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## Task 3.5 Technical Report Air cargo regional development

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Task # 3.5 – Air cargo regional development  
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## List of Abbreviations

CIS – Commonwealth of Independent States

EU – European Union, formed after ratification of the Lisbon Treaty of 2009

GDP – Gross Domestic Product

ICAO – International Civil Aviation Organisation

PLN – polish currency, ISO 4217 code

RFS – Road Feeder Service

VAT – Value Added Tax

## 1. Introduction

The reports overview development of air cargo market in Poland. Polish cargo market is very small. In 2006, total EU air cargo market was 12 million tonnes and only 0,5 million tonnes in East-Central Europe [2], in Poland, even in 2012, the figure was below 0,1 million tonnes [7]. Four main EU airports: in Frankfurt, Amsterdam, London and Paris have about 50% market share. As these main airports become saturated, new airports stand before a chance of development. Due to much lower GDP, East-Central Europe market will remain small. Average annual market growth in EU is roughly 7%, while in Poland only 1,3% [2] even though Polish GDP growth was more than a match for EU average. Good dynamics in passenger growth in Poland is not matched by according air cargo development [2].

## 2. Current situation

The majority in air cargo in Poland is import. The most of trade partners, 80% [1], are EU countries.



**Figure 1. Currently active airports in Poland.**

There are 13 operational civil airports with at least than 3 planned to begin operation within a few years (see Figure 1 and Table 1).

**Table 1. Airports in Poland [6].**

Airport name	IATA /ICAO Code	Cargo terminal	Runway		Notes
			length x width [m x m]	ref. code	
Warsaw Okęcie	WAW /EPWA	12 000 m <sup>2</sup> X-Ray Equipment, Mechanical Handling, Heated Storage, Air-Conditioned Storage, Refrigerated Storage, Deep Freeze Storage, Mortuary, Animal Quarantine, Fresh Meat Inspection, Health Officials Security for Valuables, Radioactive Goods, Very	3690 x 60, 2800 x 50	4E	40 flight operations per night limit.

		Large/Heavy Cargo, Express/Courier Centre			
<b>Katowice Pyrzowice</b>	<b>KTW /EPKT</b>	5 378 m <sup>2</sup>	2800 x 60	4D	24 h operation, 3200 strip/4E in 2014, 7000 m <sup>2</sup> of new warehouse and 2000 m <sup>2</sup> office area planned.
<b>Gdańsk Rębiechowo</b>	<b>GDN /EPGD</b>	430 m <sup>2</sup>	2800 x 45	4D	24 h operation possible
<b>Kraków Balice</b>	<b>KRK /EPKK</b>	Terminal 4 100 m <sup>2</sup> , 22 500 m <sup>3</sup> , 755 m <sup>2</sup> warehouse, Mortuary 12 m <sup>2</sup> , Radioactive 10 m <sup>2</sup> Refridgerator +4° C 12 m <sup>2</sup> , Refridgerator -20° C 9 m <sup>2</sup> , Throughput 35 t/24h	2550 x 60	4D	24 h operation possible
<b>Poznań Ławica</b>	<b>POZ /EPPO</b>	1 490 m <sup>2</sup> (DGR, valuable radioactive, goods, morgue, animals)	2504/50	4D	24 h operation possible
<b>Wrocław Strachowice</b>	<b>WRO /EPWR</b>	5 500 m <sup>2</sup>	2503 x 58	4D	24 h operation possible
<b>Szczecin Goleniów</b>	<b>SZZ /EPSC</b>	2 terminals 120 m <sup>2</sup> , 850 t, Refrigerated storage, Forklifts, carriages, ramp	2500 x 60	4D	16 h operation
<b>Bydgoszcz Szwederowo</b>	<b>BZG /EPBY</b>	500 m <sup>2</sup>	2600 x 60	4D	
<b>Łódź Lublinek</b>	<b>LCJ /EPLL</b>	750 m <sup>2</sup> Provisory, up to 3 t forklifts, Rapiscan X-Ray Equipment, temperature controlled storage	2500 x 45	3C	12-14 h operation, (24h possible) 4D certification and cargo terminal planned
<b>Rzeszów Jasionka</b>	<b>RZE /EPRZ</b>	Refridgerator 33,95 m <sup>2</sup> , 643,95 m <sup>2</sup> in total	3200 x 45	4D	24 h operation
<b>Warszawa Modlin</b>	<b>WMI /EPZG</b>	Terminal cargo planned	2500 x 60	4C	24 h operation, held operations since 22 XII 2012 for runway repair. 2800 m runway planned.
<b>Zielona Góra Babimost</b>	<b>IEG /EPZG</b>	1 terminal cargo, 16 aircraft hangars 320 m <sup>2</sup> each can be used as warehouses.	2500 x 60	4D	8 - 14 h operation, 24 h possible
<b>Lublin Świdnik</b>	<b>LUZ /EPLB</b>	Cargo planned in longer term.	2520 x 45	4D	
<b>Radom Sadków</b>	<b>QXR /EPRA</b>		2000 x 60	3C	Civil operations to start in autumn 2013.
<b>Szczytno Szymany</b>	<b>SZY /EPSY</b>		2000 x 60	3C	Operations to start in 2014. Category 4D planned.
<b>Gdynia Kosakowo</b>	<b>QYD /EPOK</b>		2500	B	Under construction

Warsaw Okęcie is the air cargo market leader, Katowice Airport is the second, third is Kraków Balice airport (see Figure 2 and Table 2) [7]. Gdańsk Rębiechowo is the 4<sup>th</sup> most important player in Polish air cargo, almost matching Kraków Balice. Poznań Ławica, Wrocław Strachowice, Łódź Lublinek, Rzeszów Jasionka, Bydgoszcz Szwederowo and Szczecin Goleniów are also operating small air cargo terminals, Wrocław's cargo infrastructure being relatively well developed. In Łódź Lublinek, only RFS transports cargo. Zielona Góra would like to achieve air cargo traffic, or any other traffic. Warszawa Modlin and Lublin Świdnik are concentrated on passenger low cost carriers and are postponing air cargo to some undefined future.

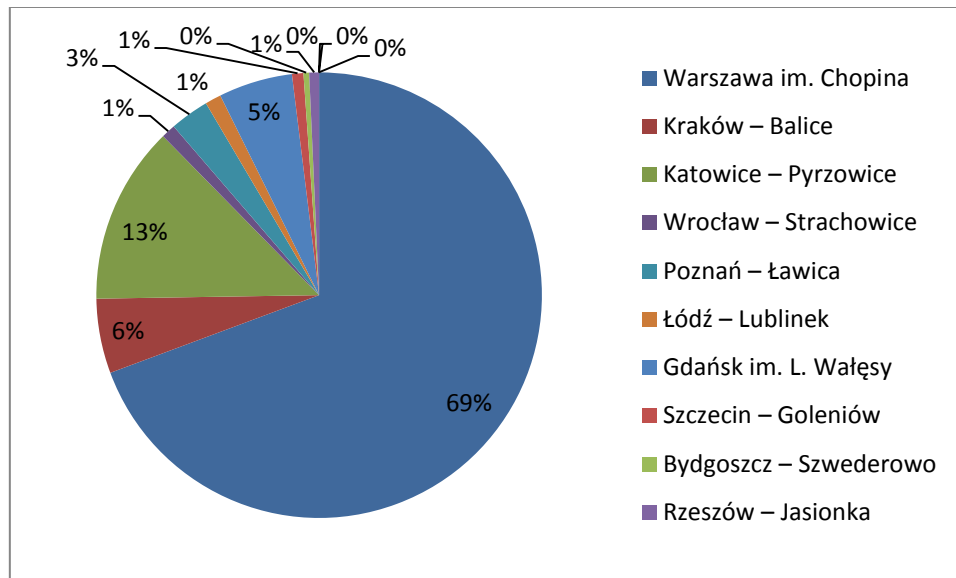


Figure 2. Airports air cargo market shares [7].

Table 2. Airports air cargo market shares [7].

Airport name	Cargo [kg]	Dynamics		Passengers	Cargo market share	Pax market share
		2012/11	2012/10			
Warszawa im. Chopina	62520996	3,1	12,3	9567063	69,3331	39,15222
Kraków – Balice	4883607	17,2	9,4	3408954	5,41571	13,95079
Katowice – Pyrzowice	11629848	0,3	-2,2	2518409	12,897	10,30633
Wrocław – Strachowice	928143	-5,7	5,7	1942000	1,029271	7,947435
Poznań – Ławica	2562849	-5,8	7	1560334	2,842089	6,385506
Łódź – Lublinek	1052842	256,9	526321	463459	1,167557	1,896658
Gdańsk im. L. Wałęsy	4838648	-2,1	7,8	2861774	5,365853	11,71152
Szczecin – Goleniów	744029	-4,5	2,1	347063	0,825096	1,42032
Bydgoszcz – Szwederowo	371760	0,6	-10,2	328099	0,412266	1,342711
Rzeszów – Jasionka	642076	51,6	37,9	562934	0,712035	2,303749
Zielona Góra – Babimost	21	-98,7	-99,6	12290	2,33E-05	0,050296
Warszawa – Modlin	0	0	0	857481	0	3,509153
Lublin	0	0	0	5697	0	0,023314

Current market leader's, Warsaw Chopin Airport, growth is highly constrained by its localisation inside city. Numerous plans and analyses of building a Central Air Port have not resulted in any decision to start this investment. Currently on-going investment in Katowice will enable it a 4E ICAO reference code which will mean it will be the only Airport, apart from Warsaw Chopin, certified to operate large E code aircraft, such as Boeing 747-8. Completion of new warehouses will make its cargo infrastructure match that of current

leader, while location outside populated area in Pyrzowice allow 24 hour unconstrained operation. Numerous airport advantages with determination of its management to achieve a strong position in air cargo market in Poland is an indicator of a prosperous future which makes it an interesting case for study for the project.

### 3. Katowice Airport



**Figure 3. Katowice Airport location and the most important goods transported.**

#### Location

Katowice Airport is located in Pyrzowice in the southern part of Poland (see Figure 3) in the Silesian Voivodeship. Location outside any major agglomeration enables curfew-free 24 hour operation. Similar to all the airports in Poland, its elevation – 303 m is low, which is beneficial for air operations. Weather conditions around the airport are very good, with only a few days of bad weather per annum. Land around the airport is inexpensive, which leaves opportunity for further airport expansion [5]. The airport is part of TEN T network.

The airport is located in the vicinity of junction of north-south A1 and west-east A4 motorways in Sońnica. S1 expressway is accessible from the airport via road 913. International routes run through the voivodeship, notably E40 (the longest European route) connecting Calais in France with Ridder in Kazakhstan (near the border with China) and E75 from Scandinavia to the Balkans.

The nearby Metallurgical Broad Gauge Line (Linia Hutnicza Szerokotorowa – LHS) is the furthest extended to the west railway line with broad 1520 mm gauge used in the CIS countries. It is used for freight only.

#### Region potential

11 out of 38 million of Polish citizens are living within 100 km radius around the airport, in its catchment area [5]. Silesian Voivodeship population is ca. 4,68 million people (12,2% of the country's population). The area is 12334 km<sup>2</sup>. It is the most densely populated, urbanised and industrialised region in Poland.

Population density is 379 persons/km<sup>2</sup>, while 124 persons/km<sup>2</sup> is the national average. 78% of population live in urban areas. Unemployment rate is low, only 6,2% [6], 13% of GDP is produced in the region.

It is an industrial region, 323 000 enterprises in the voivodeship employ over 3 million people. Two special economic zones are in Katowice and Częstochowa.

Industries in the Silesian Voivodeship include:

- Automotive (FIAT, GM Opel, Isuzu, Delphi, Brembo, Magnet Marelli Exhaust Systems, Valeo)
- Metallurgy (iron, lead, zinc)
- Mining (coal, iron, zinc, lead)
- Electric power
- Food
- Electromechanical
- Business Process Outsourcing
- High tech
- Tourism
- Aviation (Avio)

The automotive, high tech, electromechanical, aviation and food industries are important customers for the air cargo transport.

#### Ownership structure

Górnośląskie Towarzystwo Lotnicze S.A. has been the airport operator since 1 May 1994.

The majority of its shares are owned by Węglokoks – a Polish coal exporting company and regional government (see Figure 4). "Polish Airports" State Enterprise owns relatively small share, compared to other polish airports. Total number of shareholders is 37, total capital is 137 099 300 PLN.

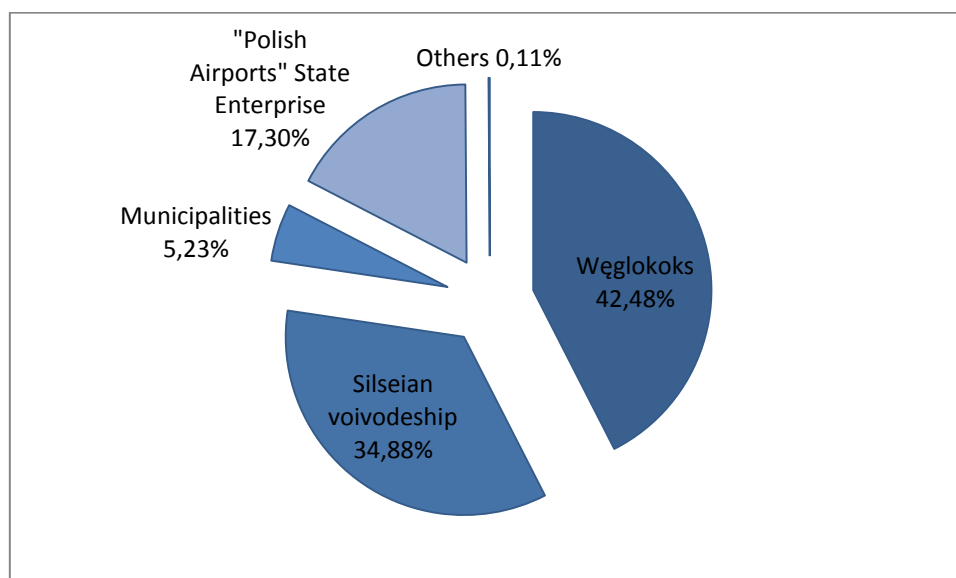


Figure 4. GTL S.A. ownership structure [5].

#### Airport technical data

Katowice Airport is a regional airport, operating 24 hour a day, 7 days a week (see Table 3). Currently, code D aircraft can use the airport, E code is to be obtained in 2014. The Most ubiquitous air cargo aircraft, MD-



11F, Airbus 310 or Boeing 727, 737, 757, 767 freighters can use the airport, while some of the heaviest aircraft, Airbus 330, Boeing 747,777, An-124, An-225 could operate, but not fully loaded. The on-going investment in runway will extend the range of aircraft that can operate. The Airport uses new generation Instrumental Landing System Thales 420. The ILS is supplemented by DME beacon Thales 415. There are two NDB radio beacons, the longer “KTC” 285KHz, and the shorter “KTW” 326 KHz.

**Table 3. Katowice Airport technical data [5].**

<b>IATA code:</b>	<b>KTW</b>
<b>ICAO code:</b>	<b>EPKT</b>
<b>ICAO reference code:</b>	4D (4E in 2014)
<b>ARFF category:</b>	8 (10 on request)
<b>Operations:</b>	24 h (no curfews)
<b>Runway:</b>	2800 m x 60 m, (3200 m in 2014) PCN 46/R/B/W/T (PCN 70 in 2014)
<b>Radio-navigation aids:</b>	RWY27 ILS Cat I (Cat II in 2014) D-VOR (JUN 2012)
<b>Visual navigation aids:</b>	PAPI RWY09/27
<b>Airport total area:</b>	570 ha
<b>Passenger terminals area:</b>	22 000 m <sup>2</sup>
<b>Cargo Terminal:</b>	5 378 m <sup>2</sup> , planned 7000 m <sup>2</sup>
<b>Annual passenger flow capacity:</b>	4 mln
<b>Terminal A serviced zone</b>	Non-Schengen
<b>Terminal B serviced zone</b>	Schengen
<b>Check – in stands</b>	35

Compared to other airport in Poland (see Table 2), Katowice Airport is distinguished by its Cargo infrastructure, which is further being extended, it is also going to be one of only 3 airports in Poland with over 3 km runway in 2014. Further extension of the runway by 400m is possible. It will gain 4E code after 3,2 km runway is finished, enabling it to service large aircraft.

#### **Companies operating at the airport**

SHELL, Petrolot and BGS provide JET A-1 and Avgas 100LL fuels at the airport.

GTL LOT Airport Services provide handling services, including passenger services, boarding, ambulift, cargo handling, storage in warehouse, ramp handling, loading, technical and line maintenance, inspections, de-icing, inspections and repairs, cleaning and washing aircraft.

Aircraft maintenance is carried out by GTL LO, LineTach and Sprint Air. Their Part 145 certificates enable them to service ubiquitous in Poland B code (SAAB 340, ATR42, ATR 72) and C code (Boeing 737, Airbus 320) aircraft. Aircraft can be serviced in two maintenance hangars suitable for up to four C code aircraft.



**Figure 5. The most ubiquitous code C aircraft provide limited cargo capacity. Embraer 170 can carry about 1 tonne of cargo or less (different airlines offer various capacities).**

**Table 4. Aircraft types maintained certified [5].**

GTL LOT	LineTech	Sprint Air
Boeing 737-300/400/500/600/700/800/900, Embraer ERJ 145, Embraer 170/175/190, ATR 72, ATR 42, Airbus 318/319/320/321 with CFM56 and V2500 engines.	Boeing 737-300/400/500 with CFM56-3 engines, Boeing 737-600/700/800/900 with CFM56-7 engines, Airbus 318/319/320/321 with CFM56-5 engines, Airbus 319/320/321 with IAE V2500 engines, Embraer 170 with GE CF34-8E engines, Embraer 190 with GE CF34-10E engines, Embraer 145 with AE3007A engines, ATR 42/200/300/400/500 and ATR 72/100/200 with PWC PW 120 engines	SAAB 340

## 4. Future development scenarios

The main barriers to growth of Polish air cargo are long custom procedures and issue with VAT payment [1]. As being on time is a priority for freight forwarders and their customers, excessive bureaucracy at some custom offices and long procedures create a serious problem affecting underdevelopment of Polish air cargo. Few days long delays are enough to make air transport ineffective. Although simplified VAT payment procedure exists in Polish regulations, its availability is limited, in practice Polish companies choose between paying VAT upfront or using other country procedures in an airport outside Poland [1].



**Figure 6. Boeing 767 of LOT Polish Airlines. Very few airlines use widebody aircraft on connections with Poland.**

Aircraft used by the airlines operating in Poland are in majority narrow body (B and C code, see Figure 5), which do not allow pieces exceeding 110cm height and 280 kg weight [1]. LOT Polish Airlines is using 3 Boeings 767-35D (see Figure 6), being replaced by 5 Boeings 787-85D, on long haul routes. This limits large scale use of bulky cargo as long haul routes are predominant in air cargo market in Europe. Although passenger transport is developing fast, air cargo development lag behind it. New airports are being built, but airports are mainly concentrated on passenger transport and low cost airlines who have mostly not been interested in air cargo.

Improvement of the situation requires the following [1]:

- Simplification custom procedures, decreasing delays,
- Implementing VAT procedures that would allow Polish airports to be competitive to EU air ports
- Improvement of both infrastructure at the airports as well as road infrastructure (getting to the airports)
- Steady GDP growth
- Increase of long haul routes in airlines connection network

A study on building CPL ([1], 2010) indicate air cargo market development as seen in Table 4. Development scenarios for Katowice Airport are shown in Table 5.

**Table 5. Air cargo forecast for Poland, base scenario [1].**

Year	2015	2025	2035
Cargo [tonnes]	199,679	376,837	524,394

**Table 6. Air cargo forecast for Poland, base scenario [3].**

scenario	2011	2012	2013	2014	2015	2016
optimistic	14,8%	15,3%	11,4%	4,9%	6,0%	6,9%
most likely	8,4% <sup>1</sup>	-13,1%	20,9%	6,4%	6,0%	5,7%
conservative	0,0%	0,0%	0,0%	0,0%	0,0%	0,0%

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<sup>1</sup> Actual change in 2011 and 2012