Interrelationships between municipal spatial policy strategy and airport operation and development. Lodz Airport case study

Abstract

The present paper focuses on spatial management regulations in order to carry out investment in the field of airport facilities. The construction, upgrades, and maintenance of airports falls within the area of responsibility of local authorities. This task poses a great challenge in terms of organisation and finances. On the one hand, an active airport is a municipal landmark and drives local economic, social and cultural development, and on the other, the scale of investment often exceeds the capabilities of local authorities. The immediate environment of the airport determines its final use and prosperity. The objective of the paper is to review legislation that affects airports and the surrounding communities. The process of urban planning in Lodz and surrounding areas will be presented as a background to the problem of land use management in the vicinity of the airport. This paper seeks to address the following questions: if and how airports have affected urban planning in Lodz, does the land use around the airport prevent the development of Lodz Airport, and how has the situation changed over the time?

It can be assumed that as a result of lack of experience, land resources and size of investments on one hand and legislative dissonance and peculiar practices on the other, aviation infrastructure in Lodz is designed to meet temporary needs and is characterised by achieving short-term goals. Cyclical problems are solved in an intermittent manner and involve all the municipal resources, so there’s little left to secure long-term investments.

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Introduction

Poland’s spatial development policy is chaotic. It is not correct, however, to blame planners for all aspects of urban misfortunes that have taken place at Polish airports. Currently, there are 14 certified airports on the territory of the Republic of Poland (Urząd Lotnicza Cywilnego 2017a), and none of them meet all the spatial planning and development conditions defined by international standards and Polish air law. Especially noteworthy is the property development that has occurred in areas neighbouring airports, which altogether constitutes an anti-catalogue of real estate solutions in the vicinity of airports. Each of the 14 Polish airports is burdened (to varying degrees) with land use planning sins, however, the airport in Lodz has the most on its conscience. Given the scope of the topic and the abundance of examples, the paper will discuss municipal spatial planning policy in terms of airport location and development using the example of Lodz Airport.

Due to the wide range of issues related to land use management in the vicinity of airports only two aspects are covered by this paper: the legal framework of land use management in the vicinity of Lodz Airport and its factual execution, as well as airport development. Planners seem to ignore the possible hazards to aviation. These hazards often result from chaotic planning practices and lack of sufficient understanding of the issue. As was stated beforehand, planners are only one of the groups which is actively involved in the process of determining the character of urban land use planning and they cannot be held fully liable for its final effect. It can be assumed that, all interest groups taking part in this process lack specific knowledge of airport operations and the safety of aircraft operations.

It needs to be noted that the notion of development should be considered within the scope of its spatial rather than its socio-economic aspect. Due to the limited space in this article, the problem of economic growth and impact on local society cannot be fully discussed and is only partially mentioned, to provide support linked to the main topics covered.

Polish legislation regarding air transportation, aviation law (including ratified international agreements and the guidelines of global aviation organisations) and airport planning regulations are in literal contradiction to common urban practice and does not conform to the reality of Polish airports. The objective is to review legislation that affects airports and surrounding communities. The consequences resulting from the incoherent structure of the legislation will be discussed.

To thoroughly present the complexity of the case of Lodz Airport, the first part of the article analyses the framework of Polish legislation regarding land use planning policy and the law of the air. The second part is dedicated to the history of Lodz Airport and its spatial development. In this part, there is a wide discussion on the characteristics of the airport’s physical location. The last part contains conclusions, recommendations, and prospects for the future of Lodz Airport.

The Polish legislative framework

Land use planning law

In the Polish legal system, the owner of property does not have fully autonomous decision-making rights to determine the use of that property. These functions are specified by local spatial development plans, and where they are absent, by the study of the conditions and directions of spatial development of the municipality. Responsibilities for real estate management are shared between national and local level. The hierarchy of legal acts constituting Polish real estate management is presented below.

The Act of 21 August 1997 on Real Estate Management (Ustawa z dnia 21 sierpnia 1997 r. o gospodarce nieruchomościami [UOGN]) is the primary Polish legislation regulating the real estate market. In accordance with its provisions, territorial management prerogatives are delegated to Territorial Government Units (Pol. jednostki samorządu terytorialnego [JST]), which have rights to vote into operation acts of local legislation. They are issued in the form of resolutions by the governing bodies of the JST: the council of the municipality, the county council, and the regional council. The provisions regarding real estate are included in the local spatial development plan (Pol. Miejskowy plan zagospodarowania przestrzennego [MPZP]) and a study of the conditions and directions of spatial development [Study]. These are essentially a long-term framework of the planning intentions for the area and may include information on environmental and heritage matters, future major infrastructure requirements, key features, zoning and residential densities.

In the case where the local spatial development plan does not apply to the area where the property is situated, art. 154.2 of UOGN should be applied: ‘In the absence of a local plan, the property function is determined on the basis of the study of the conditions and directions of the spatial development of the municipality or the decision on the conditions of development and development of the area.’

According to the art. 4 sec. 2 point 2 of the Act of 27 March 2003 on Spatial Development and Planning (Ustawa z dnia 27 marca 2003 r. o planowaniu i zagospodarowaniu przestrzennym), in the absence of a spatial
development plan, the manner of development and the conditions of development shall be determined by way of a decision on development conditions.

It should be noted, that the Polish legal system gives priority to a certain type of strategic investment labelled as for ‘public purposes’, planned and consulted at national level and the highest local level (by the governor of the local province known as the ‘voivode’). The catalogue of pivotal projects considered to be ‘for public purposes’ has been included in art. 6 of the UOGN act. According to its provisions, the construction of an airport and other facilities and devices related to it, especially land release for the airport area (both landside and airside areas), are recognised as public purposes. Significantly, art. 6 of the UOGN act labelled the approaches to the airport, which are very space consuming air areas, as a public purpose. Investments marked as public purposes can abolish the legally applicable MPZP in given area and ultimately change key features of the urban planning of the area. Public purpose investments should provide an upgrade to territorial development by their definitions, however, it might introduce an element of chaos to the planning of compact urban areas.

In addition, it is worth mentioning that land expropriation can be imposed using the justification of public purposes. According to art. 115 of the UOGN act, the executive body of the JST initiates land expropriation procedures. A land expropriation permit is issued in the form of a decision with a clause permitting immediate execution by the local public administration at local level. On the basis of the above legal provisions, it can be clearly observed that the planning process is mostly imposed in a top-down manner, while project implementation is carried out by local authorities. This structure is absolutely correct and reflects the principles of the separation of powers, however, it generates a financial issue for the municipality. Even if investment in airport construction is budgeted for, in the case of major miscalculations local authorities face the unenviable task of patching up a budget that springs a gaping new hole every year. The municipality of Lodz is the main stakeholder in the airport management company with more than 95% of the shares (Lodz Airport 2017).

Air law

The International Civil Aviation Organization [ICAO] and European Aviation Safety Agency [EASA] recommendations are incorporated in the Polish legal system through the Polish Air Navigation Services Agency [PANSA] which publishes and distributes the Aeronautical Information Publication (AIP). Poland’s AIP is compliant with the Standards and Recommended Practices [SARPs] contained in Annex 15 to the Convention on International Civil Aviation – Aeronautical Information Services [AIS] (ICAO 2016) and the Aeronautical Information Services Manual (ICAO 2003). It should be assumed that ICAO standards, recommended practices, and procedures are compulsory. PANSA consulted each of the Polish projects on national legal regulations for the aviation industry in Poland.

The list of Polish laws relating to the aviation industry and its operation is long and contains more than 80 items. Recognising the variety of areas covered, only the part related to land use management in the vicinity of the airport will be discussed, stressing those points of discrepancy between the legal provisions and the actual situation around Lodz Airport.

Each of the above-mentioned 80 universal Polish laws incorporates the ICAO and EASAs standards of organisation of land use in relation to airport infrastructure. As noted in the previous section of the article, local authorities are responsible for effective land use planning. The Act of 3rd July 2002 on Aviation Law (Ustawa z dnia 3 lipca 2002 r. Prawo lotnicze), in section IV ‘Airports, airfields and aerial equipment on the ground’, defines the necessary conditions for the location of airports. Article 87.6 says: ‘it is prohibited in the vicinity of the airport within 5 km of its border: 1) to construct or extend buildings and installations which may constitute a source of bird feeding; or 2) bird breeding that may pose a threat to air traffic’, and in 87.7: ‘it is forbidden to plant and grow trees and shrubs on the properties located in the approach areas for landings which are capable of being an obstacle to flight; The obligation and expense of removing these trees and bushes is imposed on the owner or other entity that owns the property’. The common practice in this matter looks quite different, and this will be carefully analysed in the following section.

An airport located in proximity to the urban zone directly affects the surrounding communities in terms of pollution and noise emissions. They’re the result of flight operations and are considered as a continuing source of annoyance to nearby residential communities (Cohen & Coughlin 2008).

Noise and pollution are not only produced by aircraft operations, but also by the handling service, ground services (such as fire trucks, ambulances, airport buses, etc.), logistic companies and regular car traffic (passengers and commuters’ cars, taxis, public transportation, etc.) which all together contribute their share to the total quotas of pollution and noise emissions (Fidell & Silvati 1991; Girvin 2009; Visser & Wijnen 2001; Postorino & Mantecchini 2016).

However, considering these two factors in terms of their influence on health rather than as an annoyance is a certain novelty. The continuous exposure to noise produced

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by aircraft is also related to higher blood pressure, variability of heart rate and affects sleep quality (Aydin & Kaltenbach 2007; Brook et al. 2010; Babisch & Van Kamp 2009; Huss et al. 2010).

Industrial literature provides data about geological movement, which is also often ignored as a major component of this influence occurring in the area of the airport (Schwab et al. 1985; Short et al. 2014; Weiszer, Chen & Stewart 2015). Nevertheless, the air pollution argument has become more significant than others recently (Evrd et al. 2016; Hudda & Fruin 2016; Masiol & Harrison 2014), but it still takes second position on the list after the noise factor (Brueckner & Girvin 2008).

Detailed analysis of the relationship between pollution and noise emission factors cannot be discussed in this paper, however, it is necessary to highlight its importance as far as urban planning principles are concerned. The significance of this matter was scientifically recognised and included in the Polish legal system. Regarding the above, Limited Use Areas (Pol. obszary ograniczonego użytkowania [0OU]) were created under the Act of 27 April 2007 on the Environmental Protection Law (Ustawa z dnia 27 kwietnia 2007 Prawo ochrony środowiska) in accordance with the policy of compliance with European Union (EU) environmental norms. An OOU constitutes an act of local legislation and has to be precisely defined in terms of its total area, land use restrictions, technical requirements for building and the way in which the OOU can be used.

In addition, article 135 of the environmental protection law provides that: ‘If the ecological review or project environmental impact assessment required by the Act of 3 October 2008 on the Provision of Information on Environment and its Protection, Society’s Participation in Environmental Protection and Environmental Impact Assessments or post-analysis show that, despite the adoption of available technical solutions, technological and organisational standards cannot be complied with outside the plant or another facility such as: waste water treatment plants, municipal waste disposal sites, composting yards, transport routes, airports, power lines and power plants, radiocommunication, radionavigation and radiolocation facilities, an area of limited use should be created.’

Restrictions on the use of property are different for individual OOU. However, in the area of the OOU it is forbidden to build new hospitals, nursing homes and buildings for permanent or temporary residence of children and youth. It’s forbidden to build single-family houses or to change a building’s functions. Newly designed buildings are required to have adequate acoustic insulation (Czajka-Marčlewicz 2014). Polish courts are adjudging the compensation to be paid to property owners whose estates are located in an active OOU (Bień 2011; Dobrzyński 2013).

In the Lodz region, only one airport – Lask Military Airport – is covered by an OOU pursuant to Resolution No. XXIX/379/16 of the Lodz Regional Parliament (Sejmik Województwa Łódzkiego 2016). Military aircraft produce much more noise than passenger planes, which far exceeds the established noise limits. An OOU has also been created for the S8 expressway which runs near Lodz Airport.

Delegation of powers is another important issue that needs to be stressed. Administrative reform initiated under the Act of 8 March 1990 on municipal government (Ustawa z dnia 8 marca 1990 r. o samorządzie gminnym) has assigned new responsibilities to IST, including maintenance of communal facilities and utilities (art. 7.15). As a consequence, the Act of 12 February 2009 on Special Regulations for the Preparation and Implementation of Investments in the Field of Public Airports (Ustawa z dnia 12 lutego 2009 r. …) indicated that the provincial governor is the public administration authority which authorises the implementation of public investment decisions on airports (art. 3). Airports are mostly managed by State Treasury companies in which the majority of the shares are held by municipalities. Article 2.7 of the Act of 3 July 2002 on Aviation Law (Ustawa z dnia 3 lipca 2002 r. Prawo lotnicze) states that ‘an airport operator is an entity that has been registered as a manager in the register of civil airports’. The same act in art. 2.18 states that ‘an airport manager shall ensure the airport operates, subject to certain requirements which the airport operator would not have fulfilled, solely in the interest of commercial or statutory purposes’. In practice, this means that the regulations concerning the airport operation are top-down, while the entire process of investment implementation, including management of the resulting facility, rests on the municipality’s shoulders.

**Land use planning law vs. air law – case study of Lodz Airport**

Before proceeding to analyse the implementation of the legal provisions regarding the location and spatial development of Lodz Airport, it has to be clearly stated that features resulting from airport location have different connotations for the parties involved, and it is a matter of perspective. In the article, the analysis is conducted from the point of view of the safety of aircraft operations.

As was stated above, the location of an airport is a result of the decision-making process where various factors (as economic, social, cultural, political, etc.) are taken into consideration. Due to the limited space, and recognising the complexity of the topic, neither these factors nor the decision-making process can be presented in this article.
The status quo of Lodz Airport and its spatial development over time will be discussed in this part of the article.

The situation of Lodz Airport is ambiguous. From the perspective of its location and spatial development plans, the future of the airport is unclear.

The first MPZP for Lodz was issued in 1993 (Rada Miejska w Łodzi 1993). According to this resolution and the actual spatial situation in 1993, the status quo was maintained. The runway at Lodz Airport was only 1443 m long and was mainly used by Lodz Aeroclub. At the time, the airport area was surrounded by forests and landscape areas (Figure 1). The MPZP from 1993 ceased to apply in 2003 due to the provisions of the Act of 27 March 2003 on Spatial Development and Planning (Ustawa z dnia 27 marca 2003 r. ...), which abolished all the MPZPs adopted before 1995. In consequence, all decisions regarding spatial development in Lodz were issued on the basis of a Study for the city of Lodz that was in force at the time (Rada Miejska w Łodzi 2002b). This Study was replaced by the following one from 2010 (Rada Miejska w Łodzi 2010). The new local planning law will be adopted in the near future. The new draft local spatial development plan was released to the public in July 2017. After studying the new urban planning propositions for Lodz, it can be assumed that there will be no changes in terms of the quality of land use management in the vicinity of the airport.

The area of the City of Lodz is partially covered by local spatial development plans. In 2004, only 5.4% (1592 ha) of the total area of the city had valid MPZPs. The growth is really insignificant; in 2010 the ratio was equal to 4.5%, in 2014 it was equal to 8.5% and in 2017 only 12.5% of the city area was covered by MPZPs.

According to the Polish legal system, the MPZP is much more restrictive than the Study in terms of determining the use of a property. A Study is more elastic and offers more investment opportunities for the property owner. In specific cases, the use of the property can be changed, despite the fact that another use has been given priority and is assigned to the area concerned in the Study. As an example, one can note the case of the Pienista housing estate.

Figure 1
MPZP [local spatial development plan] of the Lodz Airport area from 1993
Source: own study based on Mapa ogólna Łodzi website
Legend:
1 – airport area
2 – rivers and water reservoirs
3 – services area
4 – forest areas
4a – forest areas (future landfill)
5 – industrial area
6 – residential area
7 – landscape

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1. Between 2004 and 2010 some of the MPZP was repealed what explains why the percentage of the valid plans for Lodz is lower in 2010.
Figure 2
Ortophotomap of the Pienista housing estate from 1994
Source: own study based on Łódzki Internetowy System...

Figure 3
Ortophotomap of the Pienista housing estate from 2017
Source: own study based on Łódzki Internetowy System...
The location of the Pienista housing estate is circled in red on Figures 2 and 3. It lies a few hundred metres from Lodz Airport (1) and the landfill (2). In 1994, neither the Pienista compound nor the municipal landfill existed. In the MPZP from 1993, these areas were marked as a services area, residential area, and landscape area. The situation evolved considerably over 15 years.

According to the Figures 4 – 8 presenting the Pienista housing estate, it can be observed that before 2009 the housing estate didn't exist. The first construction work started in 2008, and the first part of the estate was completed in 2010. The same year the second part of the investment began and was partially completed by 2013. A church, kindergarten and two local shops have been constructed in addition to the apartment buildings. Figure 3 (2017) represents the current situation of the Pienista residential area, however, the developer still owns a free parcel of land on which he still may construct the third part of the investment.
In the Studies for the city of Lodz from 2002 and 2010 (Rada Miejska w Łodzi 2002b, 2010), the Pienista area was marked as a non-built environment. However, many building permits have been issued in the area during the study period. Due to limitations of space, Pienista is the only example that has been discussed as it is the largest example of a housing development in the areas which lie very close to Lodz Airport.

At present, there are MPZPs for the Lodz Airport area and its surroundings: No. 28 (Rada Miejska w Łodzi 2002a) and No. 4,4 (Rada Miejska w Łodzi 2008). These two MPZPs partially cover the actual area of the airport. Figure 9 gives a graphic presentation of the spatial deployment of these two MPZPs which cover the area of planned access to the airport (Pol. Port Lotniczy im. Władysława Reymonta [4,4]) and the area of the municipal landfill (Pol. składowisko balastu [28]). The main area of the airport is not covered by a MPZP.
Figure 11
Orthophotomap of the Lodz Airport enclosure and surrounding area from 1994
Source: Łódzki Internetowy System...

Figure 12
Orthophotomap of Lodz Airport compound and surrounding area from 2017
Source: Łódzki Internetowy System...
Despite the ICAO’s recommendations, internationally recognised best practice with regard to airport location and Polish state law, Lodz Airport is located dozens of metres from the main municipal landfill. As can be observed, the limits of MPZP No. 28 abut directly onto the airport area. There’s no intermediate space in between these two premises (Figure 10).

The landfill infrastructure does not occupy all the available land area. In the case of the development of the landfill, the real separation distance between them will decrease. What is more, the MPZP occupies a higher position than the Study in the hierarchy of Polish legal documents and hence it is more difficult and time-consuming to overrule or modify. It can therefore be assumed that landfill plays a key role in the development of the Lodz urban infrastructure and that, overall, it is more important than the airport.

On Figures 11 and 12 one can observe the way the airport area has evolved over the last 20 years. Important changes were completed on both the airside and landside. During this time the airport infrastructure has developed (extension and renovation of the runway, construction of the passenger terminal, apron, taxiway, hangar, two control towers, fire escape road, car parking, search and rescue base with helicopter hangar and many other developments and smaller size investments). Except for the extension of the runway, all the works have been carried out without significantly increasing the area of the airport. Outside the outer limits of the site, it is possible to observe that the distance between the landfill and the airport has decreased and the approach to the landing area has been separated from the landscape (trees have been cut and the area is fenced). However, another residential area and allotment gardens are situated on the east side of the airport area (right side of Figure 12), directly under the landing approach path.

In 2008, 16 pigeon breeding facilities were removed from this area (Pawlak 2008). Birds are recognized as a hazard to aircraft operations and the presence of any type of bird or wildlife attracting installation in the proximity of the area of the airport is strictly forbidden by any type of existing law (Allan 2000; Heimbs 2011; Linnell, Conover & Ohashi 1999; Boguszewicz & Sala 2011; Nizampatnam 2007; Blokpoel 1976; Dolbeer, Wright & Cleary 2000; EASA 2003).

The location of the buildings and trees (or any type of obstacles higher than ground level) is particularly hazardous to aircraft departing or arriving at an airport. The largest number of airplane accidents happen during the take-off and landing stages. Aircraft are vulnerable during the landing procedure; they are operating at low altitude, with reduced speed and flaps down. The presence of trees, shrubs or even compact urban developments can produce low-level turbulence or wind shear (vertical or horizontal). Wind shear is particularly dangerous for aircraft due to the occurrence of violent air movements (up – or down-draughts, swirling or rotating air patterns). Sudden increases or reductions of airspeed can lead to drift and even plane crashes.

Concluding, all types of prohibited installations and buildings listed in art. 87 of the Polish Aviation Law (Ustawa z dnia 3 lipca 2002 r. …) can be found within a distance of less than 5 km from the border of Lodz Airport. As was shown in this part of the paper, none of these prohibited factors was effectively eliminated over the period of the last 20 years. Airport development works mostly concern the inner space of the compound while the off-site area didn’t experience any major changes in terms of land use management.

Prospects for the future

Over the last few years, the understanding of the definition of the airport has changed. This is directly related to the evolution of the concept of an airport as the vital centre of the region secured by the dynamic development of the aviation industry and the transformation of the social structure.

Airports cannot be considered to be single-dimensional elements of the transport infrastructure anymore as they directly impact various aspects of human existence at all stages of the life cycle. The concept of an airport evolved into a major business enterprise with spatial impacts and functional implications that extend deep into metropolitan areas. They are vital hubs in the global space of flows (Freestone 2009). For the moment Lodz Airport is not keeping up with the times. Nevertheless, the prospects for the future are promising.

Winston Churchill said ‘the farther back you can look, the farther forward you are likely to see’. Adopting this cognitive perspective can lead to important conclusions.

In the immediate future, there will be no significant changes to the land use planning policy of the municipality of Lodz. Therefore, major spatial development of Lodz Airport won’t be possible. The Study document from 2010 (Rada Miejska w Łodzi 2010) contains a project to extend the runway from the present 2500 m to 3000 m but if ever this investment were to take place, it won’t affect the urban structure of the city very much. There’s no coherent strategy development document for Lodz Airport with valid and achievable goals. The last document was issued in 2013 and set up the 1 mln passenger traffic target for 2015 (Sejmik Województwa Łódzkiego 2013: 31).

Local authorities highlight the crucial role of the airport for the city and the whole region. On the other hand,
these references to a role as a major airport are not compatible with city planning practice over the years. It seems like the municipality of Lodz cannot decide which investment should be the leading one and so cannot subordinate other tasks around the dominant one. It has been proven that managers deliver better results than politicians in that matter.

Furthermore, the widely discussed idea of aerotropolis (Kasarda 2000, 2001, 2006; Charles et al. 2007; Kasarda 2010; Kasarda & Lindsay 2011) seems to be clearly inapplicable in the city of Lodz area by reason of limited space. Lublinek, as Lodz Airport is often known from the name of the village situated in this location before the area was incorporated into the city structure, is unclassifiable by simple features. The literature distinguishes 3 types of airport area management:
- location in the central part of the city;
- location in the suburban zone;
- aerotropolis.

By definition, Lodz Airport is located in the suburban zone. It is situated 6 km from the city centre which constitutes quite a short distance between the suburban airport zone and the city downtown. Over the past 20 years, the urban area of Lodz has strived to absorb the airport compound. This development has not been discouraged since that time. On the contrary, investment efforts were made to connect these two points by means of transportation. Ultimately, development of the transport network attracted settlers and stabilised house prices in this area at a high level.

From the historical point of view, the beginnings of Lublinek share the history of most Polish airports. Lodz Airport was built in 1925 and has mainly been used for sport and military purposes. Over time, the airport gradually started playing an important role in national air transportation until the late 1950s, when most of the connections were cancelled by the national authorities for unknown reasons. The first regular international flights were announced on the flight board in 2004. Since that time, the passenger transport development policy appears to have been implemented with varying degrees of success.

From the 1950s until the middle of the 1990s the airport was mostly used for training purposes. At the end of the last century the City Hall redirected its attention to Lodz Airport which was seen at that time as a solid foundation for the city’s economic success. Regional economic growth was directly associated with a fully functioning airport. The perspective of time has verified this initial optimistic premise and has uncovered all the initially unrecognised aspects of the airport development.

The reading of source documents issued by Lodz Municipality and observations made in the field of common practice shows that the City Hall had expressed an interest in the principle of investing by focusing on the linear growth of passenger traffic and ignored other financial and development opportunities. From the perspective of time, this seems to have been a misleading approach. According to the data presented in Table 1, it can be observed that passenger and charter traffic has decreased over the years, while cargo operations and redirected traffic has increased. The lack of the possibility of expanding the area of the airport compound forced local authorities to seek other economic development opportunities.

Modern airports are considered as business enterprises. Airport managers should determine the main lines of development based on the airport’s current assets and

Table 1
Lodz Airport Statistics 2008–2017
Source: own study based on Lodz Airport statistics (Lodz Airport website...)

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<td>258 857</td>
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<td>409 777</td>
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<td>0</td>
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<td>1 910</td>
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<td>4 180</td>
<td>3 268</td>
<td>3 044</td>
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<td>2 912</td>
<td>1 742</td>
</tr>
<tr>
<td>Cargo</td>
<td>0</td>
<td>5</td>
<td>1</td>
<td>299</td>
<td>1 055</td>
<td>3 162</td>
<td>5 680</td>
<td>6 476</td>
<td>6 567</td>
<td>7 894</td>
</tr>
</tbody>
</table>
First, Lodz Airport management board should proceed with the development of cargo services and restore the charter traffic branch. These types of air traffic operations worked well in the past for Lublinek. Previously, airport managers were seeking to establish new connections with Western Europe. Regarding the latest changes in the demographic structure and migration patterns, it would be appropriate to search for new eastern destinations.

Wherever possible, Lodz Airport development should be geared to high-quality general aviation and VIP aviation (Nowak & Sikora 2005) services and innovative products with added value capable of satisfying demanding markets and market niches. A commitment to VIP aviation is recommended as the city and region of Lodz has attracted many foreign direct investments of late. A great number of international corporations have located their facilities in Lodz. This regularity paves the way to create new flying directions for commuters.

General aviation and most of the charter flights are operating with smaller size aircraft. In terms of noise emissions and pollution, these aircraft can be integrated more easily in the concept of sustainable aviation, especially in a compact urban setting.

New social phenomena can be observed – people living abroad come to Poland for educational purposes, as education is cheaper in Poland and diplomas are recognized in the whole of the EU. The same pattern can be observed in the sector of aircraft crew training. The latest statistics and prognosis for the aviation industry shows a remarkable demand for the supply of flight and cabin crew, as well as aeronautical technical personnel. P. Samson (President of the Civil Aviation Authority, Pol. Urząd Lotnictwa Cywilnego [ULC]) said that the aviation market would double in size by 2030. At present, the number of aircraft operations is growing faster than expected (Urząd Lotnictwa Cywilnego 2017b). The aviation industry is already facing problems with a significant number of job vacancies and there is a particular need for pilots and aircraft mechanics. This regularity creates an opportunity to establish training centres for future aviation staff at Lodz Airport. Nowadays, two training companies are operating at Lodz Airport: Bartolini Air (2 hangars) and Aeroclub Lodzki (1 hangar) which are the main users of the airport. Bartolini Air, in particular, has specialized in fast-track programmes for foreign students wanting to become a pilot (EU and other countries). The training offer and prices raised considerable interest to the point that they have no free slots until spring 2019.

Furthermore, general aviation suffers from a lack of a sufficient number of aircraft repair centres. Lodz Airport is able to build more hangars on site and to supply mechanic’s services for a significant number of aircrafts.

The ideas presented above are reverse approach examples of how to boost the development of Lodz Airport. Until now, most of the planning efforts were concentrated on raising the numbers in the flow of passenger traffic and rebuilding the existing infrastructure. Due to the limited space around the airport and at the same time the limited possibilities for expanding its area, further plans for the development of Lodz Airport have reached a dead end. Thus far, recognition of the spatial growth limitations hasn’t triggered any changes in land use planning. Lodz Airport cannot compete with bigger, better equipped and situated airports. Nevertheless, the biggest opportunities come from regional strengths and developing market niches.

**Conclusions**

Borrowing the words of Winston Churchill once again: ‘If we open a quarrel between past and present, we shall find that we have lost the future’. Historically, Lodz Airport played an important role in training activities, delivering cargo services and also has been an active hub for locals and commuters. After a period of being a forgotten spot on the city map, Lodz Airport has been equipped with modern infrastructure and has undergone technical renovation.

The air transport system is now being shaped less by the concept of social service and more by market forces. Progressive liberalisation of air transport, together with trends to privatisation and globalisation, are causing the roles of airports to change, for planning to become increasingly decentralised, and for traffic to become more volatile. However, the expansion of Lodz Airport is becoming limited because of environmental reasons.

Planning reality requires the preparation of plans that have a long view in space and time. Effective management of land over long periods is difficult due to the short term of the standing of legislation on the basis of which long-term spatial plans are made. Moreover, since the land use planning process is extended in time, local communities cannot expect an immediate reaction on the part of local authorities. On the other hand, the number of air operations is low compared to other similar airports in Europe which does not push local authorities to take swift action other than minor preventive measures. A misleading conclusion for future development would be that there will still be time to make changes.
From the picture presented an overpowering dissonance emerges between theory and common practice. Cooperation between local authorities and airport operators is based on mutual partnership and consensus. The law voted at state level should comply with regional variety and strengths. Existing conditions and spatial circumstances are not allowing the straight application of legal documents at local level. Ultimately, subjects operating on the air market cooperate with the local authorities to avoid penalties and to minimise adverse side effects from air operations on a given area. Even though it seems to be an odd arrangement, in fact, it seems to work well and is rather considered as an intermediate stage of a long-term process by both sides.

The case study of the airport in Lodz was presented as a lead example to cover the topic of land use management and the planning dichotomy between the applicable law and local practice. As was mentioned at the beginning, a similar situation concerns all leading Polish airports, however on a different scale. All of these 14 airports have been affected by the too rapid development of aviation in relation to the pace of the spatial development process. It seems like the aviation industry grows at a different speed from that of development in urban areas. Economic cycles favour them in alternation; at one time the aviation industry is experiencing acceleration, at another time spatial development adopts an unpredictable pace.

The case study presented also emphasises the need to adopt appropriate measures to achieve the expected results. The case of Lodz Airport clearly indicates an inevitability and necessity of taking all possible factors into consideration during the airport development planning process to secure the sustainable development of the region. In order to apply the best possible solution, it is necessary to give voice to experts in the sector and build upon the experience of developed economies.

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