



ANNUAL REPORT

2022



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FOREWORD

Ladies and gentlemen,

Hereby we provide an annual report that summarizes the activities of the Polish Air Navigation Services Agency in 2022. It was marked by a dynamic recovery of the aviation market from the effects of the COVID-19 pandemic. This relationship is vividly illustrated by the number of passengers recorded at Polish airports compared to 2021 – it increased by as much as 108 per cent and reached almost 41 million passengers. For the Agency, it was also a year of strengthening the stability of operations in all areas and implementing new technical solutions, having stabilised the issue of cooperation with organisations representing the interests of its employees. A key factor for the Agency's operation and the development of the aviation market proved to be primarily the Russian aggression against Ukraine, which resulted in a change in the structure of air traffic in the region.

Thanks to the operational work of PANSa, we managed to achieve competitive results in comparison to European air traffic management organisations. It is worth mentioning the impact on the record achievements of Warsaw Chopin Airport, granting it a place among the top European airports in terms of punctuality. The number of en-route operations handled during the year was 383,000 with a total of 627,000 terminal operations. The number of flight operations in 2022 increased by 32.5 per cent compared to 2021.

PANSa also developed intensively in terms of its training activities. First and foremost, 2022 marked our return to conducting basic courses for air traffic controller candidates and FIS informants. Moreover, agreements on training cooperation with the Air Force Military Academy in Dęblin were also concluded. In the third and fourth quarters of 2022, we have also prepared the launch of a branch of the training centre in Poznań.

2022 was characterized by developing and implementing technological tools that support the PANSa's operation. It should also be mentioned that we took steps towards the targeted implementation of the P_21/iTEC system in cooperation with leading European ANSPs, both within the currently developed V2 version and the future version of the planned iTEC V3, based on a unified operational concept of the entire ATM system. Work on further refinement of the AMAN (Arrival Manager) tool was used operationally and continued. We have successfully implemented PANSa proprietary space management software (CAT 3.0), taking into account FRA (Free Route Airspace) requirements, striving to expand the functionality of this application constantly.

To sum up, 2022 was a challenging year for the Polish Air Navigation Services Agency, but with our joint efforts, we have managed to improve the safety and efficiency of air operations and contribute to the sustainable and stable development of Polish aviation.

Polish Air Navigation Services Agency



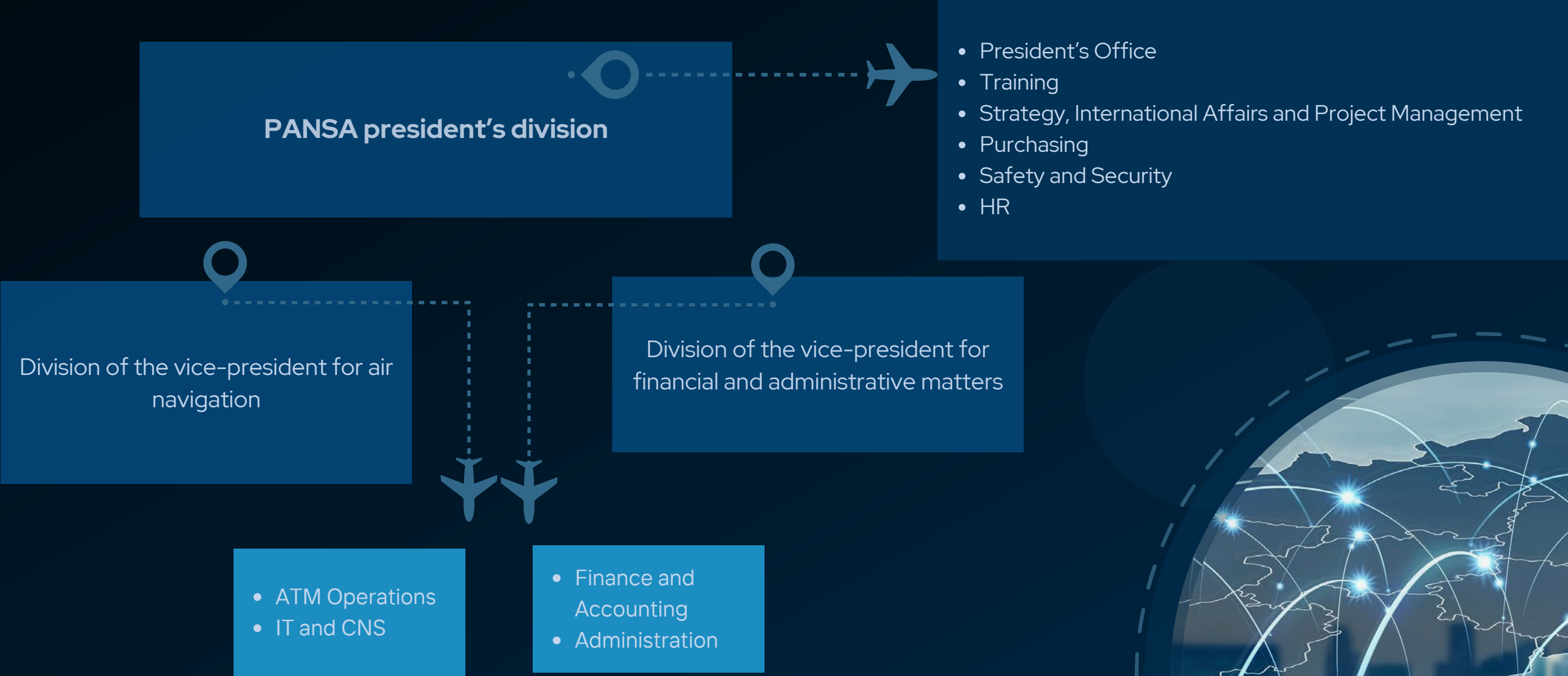
KEY RESULTS

SELECTED PERFORMANCE INDICATORS

	2020	2021	2022
Number of en route flights in FIR Warsaw ('000)	377	473	627
Number of controlled IFR flight hours ('000)	221	272	361
Number of terminal operations ('000)	194	238	382
Average en-route ATFM delay (min/flight)	0.00	0.07	1.09
Total employment at year end (in persons)	1,912	1,879	1,839
Employment at year end – ATCO in OPS	597	591	590
Total sales revenues in PLN ('000)	771,342	1,196,051	1,140,616
Revenue from en-route navigation services in PLN ('000)	625,257	963,586	878,529
Revenue from terminal navigation services in PLN ('000)	122,385	208,773	209,278
Profit / loss on sales in PLN ('000)	-114,272	572,701	147,538
Net Profit / loss in PLN ('000)	-86,166	405,028	76,616

ORGANISATIONAL STRUCTURE

Organisational structure of the Polish Air Navigation Services Agency (as at 31 December 2022).



ORGANISATIONAL STRUCTURE

Mission



PANSA employees are a disciplined team of professionals and enthusiasts, delivering the highest quality service – to make every flight safe, smooth and efficient.

Vision

- We are an organisation that invests in the development of employee skills and new technologies, continuously improving our management processes to relentlessly pursue our mission.
- We want to be a reliable partner for all users of Polish airspace, our associates and business partners.



ORGANISATIONAL STRUCTURE

Key PANSA's activities areas



Safety – ensuring and maintaining air traffic safety.



Capacity – ensuring the required airspace capacity and air traffic services while minimising delays.



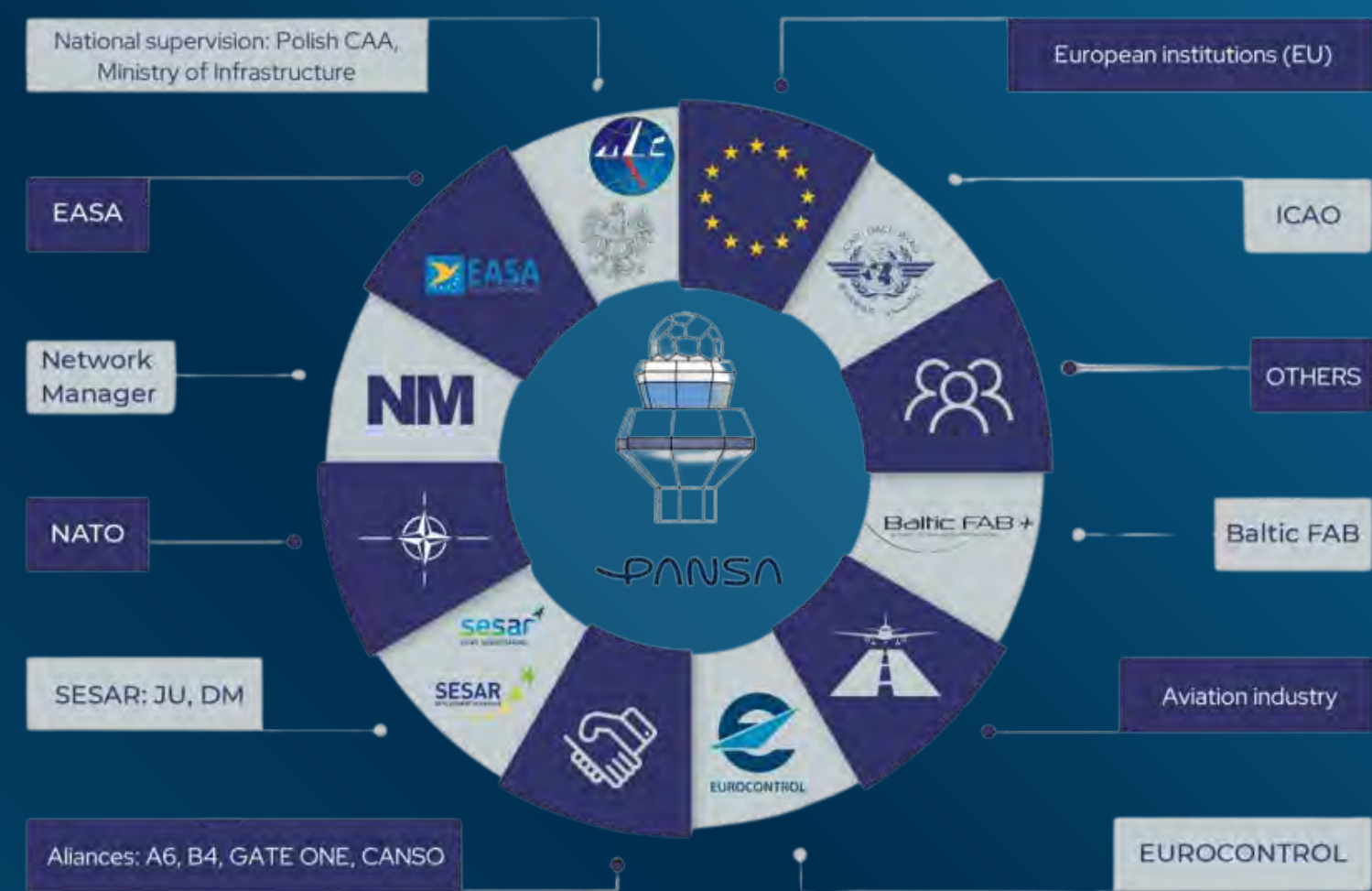
Environment – ensuring sustainability of air navigation services while minimising the negative impact on environment, reducing the pollutant emission and minimising the noise.



Cost efficiency – providing high quality of services at a reasonable price that allows the Agency to develop and strengthen the company's financial stability.

ORGANISATIONAL STRUCTURE

Relations with partners



CORE ACTIVITY

The Polish Air Navigation Services Agency is a state legal entity responsible for airspace management, air traffic flow management and the provision of air navigation services (ATM/ANS), to the following extent:

- air traffic services (ATS), (including: air traffic control services (ATC, i.e. ACC, APP, TWR) and Flight Information Services (FIS)),
- communication services (COM),
- navigation services (NAV),
- surveillance services (SUR),
- aeronautical information services (AIS),
- air traffic flow management (ATFM),
- airspace management (ASM).



CORE ACTIVITY

In addition, PANSA:

1

provides airspace users with meteorological information produced by institutions certified in meteorological services,

2

provides design of flight procedures,

3

provides in-flight control of aerial communication, navigation and airspace surveillance equipment and systems,

4

provides training and consultation on ANS,

5

conducts research and development activities in the field of ANS,

6

purchases, maintains and upgrades ATM/CNS infrastructure,

7

ensures coordination of search and rescue operations,

8

serves as flight schedule coordinator for Krakow Airport.



CORE ACTIVITY

Air traffic control

Air traffic control is exercised at three control levels:



AREA

area control service – established for the purpose of air traffic control with respect to controlled flights. It is performed by Area Control Centre (ACC) Warsaw using surveillance radars,

APPROACH

approach control service – established for the purpose of air traffic control with respect to arrival and departure of controlled flights. In Poland, four radar approach control units have been established (APP Warsaw, APP Gdansk, APP Krakow, APP Poznan) to provide services using surveillance equipment,

TWR

aerodrome control service – established for the purpose of aerodrome air traffic control. Fifteen aerodrome control units have been established, some of which (TWR EPBY, TWR EPLB, TWR EPLL, TWR EPRA, TWR EPSC, TWR EPSY, TWR EPRZ, TWR EPZG) also exercise procedural approach control.

CORE ACTIVITY

Flight Information Services

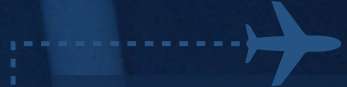
PANSA also provides Flight Information Services (FIS) in uncontrolled space. A flight information unit handles traffic in an area characterised by a considerable diversity of aircraft and airspace users with different levels of skill and experience.

The Flight Information Service provides a viable buffer against violations of controlled space and also plays an important role in the formation and maintenance of good pilot habits. FIS cooperates with search and rescue (SAR) services within the scope of alerting services.



CORE ACTIVITY

Key areas



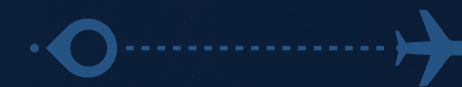
In 2022, the Polish Air Navigation Services Agency carried out the tasks of ensuring safe, continuous, smooth and efficient air navigation in Polish airspace, which is part of the Single European Sky. The measures taken considered the responsibilities, opportunities and constraints of the established performance targets in the key areas of:

- safety,
- environment,
- capacity,
- cost efficiency,

set out in Performance Plan for Poland for RP3 (PP RP3), in particular taking into account the dynamic changes in the economic and financial environment, including:

- the dynamics of price and service growth rates,
- the constraints on the pace of traffic recovery following the COVID-19 pandemic,
- the consequences of the war in Ukraine.

At the technological level, the measures implemented were part of the ATM Master Plan (ATM MP), which outlines the directions for the development of an efficient ATM system in Europe and the manner in which the objectives set will be implemented. This applies to both research and development activities undertaken by the SESAR Joint Undertaking (SJU) and deployment activities coordinated by the SESAR Deployment Manager (SDM) in accordance with the SESAR Deployment Programme and EU regulations.



CORE ACTIVITY

Operational activity

As part of its efforts to ensure the required airspace capacity (also in the medium and long term, after air traffic recovery), in 2022 the Agency:

- continued the operational development of the PEGASUS_21 air traffic management system and the STAM (Short Term ATFCM Measures) airspace capacity management support system;
- undertook activities towards the targeted implementation of P_21/ iTEC in cooperation with leading European ANSPs, both within the currently developed V2 version and the future version of the planned iTEC V3, based on a unified operational concept for the entire ATM system;
- used operationally and continued work to further improve the AMAN (Arrival Manager) tool, which facilitates the management of the landing approach sequence for aircraft to Warsaw and Modlin;
- was using the implemented in-house PANSA software for airspace management (CAT 3.0) in line with the FRA (Free Route Airspace) requirements, while striving to continuously develop the functionality of the application;
- continued efforts regarding Baltic FRA, the Free Route Airspace, with the aim of increasing its functionality by, among other things, extending the vertical limits of the FRA, progressively updating the restrictions and thus enabling air operators to operate flights in a variant as close as possible to their preferred trajectory (shortest time, most economical and environmentally sensitive);
- continued the tasks, in terms of establishing the cross-border FRA between ACC Warsaw and ACC Vilnius and ACC Warsaw and ACC Bratislava. The work took place as scheduled and the project was implemented on 24 February 2022;
- used STAM (Short Term ATFCM Measures) as part of the local ATFCM – TCT tool – to support the management of ATFCM;
- implemented and maintained working technologies and air traffic control service procedures to enable CDO (Continuous Descent Operations) landing and CCO (Continuous Climb Operations) take-off techniques by aircraft crews.

AIR TRAFFIC 2022

- IFR operations handled by PANSA in 2022:
- en-route traffic (FIR Warsaw) – 626,974 MVS,
 - terminal traffic – 382,479 MVS.

The en-route traffic in 2022 in terms of the total number of operations (MVS) was higher (by 32.5%) compared to volumes in 2021. This reflects the slow recovery of traffic after the COVID-19 pandemic in the early months of the year. The pace of post-pandemic traffic recovery was significantly affected by the war in Ukraine. Due to the sanctions introduced as a result of the outbreak of the aforementioned war, the recovery of air traffic in FIR Warsaw in 2022 was slower than the general recovery in the European network.

In 2022, air traffic, measured by the number of IFR operations, in Polish airspace accounted for 69% of that of 2019.

Tab. 1 Total en-route traffic in 2019-2022 (IFR MVS and SU)

Category	Total	
	MVS	SU [*1]
2019	912,455	4,971,806
2020	376,969	2,145,811
2021	473,196	2,585,928
2022	626,974	3,128,964
Change 2022/2019 (%)	- 31.3%	-37.1%
Change 2022/2021(%)	32.5%	21.0%

Source: PANSA

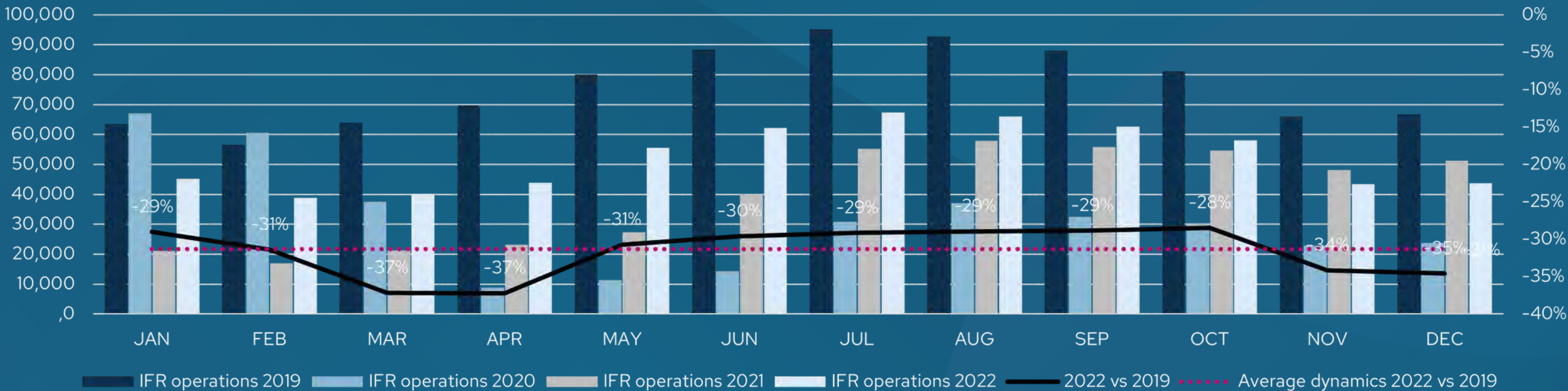
[*1] Further information on SU is provided in subsequent part of the Annual Report related to financial results.



AIR TRAFFIC 2022

Air Traffic

Fig. 1 Air traffic dynamics in FIR Warsaw by month, 2019-2022 (total IFR MVS)



Source: PANSA on the basis of EUROCONTROL

AIR TRAFFIC 2022

Terminal traffic

In terms of terminal traffic, there was a significant increase in operations in 2022 (by 60.6%) compared to the volumes in 2021, which accounted for 86% of that figure for 2019. The highest number of terminal movements (MVS) in 2022 was recorded at Warsaw Chopin Airport (144,737 MVS).

Tab. 2 Total terminal traffic in 2019-2022 (MVS, SU-L)

Category	Total	
	MVS	SU-L [*2]
2019	443,679	246,373
2020	194,403	105,905
2021	238,124	132,008
2022	382,479	224,142
Change 2022/2019 (%)	-13.8%	-9.0%
Change 2022/2021 (%)	60.6%	69.8%

Source: PANSA

[*2] Further information on SU-L is provided in subsequent part of the Annual Report related to financial results.

AIR TRAFFIC 2022

Terminal traffic

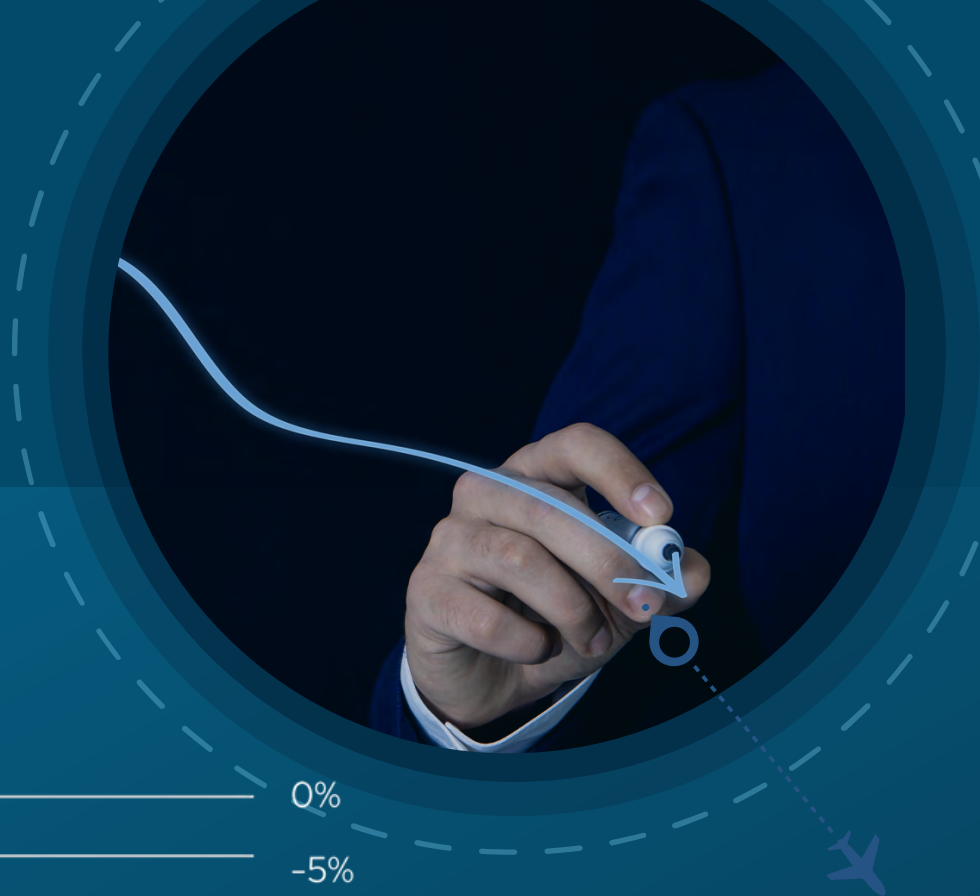
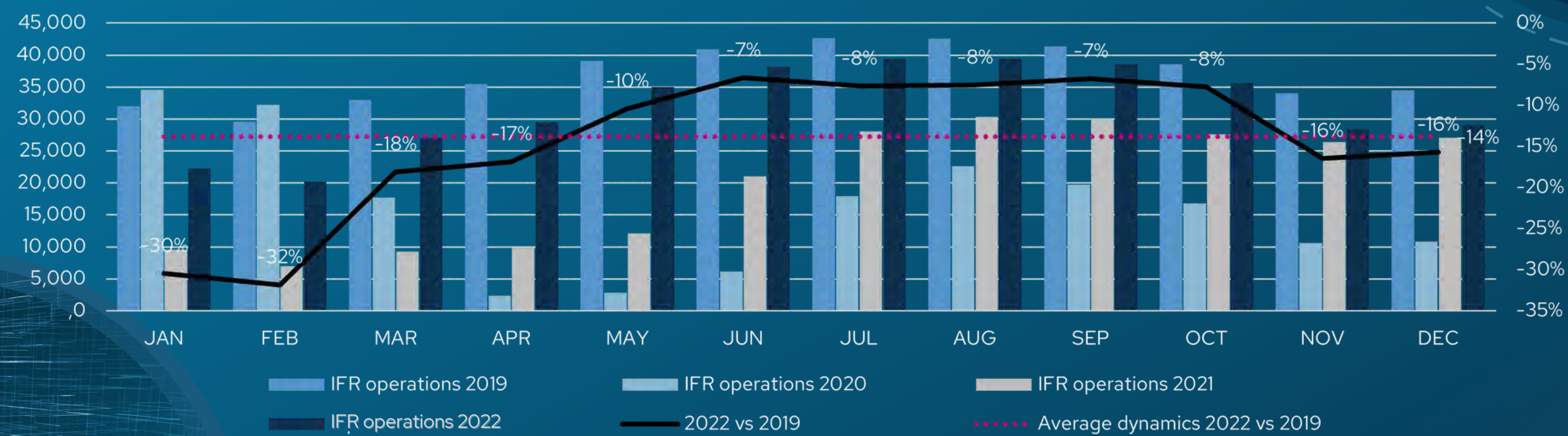


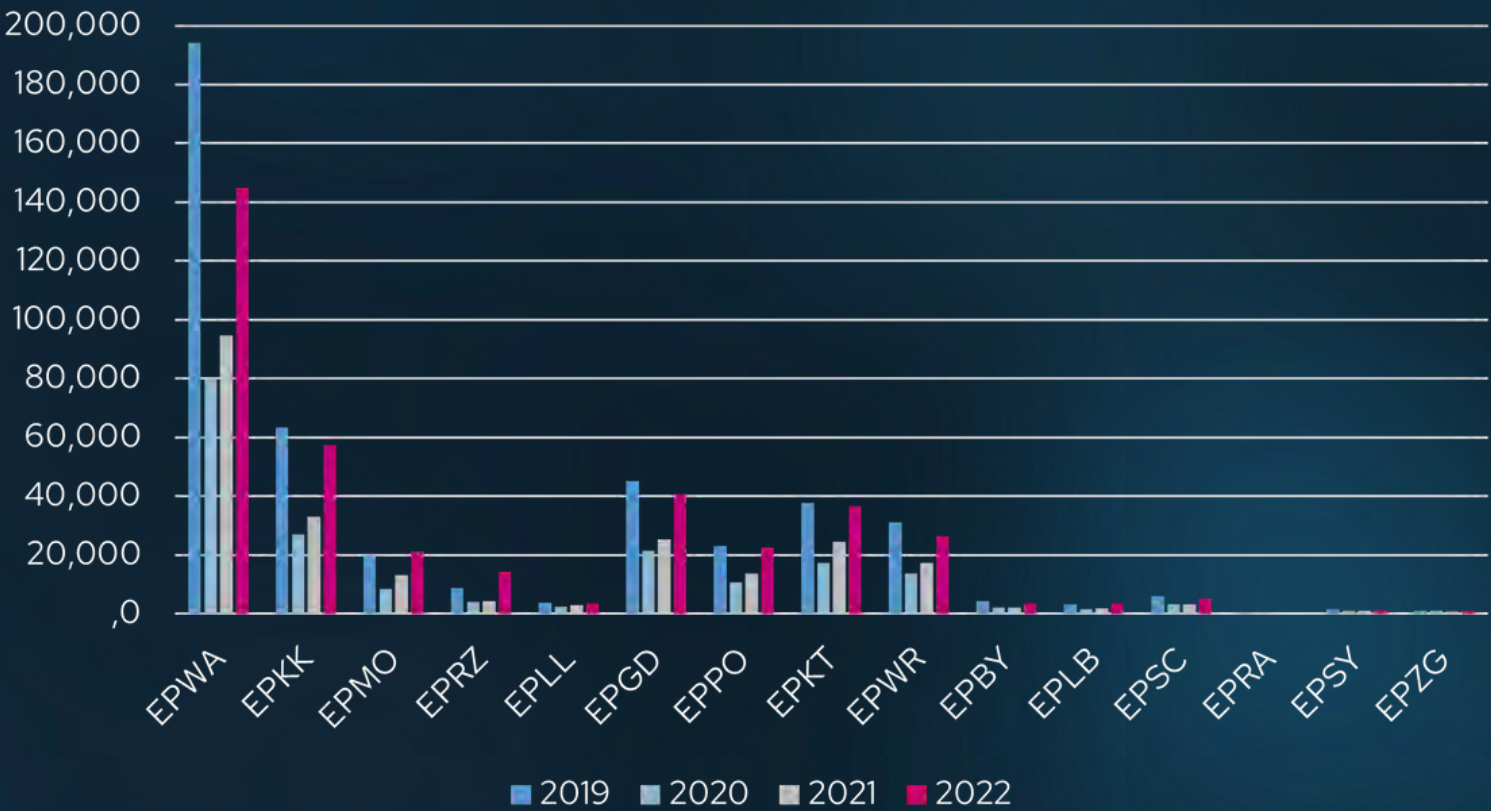
Fig. 2 Terminal traffic dynamics by month 2019-2022 (total IFR MVS)



Source: PANSa on the basis of EUROCONTROL



Fig. 3 Terminal traffic volumes at individual airports 2019-2022 (IFR MVS)



Source: PANSa on the basis of EUROCONTROL

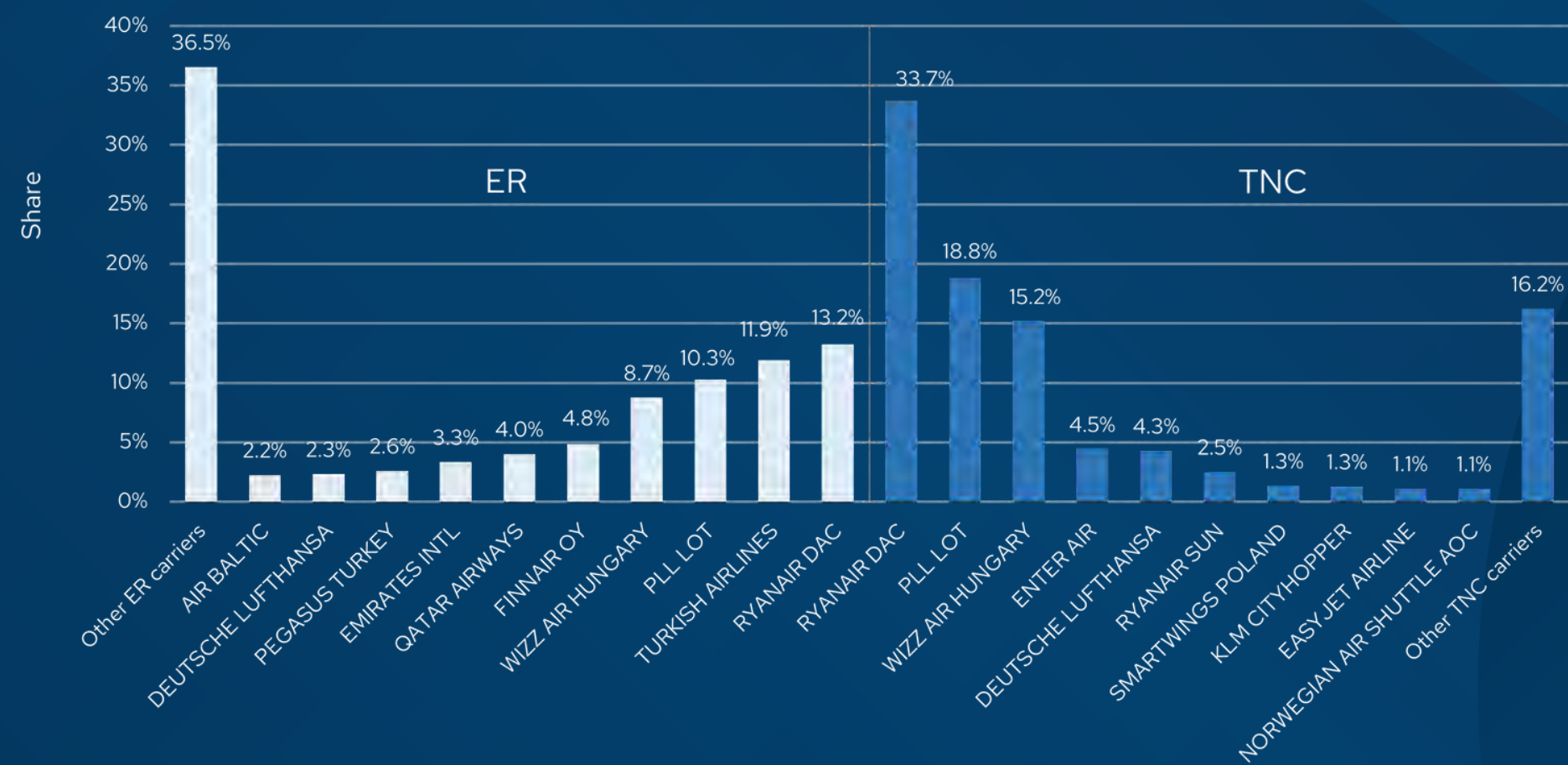
AIR TRAFFIC 2022

Traffic structure

Polish airports were most frequently used by low-cost carriers (LCCs), followed by network carriers and, to a lesser extent, charter carriers. Ryanair DAC and Wizz Air Hungary were the leaders among LCCs.

According to the Polish CAA statistics, in 2022 the share of LCC passengers served at Polish airports in scheduled traffic was 61.4%. Among network carriers, PLL LOT and Deutsche Lufthansa occupied the leading position in the list of airspace users, and Turkish Airlines took the lead for en-route services. In the category of charter carriers, Enter Air, Ryanair Sun and Smartwings Poland held the largest share.

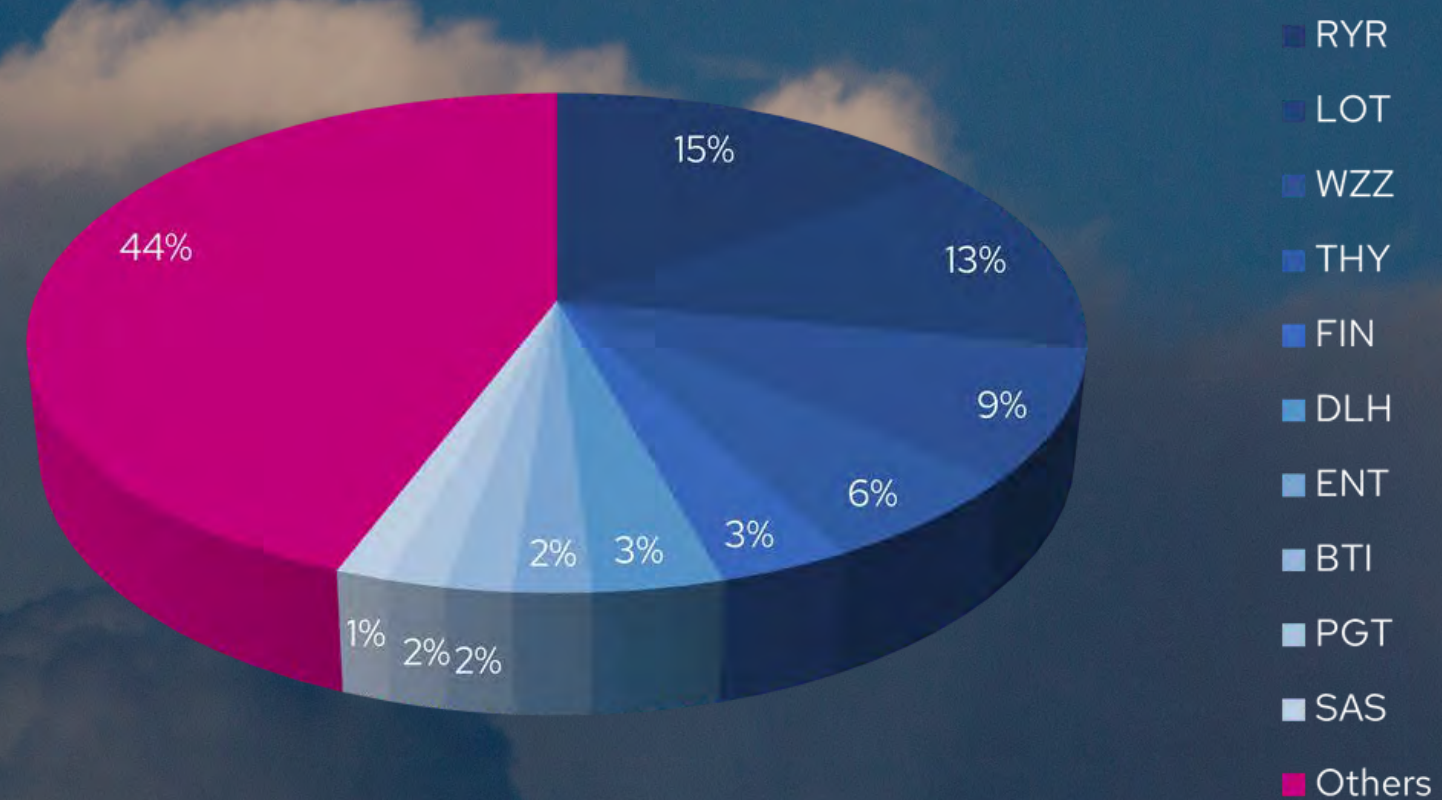
Fig. 4 Percentage share of major users in PANSA's en-route revenue and terminal revenue in 2022



Source: PANSA



Fig. 5 Percentage share of air carriers in the total number of IFR operations in FIR Warsaw in 2022

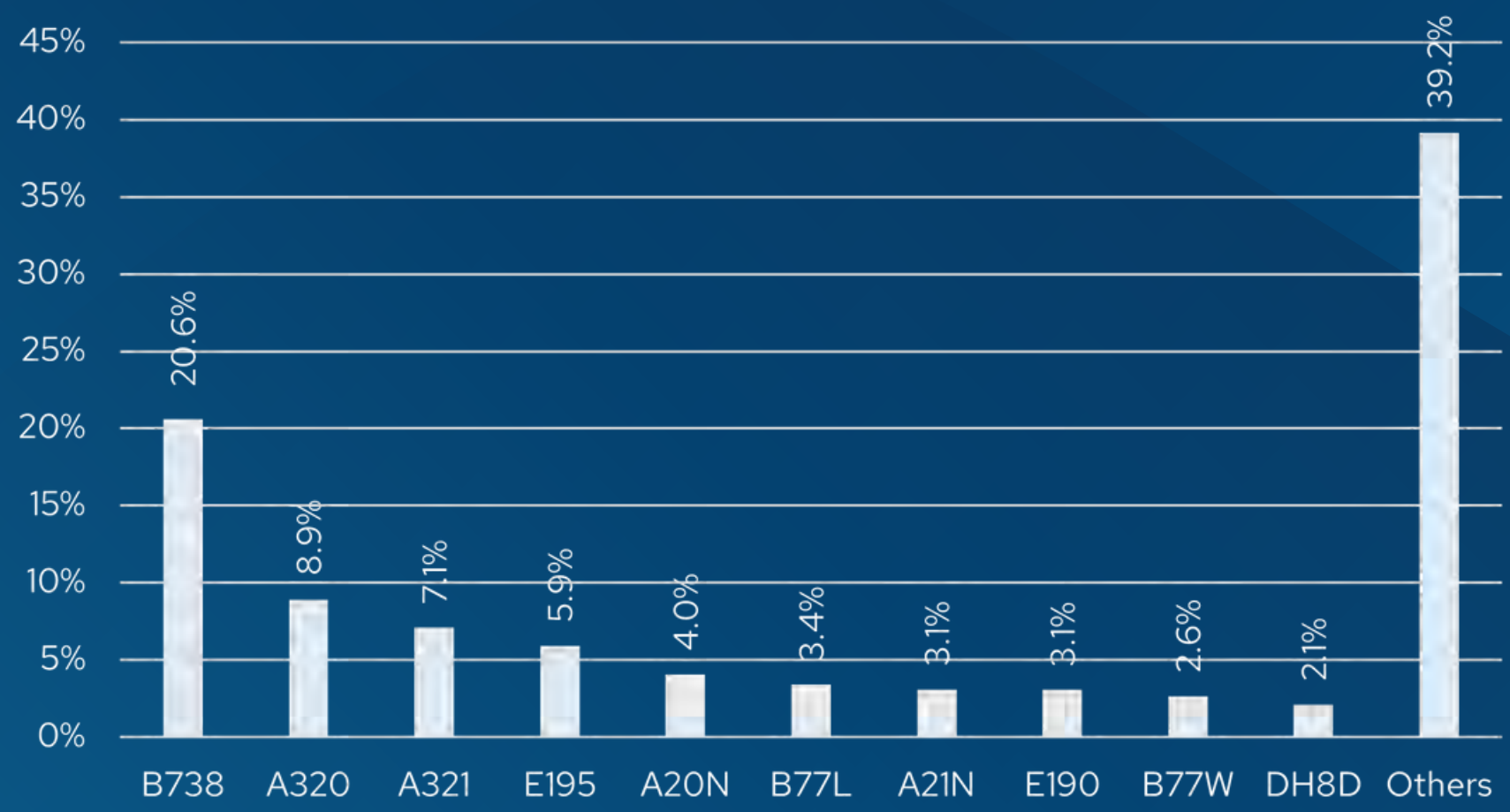


Source: PANSa

AIR TRAFFIC 2022

Traffic structure

Fig. 6 Percentage share of main aircraft types in the total number of IFR operations in FIR Warsaw in 2022



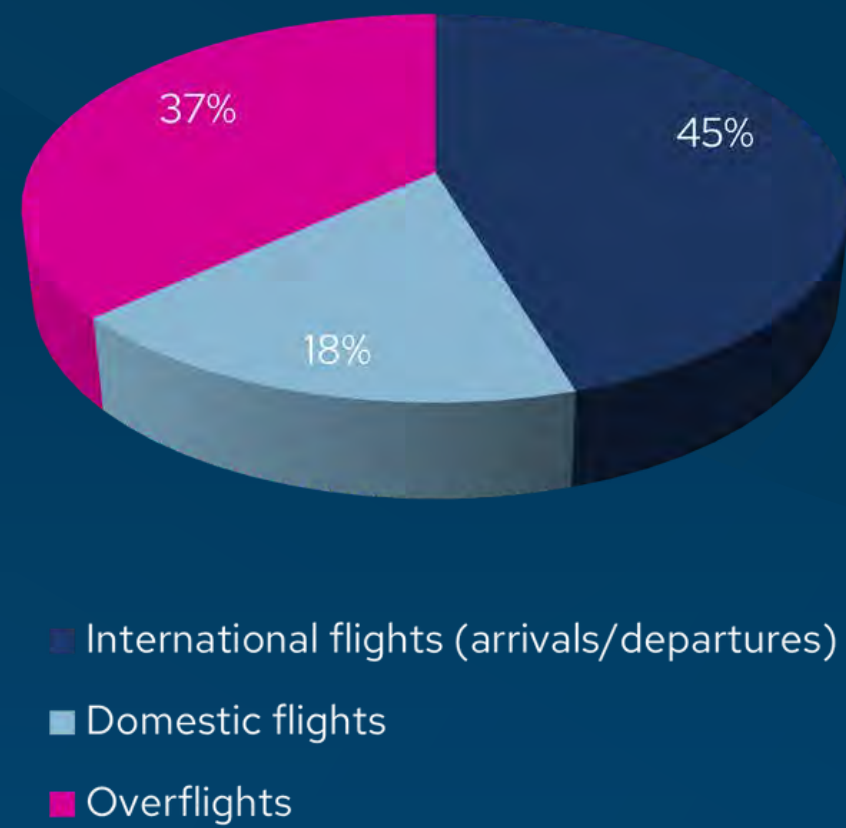
Source: PANSA



AIR TRAFFIC 2022

Traffic structure

Fig. 7 Traffic structure in FIR Warsaw in 2022



Source: PANSa on the basis of EUROCONTROL

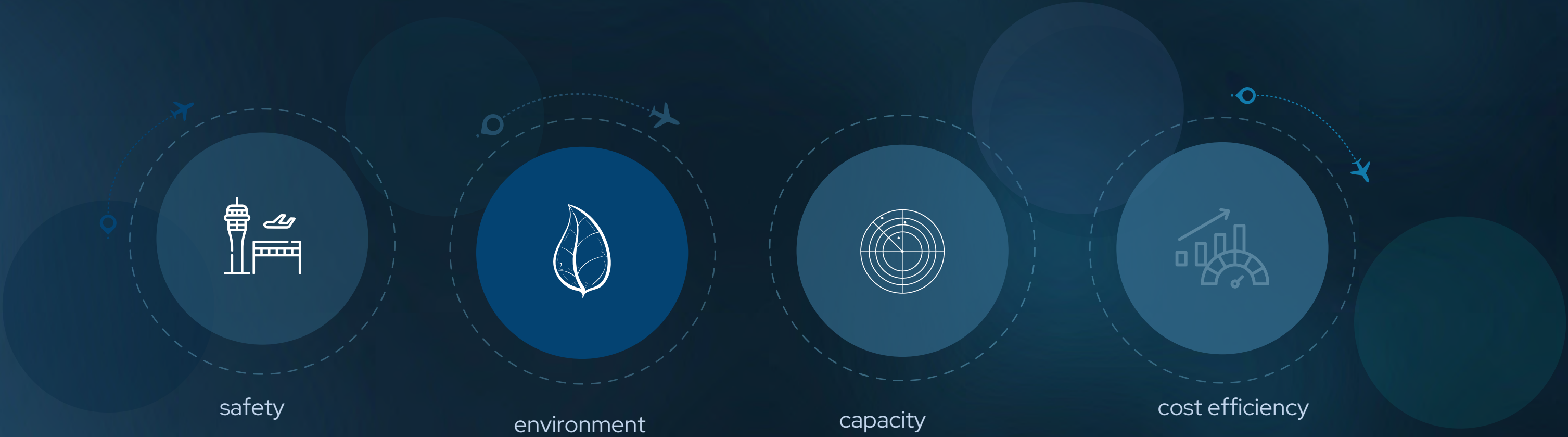


ATLANTA
419 DUBROVNIK
3208 PERM-N. NOVGOROD
873 TORONTO
360 GDANSK DANZIG
422 BOSTON
402 POZNAN POSEN
4940 EDINBURGH
3290 KATOWICE
4852 MANCHESTER
758 MADRAS
126 BANGALORE-MUMBAI
588 ISTANBUL
588 ISPAHANE
588 VANCOUVER



IMPLEMENTATION OF THE PERFORMANCE PLAN

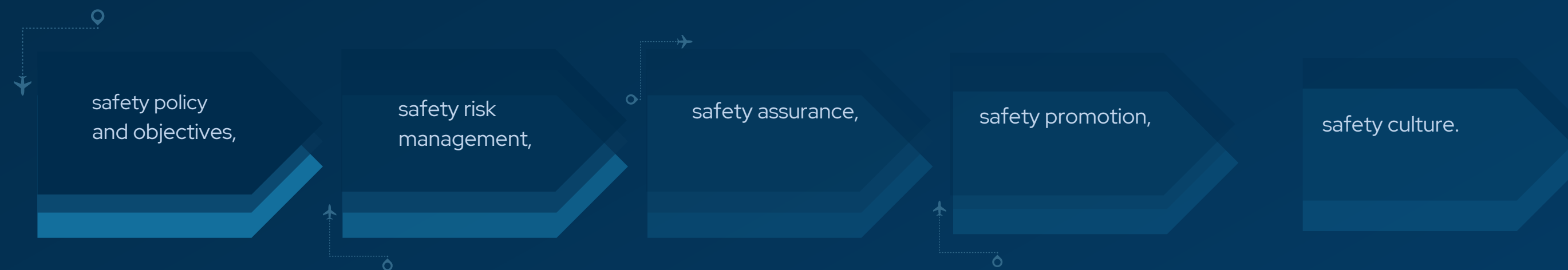
The year 2022 was the third year of the current regulatory perspective within the European Union’s air navigation services performance scheme – the third reference period (RP3), covering the years from 2020 to 2024, when the Agency pursued actions to achieve the performance targets related to its scope of responsibility set in four key areas:



IMPLEMENTATION OF THE PERFORMANCE PLAN

Safety

In accordance with Commission Implementing Regulation (EU) 2019/317 [*3], the key safety performance indicator is the minimum level of the effectiveness of safety management to be achieved by air navigation services providers certified to provide air traffic services (ATS). The level of implementation of the following safety management objectives is measured:



The safety targets set in PP RP3 for 2022 at level C in all five areas have been achieved. In all of these five areas, the Agency achieved a D level – above the target set thus maintaining the high performance of 2021.

The measures taken in 2022 in the area of safety were a continuation of the initiatives implemented consistently in previous years and included, among other things:

- the implementation of the tasks set out in the “Roadmap for SMS development in PANSa” and
- continued monitoring of the level of SMS performance in PANSa through the use of the CANSO SoE (Standard of Excellence) tool.

In terms of the Safety Performance Indicators (SPIs) and safety level monitoring in 2022, PANSa continued to monitor the SPIs as defined by CAA as part of the National Safety Plan (NSP) and internal safety indicators.

[*3] Commission Implementing Regulation (EU) 2019/317 of 11 February 2019 laying down a performance and charging scheme in the single European sky and repealing Implementing Regulations (EU) No 390/2013 and (EU) No 391/2013.

IMPLEMENTATION OF THE PERFORMANCE PLAN

Capacity, En-route delays

In 2022, the average en-route ATFM delay for flights handled by PANSa was 1.09 min/flight, higher than the target set in the PP RP3 for 2022 (0.12 min/flight). This is primarily due to the armed aggression of the Russian Federation against Ukraine, resulting in:

- the closure of the airspace beyond Poland's Eastern border,
- changes in air traffic flows,
- increased military activity in Polish airspace (including an increase in the number of military zones in the East of the country for NATO purposes).

Moreover, the 2022 result was impacted by temporary restrictions on the availability of operational staff at the Agency.

In 2022, the total number of minutes of delays in Polish airspace was 799,668, most of which were delays related to the war in Ukraine (53%). After discussion between the Polish CAA and the European Commission and the Performance Review Body, 130,727 minutes of delay was deducted from the 2022 PANSa result as linked to exceptional event defined in article 2(9) of Commission Implementing Regulation 2019/317. As a result, the final number of minutes of delays attributable to PANSa for 2022 amounts to 668,941, which gives an indicator of 1.09 min/flight.

Apart from the war in Ukraine, further contributing factors to the value of en-route delays were air traffic control (ATC)-related [*4] delays and weather-related delays.

[*4] ATC delays were determined by such factors as the shortage of operational staff (air traffic controllers) – ATC Staffing and the intensity of air traffic streams – ATC Capacity. The highest number of minutes of delay was generated in April and was the result of staffing problems at ACC Warsaw.



Tab. 3 En-route delays in 2019-2022

En-route delays	2019	2020	2021	2022
Actual performance for the year (min/flight)	0.12	0.00	0.07	1.09
Target for a given year (min/flight)	0.23	0.30	0.07	0.12

Source: PANSa

IMPLEMENTATION OF THE PERFORMANCE PLAN

Terminal delays

The value of the terminal delay indicator for Poland for airports where PANSA provides aerodrome control services was low at 0.04 min/arrival in 2022, with an annual target of 0.21 min/arrival set under the PP RP3 – thus the target was met.

The recovery of inbound/outbound traffic to Polish airports was much more dynamic than that of overflights. IFR inbound and outbound traffic in 2022 was at 86% of the volume of 2019 and increased by nearly 61% compared to 2021.

The terminal delay indicator in 2022 was affected by:

- delays generated by ATC [*5] (accounting for 57% of the total number of terminal delays),
- weather conditions (accounting for 15%),
- airport delays (accounting for 28%).

Terminal delays were generated for the following airports: EPGD, EPKK, EPKT, EPLL, EPPO, EPRZ, EPSC, EPWA and EPWR.

[*5] Most of the ATC delays were related to capacity and reduced staffing on arrivals.

Tab. 4 Terminal delays for EPWA and other airports

Terminal delays in a given year (min/ arrival)	2019	2020	2021	2022
Poland	0.39	0.02	0.00	0.04
EPWA	0.86	0.04	0.00	0.02
Other airports	0.02	0.01	0.00	0.06
Target for a given year for Poland	0.04	0.45	0.02	0.21

Source: PANSA

IMPLEMENTATION OF THE PERFORMANCE PLAN

Environment

Tab. 5 KEA in 2019-2022 [*6]

KEA	2020	2021	2022
Actual performance for the year	1.67%	2.33%	4.79%
Target for a given year	1.85%	1.65%	1.65%

Source: PANSA

[*6] Before 2020 the environmental target was set at the level of Baltic FAB, not at national level for PANSA. Therefore 2019 is not presented in the table.

The environmental impact of air transport within the performance scheme is monitored through the horizontal en-route flight efficiency indicator, which corresponds to the difference between the length of the en-route part of the actual trajectory derived from surveillance data and the corresponding portion of the great circle distance.

In the PP RP3, Poland’s 2022 target for the en-route horizontal flight efficiency indicator for the actual trajectory (KEA) was 1.65%, while actual performance was higher at

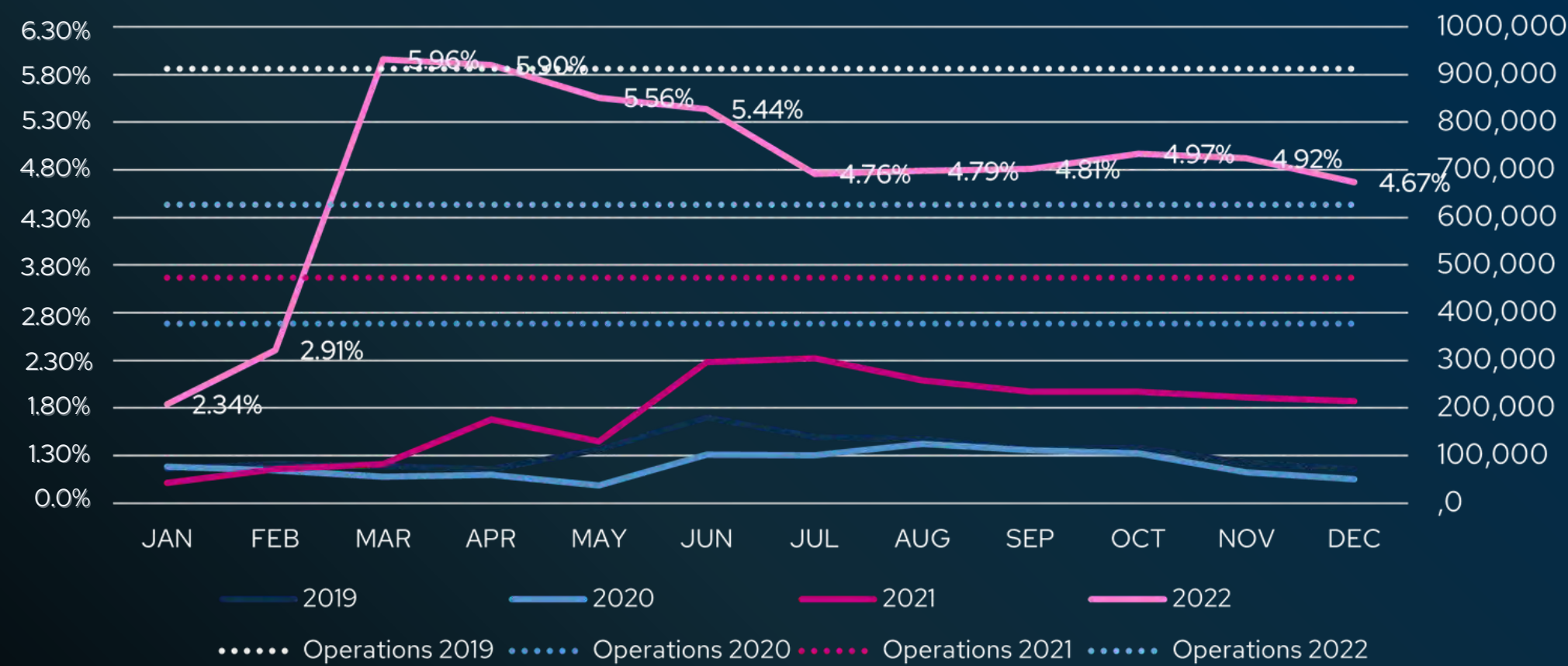
4.79%

IMPLEMENTATION OF THE PERFORMANCE PLAN

Cost efficiency

The inability to meet the target, as well as the year-on-year increase in the value of the indicator, is a direct result of the geopolitical situation - the closure of Ukrainian airspace to air traffic as well as the introduction of sanctions that restrict flights using Russian and Belarusian airspace had a negative impact on the value of the indicator. The value of the KEA indicator is determined by external factors beyond the control of the ANSPs – the impact of the ANSPs on the KEA indicator is negligible.

Fig. 8 HFE indicator (Poland), 2019-2022



The en-route horizontal flight efficiency indicator for the actual trajectory on a monthly basis (HFE) – which is closely correlated with KEA – shows the deviation in the length of the actual trajectory compared to the length of the allocated great circle distance for each month. The above indicates, as in previous years, a negligible impact of ANSPs on the HFE/KEA indicator.

Source: PANSa based on EUROCONTROL

IMPLEMENTATION OF THE PERFORMANCE PLAN

Cost efficiency

Tab. 6 Execution of cost-efficiency targets in 2022

Indicator		2022 target	2022 actual
The Determined Unit Cost (DUC) for en-route air navigation services – in the part concerning PANSa (in PLN at 2017 prices)		176.46	199.95
The Determined Unit Cost (DUC) for terminal air navigation services – in the part concerning PANSa (in PLN at 2017 prices)	Warsaw	474.38	473.98
	Other airports	877.43	799.88

Source: PANSa

The actual unit cost in 2022 relative to the value from the PP RP3 was affected by deviations in the following elements:

- costs in nominal terms,
- the cumulative inflation index, with 2017 as the base,
- the number of service units.

It should be borne in mind that the direction of influence of the various elements, including within individual charging zones, was not uniform. With regard to costs expressed in real terms, the higher actual level of inflation in 2021-2022 than assumed in PP RP3, resulting in a higher actual inflation index level, leads to a lower value of costs in real terms.

ENSURING SAFETY AND SECURITY

The main aim of PANSO is to ensure safe and smooth air traffic through efficient airspace management. Safety has the highest priority in all air traffic management services and aviation services provided by PANSO.



Managing the safety system

To continuously improve the safety management system (SMS), PANSO performs periodic tests of the system maturity (based on EASA, CANSO and EUROCONTROL guidelines). The results of the tests allow to identify all areas that need improvement. Such an approach is key to developing and implementing new methods, tools and ways of information flow.

As regards the SMS, we use tools that allow for quick and proactive identification of safety threats. We place great emphasis on disseminating knowledge and building common awareness in terms of safety management in the aviation environment.

Our approach to safety management is diverse and includes:

- promoting comprehensive understanding of all aspects of safety,
- learning from incidents and events that affect safety,
- promoting the Just Culture principle (looking for causes rather than blaming parties for causing the events),
- sharing data and best practices concerning SMS for the benefit of airspace users and the whole aviation community.



ENSURING SAFETY AND SECURITY

Incidents in 2022

Based on the results of the survey of reported incidents, in 2022:

- no aviation incidents of "A" severity class were recorded,
- 11 aviation incidents of "B" severity class were recorded,
- 32 aviation incidents of "C" severity class were recorded.

In 2022, the highest risk severity events monitored by PANSa included:

- human factor,
- airspace infringement,
- ATM specific occurrences,
- separation minima infringement,
- inadequate separation,
- taxiway incursion,
- un-authorised penetration of airspace,
- ACAS RA,
- runway incursion,
- ground-ground collision,
- aircraft deviation from ATC clearance.

In 2022, 626 technical incidents were also reported. Working with our partners within the framework of CANSO and EUROCONTROL industry organisations, PANSa provides an expertise and experience to help implement a uniform European safety framework. In this way PANSa contributes to the safer evolution of the European sky.

The Polish Air Navigation Services Agency complies with international, EU and national laws on civil aviation security. The Agency carries out all tasks prescribed by law in the areas of site security, site defence and crisis management. Awareness campaigns are being conducted among PANSa employees to raise the level of knowledge to understand cyber-security threats, as well as to apply effective methods to protect against these threats. Training is being also provided on "Cyber-security basics".

There have been no aviation accidents involving ATC services with human fatalities in 2022.

In 2022, 2,722 incidents were reported.

In 2022 a 35% increase in the number of reported incidents compared to 2021 was recorded, with a 26% increase in the total number of flights at FIR Warsaw.



ENSURING SAFETY AND SECURITY

Aeronautical Rescue Coordination Centre (ARCC)

The Centre's primary tasks are to provide, together with the other units of the ASAR (Aeronautical Search And Rescue) service:

- search and rescue for all people and aircraft located in FIR Warsaw and to operate on the land area in the aeronautical search and rescue region coinciding with the boundaries of the relevant flight information region;
- the search & rescue point of contact (SPOC) as referred to in Paragraph 3.2.5 of Annex 12 to the Chicago Convention, in particular ensuring the reception of distress information from the international satellite search and rescue assistance system (Cospas-Sarsat).



ENSURING SAFETY AND SECURITY

Aeronautical Rescue Coordination Centre (ARCC)



Activities undertaken in this area in 2022 included:

- preparation for and participation in the SAREX air rescue exercise
- participation in the work of the Cospas-Sarsat committee on changes to SAR documents

- within the Cospas-Sarsat system, steps were taken to change the operational subordination and transition from CMC Moscow to NMCC Bodø (Norway)

- planning, organisation and coordination of search and rescue operations in the Polish air search and rescue region (SRR)

- coordination of RCC activities with air traffic services, institutions and organisations related to the aviation environment, also conducting activities in the field of search and rescue, among other things, the Civil Aviation Authority (CAA), Ministry of National Defence, Polish Medical Air Rescue, Volunteer Water Rescue Service, Tatra Volunteer Search and Rescue, Mountain Volunteer Search and Rescue, the army, the police, the Border Patrol or the Maritime Search and Rescue Service as well as other entities and public benefit organisations involved in the aerial search and rescue system

INFRASTRUCTURE AND CNS/ATM INVESTMENTS

The Polish Air Navigation Services Agency has been investing in state-of-the-art technological solutions to maintain the highest level of safety in air traffic. Expenditure on the upgrade and construction of modern CNS/ATM and facility infrastructure incurred by PANSA in 2022 amounted to :

PLN 163.6 million [*7]

[*7] Additional information on CAPEX is also provided in the subsequent part of the Annual Report related to Financial Results.

Tab. 7 Main investment projects under way in 2022 in terms of expenditures incurred

Project name	Expenditure incurred (mPLN)
iTEC System	48.4
Extension of the ATC Center in Gdańsk	21.4
Server and business infrastructure	15.2
Upgrade of TWR Wrocław	10.3
Upgrade of the ATM system (upgrade 2)	6.3

Source: PANSA

The Agency pursues its strategic objectives in the areas of safety, airspace capacity, environment and cost-efficiency, safeguarding its operational needs, including ensuring the continuity of air navigation services provided and the implementation of activities resulting from European air transport development programmes and strategies, i.e: ATM MP and SESAR, for which the development of a state-of-the-art infrastructure is essential.

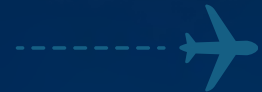
PANSA PRO-ECOLOGY ACTIVITIES



For years, the Polish Air Navigation Services Agency has been involved in various solutions aimed at environmental protection. PANSA ensures that, while maintaining the highest level of flight safety, its negative impact on the environment is also minimised.

- PANSA makes efforts to enable, among other things, the reduction of aircraft fuel consumption and carbon dioxide emissions. PANSA carries out such activities in line with the five pillars for the Green Single European Sky announced by EASA and EUROCONTROL. The pillars set out how air traffic control services may help meet the EU environmental targets for transport and significantly reduce their greenhouse gas emissions by 2050.
- The main pro-environmental activities and tools used by PANSA in the operational field include:
 - Free Route Airspace (FRA),
 - Continuous Descent Approach (CDA) – “green approach”.

PANSA PRO-ECOLOGY ACTIVITIES



Reduction of pollutant emissions – Free Route Airspace (Baltic FRA)

Free Route Airspace (FRA) is a defined volume of airspace in which airspace users are free to plan their route between specific entry and exit points. Depending on the availability of airspace, routing is possible via intermediate waypoints, without reference to the air traffic services (ATS) route network. Flights within this airspace are subject to air traffic control. In short, the use of FRA provides the opportunity to plan to fly through a given airspace via the shortest routes, bypassing the airway network.

FRA is therefore a way of overcoming the environmental dimension, efficiency and capacity issues of the aviation sector by helping to reduce fuel consumption and emissions, while improving flight efficiency. At the same time, the FRA paves the way for further improvements in airspace design and ATM operational concepts. After implementation of FRA within the Baltic FAB in February 2022, the concept of cross-border FRA is further developed aiming at being extended to cover other neighbouring airspaces.

Reduction of pollutant emissions and aircraft noise – CDA at TMA

Another solution that PANSA has introduced is the so-called “green approach”, a technique known as the Continuous Descent Approach (CDA). This technique, consists in allowing the aircraft approaching destination airports to descend in a smooth and uninterrupted manner, preferably straight away from its cruising altitude. Wherever possible, controllers shall also allow pilots to self-select the optimum rate of descent with minimum engine thrust.

Therefore, it is possible to significantly reduce emissions and aircraft noise. It is estimated that the use of CDA reduces fuel consumption by up to 46 kg per flight, and flight noise during descent by 1-5 dB – depending on the case and type of aircraft. PANSA has contributed to an increase in the use of CDA technology, which already concerns every second arrival at the largest airports in Poland. It is worth noting that we are one of the leaders in Europe when it comes to the use of CDA technology.

PANSA also cares for the environment by introducing new technologies and upgrading its infrastructure. PANSA also achieves environmental savings in indirect aviation activities. Furthermore, PANSA provides environmental training for all employees and pays attention to correct segregation of waste.

ATC TRAINING CENTRE

The primary task of the ATS Personnel Training Centre “OSPA” of the Polish Air Navigation Services Agency is to conduct:

- professional training for candidates for air traffic controllers and flight information officers, dedicated to work in air traffic services,
- continuing professional development courses to maintain competence of both the above-mentioned professional groups.

The objective of the aforesaid training is to ensure suitably qualified personnel required to provide air traffic control (ATC) and flight information services (FIS).

OSPA’s simulators allow practical training that accurately reflects the operational environment, equipment and the Pegasus_21 ATM system. ATS Personnel Training Centre also has a state of the art simulator – an aerodrome control tower (TWR) with 360-degree imaging and four airport control towers with 120-degree imaging.

In 2022, a decision was made to launch courses for air traffic controller candidates (due to the COVID-19 pandemic, enrolments were on hold in 2021). In 2022, one full enrolment was implemented. OSPA also delivered the training required to maintain the qualifications of licensed operational staff.



HUMAN RESOURCES

Fig. 9 Educational structure of PANSA employees (as at 31 December 2022)

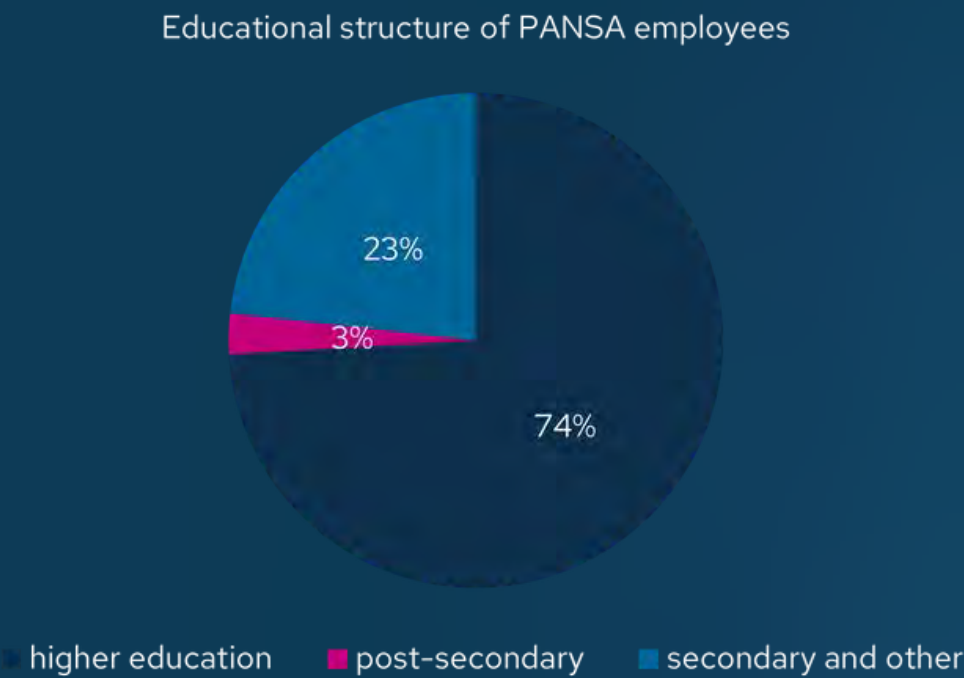
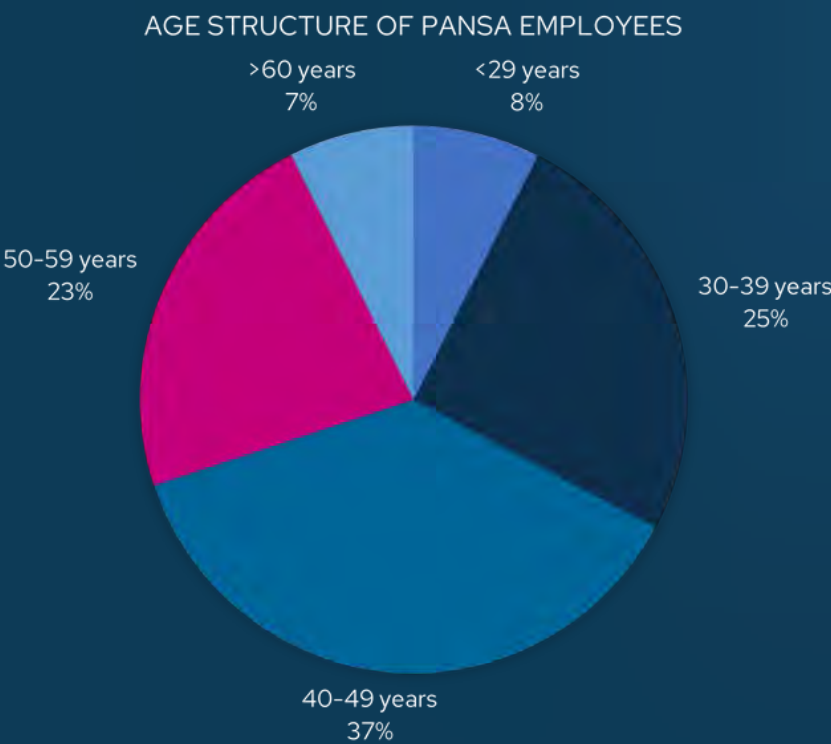


Fig. 10 Age structure of PANSA employees (as at 31 December 2022)



As at 31 December 2022, the Agency had

1839 employees

Average age of PANSA employee

44.3 years

Average age of ATCO

42.8 years



Source: PANSA



Tab. 8 Employment in FTEs and persons as at 31 December 2022 compared to employment as at 31 December 2021

PRU Category		Employment		Difference	Employment		Difference
		in FTEs			in persons		
		31.12.2021	31.12.2022		31.12.2021	31.12.2022	
x	x	1	2	3 (2-1)	4	5	6 (5-4)
1	ATCO in OPS	582.46	580.71	-1.75	591.00	590.00	-1.00
2	ATCO on other duties	20.00	16.00	-4.00	20.00	16.00	-4.00
3	Ab Initio Trainee Controller	12.00	39.00	27.00	12.00	39.00	27.00
4	On-the-Job Training (OJT)	48.00	41.00	-7.00	48.00	43.00	-5.00
5	ATC assistants	43.50	43.25	-0.25	44.00	44.00	
6	OPS support non-ATCOs	339.55	332.70	-6.85	343.00	336.00	-7.00
7A	Technical support staff for operational CNS/ATM, monitoring and control systems	300.25	291.75	-8.50	304.00	294.00	-10.00
7B	Technical support staff for the development and implementation of CNS/ATM systems	68.25	67.25	-1.00	69.00	68.30	-0.70
8	Administrative staff	362.43	334.73	-27.70	367.00	338.70	-28.30
9	Support service staff	49.00	43.00	-6.00	49.00	43.00	-6.00
10	Other employees	31.50	26.50	-5.00	32.00	27.00	-5.00
Total		1,856.93	1,815.88	-41.05	1,879.00	1,839.00	-40.00

Source: PANSA

STRENGTHENING OF PANSA NATIONAL AND INTERNATIONAL POSITION

The international cooperation of the Polish Air Navigation Services Agency is diverse. Our partners include both analogue air navigation service providers from other countries within the framework of bilateral operational cooperation, as well as international institutions, industry associations and organisations such as:



The international cooperation area also includes PANSA's activities and efforts within Baltic FAB, the A6 Alliance, the B4 Consortium, the GATE ONE Platform or iTEC cooperation.

STRENGTHENING OF PANSA NATIONAL AND INTERNATIONAL POSITION

Research and development

PANSA strongly emphasises its presence in European research and development projects coordinated by the SESAR Joint Undertaking.

In 2022, PANSA continued its participation in the SESAR 2020 Solutions in Wave 2 and Wave 3 of the SESAR 2020 Programme, including the following projects:

as part of Wave 2:

- "Airport airside and runway throughput – PJ02-W2 AART",
- "Total Airport Management – PJ04-W2 TAM",
- "Digital Technologies for Tower – PJ05-W2 DTT",
- "Optimised Airspace Users Operations – PJ07-W2 OAUO",
- "Digital Network Management Services – PJ09-W2 DNMS",
- "Separation Management and Controller Tools – PJ10-W2 PROSA",
- "Enable RPAS Insertion in Controlled Airspace – PJ13-W2 ERICA",
- "4D Skyways – PJ18-W2 4D Skyways",
- "Content Integration, Performance Management and Business Case Development – PJ19-W2 CI",
- "Master Planning – PJ20-W2 AMPLE",

as part of Wave 3:

- "Virtual Centre – PJ32-W3 VC",
- "ATM U-SPACE INTERFACE – PJ34-W3 AURA",
- "ADS-C Enables and Supports Improved ATM Operations – PJ38-W3-ADSCENSIO",

In 2022, two Wave 2 projects were completed, i.e. the project entitled "Surface Traffic Alerts Improve Runway Safety – VLD2-W2 STAIRS" and the project entitled "Integrated Urban Airspace VLD – GOF2.0". The remaining Wave 2 and Wave 3 projects are scheduled for completion by the end of 2023. In 2022, further SESAR 3 project proposals were submitted to the partnership for implementation between 2023 and 2026.

STRENGTHENING OF PANSA NATIONAL AND INTERNATIONAL POSITION

SESAR Deployment

In 2022, PANSA continued its participation in the SESAR Deployment process, both as an Implementing Partner and as a Founding Member of the SESAR Deployment Alliance (SDA) as well as a Founding Member of the SESAR Deployment and Infrastructure Partnership (SDIP) [*8].

As the Implementing Partner, PANSA continued to implement the deployment projects launched in previous years using EU co-financing under the CEF Transport Calls for Proposals.

As a member of the SDA, until the end of May 2022, the Agency's representatives participated in the SDA's governing body (General Meeting of Members (GMoM)) and from 1 June 2022 in the SDIP's governing body (SDIP Supervisory Board).

[*8] In December 2014, on the basis of Commission Implementing Regulation (EU) No 409/2013, the SESAR Deployment Alliance consortium was established to act as the SESAR Deployment Manager until the end of 2017. Since January 2018, the consortium has been transformed into a legal entity, i.e. SESAR Deployment Alliance (Association Internationale Sans But Lucratif (AISBL)). As of 1 June 2022, the SESAR Deployment Manager function is carried out by the new consortium SESAR Deployment and Infrastructure Partnership, which was formed by 14 European ANSPs, four European airlines, the European Airports Association and EUROCONTROL/Network Manager.

Tab. 9 Projects associated with the process of implementing the SESAR Program (Pilot Common Project/Common Project 1) co-financed from EU funds under the CEF Transport Call for Proposals, in which PANSA participates as a leader or as a contributor

Source: PANSA

Project name	CEF	Planned project budget (in EUR)	Grant amount awarded (in EUR)
1st part of the upgrade of the P_21 PEGASUS system to SESAR functionalities - Test and Validation Platform (project completed)	CEF2014	6,600,000	3,300,000
LAN network upgrade (project completed)	CEF2015	2,009,500	1,708,075
The ECG Communication System upgrade (project completed)	CEF2015	1,567,500	1,332,375
ATM System Upgrade towards Free Route Airspace (project completed)	CEF2016	5,880,000	2,528,400
iTEC Tests, Validation and Planning	CEF2016	1,716,360	738,035
Implementation of Data Link Service for the ATM in FIR Warsaw (project completed)	CEF2016	5,247,102	2,256,254
Deploy SWIM Governance (project completed)	CEF2016	90,400	38,872
NewPENS Stakeholders contribution for the procurement and deployment of NewPENS (project completed)	CEF2016	145,900	62,737
DLS Implementation Project - Path 2 (project completed)	CEF2016	148,805	63,986
General Call - DLS Implementation Project - Path 1 "Ground" stakeholders (project completed)	CEF2016	142,501	61,275
European Deployment Roadmap for Flight Object Interoperability (project completed)	CEF2016	25,000	10,750
Local traffic complexity management (project completed)	CEF2017	1,694,000	847,000
SWIM Common PKI and policies & procedures for establishing a trust framework (project completed)	CEF2017	101,515	50,758
IPI DLS European Target Solution assessment (project completed)	CEF2017	139,600	69,800
Clean ATM (Cross-border FRA)	CEF2022	3,382,453	1,691,227
Clean ATM (ACADIA)	CEF2022	2,059,192	1,029,596
Clean ATM (FF-ICE R1 eFPL)	CEF2022	1,654,142	827,071
Clean ATM (ASM SWIM)	CEF2022	699,999	349,999
TOTAL		25,508,183	13,068,316

STRENGTHENING OF PANSA NATIONAL AND INTERNATIONAL POSITION

A6 Alliance

In 2022, the Agency continued to participate in all three activities of the A6 Alliance, which brings together Europe's largest air navigation service providers (from, among other countries, Germany, the UK, France, Spain, Italy, Switzerland):

- coordination of research and development work between ANSPs in the SESAR Joint Undertaking;
- coordination between ANSPs of the works within SESAR Deployment Manager;
- joint actions in the field of European aviation policy/changes European ATM system.

In 2022, PANSA actively participated in the work of the A6 Steering Board and the A6 Strategy Board, developing common A6 alliance positions and representing the A6 Group at high-level meetings. This has provided PANSA with the opportunity to directly influence the decisions related to the development of the air traffic management industry in Europe, including significant participation in the works on the new Single European Sky legislative package.

Baltic FAB

PANSA actively participated in information exchange and ongoing activities within the Baltic FAB (Baltic Functional Airspace Block), which Poland forms with Lithuania, and on the InterFAB forum, which is a platform for the exchange of experience between all European functional airspace blocks.

CANSO

In 2022, PANSA continued its cooperation with other ANSPs within the CANSO structures, aimed at developing a common position of ANSPs towards the most important topics and challenges that have been presented to the ATM environment, e.g. regarding legislative (SESII+ legislative package), operational and infrastructural (including R&D activities) proposals for shaping future regulatory, technical and operational solutions for the ATM industry in Europe.

iTEC Consortium

In 2022, PANSA continued to operate within the iTEC Collaboration (Interoperability Through European Collaboration) industry consortium on the basis of the ATM system co-development partnership agreements concluded with DFS, NATS, ENAIRE, LVNL, Avinor and Oro Navigacija in 2017. As part of the iTEC Co-operation, air navigation agencies from seven European countries are working with technology partner Indra Sistemas to achieve smoother and more efficient air traffic management through the harmonisation and development of an advanced, state-of-the-art iTEC ATM system, supporting the implementation of the Single European Sky.

PANSA PROPRIETARY SOLUTIONS

Common Airspace Tool (CAT) System

The CAT system makes it possible to accept and verify reservations of airspace structures as well as to streamline the process of creating and publishing the Airspace Use Plan (AUP) – one of the key aviation documents used by the Polish sky users. The CAT system allows efficient management of structures in accordance with the reservations of airspace structures (AFUA) concept, at pre-tactical level and in real time – their activation, deactivation or change of altitude parameters. The CAT system works closely with Network Manager, the European air traffic management system, and through a B2B Web Services connection, automatically exchanges all information on the activity of the structures included in the AUP.

The CAT system is a major convenience for airspace managers and users. Thanks to a modern, freely accessible web interface, i.e. Collaboration Human Machine Interface, anyone using services offered by PANSA may see – in the form of a map – all current and planned, even in the long term, structures and obtain information thereof. It is a secure, complete, flexible, coherent and open solution for data exchange with other systems, operationally used by air traffic services.

The development of the CAT system continued in 2022. Among other things, a prototype of a proprietary CAT system was prepared to automate the exchange of ASM data with the iTEC system. Continued development of the CAT system was also focused on implementing new mechanisms to support the CDM process between ASM and ATFCM services.



PANSA PROPRIETARY SOLUTIONS

Traffic system

The TRAFFIC (Track Advisor for Flight Information Concerns) system is a tool used to validate and verify the operational data contained in flight plans before sending them to ATM systems. The TRAFFIC system is a solution that has allowed PANSA to face the challenges generated by growing air traffic in a smooth and user-friendly manner.

In 2022, system development work continued (project launch and continuation until around 2026) aimed at providing the ATM system with information on planned air traffic based on:



multithreaded
(threads -
operational as
well as formal and
legal)

multidimensional
(dimensions -
syntactic and
semantic)

verified data contained in flight plans and messages modifying them, as well as supplementary messages in the tactical and pre-tactical phases.

PANSA PROPRIETARY SOLUTIONS

Aeronautical inspection

PANSA is responsible for the proper operation of about 150 ground-based air traffic safety devices and the validation of instrumental aeronautical procedures in Poland. Operating since 1963, the Polish Air Navigation Services Agency (PANSA) carries out control and measurement flights.

PANSA Flight Inspection performs implementation, periodic, ad hoc and category inspections and measurements of CNS infrastructure:

instrument
landing systems
(ILS CAT 1, 2, 3)

VHF Omnidirectional Radio
Range (VOR and DVOR)
and non-directional radio
beacons (NDB), distance
measuring equipment
(DME)

navigation light systems
(approach light systems
ALS and runway light
systems) and precision
approach path indicator
(PAPI)



PANSA Flight Inspection is the only unit in Poland to check new and existing instrumental flight procedures - conventional and area navigation (RNAV) based on DME-DME and Global Navigation Satellite Systems (GNSS).

Due to the progressive implementation of the Ground Based Augmentation Systems (GBAS) in Europe, which are used for precision landing of aircraft based on satellite technology, aerial inspection services of such systems and validation of the associated flight procedures will also be provided.

In 2022, in addition to providing aeronautical inspection services domestically, such activities also continued abroad, in the form of CNS infrastructure and flight procedures flyovers in Lithuania.

PANSA PROPRIETARY SOLUTIONS

Flight schedule coordination

PANSA acts as a flight schedule coordinator. Coordination is performed on the basis of EU and Polish legislation and International Air Transport Association (IATA) guidelines contained in the Worldwide Slot Guidelines (WSG) and the Standard Schedules Information Manual (SSIM). The independence, neutrality, non-discrimination and transparency of the coordinator with respect to all air carriers is at the heart of flight schedule coordination.

PANSA's strategic and long-term business objective is to develop and refine its co-ordination competencies to meet the future challenges of limited airport capacity.

In 2022, the coordination of flight schedules at Krakow-Balice Airport continued and the development of slot coordination services was implemented.

Aviation publications

One of organisational units of PANSA is the Aeronautical Information Services (AIS). AIS Poland is responsible for providing aeronautical data and information necessary to ensure the safety, regularity and efficiency of air navigation in FIR Warsaw. For this purpose, AIS Poland prepares aeronautical information products, which include:

- Aeronautical Information Publication (AIP), including AIP Amendments and Supplements;
- Aeronautical Information Circular (AIC);
- aeronautical maps;
- NOTAMs;
- digital datasets.

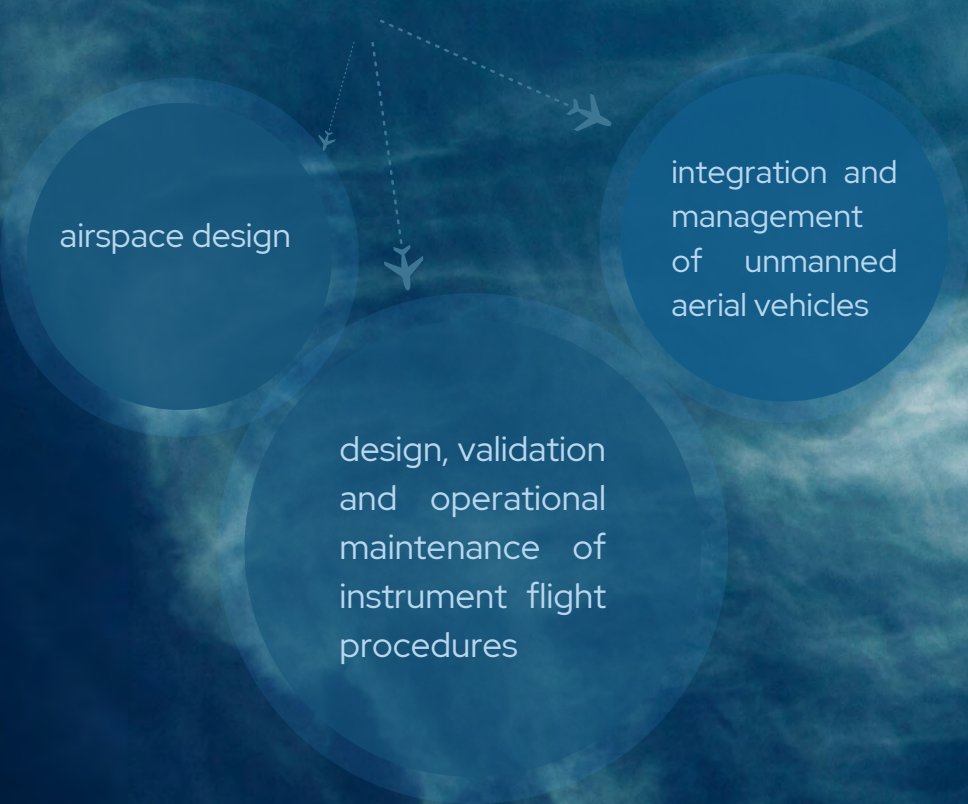
In 2022, PANSA continued selling aviation publications (AIPs and maps) and digital datasets – changing the distribution model for aviation information products (AIS) from DVDs to digital products available online.



PANSA PROPRIETARY SOLUTIONS

Consultancy services

Consultancy and training services offered by PANSA are tailored to customers' needs and performed by experienced specialists with many years of experience working for PANSA and other aviation institutions. The catalogue of consulting services is constantly growing to allow PANSA effectively carry out the tasks and achieve the objectives set by clients. PANSA currently offers consultancy services in such areas, as:



The provision and development of commercial training services addressed to aeronautical information providers and stakeholders from other industries continued in 2022.



FINANCIAL RESULTS



GENERAL INFORMATION



Basis of preparation of the financial statements

The Agency, in accordance with the Act of 8 December 2006 on the Polish Air Navigation Services Agency (Journal of Laws of 2021, item 260 as amended, hereinafter referred to as "PANSAct"), prepares financial statements for statutory purposes in accordance with IFRS as approved by the EU.

Measurement currency and financial statement currency

The measurement currency of the Agency and the reporting currency is the Polish zloty (PLN), and all values, unless otherwise indicated, are presented in thousands of Polish zlotys ('000 PLN).

GENERAL INFORMATION



Principles of financial management

The Agency, in accordance with the PANSA Act, conducts independent financial management, taking into account EU law, international agreements and EUROCONTROL provisions regarding the air navigation charges system, including the principles of establishing and collecting charges and issuing invoices by CRCO.

By virtue of the PANSA Act, the net loss of the Polish Air Navigation Services Agency for the financial year is covered from the reserve fund. If the net loss is higher than the reserve fund, the part of the loss not covered by the reserve fund will be covered by the statutory fund. Whereas the Agency's net profit for the financial year is allocated to the reserve fund or other funds created on the basis of separate provisions.

Operating expenses are covered by the generated revenues. The sources of revenues are: revenues from services provided, interest on bank deposits, grants and donations from the state budget, other revenues including funds obtained as non-returnable aid.

The main source of the revenue generated from sales constitutes the revenue from navigation activities, which includes charges levied for the provision of air navigation services [*9]. The amount of the revenue generated due to the provision of navigation services (en-route and terminal services) depends, among other things, on the level of unit rates for charges for navigation services established annually.

The calculation of revenue from the sale of navigation services provided by the Agency is based on:

1. actual number of service units:
 - for en-route services (SU), which derive from the weight of the aircraft, number of movements and the length of the route of the flight over the territory of Poland,
 - for terminal services (SU-L), which derive from the weight of the aircraft and the number of landing approaches at 'controlled' Polish airports;
2. unit rates of en-route and terminal charges,
3. estimated value of carry-overs reflected in the calculation of the unit rates under applicable law.

[*9] Commission Implementing Regulation (EU) 2019/317.

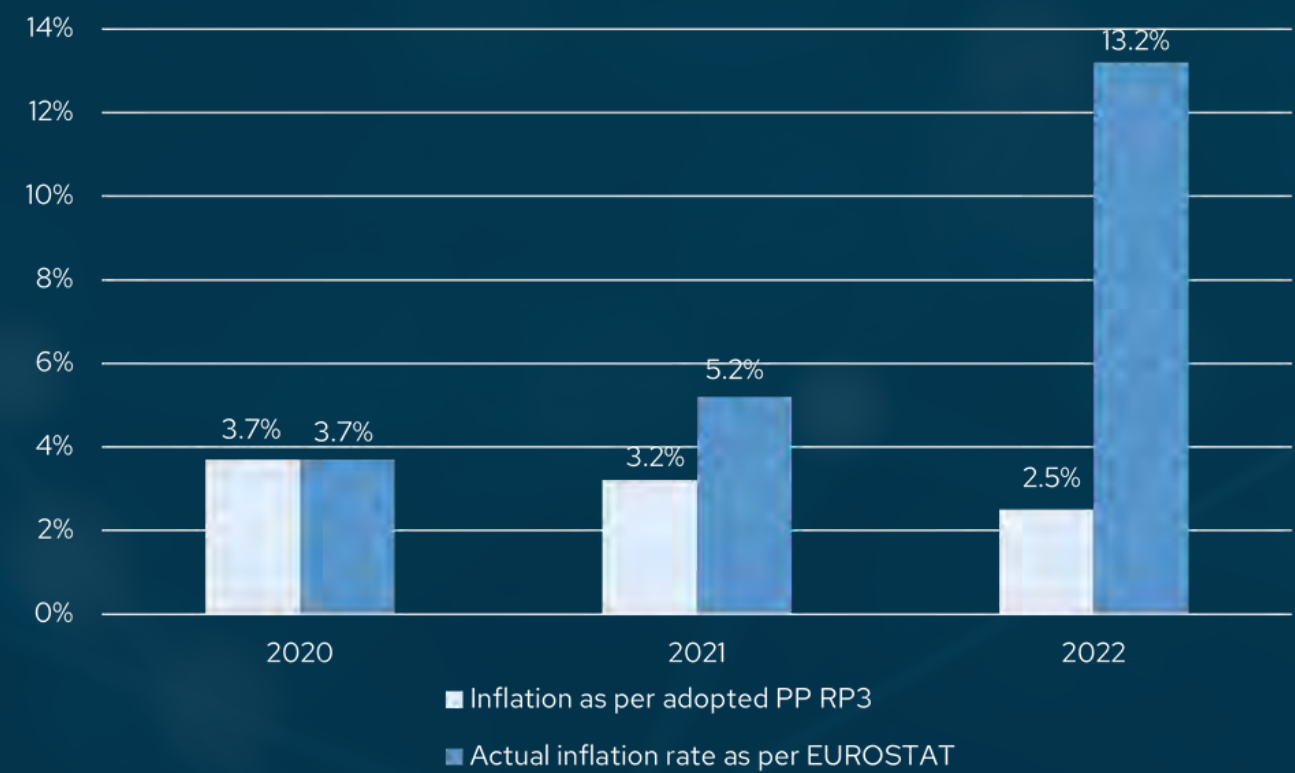
GENERAL INFORMATION

Inflation

Over 2021-2022, Poland faced a significant increase in the inflation rate compared to previous reporting periods and to the assumptions underlying the PP RP3. The main driver for the steep rise in the inflation rate in 2022 was the military aggression on Ukraine, which caused difficulties in the raw material markets, leading to a rise in energy products that impacted other market segments. The increase in inflation had an impact on PANSA operating costs.



Fig. 11 Planned vs actual inflation rates



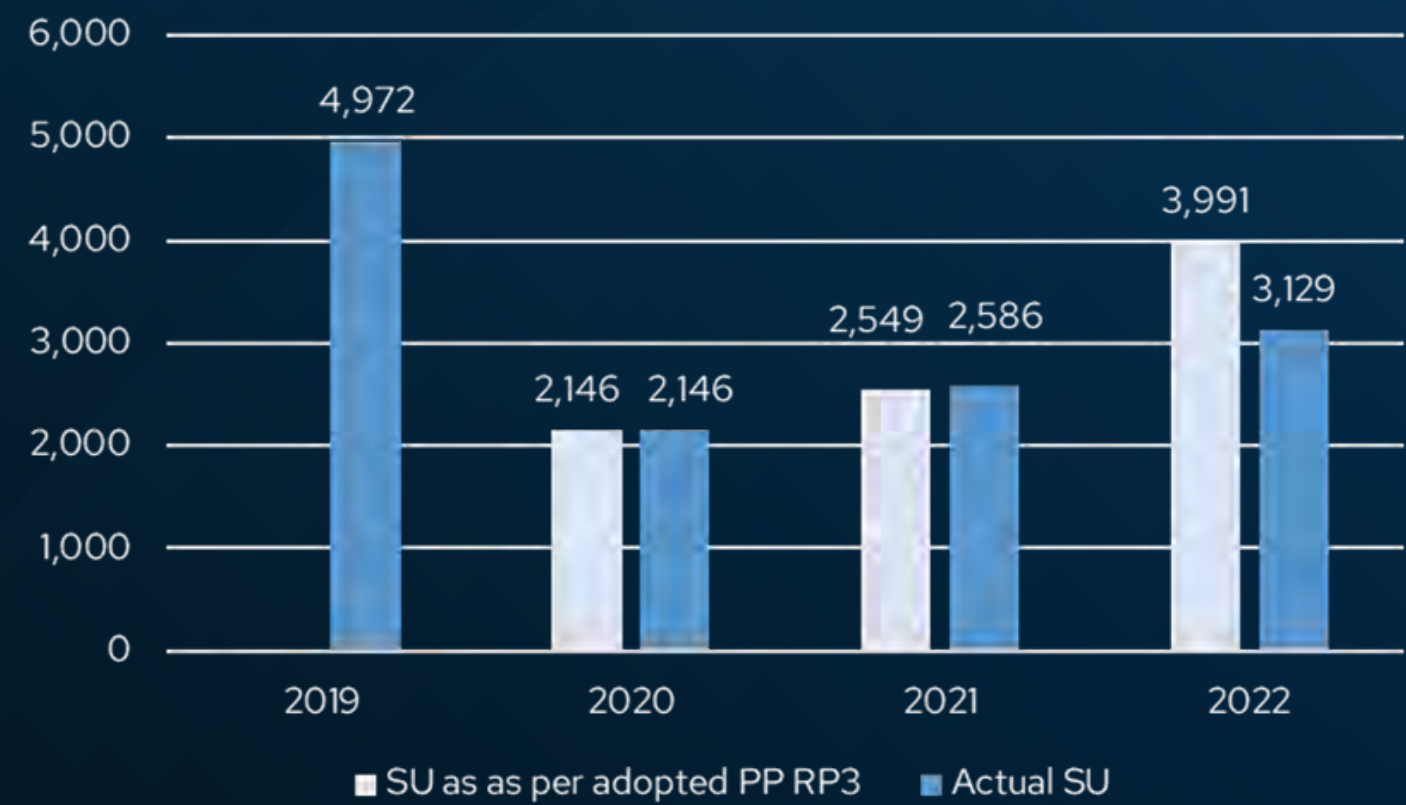
Source: PANSA based for planned values on IMF "World Economic Outlook Database" (April 2021) and for actual values on Eurostat (March 2023)

GENERAL INFORMATION

Traffic (service units)

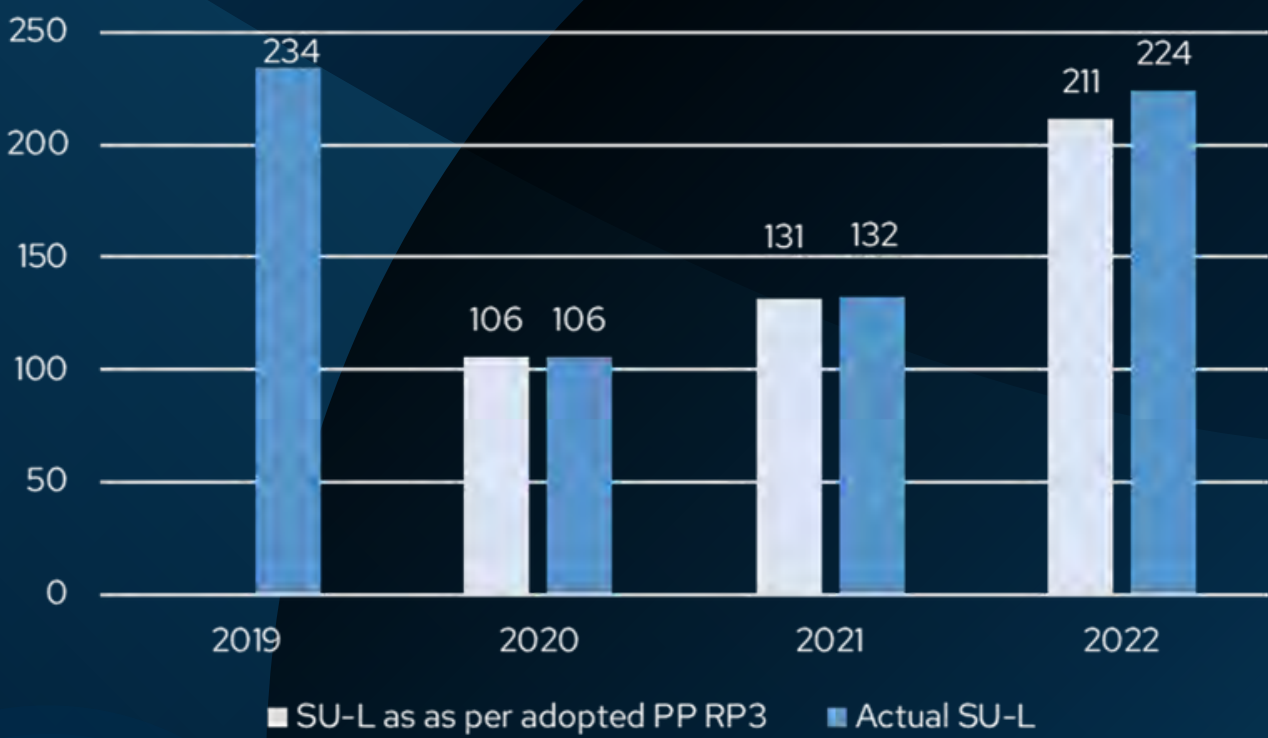
The influence of COVID-19 on air traffic was still visible in 2022. At the beginning of the year, gradual restoration of the traffic in Polish airspace had started. However, since the end of February, the figures have been strongly impacted by the outbreak of the war in Ukraine, right beyond the Polish eastern border. The resulting closure of Ukrainian airspace and further restrictions imposed on traffic flows on the east-western axis (as a consequence of sanctions and reciprocal actions) led to significant changes to traffic flows in the Polish airspace, including a substantial drop in overflights. The effect reduced the number of en-route service units due to the loss of overflights being historically performed with heavier aircraft and on longer routes. It was less visible in terminal service units. The restoration of terminal traffic, especially at regional airports, was much faster, although 2022 annual results are still below 2019 (pre-pandemic) figures.

Fig. 12 En-route service units – SU ('000)



Source: PANSA on the basis of EUROCONTROL

Fig. 13 Terminal service units – SU-L ('000)



Source: PANSA

GENERAL INFORMATION

Unit rates of air navigation charges

For the provision of navigation services, PANSA calculates and collects the following charges:

- en-route charges – invoiced and collected on behalf of PANSA by EUROCONTROL CRCO, based on unit rate approved by the EUROCONTROL enlarged Commission,

- terminal charges – invoiced and collected by PANSA, based on unit rates approved by the President of the Civil Aviation Authority. In RP3 terminal unit rates are established for two separate terminal charging zones, approved in 2019 by a decision of Minister of Infrastructure – one for Warsaw Chopin airport and the second one for 14 regional airports where PANSA provides air traffic services.

GENERAL INFORMATION

Unit rates of air navigation charges

The unit rates of air navigation charges are calculated using three elements:

- determined costs of providing air navigation services in the given charging zone for the given year, as established in the performance plan for Poland (total of costs of all entities covered by the performance plan),
- adjustments stemming from EU Charging Scheme,
- forecasted number of service units in the given charging zone for the given year, as forecasted in the performance plan for Poland.

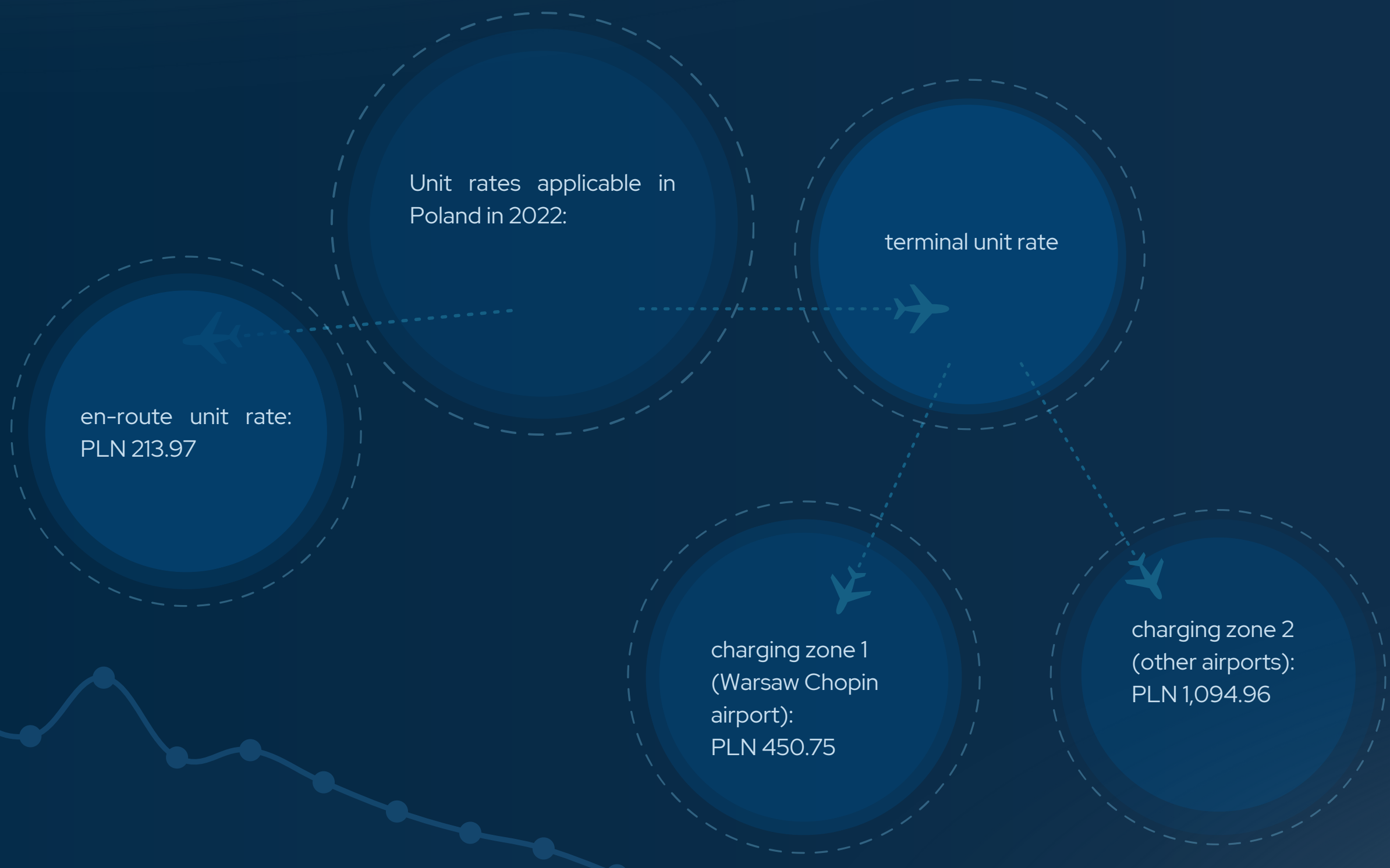
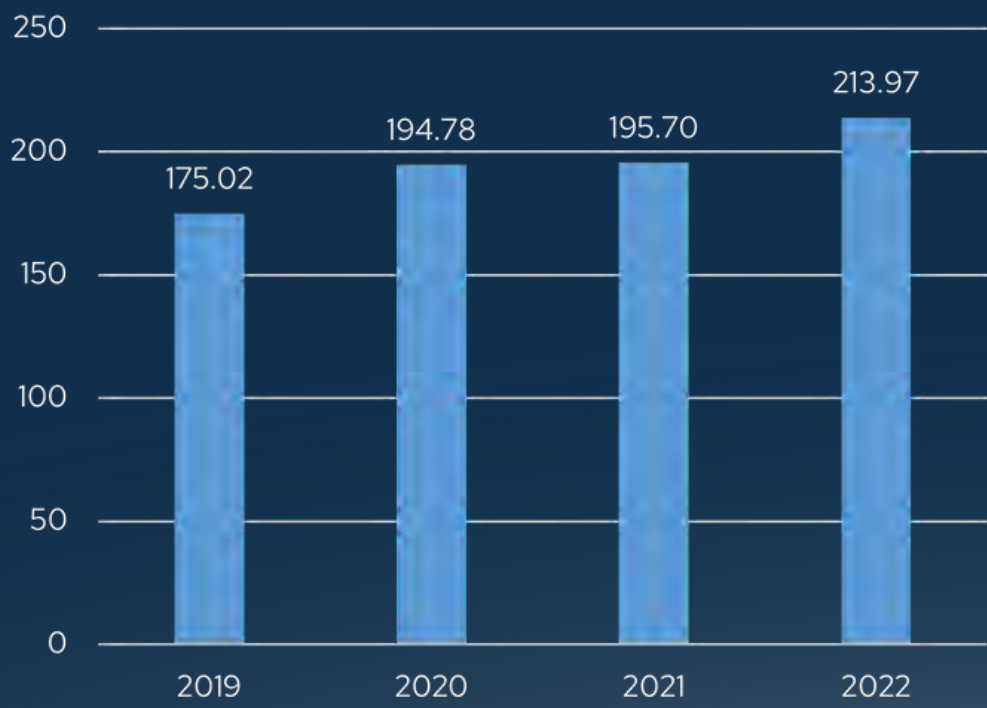


Fig. 14 En-route charges unit rates in Poland (PLN)



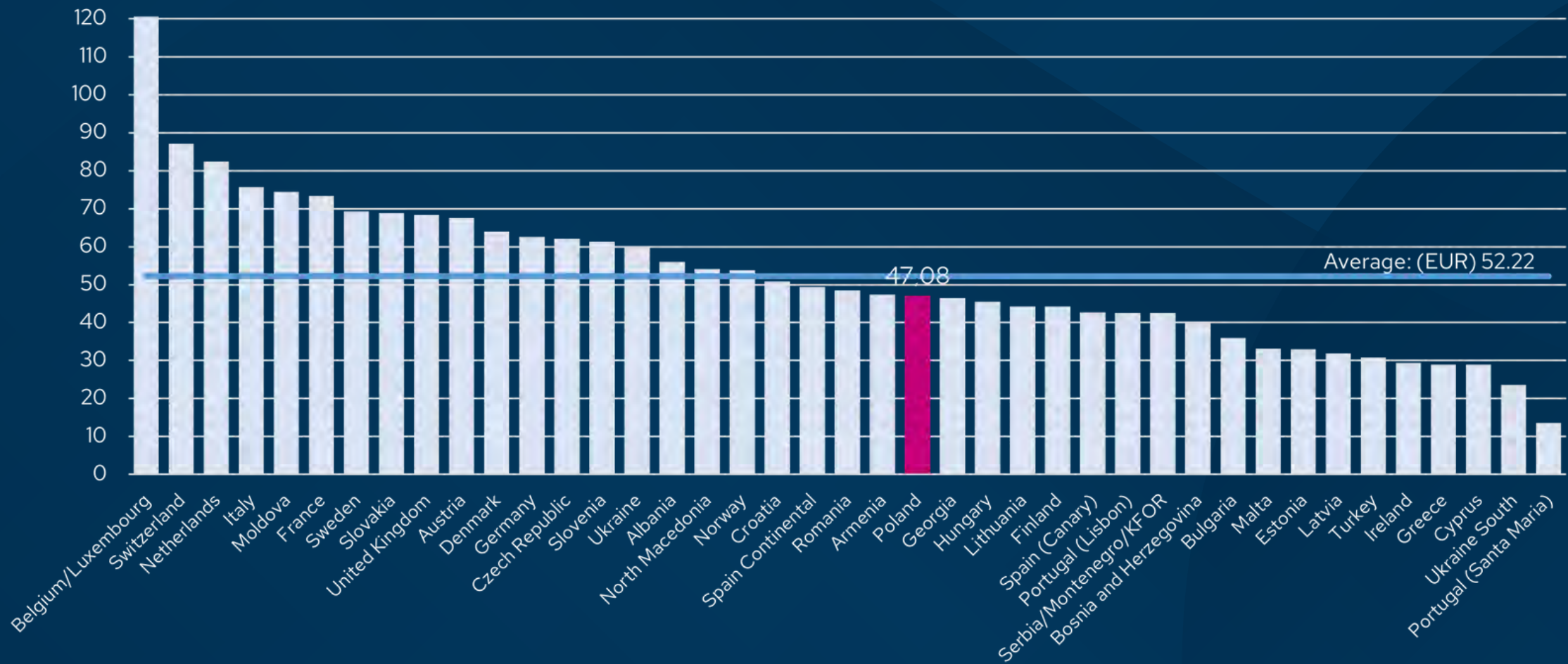
Source: PANSA

GENERAL INFORMATION

Unit rates of air navigation charges

The average value of the en-route unit rate in 2022 of EUROCONTROL member states was EUR 52.22. The Polish unit rate for en-route navigation services was EUR 47.08.

Fig. 15 En-route unit rate in EUROCONTROL Member States in EUR

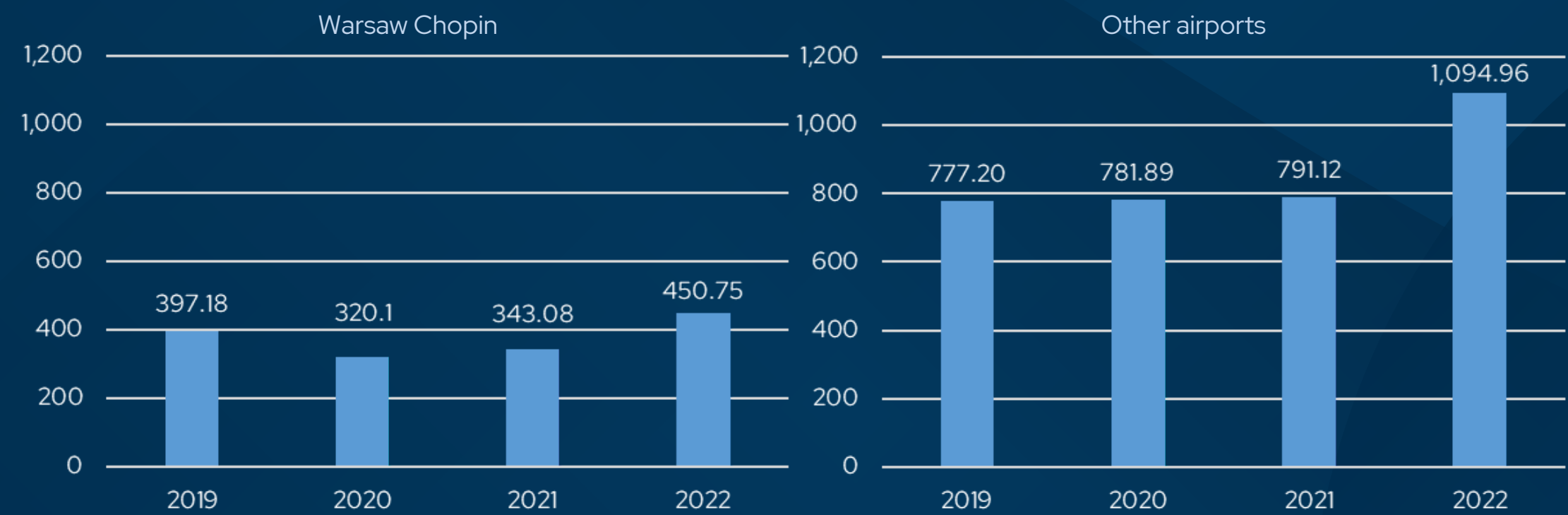


Source: PANSA's based on Decision No 21/170 of the EUROCONTROL Enlarged Committee; unit rates presented including CRCO administrative charge of EUR 0.22

GENERAL INFORMATION

Unit rates of air navigation charges

Fig. 16 Terminal charges unit rates in Poland (PLN)



Source: PANSA

REPORT ON PANSA'S FINANCIAL ACTIVITIES

Tab. 10 Statement of comprehensive income

Statement of comprehensive income ('000 PLN)	For the year ended 31.12.2022	For the year ended 31.12.2021
Sales revenues	1,140,616	1,196,051
Operating expenses	993,077	623,351
Profit on sales	147,538	572,701
Other operating revenues	43,951	41,151
<i>including: EU grants and donations from the state budget</i>	38,749	33,989
Other operating expenses	38,255	33,878
Operating profit	153,234	579,974
Financial revenues	6,782	1,245
Financial expenses	63,077	79,337
Gross profit	96,940	501,882
Income tax expense	20,323	96,854
Net profit	76,616	405,028
Items of other comprehensive income	1,912	13,104
Total comprehensive income	78,529	418,132

Source: PANSA

SALES REVENUES

The analysis of the PANSA's revenue structure shows that the dominant share in total revenues is sale revenue, which in 2022 amounted to kPLN 1,140,616. The Agency's primary revenue source is providing route and terminal navigation services.

Also, the balance of adjustments for carry-overs in the total amount of kPLN 251,160 significantly affects the Agency's recognized revenue.

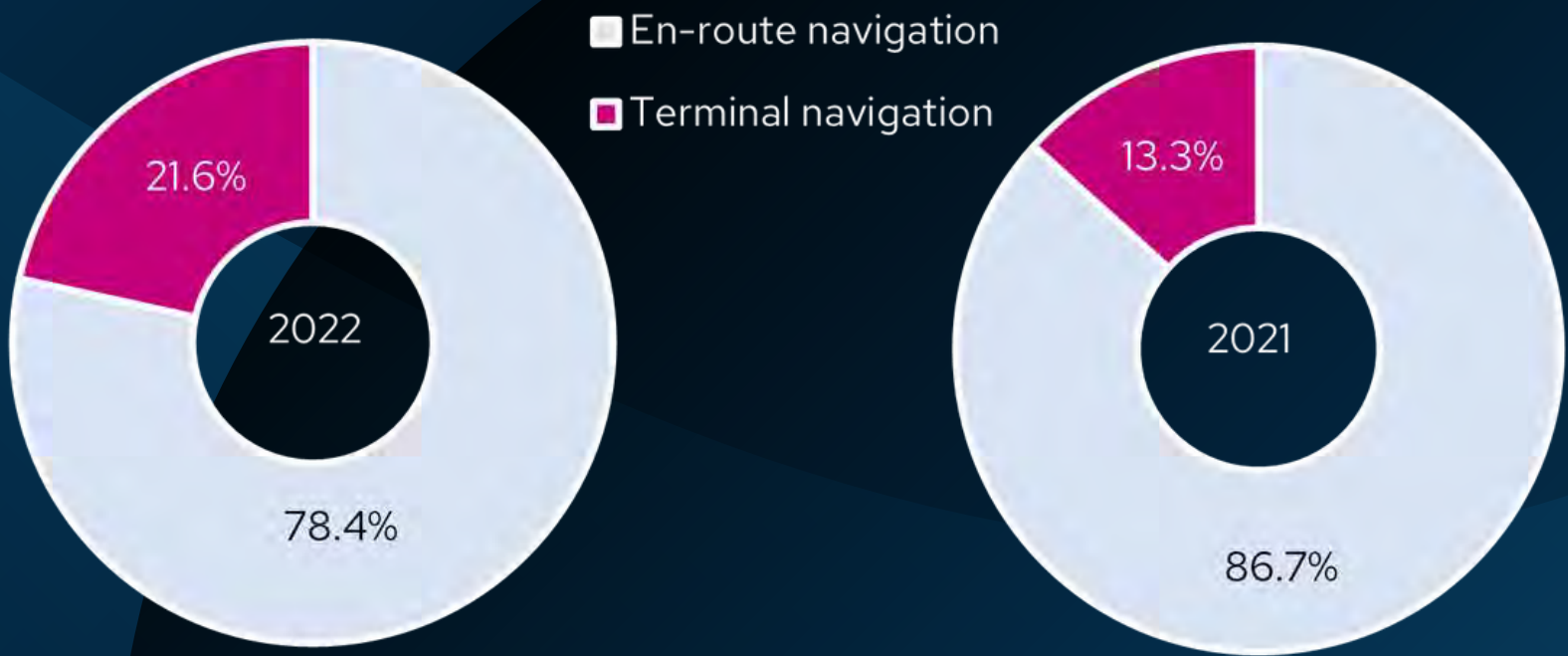
The value of the estimated adjustments for carry-overs shall be subject to settlement with the airspace users in subsequent years. In 2022, the share of sales revenue of navigation services accounted for 95% of the total income reported by the Agency.

Tab. 11 Sales revenues ('000 PLN)

Sales revenues ('000 PLN)	For the year ended 31.12.2022	For the year ended 31.12.2021
Navigation services, including:	1,131,567	1,187,637
En-route navigation, including:	878,529	963,586
Balance of adjustments for carry-overs	222,311	460,178
Terminal navigation, including	209,278	208,773
Balance of adjustments for carry-overs	28,850	131,579
Grant for exempted flights	43,761	15,278
Non-navigation services, including:	8,999	8,378
Measurement of meteorological parameters	1,771	1,771
Radar data	2,733	2,844
Sales of materials	50	36
Total	1,140,616	1,196,051

Source: PANSA

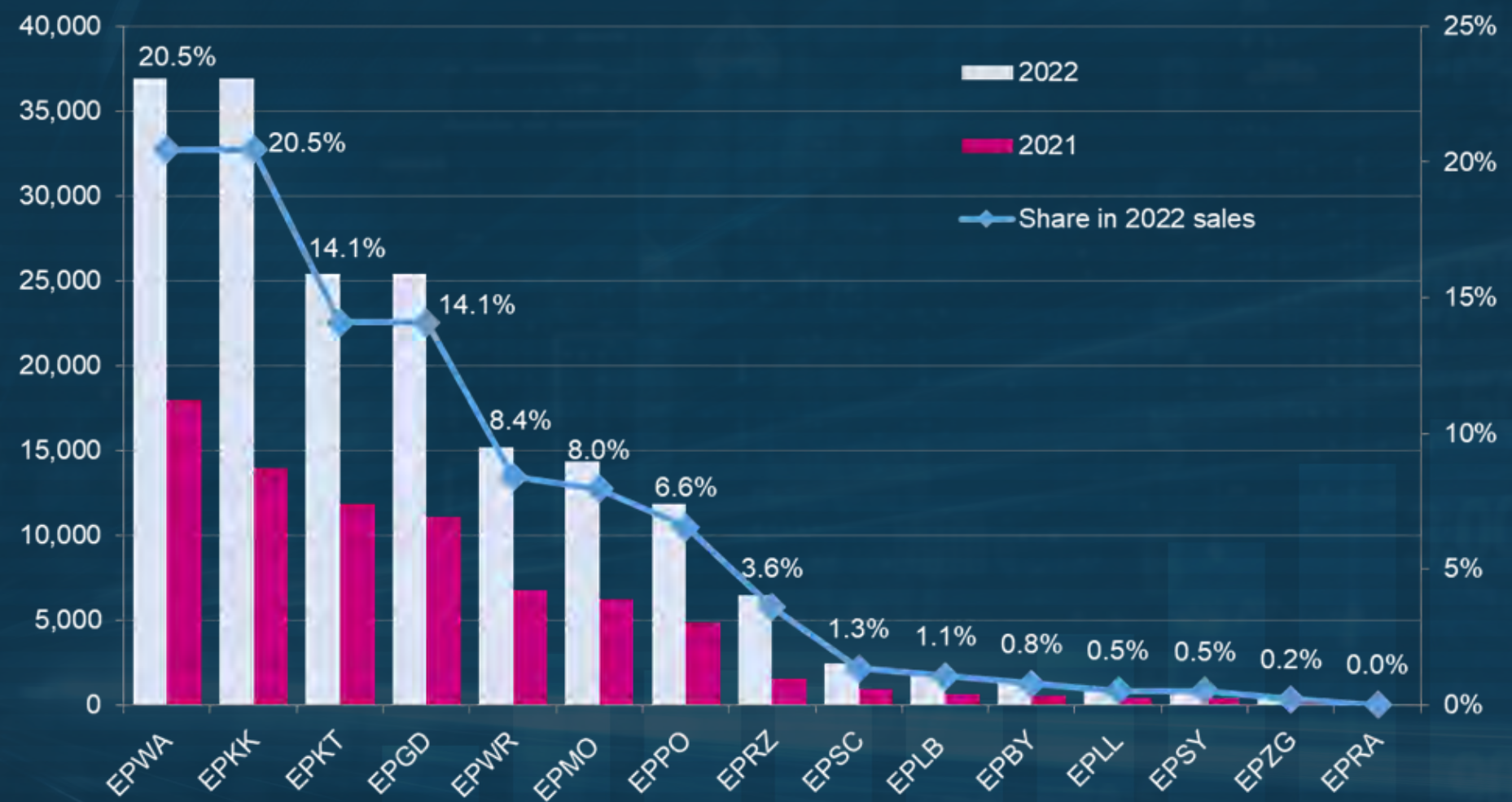
Fig. 17 Invoiced sales revenues by services



Source: PANSA

SALES REVENUES

Fig. 18 TNC invoiced sales revenues by services



Source: PANSA

TOTAL COSTS

The total costs incurred by PANSA within the twelve months of 2022 amounted to kPLN 1,094,409.

The analysis of the PANSA cost structure shows that the significant share in total costs corresponds to the operating expenses, which in 2022 amounted to kPLN 993,077.

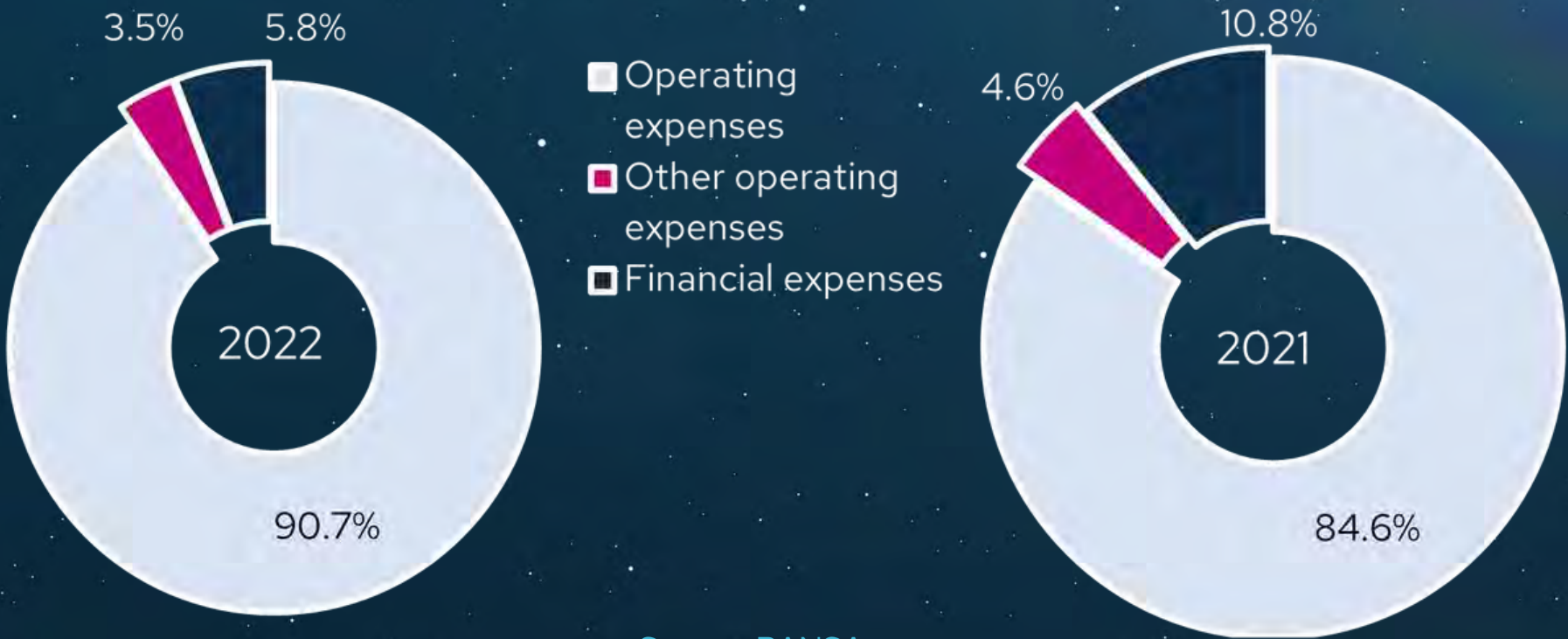
Tab. 12 Total costs

Total costs ('000 PLN)	For the year ended 31.12.2022	For the year ended 31.12.2021
Operating expenses	993,077	623,351
Other operating expenses	38,255	33,878
Financial expenses	63,077	79,337
Total costs	1,094,409	736,566

Source: PANSA

TOTAL COSTS

Fig. 19 Total costs



Source: PANSA

OPERATING EXPENSES BY TYPE

Tab. 13 Operating expenses by type

Operating expenses by type ('000 PLN)	For the year ended 31.12.2022	For the year ended 31.12.2021
Amortization and depreciation	132,020	135,430
Materials and energy	30,941	15,926
Employee benefits costs	639,172	282,304
External services	106,410	112,040
Taxes and charges	21,282	20,478
Other operating expenses	63,252	57,172
Total of cost by kind	993,077	623,351

Source: PANSA

Tab. 14 Employee benefits costs

Employee benefits costs	For the year ended 31.12.2022	For the year ended 31.12.2021
Remuneration	467,999	350,245
Social security	124,392	86,485
Other employee benefits costs	46,780	-154,425
Employee benefits costs	639,172	282,304

Source: PANSA



OPERATING EXPENSES BY SERVICE

In compliance with the Commission Implementing Regulation (EU) 2019/317, the costs of providing air navigation services are broken down into: staff, other operating costs, depreciation, cost of capital (off-balance sheet item) and exceptional items.

The employee benefits costs (excluding training costs) are included in the staff costs. Other operating costs include the following categories of costs: consumption of materials and energy, external services, taxes and charges, other expenses, training in employee costs, other operating expenses and eligible financial costs. Lease payments resulting from the application of IFRS16 are also presented in other operating expenses.

The portion of depreciation resulting from the application of IFRS16 is not presented under depreciation. The cost of capital is not calculated on assets recognized due to the application of IFRS16.

Tab. 15 Operating expenses by service

Specification according to the Regulation 2019/317 ('000 PLN)	Constituent items	En-route navigation	Terminal navigation
Staff	Total, including:	503,676	127,638
	Operating expenses	499,356	126,544
	Other operating expenses	4,320	1,093
Other operating costs	Total, including:	100,244	25,523
	Operating expenses	94,885	22,808
	Other operating and financial expenses	9,718	3,630
	Other operating and financial revenues	-4,358	-915
Depreciation		100,146	21,370
Cost of capital		55,804	10,832
Exceptional items		0	0
Total costs		759,869	185,363

Source: PANSA

STATEMENT OF FINANCIAL POSITION

Tab. 16 Statement of financial position as at 31 December 2022

Statement of financial position as at ('000 PLN)	31.12.2022	31.12.2021
Non-current assets	2,044,602	1,994,427
Intangible fixed assets	280,073	250,314
Property, plant and equipment	937,314	929,264
Right-of-use assets IFRS 16	44,476	47,209
Long-term receivables	134	135
Deferred tax assets	0	0
Long-term assets due to adjustments for carry-overs	775,401	759,750
Other accruals	7,204	7,755
Current assets	662,315	355,675
Inventories	111	135
Trade and other receivables	162,984	144,064
Income tax receivables	0	0
Short-term assets due to adjustments for carry-overs	186,989	0
Short-term accruals	6,399	5,778
Cash and cash equivalents	302,558	202,511
Assets available-for-sale	3,274	3,188
Total Assets	2,706,918	2,350,102
Equity, including:	1,434,288	1,355,760
Statutory Fund	475,022	475,022
Reserve Fund	869,648	464,620
Retained earnings	0	0
Accumulated other comprehensive income	13,002	11,090
Profit (loss) for the financial year	76,616	405,028
Long-term liabilities	752,928	688,586
Long-term provisions	153,868	135,168
Deferred tax liability	37,747	16,975
Other long-term accruals	234,068	252,492
Long-term liabilities due to adjustments for carry-overs	53,189	81,666
Liabilities due to IFRS 16	39,439	43,925
Liabilities due to loan	233,733	157,482
Other long-term liabilities	883	879
Short-term liabilities	519,702	305,756
Short-term provisions	1,421	7,859
Trade and other liabilities	137,183	90,303
Short-term liabilities due to adjustments for carry-overs	89,332	62,101
Liabilities due to IFRS 16	7,994	5,583
Liabilities due to loan	92,642	16,000
Other short-term accruals	191,129	123,911
Total Liabilities	2,706,918	2,350,102

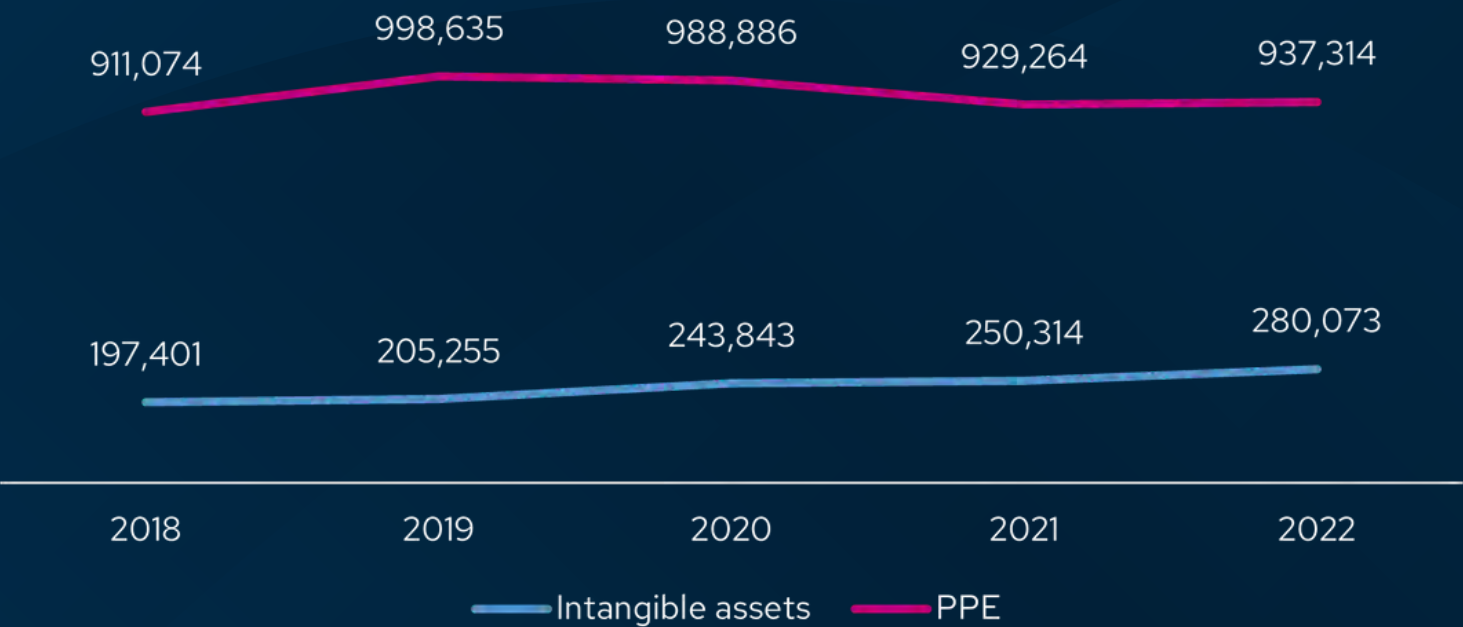
The total value of assets/ liabilities increased by PLN 357 milion to PLN 2,708 milion at the end of 2022. The increase is mainly coming from increase of long and short-term assets and liabilities due to adjustments for carry-overs.

Source: PANSA

STATEMENT OF FINANCIAL POSITION

Non-current assets

Fig. 20 PPE & Intangible assets



Source: PANSa

Property, plant and equipment comprise assets owned by the Polish Air Navigation Services Agency. At the end of 2022, the Agency had at its disposal tangible fixed assets (PPE) in the total amount of kPLN 937,314, which consisted mainly of technical equipment and machinery, buildings and structures, land (including rights of perpetual usufruct of land), and tangible fixed assets under construction.



Tab. 17 Property, plant and equipment

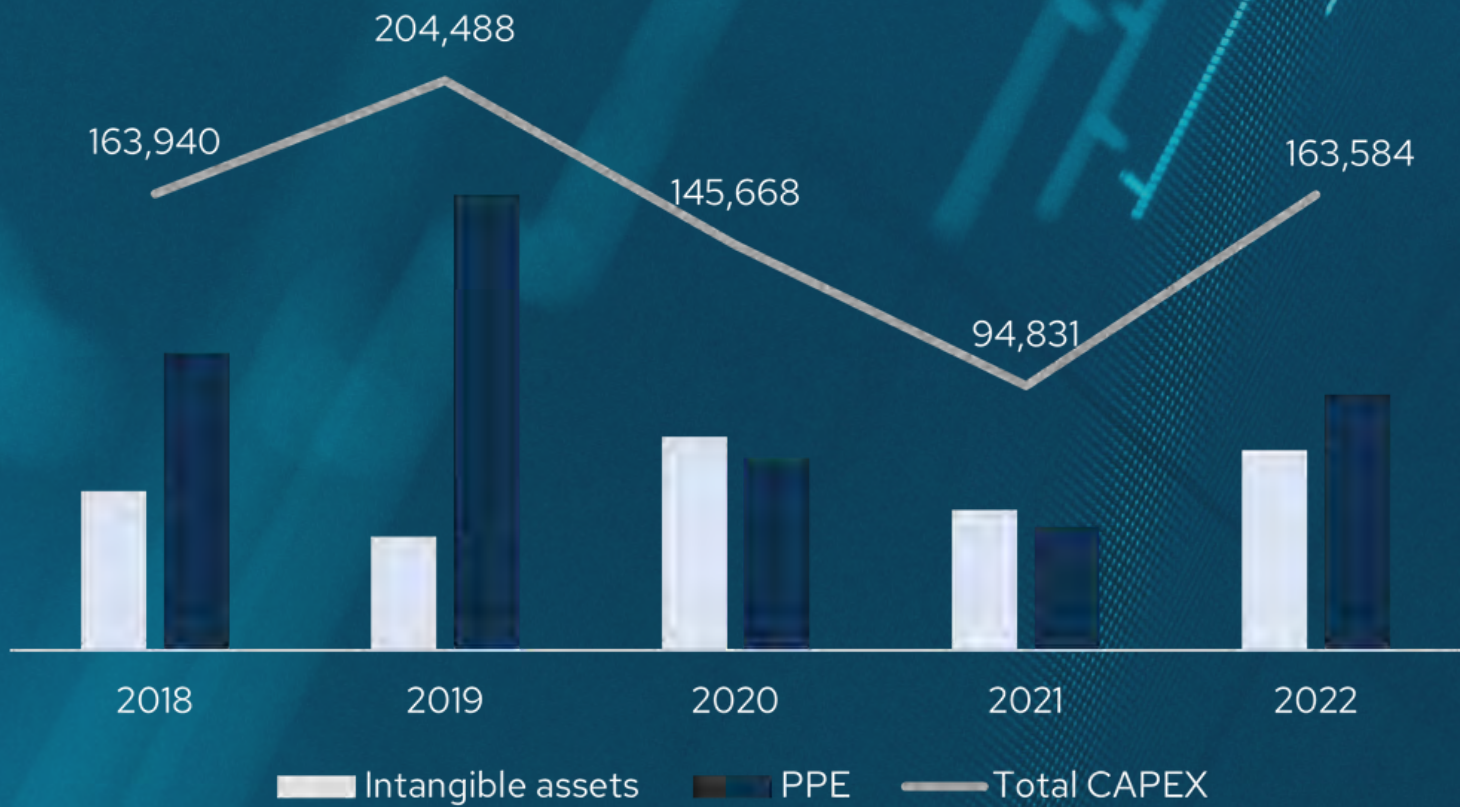
Property, plant and equipment ('000 PLN)	Net value as at 31.12.2022	Net value as at 31.12.2021
Land & Perpetual usufruct of land	142,017	142,020
Buildings and structures	311,972	323,955
Machinery and equipment	358,328	382,551
Fixed assets under constructions	89,111	41,629
Vehicles, other non-current assets	35,886	39,109
Total	937,314	929,264

Source: PANSa

STATEMENT OF FINANCIAL POSITION

Non-current assets

Fig. 21 CAPEX



Source: PANSA

STATEMENT OF FINANCIAL POSITION

Equity and liabilities

The analysis of the asset financing sources shows that the Agency's funds (equity) amounting to kPLN 1,434,288 represent 53% of total liabilities. The remaining 47% are long-term and short-term liabilities in the total amount of kPLN 1,272,629.

Tab. 18 Statement of changes in equity

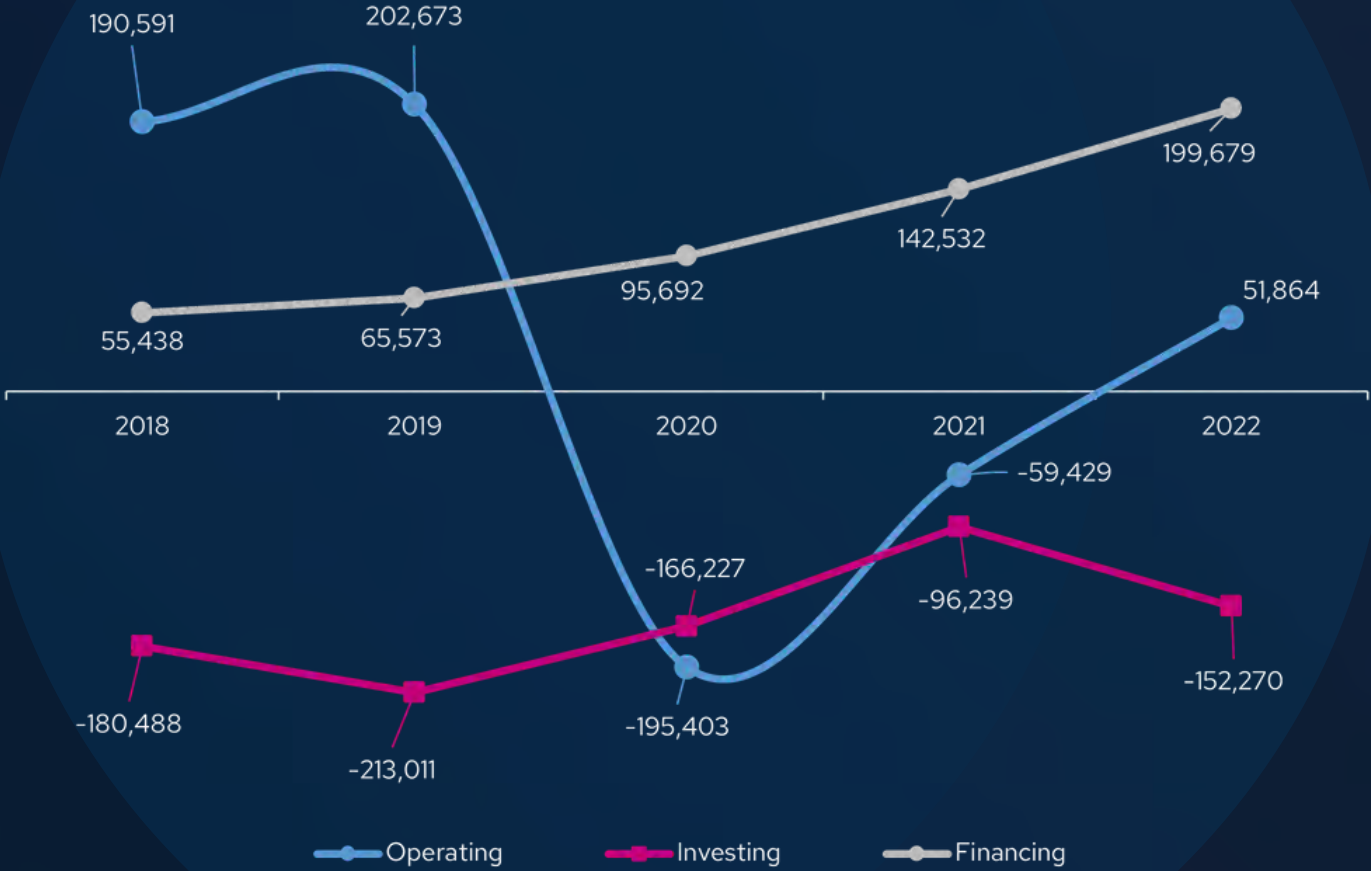
Statement of changes in equity ('000 PLN)	Statutory fund	Reserve fund	Retained earnings	Profit (loss) for the financial year	Accumulated other comprehensive income	Total
As for 31 December 2021	475,022	464,620	0	405,028	11,090	1,355,760
Distribution of prior year profit [*10]		405,028		-405,028		0
Profit (loss) for the financial year				76,616		76,616
Retained earnings						0
Actuarial profit (loss)					1,912	1,912
As for 31 December 2022	475,022	869,648	0	76,616	13,002	1,434,288

Source: PANSA

[*10] Distribution of prior year profit presented in Profits for the financial year column includes 2021 net profit adjustment due to recalculation of adjustments for carry-overs.

STATEMENT OF CASH FLOWS

Fig. 22 Cash flows



Source: PANSa

The net cash flow from PANSa’s operating activities for 2022 was positive and amounted to kPLN 51,864.

Cash flow from operating activities refers to cash flows from the core, statutory activities of PANSa, directly related to the services provided. The positive operating cash flow balance demonstrates the ability of the Agency to generate cash from its core operating activities.

Operating cash flows should provide the Agency with the cash necessary to make investments. In order to ensure the financing of the investments, the Agency acquired an investment loan in the total amount of PLN 550 million and an operating credit facility in the amount of PLN 250 million. The funds obtained from the investment loan may be used in tranches until December 31st, 2023, and the loan should be fully repaid by December 31st, 2033. At the end of 2022, the total balance under the operating credit facility and investment loan was PLN 326 million.

In connection with the investment processes carried out in 2022, net cash flows for the acquisition of intangible assets and fixed assets amounted to kPLN -152,270. The negative cash flows in this area prove that the PANSa continued its activities aimed at modernising the Agency through digitisation as well as development in the area of new technologies.

Net cash flow from financing activities in the analysed period was positive and amounted to kPLN 199,679, which to a large extent resulted from launched loan tranches in the amount of kPLN 167,560 and the impact of grants and donations amounting to kPLN 60,418.

STATEMENT OF CASH FLOWS

Tab. 19 Statement of cash flows

Statement of cash flows ('000 PLN)	For the year ended 31.12.2022	For the year ended 31.12.2021
Cash flow from operating activities		
Profit before tax	96,940	501,882
Total adjustments	-45,075	-561,312
Depreciation	132,020	135,430
Foreign exchange profit (loss)	-773	-1,501
Interest	11,429	2,881
Profit (loss) on investments	145	18,596
Change in provisions	12,711	-170,855
Change in inventories	24	106
Change in receivables	-18,919	6,452
Change in liabilities	35,578	-25,367
Change in accruals	23,581	2,486
Change in adjustments for carry-overs	-203,886	-518,325
Income tax (paid)	0	9,632
Other adjustments	-36,986	-20,849
Net cash flows from operating activities	51,864	-59,429
Cash flows from investing activities		
Disposal of tangible and intangible assets	6	30
Acquisition of tangible and intangible assets	-144,178	-91,298
Development works	-8,099	-4,971
Net cash flows from investments	-152,270	-96,239
Cash flows from financing activities		
Credits and loans	167,560	234,182
Interest received	4,368	1,244
Proceeds from grants	60,418	42,723
Repayment of credits and loans	-14,667	-125,201
Interest paid	-15,844	-4,234
Change in liabilities due to IFRS 16	-2,156	-6,182
Net cash from financing activities	199,679	142,532
Net increases (decreases) in cash and cash equivalents	99,273	-13,136
Change in cash due to exchange rates changes	773	1,501
Balance sheet change in cash and cash equivalents	100,047	-11,636
Operating balance of cash and cash equivalents	202,511	214,147
Closing balance of cash and cash equivalents, including:	302,558	202,511
restricted cash	30,465	29,570

Source: PANSA

INDEPENDENT AUDITOR'S REPORT



TRANSLATION

PKF

This document is a free translation of the independent auditor's report issued by PKF Consult Sp. z o.o. (the "Auditor") on the financial statements of the Polish Air Navigation Services Agency (the "Agency") for the year ended on December 31st, 2022. The original text is in Polish and is the only one that is legally binding. The English translation is provided for information only.

INDEPENDENT AUDITOR'S REPORT ON THE ANNUAL FINANCIAL STATEMENTS

For Minister of Infrastructure

Report on the audit of the financial statements

Opinion on the financial statements

We have audited the accompanying annual financial statements of Polish Air Navigation Services Agency with its registered office in Warsaw at Wieżowa 8 Street, hereinafter referred to as the "Agency", for the financial year from January 1st, 2022 to December 31st, 2022, which comprise the statement of comprehensive income for the year ended December 31st, 2022, the statement of financial position as of December 31st, 2022, the statement of changes in equity and the statement of cash flows for the financial year then ended and related notes including significant accounting principles (policies) and other explanatory information.

The financial statements have been prepared in an electronic format as a file entitled Sprawozdanie finansowe PAŻP 2022.pdf, and have been signed with an electronic signature by the President of the Agency on May 31st, 2023.

The annual financial statements have been prepared in accordance with applicable financial reporting framework of International Accounting Standards, International Financial Reporting Standards and related interpretations published as a Commission Regulation, hereinafter referred to as "IFRS EU".

In our opinion, the accompanying annual financial statements of Polish Air Navigation Services Agency:

- give true and fair view of the financial position of the Agency as of December 31st, 2022, and of its financial performance and its cash flows for the financial year then ended in accordance with IFRS EU and applied accounting principles (policies),
- comply, in all material respects, as to the form and content, with the regulations relevant to the Agency as well as with provisions of the Agency's articles of association.
- have been prepared, in all material respects, based on the properly kept accounting records in accordance with the provisions of Chapter 2 of the Accounting Act.

Basis for Opinion

We conducted our audit of the financial statements in accordance with the National Standards on Auditing being International Standards on Auditing as adopted in Poland by the National Chamber of Statutory Auditors, hereinafter referred to as "National Standards on Auditing", adapted by the Act dated May 11th, 2017 on Statutory Auditors, Audit Firms and Public Oversight, hereinafter referred as "statutory auditors act", applicable to audit of financial statements prepared for the periods ended on December 31st, 2022.

Our responsibilities under those standards are further described in the "Statutory Auditor's Responsibilities for the Audit of the Financial Statements" section of our report.

We are independent of the Agency in accordance with the International Code of Ethics of Professional Accountants (including the International Independence Standards, hereinafter referred to as the "IESBA Code", adopted by a resolution of the National Chamber of Statutory Auditors and the requirements of independence specified in the Act on Statutory Auditors. We have also fulfilled our other ethical responsibilities required by the Act on Statutory Auditors and IESBA Code.

We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our opinion.

Responsibilities of the President of the Agency for the financial statements

The President of the Agency is responsible for the preparation of the annual financial statements that give true and fair view in accordance with IFRS EU, their compliance with applicable laws and regulations and the Agency's articles of association, as well as for keeping the accounting records in accordance with the Accounting Act.



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The President of the Agency is also responsible for such internal control as management deems necessary to enable the preparation of financial statements that are free from material misstatement, whether due to fraud or error.

In preparing financial statements, the President of the Agency is responsible for assessing the Agency's ability to continue as a going concern, disclosing, as applicable, matters related to going concern and using the going concern basis of accounting unless management wither intends to liquidate the Agency or to cease operations, or has no realistic alternative but to do so.

Under the Accounting Act, the President of the Agency is obliged to ensure that the annual financial statements meet the requirements of the Accounting Act.

Statutory Auditor's Responsibilities for the Audit of the Financial Statements

Our objectives are to obtain reasonable assurance as to whether the financial statements as a whole are free from material misstatement, whether due to fraud or error, and to issue an independent auditor's report that includes our opinion. Reasonable assurance is a high level of assurance, but is not a guarantee that an audit conducted in accordance with the above mentioned standards will always detect a material misstatement when it exists. Misstatements can arise from fraud or error and are considered material if, individually or in the aggregate, they could reasonably be expected to influence the economic decisions of users taken on the basis of these financial statements.

While carrying out the audit, in compliance with the National Standards on Auditing:

- we exercise professional judgment and maintain professional skepticism and
- identify and assess the risks of material misstatement of the financial statements, whether due to fraud or error, design and perform audit procedures responsive to those risks, and obtain audit evidence that is sufficient and appropriate to provide a basis for our opinion. The risk of not detecting a material misstatement resulting from fraud or other irregularities is higher than for one resulting from error, as fraud may involve collusion, forgery, intentional omissions, misrepresentations, or the override of internal control and may relate to any area of law and regulations, not only the one that directly impacts the financial statements.
- obtain an understanding of internal control relevant to the audit in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the Agency's internal control;
- evaluate the appropriateness of accounting principles (policies) used and the reasonableness of accounting estimates and related disclosures made by the Agency's President;
- conclude on the appropriateness of use by the President of the Agency of the going concern basis while applying the adopted accounting principles (policies) and, based on the audit evidence obtained, whether a material uncertainty exists related to events or conditions that may cast significant doubt on the Agency's ability to continue as a going concern. If we conclude that a material

uncertainty exists, we are required to draw attention in our audit report to the related disclosures in the financial statements or, if such disclosures are inadequate, to modify our opinion about the financial statements. Our conclusions are based on the audit evidence obtained up to the date of our audit report. However, future events or conditions may cause the Agency to cease to continue as a going concern.

evaluate the overall presentation, structure and content of the financial statements, including the disclosures, and whether the financial statements represent the underlying transactions and events accurately.

Our audit does not involve any assurance on the future viability of the Agency nor the efficiency nor effectiveness with which the President of the Agency has conducted or will conduct the affairs of the Agency.

Under the Act on Statutory Auditors, we are also required to express in the audit report an opinion on whether financial statements comply, as to their form and content, with applicable laws as well as the Agency's articles of association and whether they have been prepared based on the properly kept accounting records. We report on these matters based on the work undertaken in the course of the audit.

Report on Other Legal and Regulatory Requirements

Other information included in the annual report

Other information comprises the financial and non-financial information, other than the financial statements or out report. Other information comprises of the management report for the year ended on December 31st, 2022.

The management report has been prepared in electronic format as a file titled Sprawozdanie z działalności PAŻP 2022.pdf and has been signed with qualified electronic signatures by the President of Polish Air Navigation Services Agency on May 31st, 2023.

Our opinion on financial statements does not cover the other information and, except to the extent otherwise explicitly stated in Report on Other Legal and Regulatory Requirements below, we do not express any form of assurance conclusion thereon. Furthermore, scope of our work related to the other information conducted in the course of our audit and related assurance conclusion is only as we describe below.

Responsibilities of President of the Agency

The President of the Agency is responsible for preparation of the management report in compliance with the law. The President of the Agency is required to ensure that the management report complies with the Accounting Act.

Responsibilities of the Statutory Auditor

Under the Act on Statutory Auditors and the Regulation on Current and Periodic Information, we are required to express an opinion on whether the management report has been prepared in accordance with the Accounting Act and whether it is consistent with the information included in the annual financial statements.

Furthermore, we are also required to state, whether, in the light of the knowledge of the Agency and its environment obtained



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INDEPENDENT AUDITOR’S REPORT

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during the course of the audit, we have not identified material misstatements in the management report, and report on these misstatements if noted.

We have read the management report. We considered whether it discloses the information required by these laws and whether the information included therein is consistent with the information included in the financial statements. Reading the management report we also considered whether, in the light of our knowledge and understanding of the Agency and its environment, it does not include material misstatements.

Opinion on the management report

In our opinion, based on the work undertaken in the course of the audit of the annual financial statements, the accompanying

management report of Polish Air Navigation Services Agency for the financial year ended on December 31st, 2022:

- has been prepared in accordance with Article 49 of the Accounting Act,
- the information presented therein is consistent with the information in the audited financial statements.

In the light of the knowledge of the Agency and its environment obtained during the course of the audit, we have not identified material misstatements in the management report.

Qualified electronic signature on the Polish original

Cezary Bąkiewicz
Statutory auditor no. 12 232

Key Statutory Auditor conducting the audit
on behalf of PKF Consult Spółka z ograniczoną odpowiedzialnością Sp. k.
the audit firm number 477

ul. Orzycka 6 lok. 1B
02-695 Warszawa

Warsaw, date May 31st 2023



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