin Airport	19 PLN
Personal season ticket valid for 1 month: Warsaw Centre - Warsaw Modlin Airport	255 PLN

Source: Koleje Mazowieckie

No single return tickets are available at a special discount rate.

2.6. Access by taxi

Access to the Warsaw Modlin Airport by taxi is in no way limited. The airport has agreements with two taxi carriers:

- Sawa Taxi,
- Taxi Modlin.

Within the agreements the firms are allowed to:

- Promote their services in the terminal;
- Invite clients in the terminal;
- Use 3 parking lots in the first lane in front of the terminal;
- Use 3 parking lots in the second lane in front of the terminal;
- Use the car park for cars waiting to get to the terminal;
- Apply fixed prices for trips from the airport to Warsaw.

Picture 7: Taxi information board



Each of these two corporations has 20-25 vehicles dedicated to serve the airport.

Third-party or individual taxis have no restrictions on driving to the terminal, using a 10-minute free of charge parking time.

2.7. Car rental services at the airport

There are 9 car rental firms operating at the Warsaw Modlin Airport. Their stands are located in the arrival hall of the terminal:

1. Hertz;
2. Panek;
3. Budget;
4. Avis;
5. Awos;



6. Express
7. Europcar;
8. CarFree;
9. CheapCar.

Car rental companies maintain a fleet of cars suitable for their needs at the airport. Usually it is 4-5 cars in different classes for each firm. Consequently, there are no limitations to the possibility to rent a car of any class, both on prior reservation and ad hoc. The range of prices is presented below:

- Small cars (e.g. Fiat 500) from 130 PLN / day;
- Medium cars (e.g. Renault Clio) from 160 PLN / day;
- Big cars (e.g. Toyota Avensis) from 190 PLN / day;
- Premium cars / SUV (e.g. KIA Sportage) from 245 PLN / day.

2.8. Planned projects improving connections to the airport

Rail projects

Currently, passengers using the train connection get to Modlin station (ca. 6 kilometers from the airport) and there they change to a bus to the airport terminal and vice versa on the way back.

The first stage of the project of providing a rail link to the Warsaw Modlin Airport is to include:

- Construction of a train station at the Warsaw Modlin Airport, located about 200 meters from the terminal;
- Construction of a two-track line from Modlin station to the Warsaw Modlin Airport station;
- Launch of a train service from Warsaw to the airport.

The delivery of the project will allow to eliminate the problematic rail-bus transfers. According to the provisions of the agreement between the authorities of the Mazovia region and PKP PLK (the rail infrastructure managing company), the investment should be completed by 2020.

Phase II of the project envisages the extension of the railway connection from Modlin, through the airport to Płock. At present, the details of this project are only in “The preliminary feasibility study for the rail connection between Modlin and Płock”.

Road projects

Currently, the key access road to Warsaw Modlin Airport is the S7 road from Warsaw to Gdansk, providing access to the affluent market of Warsaw Agglomeration and to the northern regions of Poland (Kujawsko-pomorskie, Pomorskie and Warminsko Mazurskie regions). The main road linking the airport and the centre of Warsaw does not currently provide adequate standard. The off-peak travel time to the airport from the centre of Warsaw amounts to approximately 45 mins. However, due to significant traffic to and from Warsaw on this route, the travel time to the airport is very unpredictable and in peak hours can rise significantly above 60 mins. Access to the airport from other parts of the airport’s catchment area (mainly from west and east) needs improvement too.

Dual carriageway S7 Warsaw - Czosnów. A new route from Warsaw towards Gdańsk is planned, which will link the S8 (AK Route) with the S7 road in the Łomianki area, facilitating access to Modlin from the northern part of Warsaw. According to GDDKiA (the highway authority) the planned deadline for signing



the contract in the "design and build" mode is October 2019. The construction is to start two years later and last until 2023.

Dual carriageway S17 East Bypass of Warsaw. This is a missing 15 km link between Marki (on the route from Warsaw to Białystok) and the area of Zakręta (route to Lublin). According to the official schedule of GDDKiA, it is to be built in 2020-2022.

Dual carriageway S10 from Szczecin through Piła, Bydgoszcz, Toruń, Płock to north of Nowy Dwór Mazowiecki (S7). The final path of the modernized S10 road is still subject to considerations. The route would improve access to the Warsaw Modlin Airport from the northwest. It is planned to be built by 2027.

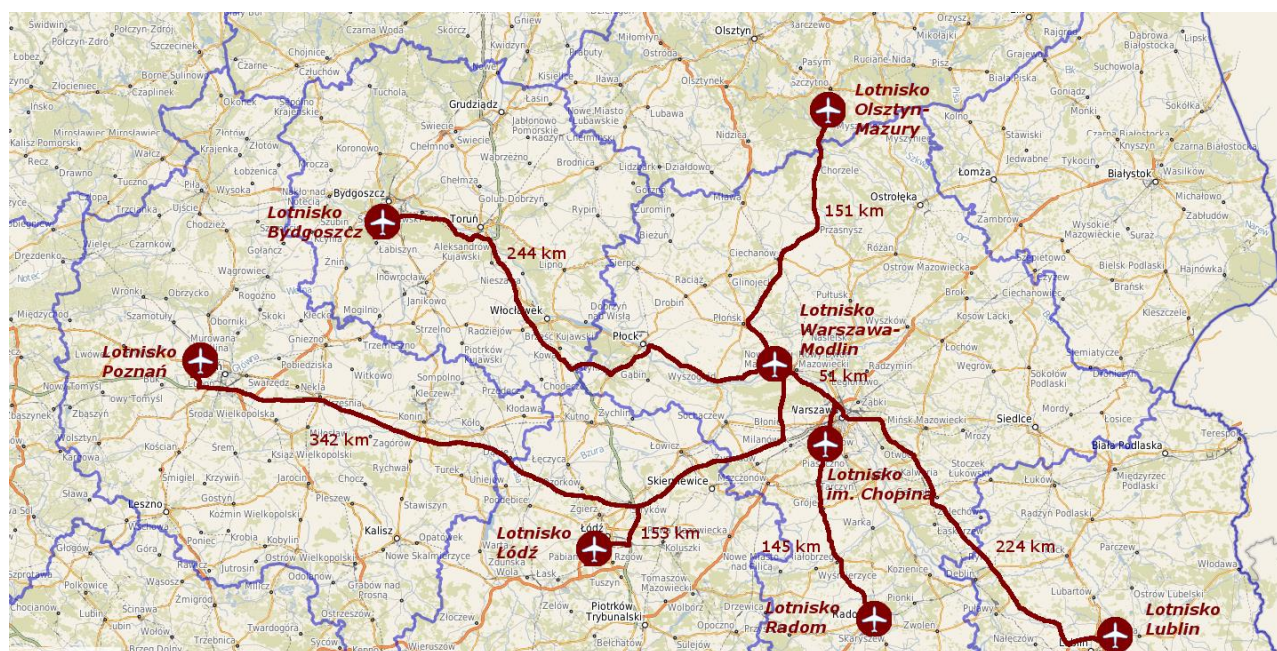
3. Description of the Warsaw Modlin Airport and its transport functions

3.1. Warsaw Modlin Airport's location

The Warsaw Modlin Airport is located 3 km to the north-west of Nowy Dwór Mazowiecki, by the S7 road to Warsaw and Gdańsk.

The location of the airport in regard to the nearest airports and distances by fastest road link from these airports is presented on the map below. There is only one direct rail link between Warsaw Modlin Airport and Warsaw Chopin Airport.

Map 11: Location of the the Warsaw Modlin Airport in regard to the nearest airports

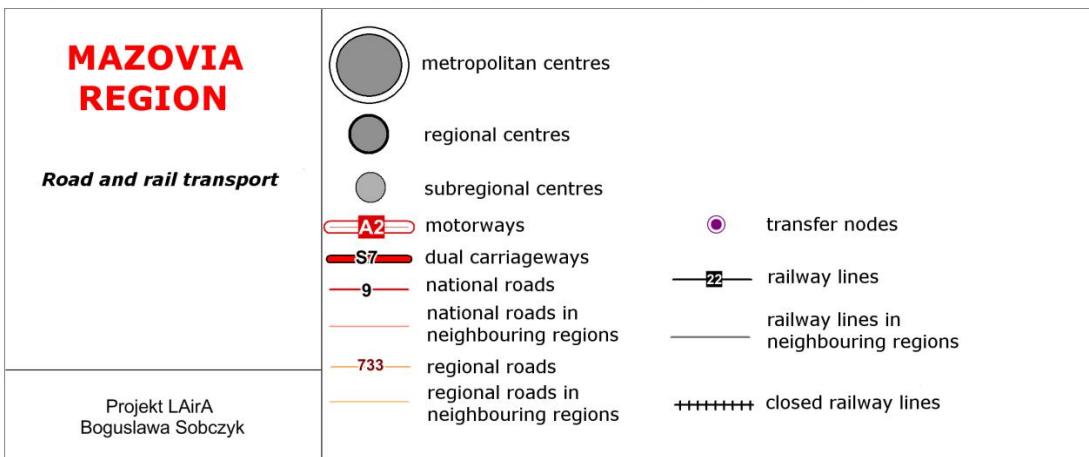
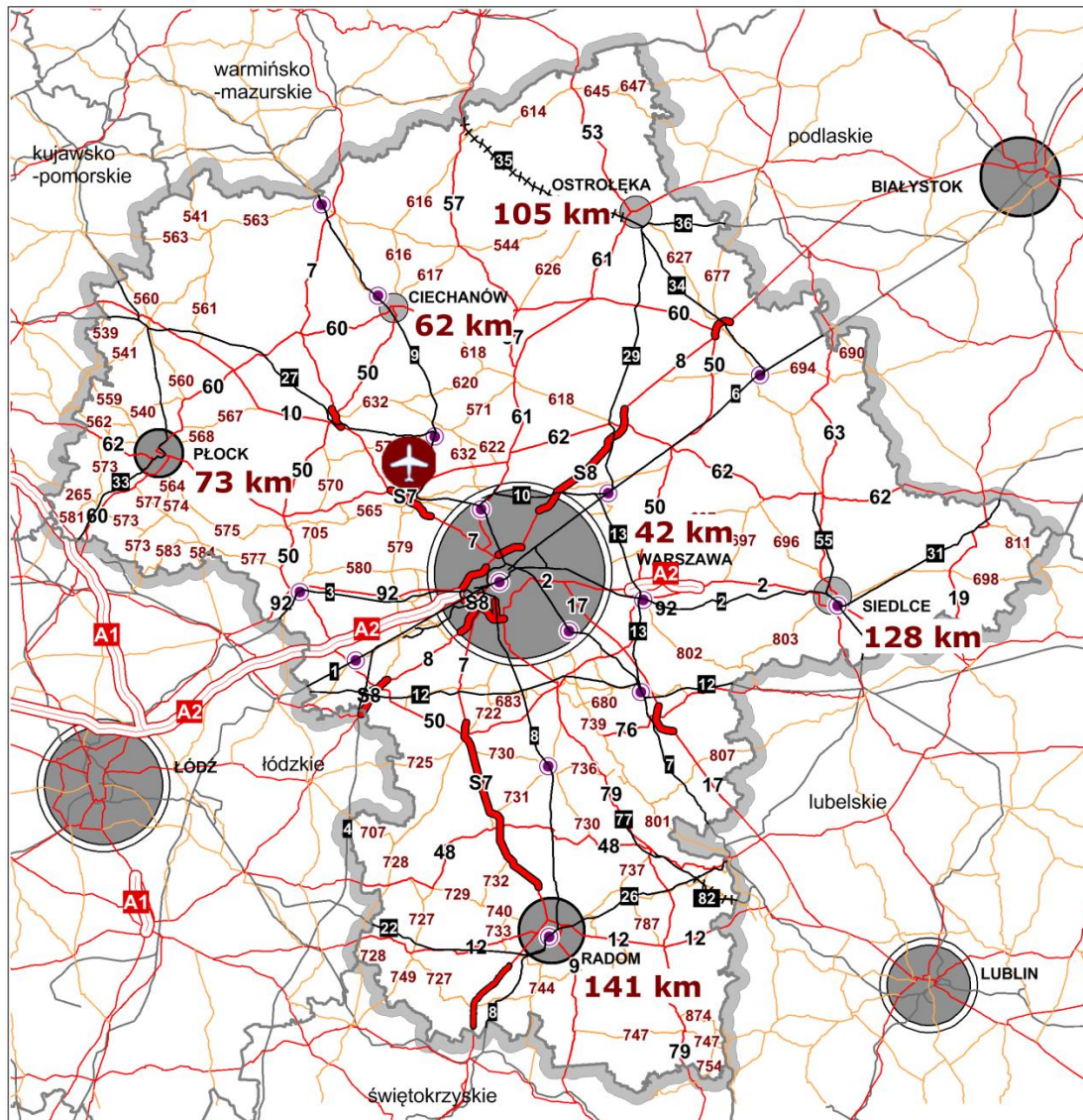


Source: own analysis

The location of the airport in regard to regional and subregional cities, including the centre of Warsaw and distances from these cities are shown on the map below.



Map 12: Location of the Warsaw Modlin airport and distances between the airport and regional and subregional cities of the Mazovia region





The location of the Warsaw Modlin airport should be considered advantageous because:

- The distance from competing airports (with dominant low-cost carrier (LCC) traffic) is ca. 150 kilometres or more;
- The airport is well accessible by road connections;
- It is close and well connected to the affluent market of Warsaw Agglomeration;
- It has good access to potential labour reserves within the functional urban area.

3.2. Transportation functions

The location of the Warsaw Modlin Airport in the vicinity of Warsaw (42 kilometers from the city centre) makes it especially attractive for point-to point connections provided by low-cost carriers, for which the Chopin Airport is too expensive or doesn't meet their operational conditions.

Additionally, it is expected that the Warsaw Modlin Airport will take over a further part of the point-to point (low-cost) air traffic and charter flights from the congested Chopin Airport in Warsaw.

3.3. Number of aircraft movements and types of airlines

Table 5: Aircraft movements in the years 2012-2016

Year	2012	2013	2014	2015	2016
Warsaw Modlin Airport (movements)	6 379	2 415	11 148	16 288	17 543

Source: Polish Civil Aviation Authority

The Compound Annual Growth Rate amounts to 29%.

In July 2012 Ryanair and Wizz Air started their operations at the Warsaw Modlin Airport. In December 2012 the airport was closed due to poor quality of the runway surface. Ryanair and Wizz Air were forced to move to Chopin Airport in Warsaw. In June 2013 the airport was reopened. Despite this, in July Wizz Air decided to remain at Chopin Airport permanently. Ryanair did not return to Modlin until September. Unfortunately, no other regular or charter carrier has appeared at the Warsaw Modlin Airport since then.

Scheduled operations at the Warsaw Modlin Airport:

- In 2012 scheduled operations were provided by Ryanair and Wizz Air with code C aircrafts, i.e. Boeing 737 and Airbus 320;
- Since 2013 scheduled operations are provided only by Ryanair, with Boeing 737 aircraft.

Non-scheduled operations at the Warsaw Modlin Airport:

- General Aviation;
- Re-routing from other airports,
- Training flights.

The numbers in the aircraft movements table above include only scheduled operations. General aviation and re-routing from other airports amounted to 736 operations in 2016.

3.4. Number of passengers in the last five years

Table 6: Number of passengers in the years 2012-2016

Year	2012	2013	2014	2015	2016
Warsaw Modlin Airport (pax)	857 481	344 566	1 703 743	2 589 286	2 859 191

Source: Polish Civil Aviation Authority (ULC)

The Compound Annual Growth Rate (CAGR) amounts to 35%.

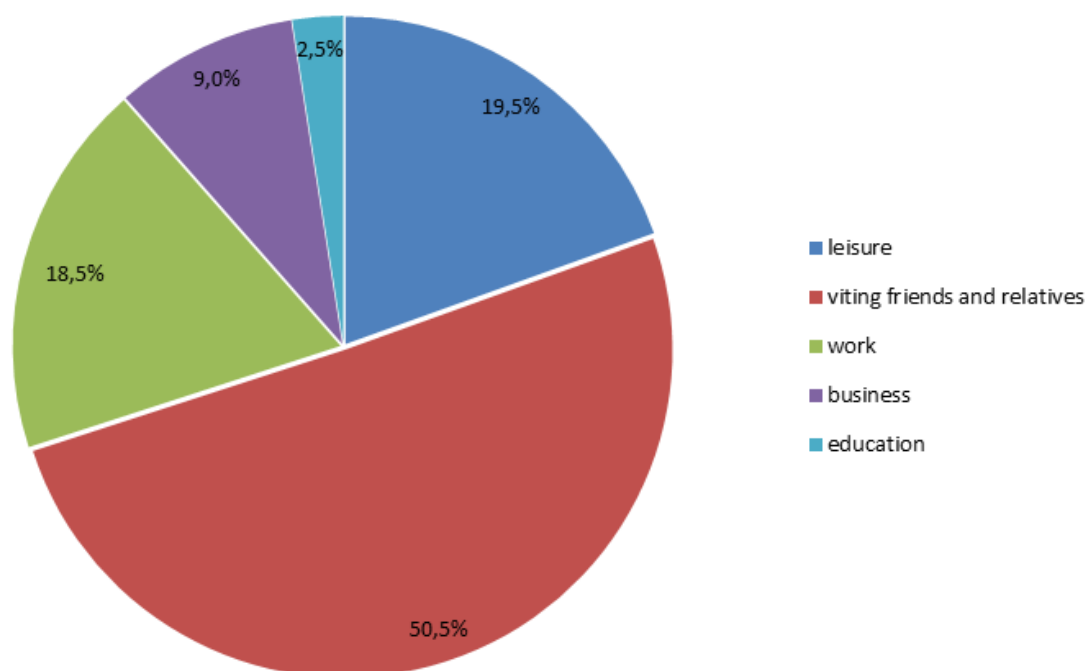
Warsaw Modlin Airport is the fastest growing airport in Poland, with a growth rate four times higher than that of the national market as a whole (CAGR 8,6%). The key reasons for such a spectacular growth are:

- focus on the low cost traffic, which is the fastest growing type of traffic in Europe;
- cooperation with the biggest low cost airline Ryanair, which aggressively develops connections from Warsaw Modlin enjoying beneficial operational and financial conditions.

3.5. Type of passengers according to purpose of travel (work/leisure) and type of travel (in-out, connected)

The distribution of passengers according to the purpose of travel is presented below.

Chart 2: Distribution of passengers according to the purpose of travel (2015)



Source: Warsaw Modlin Airport



The airport does not survey passengers on a regular basis. The results presented above come from a study conducted in 2015.

Due to the nature of the traffic at the airport (one low cost carrier) all travel is considered to be single-journey (without transfers to other flights/airports). Low cost carriers do not, as a rule, offer transfers because of their operational model. Even if passengers transfer at other airports for other flights, they do so on the basis of different, individually purchased tickets, possibly also from other carriers. As a consequence, neither the airport nor the carrier knows about this type of transfers.

3.6. Number of employees and business entities at the airport

Businesses and other employers located at the Warsaw Modlin Airport include:

- Mazowiecki Port Lotniczy Warszawa-Modlin Sp.z o. o. - the airport managing entity;
- The Border Guard;
- The Customs Service;
- LS Airport Services - handling agent;
- STEKOP Sp. z o.o. - security and cleaning;
- Lagardere Travel Retail Sp. z o.o. - commerce at the terminal (duty free);
- Baltona Sp. z o.o. - commerce at the terminal (catering);
- Restaurant Eat&Fly - catering;
- Ryanair plc airport base;
- 9 car rental companies;
- Transportation services (Koleje Mazowieckie, Modlin Bus, taxi);
- Aircraft Management and Consulting Sp. z o.o. - aircraft maintenance and repair;
- Salt Aviation Sp. z o.o. - GA service, flight academy, air services;
- SMARTAERO - GA service, flight academy, air services;
- Air Modlin Sp. z o.o. - aircraft maintenance and repair.

The airport manager does not keep a detailed record of the number of people employed at the airport. According to estimates based on the number of passes issued (also those who do not work permanently at the airport), the largest employers at the airport are:

- Mazowiecki Port Lotniczy Warszawa-Modlin Sp. z o. o. - airport managing entity (230 people);
- Border Control (ca. 300 people);
- LS Airport Services - handling agent (170 people);
- STEKOP Sp. z o.o. - security and cleaning (254 people);
- Lagardere Travel Retail Sp. z o.o. - commerce (38 people);
- Baltona Sp. z o.o. - catering (24 people).

In total those entities employ more than 1000 people. The managing entity estimates that around 1200 people are employed at the airport in total.

3.7. Bus infrastructure

Public transport service is available only in Nowy Dwór Mazowiecki within the functional urban area - 3 lines. None of the lines access Warsaw Modlin Airport. Koleje Mazowieckie bus service between Modlin train station and the airport may be considered as an element of public transport service within the functional urban area.

Short distance transport services at the airport include: Modlin Bus from Warsaw City Centre to the Warsaw Modlin Airport. The bus stop is located in the second lane in front of the terminal.

Picture 8: Modlin Bus bus stop



Picture 9: Modlin Bus bus stop



Long distance bus transport includes the following services:

- Ad Euro TransContbus (to Rawa Ruska and Ukraine: Lwów, Kamieniec Podolski);
- Contbus (to Lublin);
- OKBus (to Łódź, Toruń, Ciechocinek, Włocławek, Płock, Biała Podlaska, Międzyrzec Podlaski);
- Podlasie - Express (Białystok - Jeżewo - Zambrów - Ostrów Mazowiecka - Wyszaków);
- Radex (Orneta - Olsztyn - Olsztynek);
- Transwał (Lidzbark Warmiński - Olsztyn - Olsztynek - Nidzica - Strzegowo);
- Żak Express (Suwałki - Augustów - Elk - Grajewo - Szczuczyn - Stawiski - Łomża).

These companies' bus stops are located in the second lane in front of the terminal (unmarked) and outside the car parking zone next to the terminal (photo below).

Picture 10: Long distance bus stop



Other bus transportation infrastructure includes only Modlin Bus information and ticket point and Koleje Mazowieckie info and ticket machine (tickets for bus service airport-railway station) located inside the terminal.

Picture 11: Modlin Bus information and ticket point



3.8. Car parking infrastructure

The car parking infrastructure at the Warsaw Modlin Airport includes the following parking lots.

Car parks for passengers

PA1 (in front of the terminal)	PA7 (out of the airport area)
Short term	Long term
Capacity: 600 vehicles	Capacity: 500 vehicles
Average occupancy > 80%	Average occupancy > 60%
Prices shown below	Prices shown below

CENNIK USŁUG PARKINGOWYCH CAR PARK TARRIF

PA1	Parking godzinowy Short term hourly parking	
	Do 10 minut Up to 10 minutes	Bezpłatne Free of charge
	Do 1 godziny Up to 1 hour	7 PLN
	Do 2 godzin Up to 2 hours	12 PLN
	Do 3 godzin Up to 3 hours	17 PLN
	Każda następna rozpoczęta godzina Each additional started hour	5 PLN
	Do 8 godzin Up to 8 hours	42 PLN
PA1	Parking dobowy (powyżej 8 godzin) Short term daily parking (over 8 hours)	
	1 doba 1 day	55 PLN
	2 doby 2 days	65 PLN
	3 doby 3 days	75 PLN
	4 doby 4 days	85 PLN
	5 dób 5 days	100 PLN
	Każda następna rozpoczęta doba Each additional started day	20 PLN

Source: Warsaw Modlin Airport website

TIME (days)	PRICE (PLN)
1	30
2	35
3-4	40
5-7	50
8-9	70
10-12	90
13-15	100
each following day	5
lost ticket	200

Source: Warsaw Modlin Airport website

The PA7 car park is located in the area belonging to the airport, 3 km from the terminal in the direction of Nowy Dwór Mazowiecki, by road No. 62. Passengers who use the PA7 are offered a free round-trip transfer (car park-terminal-car park).

Map 13: Car parks for passengers at Warsaw Modlin Airport



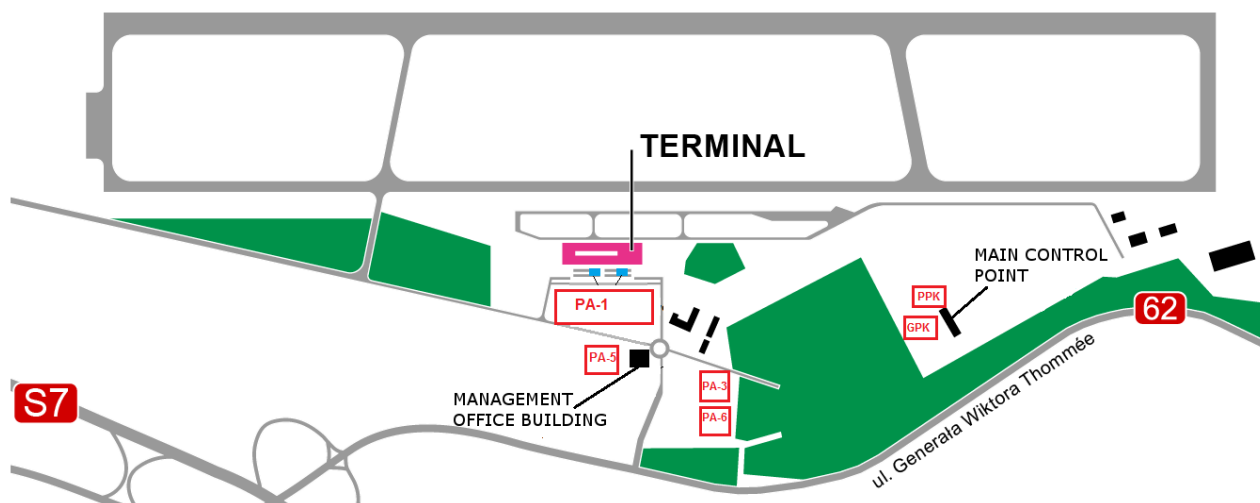
Source: Warsaw Modlin Airport website

Car parks for employees:

- PA5 - 52 spaces;
- PA3 - 197 spaces (in future it is going to be changed to mid-term parking lot for passengers);
- PA6 - 140 spaces;
- Car parks next to Main Control Point (GPK) (100 spaces).

Car parks for employees are chargeable. Parking space for other entities operating at the airport is payable according to individual agreements.

Map 14: Car parks for employees at Warsaw Modlin Airport



Source: Warsaw Modlin Airport



Car park space for taxi:

- 6 parking spaces in the first lane in front of the terminal;
- 6 parking spaces in the second lane in front of the terminal;
- Space for taxis waiting for access to the terminal.

There is no designated area or stands for parking bicycles.

3.9. Car rental

There are nine offices of car rental companies at the Warsaw Modlin Airport. They are located on the ground floor in the arrivals area of the terminal. The companies are:

1. Hertz,
2. Panek,
3. Budget,
4. Avis,
5. Awos,
6. Express,
7. Europcar,
8. CarFree,
9. CheapCar.

The number of cars kept at the airport is adjusted according to expected demand. Usually it is 4 to 5 cars of different classes per company.

3.10. Fuelling infrastructure

There is no petrol station at the airport. The nearest petrol stations are:

- PKN Orlen - ca. 3 kilometers from the airport, by road No. 62 in the direction of Nowy Dwór Mazowiecki;
- Circle K (formerly Statoil) - ca. 2,5 kilometers from the airport, by road No. 62 in the direction of Zakroczym.

There are no electric car charging stations at the airport or nearby.

4. Available travel planning and travel management solutions

4.1. Travel planning and travel information solutions

Nowadays, the Internet and travel planning applications are the number one source of information on travel to and from the airport. Numerous solutions of this nature are available to passengers planning to travel to/from the Warsaw Modlin Airport. A summary of such solutions is presented in the table below.

Table 7: Travel planning and travel information solutions

Solution	Means of transport	Channels	Additional information
Google maps https://www.google.pl/maps	car, bicycle, public transport, Uber	www and mobile app	Information on cycling routes of different nature Traffic warnings
JakDojade https://jakdojade.pl/warszawa/trasa/	public transport	www and mobile app	
ViaMichelin https://www.viamichelin.com/	car	www and mobile app	Traffic warnings
Targeo https://www.targeo.pl/	car, bicycle, public transport	www and mobile app	Traffic warnings
Warsaw Transport Authority website http://www.ztm.waw.pl/	public transport - limited usability, routes to Nowy Dwór Mazowiecki only	www	
Koleje Mazowieckie website http://www.mazowieckie.com.pl/en	public transport	www	
Naviki https://www.naviki.org/pl/naviki/	bicycle	www and mobile app	Information on cycling routes of different nature

Source: own analysis

The table above provides examples of the most popular applications and websites allowing to plan the travel to/from the Warsaw Modlin Airport. Similar features are offered by other websites and apps, often based on Google Maps search engines.

Numerous websites provide descriptions of the possibilities of reaching the airport, using various means of transport. Similar information, including timetables, are provided on websites of railway and bus carriers providing access to the airport.



The Warsaw Modlin Airport's website plays an important role in enabling the passengers to prepare efficient travel plans to/from the airport. It contains information on:

- car accessibility and car parking options,
- bus accessibility, including links to carriers' websites and timetables,
- train accessibility, including links to carriers' websites and timetables,
- taxi accessibility, including links to websites of two taxi companies cooperating with the airport.

An important shortcoming of the airport's website is an outdated bus and train timetable. No mobile airport application is available, but a responsive version of the website is offered to passengers.

Some difficulties for airport users can also result from the lack of a unified name for Warsaw Modlin Airport in various travel planning applications. Different websites and applications identify the airport in different ways. The case of the Warsaw Modlin Airport, however, is not isolated in this respect.

4.2. Solutions for obtaining information while traveling to/from the airport

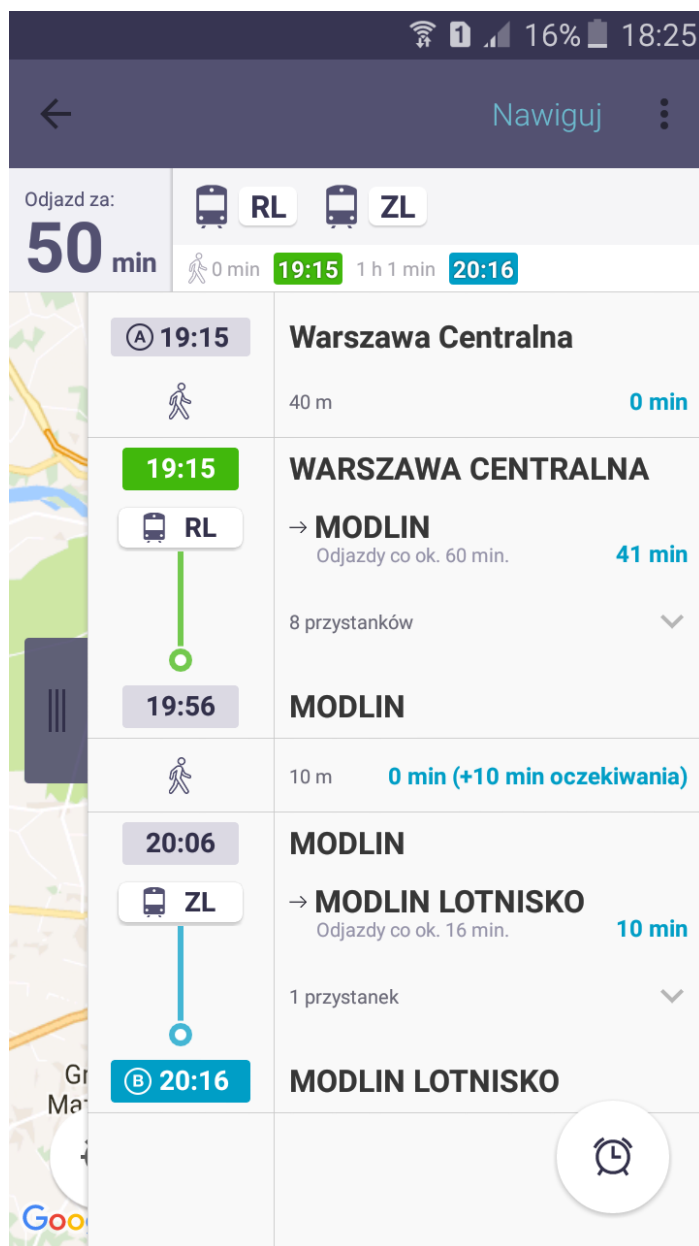
Most of the planning solutions described above, running on a GPS-enabled mobile device (e.g. smartphone, tablet), allows to keep current information on the passenger's location, expected travel time and traffic warnings. This is a set of standard features of all travel planning applications which enable planning and managing journeys.

An additional valuable option of travel planning apps includes providing the following information to passengers (example based on the JakDojade app):

- Appropriate time to leave to get to the stop/station in time;
- Current location on the route;
- Next stop;
- Journey time to destination;
- Navigation to the stop/station.

A sample screenshot of the „JakDojade” app is presented below.

Picture 12: Screenshot of the „JakDojade” app



Source: JakDojade app

The Warsaw Modlin Airport's website presents departures and arrivals information in real time. This standard feature also facilitates the planning and management of the journey to/from the airport. A similar set of information is provided by the Ryanair mobile application, which is the sole regular carrier operating at the airport.

A new mobile application to trace Koleje Mazowieckie's trains in real time is currently undergoing tests. The app includes the following features:

- Real-time train location;
- Interactive map presenting the current location of the train;
- Description of the rolling stock;

- Traffic warnings;
- Timetable.

At present, however, the app covers only a limited amount of the carrier's trains (those on railway lines 27 and 33, neither of which is near the airport). This fact significantly limits its usefulness to the planning and management of the journey to/from the Warsaw Modlin Airport.

Alternative applications with similar features are "Portal pasażera" and "Bilkom".

4.3. Wayfinding at the airport area addressed to car drivers, public transport, pedestrians, cyclists

The airport wayfinding system is to facilitate the flow of vehicles by directing them to the appropriate points (terminal, car park).

Picture 13: Airport wayfinding system



Picture 14: Airport wayfinding system



Picture 15: Airport wayfinding system



And to the exit from the airport.

Picture 16: Airport wayfinding system



There are basically no signs for pedestrians and bicycles because there is no proper infrastructure to reach the airport this way:

- Pedestrians - the pedestrian walkways are fragmented and don't make up a comprehensive system;
- Bicycle - there are no bicycle paths; cyclists can use the same roads as cars.

Pedestrian signage is limited to the markings at the Modlin train station, as shown in the picture below.

Picture 17: Airport markings at the Modlin train station



At the airport there are no signs for pedestrians and public transport passengers, but it seems that there is no such need because of the small area of the airport and a relatively simple communication system - car parks, public transport stops and other essential elements of the airport are in the immediate vicinity of the terminal and in the passengers' sight.

4.4. Information available in other languages to facilitate planning and travel

All information at the airport to facilitate planning and travel is presented in Polish and English. This includes mainly bus and rail timetables, schemes of the public transport network, taxi information. Examples are presented on the pictures below.

Picture 18: Bus and rail timetables and schemes




Koleje Mazowieckie
ROZKŁAD JAZDY POCIĄGÓW
Train timetable
 Wskazywał 03.09.2017 - 14.10.2017
MODLIN

RELACJA/RELATION	ODJAZDY/DEPARTURES							
Tuszczy	12:52 ^h	20:20 ^h						
Warszawa Gdańska	04:13 ^h	04:36 ^h	05:03 ^h	05:26 ^h	05:46 ^h	06:02 ^h	06:27 ^h	06:47 ^h
	07:03 ^h	07:43 ^h	08:05 ^h	08:48 ^h	09:04 ^h	10:02 ^h	11:02 ^h	12:02 ^h
	13:02 ^h	14:11 ^h	15:02 ^h	15:44 ^h	16:02 ^h	16:47 ^h	17:02 ^h	17:33 ^h
	17:58 ^h	18:02 ^h	18:44 ^h	19:02 ^h	20:00 ^h	21:02 ^h	23:02 ^h	
Warszawa Lotn. Chopina								
przez/właz Warszawę Centralną	+04:24 ^h	+05:22 ^h	+06:22 ^h	+07:22 ^h	+08:24 ^h	+09:23 ^h	+10:22 ^h	+11:22 ^h
	+12:22 ^h	+13:22 ^h	+14:22 ^h	+15:24 ^h	+16:22 ^h	+17:22 ^h	+18:20 ^h	+19:23 ^h
	+20:29 ^h	+21:22 ^h						
Warszawa Zachodnia								
	+06:22 ^h	+04:24 ^h	+05:22 ^h	+06:22 ^h	+07:22 ^h	+08:24 ^h	+09:23 ^h	+10:22 ^h
	+11:22 ^h	+12:22 ^h	+13:22 ^h	+14:22 ^h	+15:24 ^h	+16:22 ^h	+17:22 ^h	+18:26 ^h
	+19:23 ^h	+20:29 ^h	+21:22 ^h	+22:30 ^h	+23:32 ^h			

LEGENDA
 h - godziny od poranku do południa
 h - godziny od poranku do wieczornego odjazdu
 h - nie odjeżdża do: Janków, Choszczyno, Legionowo
 h - nie odjeżdża do: Janków, Choszczyno, Legionowo, Pruszków, Legionowo
 h - odjeżdża do: Warszawa Zachodnia, Warszawa Toruńska, Warszawa Śródm. (przez/właz Warszawę Centralną)
 h - odjeżdża do: Warszawa Zachodnia, Warszawa Toruńska, Warszawa Śródm. (przez/właz Warszawę Centralną)
 h - odjeżdża do: Warszawa Zachodnia, Warszawa Toruńska, Warszawa Śródm. (przez/właz Warszawę Centralną)
 h - odjeżdża do: Warszawa Zachodnia, Warszawa Toruńska, Warszawa Śródm. (przez/właz Warszawę Centralną)
 h - odjeżdża do: Warszawa Zachodnia, Warszawa Toruńska, Warszawa Śródm. (przez/właz Warszawę Centralną)

There is no information available in the Braille alphabet.

4.5. Purchasing public transport tickets at the airport

The public transport ticket sale system at the airport includes:

- Ticket machine of Koleje Mazowieckie next to baggage collection area;
- Point of sale of Koleje Mazowieckie train tickets;
- Ticket machine of Koleje Mazowieckie in the open zone of the terminal
- Point of sale of Modlin Bus tickets

Picture 19: Koleje Mazowieckie's point of information and sale of train tickets



Picture 20: Ticket machine of Koleje Mazowieckie in terminal open zone



Picture 21: Point of sale of Modlin Bus tickets



4.6. Available solutions, including mobile apps for electronic ticketing in public transport

There are several solutions available which allow passengers to purchase electronic public transport tickets to the airport. The table below presents the available options.

Table 8: Electronic ticketing in public transport solutions

Solution	Means of transport	Channels	Additional information
moBilet, mPay, SkyCash	public transport in Warsaw, rail transport	mobile app	These solutions offer the possibility to buy one-way, 3-day, weekend and time (X minute) tickets.
Warsaw Transport Authority website	public transport - limited usability, routes to Nowy Dwór Mazowiecki only	www	Only 30- and 90-day personal tickets encoded on a personalized Warsaw City Card at designated points are available through the website.
Koleje Mazowieckie website	public rail transport	www	In addition to standard Koleje Mazowieckie tickets, the special "Airport ticket" is available online.
ModlinBus website	Bus routes to the airport from Warsaw and other cities like Łódź, Toruń, Płock, Włocławek.	www	

Source: own analysis

The websites of other rail and bus companies operating on routes between the Modlin station/Warsaw Modlin Airport and more distant destinations also offer the possibility to purchase tickets online.

5. Solutions fostering innovation in mobility

5.1. Solutions promoting electric mobility

There are no solutions at the airport to encourage the use of electric vehicles. There is no charging station for electric vehicles either.

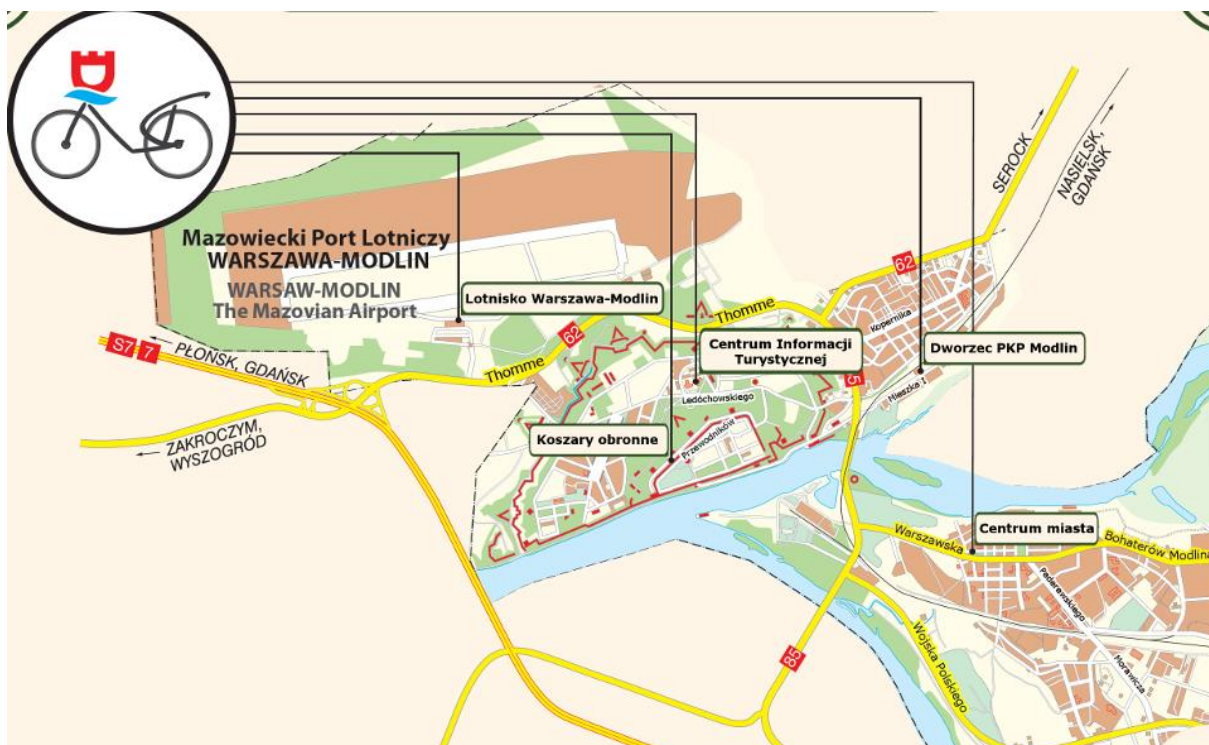
5.2. Public bicycle systems, car sharing

Public bicycle systems

As regards the functional urban area of the Warsaw Modlin Airport, a public bicycle system is available in Nowy Dwór Mazowiecki.

The system operates from April to November, on a daily basis from 8 AM to 8 PM. The system currently consists of 5 bicycle stations. Their location is presented on the map below.

Map 15: Location of bicycle stations in Nowy Dwór Mazowiecki.



Source: Nowy Dwór Mazowiecki public bicycle system website

Potential users must:

- Call the infoline via the terminal;
- Provide personal data and phone number;
- Select requested bicycle and additional equipment;

- Wait for confirmation;
- Wait for delivery of bicycles (declared time is 20 minutes).

The bicycles should be returned at the preselected station at the agreed time.

The system is not comfortable to use, inflexible and time consuming. However, it enables free of charge public bicycle journeys between the airport and Nowy Dwór Mazowiecki. One of the five bicycle stations is located at the Warsaw Modlin Airport, by the exit of the arrivals hall. Another one is located at Modlin train station. The stations are marked in a visible way, as can be seen in the images below.

Picture 22: Public bicycle stations at the Warsaw Modlin Airport



The Veturilo public bicycle system operating in Warsaw as a primarily short-distance mode of transport does not function as a mode of transport for the whole trip between Warsaw and the Warsaw Modlin Airport. The nearest bicycle station is located 27 km from the airport (Aluzyjna-Trąby bicycle station in the Białołęka district). It may play a marginal role in trips between the Warsaw Modlin Airport and Warsaw, as an element of access to/from a public transport stop in Warsaw (last mile), only in the case of travelers without much baggage. The first 20 minutes are free, but a deposit must be paid before a bicycle is rented. New users can register via the internet or at a terminal.



Car-sharing

There are several car-sharing systems operating in Warsaw (Panek CarSharing, Traficar, 4mobility). The sample costs of using such system are:

- 0.50 PLN per 1 minute drive;
- 0.10 PLN per one minute stop;
- 0.50 PLN per 1 kilometer.

Such systems enable renting cars and travelling to/from the Warsaw Modlin Airport. However, the cars cannot be left at the airport, which is beyond their predefined parking zone. Some car-sharing system providers offer additional services including, for example, free parking in the metered parking zone in Warsaw. Car-sharing systems operating in Warsaw include not only the possibility to rent cars from commercial providers but also private car-sharing systems (sharing cars between private users).

Currently there are no car-sharing systems available in the functional urban area of the airport or at the airport itself.

5.3. Other shared mobility schemes

Different carpooling solutions are available in Poland (the most popular of them is the BlaBlaCar platform). These solutions are used mainly for long distance journeys, including routes to/from the Warsaw Modlin Airport. This shared mobility option is also used on the route between the Warsaw Modlin Airport and Warsaw. The cost of such solution depends on distance, time of travel and class of vehicle. In case of travel between Warsaw centre and Warsaw Modlin Airport the range of fee is between 5 and 10 PLN per passenger.

As the distances between different parts of the functional urban area and the Warsaw Modlin Airport are short, carpooling solutions are unlikely to play an important role in passengers' travel to/from the airport. However, carpooling platforms are also becoming more and more popular with travellers travelling on short distances - e.g. commuters (examples of such platforms include: rides.com, bytheway.pl, inonecar.com). There is currently no information indicating the use of these systems in the functional urban area, but this does not necessarily mean they are not used. It is also worth mentioning that some forms of shared mobility (carpooling) are quite probably present in the functional urban area based on private travel contacts, especially in the case of airport employees.

No dedicated solutions fostering shared mobility have been observed at the Warsaw Modlin Airport or in the functional urban area.

5.4. ITS (Intelligent Transport Systems) solutions

The ITS solutions are understood as information and communication systems designed to provide services related to various types of transport and traffic management and to better inform different users and provide safer, more coordinated and "smarter" use of transport networks.

At the Warsaw Modlin Airport the intelligent transport systems are limited to light panels located at the entrance to the airport informing about the current usage of car parking for passengers - PA1.



Such solutions are available in Warsaw where the Integrated Traffic Management System (*Zintegrowany System Zarządzania Ruchem - ZSZR*) is in operation. However, it has only indirect significance for the communication between the airport and Warsaw. The goal of ITMS is to maintain traffic smoothness, improve traffic conditions and improve orderliness, reduce the time of commuting by public transport in Warsaw, and make eventual journey to the airport easier.

5.5. Integration of different means of transport, especially walking, cycling and public transport

An example of a functioning train and bus integration is the offer of Koleje Mazowieckie which includes a train journey to or from Modlin station and a bus connection between Modlin and the Warsaw Modlin Airport. It includes the possibility to purchase one ticket for the entire journey. The ticket also allows the traveler to use Warsaw public transport for 75 minutes.

As for the integration of pedestrian, cycling and public transport, it is possible to rent a bicycle at the Warsaw Modlin airport. Another station of this system is located at Modlin train station. Theoretically, passengers can use this solution for communication between the train station and the airport. In practice, this solution does not work efficiently due to the functioning of the system (time required to obtain the bicycle) and competition from the Koleje Mazowieckie bus connection.

In Warsaw, the Veturilo public bicycle can be used to get to/from bus/train stops. It can be accessed by phone or with a personalized Warsaw City Card.



6. Summary

The Warsaw Modlin Airport is, along with the Chopin Airport in Warsaw, one of the two key airports serving the Warsaw agglomeration and the Mazovian region. The mobility system enabling passengers to reach the airport is of key importance to the functioning of any airport. In the case of the Warsaw Modlin Airport it is a key factor due to:

- the location of the airport far from the Warsaw city centre;
- the dynamic increase in the number of passengers which puts increasing pressure on the mobility system;
- the increasing number of employees at the airport who use the mobility system.

The analysis of the current mobility system shows some positive elements, such as the direct bus connection between Warsaw and the Warsaw Modlin Airport, with timetables matched to the flight schedule, the offer of a common rail-bus ticket or the appearance of a public bicycle system at the airport. However, there are also many areas requiring improvement. A set of recommendations is presented below.

Essentially, there is no sign of integration (intermodality) of different modes of transport at the Warsaw Modlin Airport and there is much room for innovation in this regard. In principle, even very simple solutions will allow for significant improvement in the quality of the offer.

It should also be noted that the challenges for the mobility system used to get to and from the airport vary considerably depending on whether the municipalities of the functional urban area or Warsaw are concerned. Therefore, the recommendations below are split between these two areas.

Access from/to Warsaw - recommendations:

1. **Providing a train link to the Warsaw Modlin Airport** - currently the railway journey is possible only to the Modlin train station. Providing the infrastructure and adequate rail link offer to the airport itself would significantly improve the functioning of the system and its attractiveness.
2. **Extension of the "Airport ticket" offer** - currently the ticket is valid on the route from the centre of Warsaw to the Warsaw Modlin Airport one way. It would be beneficial to extend this offer to a two-way offer with a reduced price.
3. **Extension of the S7 road at the Warsaw-Czosnów section** - today this section represents an important bottleneck in the arrival to/from the airport. The construction of this connection will provide a high quality road connection to Warsaw, especially its southern parts.
4. **Information about the current road travel time to/from the Warsaw Modlin Airport from the centre of Warsaw** - such information, communicated in various channels (website, application, ITS elements), would make it easier to plan a trip to/from the airport.
5. **Providing the possibility of accessing the airport by bicycle from the direction of Warsaw.** A comfortable and durable cycle path on the embankment along the Vistula from Warsaw to Nowy Dwór Mazowiecki would at the same time improve commuting conditions between other points along the way.

Access from/to the functional urban area - recommendations:

1. **Improve pedestrian accessibility** - the airport is located in a short distance from the municipalities of the functional urban area and one can imagine that airport employees living in



this area would be getting to the airport on foot. However, it is necessary to provide adequate pedestrian infrastructure, which is currently non-existent. Routes providing an alternative to the national road would be especially useful.

2. **Improve airport accessibility by bicycle** - as in the case of pedestrian traffic, one can imagine that airport employees living in the surrounding area would reach the airport by bicycle. However, it is necessary to provide adequate cycling infrastructure on the routes to/from the airport (including both separate cycle infrastructure along high-speed/high-traffic roads and traffic-calming on alternative routes). Currently such infrastructure does not provide complete links to the airport. Routes providing an alternative to the national road would be especially useful.
3. **Organization of infrastructure for cyclists at the airport** - currently there is no parking infrastructure / bicycle parking facilities. A change in this respect could be a factor stimulating such traffic, especially among employees. Such facilities should ensure comfortable parking conditions close to the goal of the journey, as well as provide protection from rain. A more flexible and less time-consuming bicycle rental system would also be useful.
4. **Public bus transport** - there is currently no bus service connecting the municipalities within the functional urban area and the airport (except the Koleje Mazowieckie bus from Modlin). This offer would improve access to/from the airport for residents of the area, especially airport employees.
5. **Arrival by train to the Warsaw Modlin Airport** - as above.

Other recommendations:

1. **Updating the arrival information on the airport's website** - an out-of-date timetable for buses and trains to/from the airport is presented on the airport's website. The airport's website could become an "information hub" about airport access and arrival planning, integrating the various dispersed solutions and information.
2. **Preference for car sharing** - introducing preferences for shared commuting to and from the airport (e.g. reduced car parking charge) could improve airport accessibility by reducing the number of cars on the route to/from the airport.
3. **Unified airport name in trip planning systems** - different web sites and applications now identify the airport in different ways, which sometimes requires the user to make several attempts to enter the proper name when planning a trip to/from the airport.