

REGULATIONS FOR UNMANNED AERIAL VEHICLE FLIGHTS IN POLAND AND OTHER EUROPEAN COUNTRIES – AN ANALYSIS OF THE APPLICABLE LAW

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Summary

In Poland, a growing interest in unmanned aerial vehicles has been observed in successive years. First and foremost, the development trend concerns operations with the use of unmanned aerial vehicles – i.e. drones – employed for sport, recreational, and commercial purposes. The aim of the present study is to familiarize the users of drones with the most important issues related to the various regulations and responsibility for their flights in Poland and other European countries. Unmanned aerial vehicles expand the spatial range in which research can be conducted. The work uses the method of critical analysis and case analysis based on legislative changes in Polish and European law. The research subject addressed the characteristics of the pertinent aviation law regulations, including those applicable to unmanned aerial vehicles. In this context, a study of regulations in European countries was also conducted, indicating the differences between individual countries. The article is a kind of resume of legislative regulations in force in Europe in the context of unmanned aerial vehicles. Extensive legal systems require the pilot of unmanned aerial vehicles to have professional knowledge required to carry out drone missions safely. The conducted analysis of the rules of UAV flights in various countries allows for the conclusion that the introduced changes, aimed at unifying the regulations across all European Union countries, are highly justified. Compared to some other European Union countries, in Poland the implementation of EU regulations in this respect is at an advanced stage.

Keywords

drone • UAV • European Union • aviation law • CAA • PANSZA

1. Introduction – research problems. The evolution of aviation law in Poland

In Poland, a growing interest in unmanned aerial vehicles has been observed in successive years. Drones are earning their place in the economy and will soon become essential to it. The ability to perform certain tasks faster, more safely, and in many instances also much more cheaply, will be the key factors determining the widespread use of unmanned aerial vehicles (UAVs).

Initially, drones were employed mainly for military uses, but with time they began to enter commercial markets, finding their applications in measurement campaigns and various types of inspections. The scale of possibilities related to the use of UAVs makes them an extremely helpful research tool, enabling the reconstruction of the shape, size, and mutual position of objects in the field on the basis of surveys performed and inspection of the technical condition of objects. However, while focusing only on the benefits of the widespread use of modern technologies, we should not forget about the issues related primarily to safety, which are strongly correlated with the existing law regulating the use of unmanned aerial vehicles [Clarke 2014, Clarke and Bennet 2014].

Referring directly to legislative issues, we should note that it was not until the end of 2021 that an attempt was made to unify the regulation of drone flights in the European Union countries. Previously applied regulations were not uniform throughout the European Union. Since 2015, the European Parliament has been working towards reorganizing and systematising this issue. In 2016, the issue of drone flights in airport-controlled zones was regulated, whereas in 2014 the International Civil Aviation Organization (ICAO), responsible for the development and implementation of international legal regulations in the field of air traffic safety, took the stand that flying model aircraft and recreational aircraft are outside its remit and constitute the responsibility of national authorities.

The currently operational Aviation Law Act of July 3, 2002 does not include the definition of the term 'drone'. On the other hand, the Act uses the term 'unmanned aerial vehicle', which should be understood as a device capable of floating in the atmosphere as a result of the influence of air, other than the influence of air reflected from the ground. Over time, the Act has been amended and updated several times. The executive regulation of the above-mentioned Act was the Regulation by the Minister of Transport, Construction and Maritime Economy of September 19, 2016 replacing the Regulation by the Minister of Transport, Construction and Maritime Economy of June 3, 2013 on qualification certificates. The aforementioned Regulation of 2016 introduced the concept of aircraft take-off weight into Polish legislation, supplementing the previously functioning concept of MTOM, i.e. maximum take-off mass. The difference between the terms makes it possible to clarify the categories of the ratings obtained, and thus to clarify the required qualifications of a pilot of unmanned aerial vehicles.

The scope of the acquired qualifications has also changed, and they have been divided into two categories: VLOS (visual line of sight) and BVLOS (beyond visual line of sight), i.e. flights performed within the range of operator's sight and out of that range, respectively. The aircraft category and maximum take-off weight were already functioning additional ratings, and the flights were clearly divided into those performed for recreational purposes, and those performed for commercial purposes.

The current regulations have been modified, and there is no clear division according to the nature of the flight (commercial or recreational).

2. Discussion and research process

The work carried out by the European Parliament has led to changes in the legislation – in Poland and in many other European countries. Since December 31, 2020, new rules for drone flights across Europe apply. At the time of this writing (as of May 2022) we are in a transition period, which is to last until December 2, 2025. Until then, each of the European Union Member States should prepare for the introduction of uniform flight rules. ‘Drones constitute an important branch of the economy that is developing very dynamically, also in Poland. We are one of the world’s leading countries that successfully implement drone systems. The potential of unmanned aerial vehicles has been particularly visible during the Covid-19 pandemic. Drones are already used in Poland today in medical transport and in other services that are important for the economy, among other applications. The new regulations will allow this development to accelerate and, as a result, they will improve the quality of life of the Poles,’ said Marcin Horała, Deputy Minister for Infrastructure.

Ultimately, there will be three categories of flights within the European Union: open, detailed, and certified. The division into the categories depends on the degree of risk, ranging from the open category (with a low level of risk), to the detailed category (medium level of risk), and ultimately, to the certified category (with the highest level of risk). Each drone pilot who wants to fly a UAV weighing more than 250 grams or a drone with a camera, in accordance with the regulations required for the open category, will have to acquire a license that guarantees the performance of a drone mission up to a maximum height of 120 meters, within the pilot’s line of sight.

‘Poland is a country with the highest level of digitization of services supporting the performance of unmanned aerial vehicle operations. The Polish Air Navigation Services Agency was the first in Europe to operate the PansaUTM drone flight coordination system. The latter allows, among other things, for fast, digital, non-verbal communication between air traffic controllers and drone operators. Thanks to that system, drone pilots can quickly check flight possibilities in a given area, digitally submit a flight plan, and obtain permission to fly in a situation where it does not threaten the safety of the aircraft. This is a huge step towards the integration of manned and unmanned aviation.’ – said Janusz Janiszewski, President of the Polish Air Navigation Services Agency.

The ‘open’ category is divided into three subcategories: A1, A2, and A3, based on the operational limitations and requirements imposed on unmanned aerial vehicles and drones:

- A1 – It is allowed to fly over bystanders (with some restrictions), but it is not allowed to fly over gatherings of people;
- A2 – It is forbidden to fly over persons or gatherings of people. The minimum horizontal distance from people is 30 m or 5 m if the drone has a function that limits the flight speed to 5 m/s;
- A3 – It is forbidden to fly over persons and gatherings of people. The minimum horizontal distance from residential, commercial, industrial or recreational areas is 150 m.

'Gatherings of people' are such groups or assemblies of people where the density of people prevents them from moving freely.

In addition to the 'open' category, there are currently national standard scenarios (NSTS) implemented in accordance with the guidelines of the President of the Civil Aviation Authority:

- NSTS-01 for operations within the line of sight (VLOS) or the first person view (FPV), performed with an unmanned aerial vehicle with a take-off mass of less than 4 kg;
- NSTS-02 for operations within the line of sight (VLOS) with a multi-rotor unmanned aerial vehicle (MR) with a take-off mass of less than 25 kg;
- NSTS-03 for operations within the visual range (VLOS) with unmanned aerial vehicles of fixed wing aircraft category (A) with a take-off mass less than 25 kg;
- NSTS-04 for operations in the visual range (VLOS) with helicopter (H) unmanned aerial vehicles with a take-off mass less than 25 kg;
- NSTS-05 for operations beyond the visual range (BVLOS) with unmanned aerial vehicles with a take-off mass less than 4 kg, within a distance of not more than 2 km from the pilot of the unmanned aerial vehicle;
- NSTS-06 for operations beyond the visual range (BVLOS) with multi-rotor unmanned aerial vehicles (MR) with a take-off mass less than 25 kg, within a distance of not more than 2 km from the unmanned aerial vehicle pilot;
- NSTS-07 for operations out of the visual range (BVLOS) with unmanned aerial vehicles of fixed wing aircraft category (A) with a take-off mass less than 25 kg, within 2 km of the unmanned aerial vehicle pilot;
- NSTS-08 for out-of-sight (BVLOS) operations with helicopter (H) category unmanned aerial vehicles with a take-off mass less than 25 kg, within 2 km of the unmanned aerial vehicle pilot;
- NSTS-09 for out-of-sight (BVLOS) operations with unmanned aerial vehicles with a take-off mass of less than 25 kg, performed by operators of unmanned aerial systems with a national approval to fly (BVLOS).

Each of the flights performed in the detailed category requires an authorization to operate. Coordination of unmanned aerial vehicle flights with the Polish Air Navigation Services Agency (PANSa) is conducted through the already mentioned PansaUTM system. PansaUTM is a concept of digital coordination of unmanned aerial vehicles (UAV) and management of applications and approvals for flights within Polish airspace, which consists of PANSa's proprietary operational solutions. The system is integrated with the popular Droneradar application, well known among drone operators, which allows pilots to report their flight to the Air Information Services by performing a Check-In within the application. Flights are conducted within the territory of the country in accordance with the type of geographical zones presented below (Fig. 1).

Types of geographical zones				
New zones	Previous zones	All drones up to 900 g	All drones in the range of 900 g – 25 kg	All drones above 25 kg
DRA-P	P, TSA, TMA, MTMA, MRT, TFR, R	Flights only by permission of managing body		
DRA-RH	(CTR, ATZ) > 6 km	Up to 100 m no permission required	Up to 100 m no permission required / above 100 m permission required	Conditions specified in the ULC permit
DRA-RM	(CTR, ATZ) 1–6 km, P > 500 m	Up to 30 m no permission required	Specified conditions must be met. Flights only by permission of ATS / zone managing body	
DRA-RL	(CTR, ATZ) < 1 km, MCTR, D, TRA, P < 500 m (national park area)	Specified conditions must be met. Flights only by permission of ATS / managing body of the given zone		
DRA-T	new zones	Additional technical requirements specified by PANSAs		
DRA-U	new zones	With the support of specific, verified services provided in the given zone, and requirements specified by PANSAs		
DRA-I	NW, AREA, ADIZ, RMZ, R (outside national park area)	Information necessary for ensuring safety of performing operations using the systems of unmanned flight vehicles		

Source: <https://www.pansa.pl/strefy-geograficzne/>

Fig. 1. Types of geographical zones

From 31 December 2020 to 1 January 2025, the so-called transitional period remains in force within the European Union, aimed at standardizing the provisions of aviation law. Legislative and implementation works in individual European countries are at varying levels of advancement. The analysis of the regulations in selected European countries led to the collation, in a tabular format (Table 1), of the most important rules for flying unmanned aerial vehicles as of 30 December 2020.

Table 1. Tabular summary of regulations for UAV flights in Europe

Countries	Regulations for drone flights
Albania	The regulations are fairly liberal: <ul style="list-style-type: none"> • Drone flights are possible within 5.5 km from the airport, only when the planes are not taking off or landing. • The maximum cruising altitude of the AGL drone is 120 meters. • A distance of at least 30 meters from people and private property must be kept.

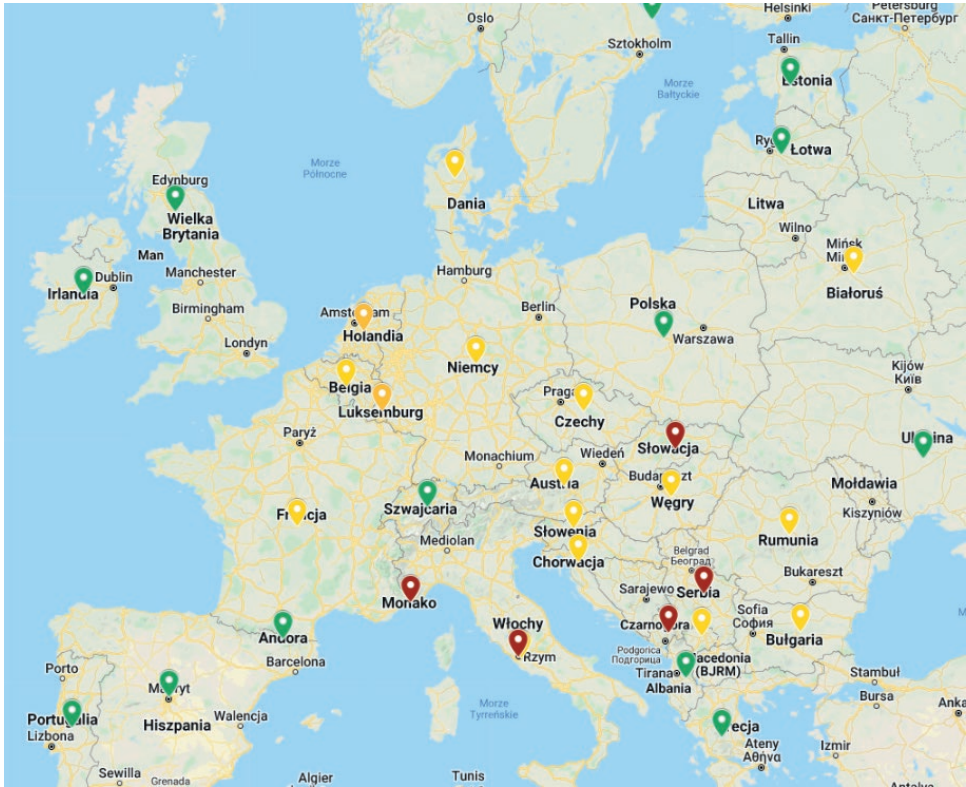
Table 1. cont.

Countries	Regulations for drone flights
Andorra	<p>In Andorra, there are three categories of drones depending on the weight:</p> <ul style="list-style-type: none"> • Category A0: 0–999 grams; • Category A1: from 1 to 3.99 kg; • Category A2: from 4 to 25 kg. <p>For categories A1 and A2, the drone must be registered with the ministry responsible for aviation.</p>
Austria	<p>Austria classifies drones using the joule kinetic energy generated by the drone, which is a measure that includes both weight and speed.</p> <p>Drones with kinetic energy up to 79 joules, i.e. those weighing less than 250 g, do not require a permit.</p> <p>For a drone lighter than 250 g, flights up to 30 meters are allowed without a permit. The fine for unauthorised use is up to 22,000 EUR.</p>
Belgium	<p>Private use:</p> <p>Concerns all drones with the take-off weight up to 1 kg, flying up to 10 meters in height. No drone registration is required.</p> <ul style="list-style-type: none"> • Class 2 <p>This class includes flights up to 45 meters (150 feet) outside cities and towns and outside controlled airspace. In this category, drones can weigh a maximum of 5 kilograms, and they must be controlled directly by the pilot at all times.</p> <ul style="list-style-type: none"> • Class 1b: <p>Drone flights up to 90 meters above the ground outside of controlled airspace. A distance of 50 meters from people and objects on the ground must be kept.</p> <ul style="list-style-type: none"> • Class 1a: <p>Drone flights can take place at an altitude of 90 meters above the ground outside of controlled airspace. In this class, persons may fly.</p> <p>All flights can only be operated during the day.</p> <p>For commercial use, registration and special training are required.</p>
Belarus	<p>The rules are not clearly defined, however, there are designated no-fly zones. No-fly zones are located within strategic and military facilities, as well as within airports.</p>
Bosnia-Herzegovina	<p>There are several categories depending on the weight of the drones:</p> <p>Drone categories are: A1 (249 g–1 kg), A2 (1 kg–2 kg), A3 (2 kg–5 kg), and A4 (5 kg–25 kg).</p> <p>Drones can only fly during the day within the pilot's line of sight. A distance from people should be at least 30 meters away, and from gatherings of people, at least 50 meters away. Drones weighing more than 1 kg should be insured (with third party liability insurance).</p>
France	<p>It is mandatory to register drones over 800g via a website.</p> <p>The drone is then given a registration number, which must be permanently visible on the drone and must be readable to the naked eye within 30 centimetres. The drone pilot must be able to provide proof of registration in the event of an inspection.</p> <ul style="list-style-type: none"> • Only VLOS flights (within the pilot's eyesight), and only during the day, are allowed. • The maximum flight altitude is 150 meters or up to 50 meters above a building up to 100 meters high. • Drones cannot fly over people; airports; over private property (unless authorized by the owner); over military installations; prisons; nuclear power plants; monuments or national parks.

Spain	<ul style="list-style-type: none"> • Flights up to 120 meters, VLOS. • Night flights are possible with drones below 2 kg and up to 50 meters. • Flying over people or large crowds is prohibited. • Distance of 150 meters from buildings must be kept; 50 meters from people or vehicles not related to the operation of the drone. • Flights possible within 8 km from airports or in areas where airplanes fly. If approved for BVLOS flights (out of sight), they must be operated within 15 km of the airports. • No drone flights are allowed in sensitive areas, including government and military facilities. The use of drones and aerial recording of these objects is prohibited. • No flights are allowed over national parks without AESA approval. The use of drones in no-fly zones must be approved by the Spanish Ministry of Defense. Response time approximately 1 week. • Different regions may have their own regulations – drone operators must check this before flying.
Germany	<p>The regulations are very complex, and they very often depend on the authorities of individual federal states.</p> <ul style="list-style-type: none"> • All drones and model aircraft weighing more than 0.25 kilograms must be labelled with the name and address of the owner. • Drones may only be operated by persons authorized by the Federal Aviation Authority. • Drones weighing more than 5 kg must be in sight at all times. • Flights may be conducted while maintaining the minimum distance of at least 100 meters from people, prisons, military complexes, highways, nature reserves, and hospitals.
Slovakia	<p>Flights are only possible after obtaining the consent of the Ministry of Defense of the Slovak Republic. Applications for a permit to fly must be submitted at least 7 days prior to the scheduled flight, and it must include the aircraft type information, certificate of liability insurance, location and duration of the flight, and a certificate of payment of an administrative fee of EUR 200.</p>
Vatican	<p>Drone flights are prohibited.</p>
Italy	<p>Drone flights should take place during the day at a distance of 200 meters from buildings and sensitive infrastructure. The operator is obliged to insure the drone and obtain all permits depending on the zones. Drones can fly within 5 km of airports.</p>

Source: Author's own study

The conducted research on the diversified aviation regulations of individual European countries leads to the conclusion that there exists a need to unify the law. The illustration below presents a map with markers signifying the degree of restrictiveness of legislative solutions functioning in individual countries. Countries with strict regulations are shown in brown. Green indicates countries with very soft drone regulations. Other countries have been marked with yellow markers.



Source: Author's own study

Fig. 2. Designation of countries depending on the strictness of aviation regulations for the flights of unmanned aerial vehicles

Despite the new legislative solutions introduced by the European Parliament, many legal provisions still remain inoperative – a dead letter. This applies, *inter alia*, to the provision related to the classification of unmanned aerial vehicles (C0, C1, C2, C3, C4), which has already been postponed several times. According to the EU Regulation, the transition period is scheduled to last from July 1, 2020 to December 31, 2022, but it should be emphasized that as of May 16, 2022 there is not a single drone with a classification issued as yet. In this context, it seems reasonable to continue research and follow subsequent changes in regulations.

3. Conclusions

The developing market of unmanned aerial vehicles entails the need to change the regulations that allow for the standardisation of the rules of their operation. In this article we presented an analysis of the legal provisions in force in Poland, focusing on the require-

ments for drone operators. In addition, the article also addressed the issues related to the analysis of the regulations in other European countries, along with an indication of the differences preceding the introduction of the provisions of the transition period and the adaptation of legislative solutions in individual European countries. Extensive legal systems require that the pilots of unmanned aerial vehicles possess professional knowledge aimed at carrying out drone missions in a safe manner. The conducted analysis of the rules for UAV flights in various countries has led to the conclusion that the introduced changes aimed at unifying the regulations for all European Union countries are highly pertinent and justified. Compared to the European Union countries, Poland is a country in which the implementation of EU regulations in this respect is at an advanced stage. The analysis of the legal provisions allows for the conclusion that not all provisions introduced by the European Parliament are being implemented. This applies, for example, to the need to classify all unmanned aerial vehicles by the end of the current year i.e. 2022. Taking into account the fact that after an almost two-year transition period, no drone in the European Union has obtained such classification as yet, it seems reasonable to continue our research and follow further changes in the regulations.

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<https://szewo.com/grecja-latanie-dronem/>

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