

LEGAL REGULATION OF THE USE OF DRONES: HUMAN RIGHTS AND PRIVACY CHALLENGES

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Abstract. This research paper examines the impact of unmanned aerial vehicles (UAVs), notably drones, on contemporary society and analyses the legal challenges and potential human rights and privacy violations associated with their widespread use. Specifically, the article focuses on the issues of invasion of privacy, illegal collection and use of personal data, and illegal display and distribution of information. The main goal of this work is to emphasise the need for legal regulation of the use of drones, which balances human rights and freedoms, addresses security and privacy, and also promotes the development of technologies in this area.

It should be noted that drones have opened up new opportunities in various fields of industry such as environmental monitoring, agriculture, medical care and intelligence service. However, along with these advantages, there are serious legal problems that require special attention of the legislation.

The article provides examples of legal regulation, analyses the use of drones in the USA, EU, Japan and the Netherlands, which can be taken as a basis for the development and improvement of national legislation in other countries. The peculiarities of the legislative process in these countries are considered, as well as limitations in the existing legislation. The main areas of regulation include:

- restriction of access to airspace,
- setting the minimum distance from settlements and objects,
- control over the use of cameras and other data collection devices,
- application of sanctions for violation of established rules.

An important aspect of regulation is establishing the liability of drone operators and their owners in case of violations of safety, privacy and human rights regulations. The authors emphasise the need to create mechanisms to control and monitor compliance with the rules for the use of drones and the protection of personal data.

The article also describes proposals for improving drone legislation and policy, including

the development of security and privacy standards, conducting educational programs for drone owners, and providing citizens with access to information on the rules of the use of drones.

In conclusion, this scientific article emphasises the importance of legal regulation on the use of drones to ensure a balance between human rights and freedoms, data security and privacy, as well as the development of technologies in this area. Analysing the experience of the USA, the EU, Japan and the Netherlands, it is possible to highlight the development and improvement of national legislation in other countries that are facing similar legal challenges.

Keywords: drones, legal regulation, human rights, protection of personal data, confidentiality, international norms, cyber security

INTRODUCTION

In the world of innovative technologies, drones are used in various spheres of human activities. Drones can be used to solve complex tasks, provide security, conduct surveillance and gather information. However, the use of drones can create problems from the point of view of human rights and privacy, which raises the question of the need for legal regulation of the use of drones.

Drones are a fairly new technology that is increasingly occupying a significant position in the market. The use of drones enables significant cost reduction and increased productivity in various industries, thereby driving the development of the drone market. However, the use of drones raises questions regarding safety and the confidentiality of personal data. To address this, legal regulation should ensure a balance between technological progress and the protection of human rights and confidentiality.

The primary problem related to the utilisation of drones resides in the infringement of privacy. Drones have the capacity to engage in video recording or gather personal information without any consent of an individual, thereby posing a threat to human rights. Moreover, drones can contaminate the surrounding environment with noise, consequently compromising the right to a healthy and serene existence.

The absence of standards and rules for drone usage emerges as one of the paramount issues. Legal regulation is required to establish what actions involving drones are allowed or prohibited. In particular, it is necessary to determine restricted flight areas for drones, such as no-fly zones encompassing airports, areas of public assembly, and any other locations where drone flights could endanger life and health. Furthermore, setting forth the requirements for the technical characteristics of drones employed for commercial and private purposes is essential to guarantee their safety and safeguard the confidentiality of personal data.

Therefore, upon analysing the situations, it becomes evident that this could potentially infringe upon privacy rights and the protection of personal data, which are guaranteed.

- Article 8 of the European Convention on Human Rights, (European Convention on Human Rights, 1950);

- Article 17 of the International Covenant on Civil and Political Rights, (International Covenant on Civil and Political Rights, 1976);
- Article 12 of the Universal Declaration of Human Rights (Universal Declaration of Human Rights, 1948);
- Article 16 of the Convention on the Rights of the Child (Convention on the Protection of the Rights of the Child, 1989).

Another issue is the possibility of drones being used for illegal activities such as espionage, surveillance, and stalking. This can constitute a violation of rights to privacy, freedom from violence, and other rights protected by various international conventions and norms, namely

- The Convention for the Protection of Human Rights and Fundamental Freedoms (1950): Espionage can violate the right to private life, which is guaranteed by this convention (Convention for the Protection of Human Rights and Fundamental Freedoms, 1950);
- The Cybercrime Convention (2001): Some actions related to the use of drones for espionage may be recognised as cybercrime (Cybercrime Convention, 2001).

In addition, the use of drones can pose a problem in terms of airspace security. Some drones have the potential to endanger the safety of aircraft flights and other airborne transportation. This can be a concern in terms of flight safety and adherence to other important international norms.

To address these issues, clear rules and restrictive measures are necessary to govern the use of drones. This should include regulations concerning safety, privacy, and protection of personal data. Such rules can be established at the national legislative level or through international agreements and conventions.

For example, the European Union has established a regulatory framework that governs the use of drones within the EU territory. According to this framework, drones require certification and flight permits, and they must adhere to specific safety and personal data protection standards.

If human rights and privacy have been violated as a result of drone usage, individuals can seek justice and compensation by turning to the European Court of Human Rights (ECtHR). For instance, in the case of “Malaysia Airlines Plane Crashes in Ukraine MH17” the use of drones for data and information gathering violated the right to privacy protected under Article 8 of the European Convention on Human Rights (ECHR). (Case “Malaysia Airlines Plane Crashes in Ukraine MH17”, 2014).

Therefore, the use of drones can give rise to issues related to human rights and confidentiality, making it crucial to establish clear rules and limitations for their usage. Such rules should take into account human rights, international norms and conventions, as well as ensuring airspace safety and personal data protection. In case of human rights and confidentiality violations, one can seek justice and compensation through the ECtHR.

Moreover, it is important to define rules for the use of drones in the field of filming and advertising. Drones can be employed in film production, sports events, and other mass gatherings, as well as for advertising goods and services. However, it is necessary to consider that drones may infringe upon privacy and collect personal information, which may not align with data protection legislation.

Taking into account the aforementioned issues, there is a need for effective legal regulation that ensures a balance between technological advancements and the protection of human

rights and confidentiality. This regulatory framework should encompass legislation that governs the utilisation of drones, including the establishment of technical requirements for drones and the designation of no-fly zones. Additionally, it is crucial to establish robust control and oversight mechanisms for drone usage, as well as define rules for the collection and processing of personal data obtained through drones.

Several countries around the world, with significant experience in drone regulation, can serve as exemplary models for nations that are in the early stages of developing their own legislative frameworks. The article highlights an analysis of countries with extensive expertise in crafting drone legislation. One notable example of successful legal regulation of drone usage is the United States, which has implemented comprehensive rules through the Federal Aviation Administration to govern drone operations. (Federal Aviation Administration, 1958)

Japan has introduced very restrictive legislation regarding the use of drones. Specifically, drones are not allowed to fly over national parks and other designated areas determined by the Japanese government. There are also prohibitions on flights over major highways and densely populated areas. This makes drone deliveries and the use of drones for commercial purposes difficult. However, the use of drones for monitoring during natural disasters and other emergency situations is permitted.

In the Netherlands the use of drones is allowed for commercial purposes, provided that safety regulations are observed. Operators are required to undergo a specific training course and obtain a certificate. Drones are not allowed to fly over restricted areas such as airports and military bases, as well as over major highways and densely populated areas. The Netherlands also adopted rules regarding the protection of personal data that must be adhered to when using drones for data collection.

The European Union has implemented a comprehensive regulatory framework governing the use of drones within the EU territory, as established by Regulation (EU) 2019/947 of the European Parliament and of the Council dated June 5, 2019. This regulation aims to harmonise the rules on the operation of unmanned aircraft and the mandatory requirements for the permits of unmanned aircraft, as well as regulate their exploitation within the European Union.

According to this framework, drones require certification and flight permits, and they must adhere to specific safety and personal data protection standards. The use of drones for commercial purposes, such as goods delivery, is allowed, but it must comply with safety and confidentiality rules. (Regulation EU 2019/947, 2019).

When it comes to Ukraine, the use of drones is regulated by the Air Code of Ukraine as of 2011 and the order of the State Aviation Service of Ukraine, "Approval of the Aviation Rules of Ukraine 'Rules for the Use of Airspace of Ukraine'" as of September 14, 2018, №. 1056/35508.

It contains relevant provisions regarding the regulation of aircraft operations, including unmanned aerial vehicles, and establishes requirements for drone management, flight restrictions, and rules for interaction with other aircraft and ground infrastructure. There are also other documents that may apply to unmanned aerial vehicles, such as orders from the State Aviation Administration of Ukraine concerning flight safety, which specify the requirements for drone flight safety in Ukraine. The use of drones is widespread in various

fields, such as research, agriculture, logistics, entertainment, and currently even in the military sector.

In many countries, the legal regulation of the use of drones is based on the requirement for a special permit or license to operate drones. In Ukraine, there are specific categorisations of drones based on weight, size, and equipment with certain systems and mechanisms. The regulation on the use of drones in Ukraine is determined by the resolution of the Cabinet of Ministers of Ukraine “On Approval of the Procedure for the Use of Ukrainian Airspace.”

Therefore, the norms governing the use of drones varies depending on the country and region, but they all deal with issues related to human rights and confidentiality. One of the main challenges associated with the use of drones is the collection and storage of personal data. Some drones are equipped with cameras, sensors, and audio recording devices that gather large amounts of data about people, including information concerning their location, appearance, and conversations. This constitutes the relevance of the article. The collection of such information can be used to detect theft, blackmail, stalking, and other dangerous activities.

Hence, the purpose of this article is to provide reasoned conclusions regarding the legal regulation of the use of drones, specifically the challenges for human rights and confidentiality.

MATERIALS AND METHODS

As part of the research, it was appropriate to analyse the legal regulation of the use of drones. To ensure a quality analysis of the legal framework and obtain reasoned conclusions, a combination of methods was applied, complementing each other and allowing for a comprehensive study of the issue.

Analysis and synthesis method: This method involves dissecting the legal framework into individual components, enabling a detailed examination of the legal regulation of drones from various perspectives, such as safety, privacy, and technical requirements. During the synthesis process, the analysed components are combined, helping to identify issues, gaps, and prospects for the development of legal regulation in the field of drones.

Comparative legal method: The application of this method allows for the comparison of legal acts and experiences in regulating the use of drones in different countries, including the United States, the Netherlands, Japan, and the EU. Conducting a comparative analysis helps identify common and distinctive features and determine the most effective approaches to legal regulation of drones.

Formal legal method: Utilising the formal legal method involves analysing the texts of legal acts, as well as their systematisation and classification, to identify general and specific principles underlying the legal regulation of the use of drones. This allows for the identification of problematic areas, inconsistencies in provisions, and potential conflicts between different legal norms.

Historical method: Researching the historical aspect of the development of legal regulation of the use of drones helps identify key stages of its formation and trends in the development. Applying the historical method contributes to a better understanding of the current state of the issue and the ability to forecast further changes in the legal regulation of this sphere.

By employing the aforementioned methods, the study of the legal regulation of the use of drones in different countries was conducted, its impact on human rights and privacy was

reviewed, and issues and gaps in existing legislation were identified. The obtained research results allowed for the formulation of recommendations for improving the legal regulation of the use of drones, aiming to balance human rights and freedoms, data security and privacy, and the advancement of technologies in this field.

RESULTS AND DISCUSSION

In contemporary world, the use of drones is becoming more and more common in various industries such as transportation, forestry and agriculture, military applications and many others. Meanwhile, along with the growing popularity of drones, there are also problems and challenges associated with their use. One of the main problems is the issue of confidentiality and protection of human rights. In this regard, legal regulation of the use of drones is becoming increasingly important to ensure safety and protect people's rights.

Legal regulation plays an important role in ensuring privacy and protecting human rights, as it defines the legal standards that govern the processing and protection of personal data, including sensitive data that can be used to identify a person.

Legal norms, such as the Convention for the Protection of Human Rights and Fundamental Freedoms and the General Data Protection Regulation (GDPR), establish rules and requirements for the processing and storage of personal data, in particular regarding their confidentiality and security.

The Convention for the Protection of Human Rights and Fundamental Freedoms (ECHR) is an international document that defines basic human rights and freedoms that must be protected by member states. It sets standards for the right to life, liberty and security, freedom of thought, conscience and religion, freedom of expression, right to private and family life, and other rights.

The GDPR is a European Union law that aims to protect the personal data of EU citizens. It sets standards for the collection, processing and storage of data, as well as defines the rights of individuals whose personal data is processed. The GDPR also contains requirements for data security and protection, including protection against unauthorized access, loss and destruction.

These legal standards also define a person's rights to access their personal data, including the right to have it corrected or removed if it is improperly stored or used in an unauthorized manner. In addition, they establish liability for organizations and individuals that collect and process personal data in case of violation of human rights to privacy and security of their data.

The legal regulation of the Air Code of Ukraine recognizes that the use of drones involves determining the validity of ownership, establishing no-fly zones, approving flight rules, establishing requirements for the qualifications of drone pilots, as well as establishing requirements for the technical condition of drones and their equipment. However, in addition to this, legal regulation should also ensure confidentiality and protection of people's rights, including their rights to privacy and personal information.

To ensure privacy and protect human rights when using drones, it is necessary to establish control mechanisms for the collection, processing and storage of personal data that may be obtained during drone flights. It is also important to set limits on banning drone flights over certain areas that may be related to privacy.

Therefore, legal regulation plays an important role in ensuring privacy and protecting human rights, providing standards and requirements for the processing and storage of personal data and establishing liability for their violation.

Drones (unmanned aerial vehicles in other words, quadcopters) are aerial vehicles that are controlled from afar using remote control or software with predefined routes. Drones can come in many shapes and sizes, from small multi rotors used to capture aerial video to large unmanned aerial vehicles used for heavy duty security, research or cargo transport. The flight height of the drone should not exceed 120 meters, and its speed should not exceed 160 km/h.

The use of drones is governed by the laws of the country in which they are used. Below are the general principles of legal regulation of the use of drones, which are often used in different countries of the world:

Drone registration: Legislation requires drone owners to register their equipment with the relevant authorities.

Operator Licensing: Drone operators must be licensed to operate drones, which can be obtained after completing specific training and certification.

Regulation of flight locations: Many countries have legislation that restricts the locations where drones can be flown (for instance, at airports, over populated areas, close to infrastructure).

Maximum flight height restrictions: Legislation may limit the maximum flight height of drones.

Safety rules: Drone operators must follow certain safety rules during flights (for example, do not allow contact with other objects, do not fly over people).

Liability: Legislation defines the liability of drone owners and operators in case of violation of the rules of use.

Legislation may also contain other rules and restrictions on the use of drones, depending on the specific needs of the country.

Drones can be used in a variety of industries, including military and civil aviation, medicine, transportation, environmental monitoring, manufacturing, research, agronomy, logistics, and entertainment. The main applications of drones include:

Aerial photography and videography: Drones can be used for aerial photography and videography for film and television, marketing and advertising, architectural design, wedding photography, and more.

Environmental and land monitoring: drones can be used to monitor climate change, forests, oceans, water resources research, environmental pollution control, etc.

Search and rescue: Drones used in search and rescue. They can be effective tools for finding people in emergency situations such as floods, earthquakes, snow drifts, forest fires, etc.

For example, in Ukraine, the Shukach unit of the State Emergency Service uses drones to search for people during emergency situations. Thanks to drones, it is possible to quickly and efficiently identify damaged buildings, check the condition of roads and bridges, and identify people who need help. Drones are also used for water rescue. If necessary, the drone can be equipped with a floating camera or even food supplies that can help a person in distress on the water. In addition, drones can be used to deliver medicines and medical equipment to hard-to-reach areas where emergencies may occur. In such cases, a drone can deliver several times faster than conventional transport, which can save people's lives.

Transportation of goods: drones can be used for transporting goods. This can be beneficial in cases where it is necessary to deliver cargo to a remote area where there are no roads or other means of access for traditional transportation. Additionally, drones can be useful for delivering medical equipment or medications to remote areas or in emergency situations. Specialized drones with higher payload capacity are utilized for cargo transportation. They are capable of carrying large loads, including packages, mail shipments, equipment, and more. One example of the use of drones for cargo transportation is the Amazon Prime Air project, which aims to deliver goods to customers using unmanned aerial vehicles. The project involves the use of specialized drones that can carry payloads of up to 2.3 kg for distances of up to 24 km from the company's warehouse. The idea is indeed remarkable, but it has not gained widespread acceptance and is currently considered a failure. Ukrainian startup Pegasus Aeronautics is working on developing unmanned aerial taxis using drones. This project is being developed with the aim of improving transportation infrastructure in megacities, reducing traffic congestion, and enhancing passenger safety. Moreover, some Ukrainian companies are using drones for delivering goods to customers. For example, the company "Nova Poshta" carries out delivery of small packages using drones in a limited region. This allows the company to significantly reduce delivery time and transportation costs. Furthermore, other companies are already using drones for delivering goods to remote locations and even to islands where there is no other means of transportation available.

Agriculture and Forestry: In agriculture and forestry, the use of drones can be useful in many ways, including crop control, soil monitoring, forest surveys, pest detection, and other tasks.

With the help of drones, you can get detailed pictures of a field or forest, which allows you to assess the condition of plants, identify problem areas and identify potential places for improving plant growing processes. Also, drones can help in surveying forests, detecting pests and assessing the condition of wood. In addition, drones can be used to spray fertilizers or plant protection products, which can be more efficient than traditional methods such as agricultural machinery or manual spraying. Ukraine also uses drones in agriculture and forestry. For example, the state company "Ukrlis" uses drones to monitor forest areas and detect changes in the forest cover. In addition, drones are used in Ukraine to spray fertilizers and plant protection products on fields.

Construction and Architecture:

- Building inspection: Drones can easily ascend to heights and explore the condition of buildings and structures from an aerial perspective. This allows for obtaining detailed information about the state of roofs, facades, pipelines, and other elements.
- Construction site mapping: Drones are capable of gathering aerial data and creating three-dimensional models of construction sites, enabling more efficient planning and monitoring of the construction process.
- Material transportation: Some drones can be used for transporting small loads within a construction site, including tools and building materials.
- Planning and design: Drones can be employed to create detailed three-dimensional models of buildings and their surroundings, assisting architects and designers in better understanding the space and planning structures.
- Construction monitoring and control: Drones can be utilised for construction monitoring, allowing for progress tracking and timely detection of any issues or malfunctions.

Military application: drones are widely used in the military sphere, which allows conducting reconnaissance, carrying out strikes, and ensuring the security of military and civilian objects.

One of the main types of military use of drones is reconnaissance and territory monitoring. Due to their compact size and the ability to fly at a height higher than enemy action can provide, drones can collect important data on the location of enemy forces, movements of equipment and military equipment, monitoring activities and other factors that can be important for planning military operations.

Drones can also perform strikes, enabling the military to respond quickly and effectively to a threat. Some drones can be armed with missiles or bombs, which allows making strikes from a height and increases the safety of pilots.

In addition, drones are used to ensure the security of military and civilian facilities, monitoring the territory and detecting threats. Drones can be used to ensure border security, protect territories from terrorist attacks, and other purposes.

However, the use of drones in military operations can also raise questions about the ethics and legality of the use, particularly with regard to civilian casualties and human rights.

Entertainment: Drones can be used for fun and entertainment, such as drone racing, quadcopter movies, aerial photography of cities, etc.

Research: Drones are used to collect data and study various phenomena and processes, such as the study of weather, geological formations, archaeological sites, marine animals, birds, archeology, geology, ecology, meteorology, agriculture, etc. For example, in geology, drones can be used to capture geological formations and landscapes that are not available for viewing from the ground. In ecology, drones can be used to study animals and their behaviour, monitor ecosystems and vegetation, and detect environmental pollution. In archaeology, drones can be used to photograph archaeological sites from the air and explore ancient settlements and cities. Drones can collect data in hard-to-reach places, where a person cannot reach, and collect information from a height, which allows you to get a more complete picture of the processes taking place on the ground and in the air.

Having reviewed a significant amount of information about the use of drones, it can be concluded that drones are used in nearly all existing industries and is a very promising technology. The use of drones in agriculture, forestry, construction, cargo transportation, search and rescue, military, entertainment, research and other areas is able to facilitate the work of people and increases the efficiency of every process. However, it is necessary to take into account the legal aspects of the use of drones and their safety in order to avoid negative consequences and ensure the safety of people and property. Countries around the world have already adopted various legislative acts that regulate the use of drones and ensure their safety.

At the same time, in order to solve the problem of legal regulation, it is necessary to study the history of the formation of this field.

Since the beginning of the 21st century, the development of drones began to gain momentum, due to the growing interest in the use of drones for commercial, civil and scientific purposes. In the process of designing drones, new positive ideas of use emerged, which manifested the problems which the countries that used drones had to tackle, such as flight safety and privacy.

The use of drones is becoming increasingly popular, and countries around the world are introducing rules and regulations to ensure safety and protect privacy.

The regulations governing the use of drones can vary depending on the country and its legislation. However, there are several key aspects that are generally regulated by laws in most countries:

- Registration of drones and their owners.
- Requirements for drone pilots and qualifications.
- Restrictions on maximum flight altitude and distance from the pilot.
- Prohibition of flights in certain areas, such as airports, over populated areas, and restricted zones.
- Requirements for drone equipment, such as built-in collision avoidance systems, as well as labelling and identification requirements for drones.

For example, in Ukraine, the use of drones is regulated by the Order of the Ministry of Ukraine on the airspace of Ukraine, which includes relevant requirements for drone registration, pilot qualifications, limitations on maximum altitude and flight distance, prohibition of flights in certain areas, and requirements for drone equipment.

It's important for drone operators to familiarise themselves with the specific regulations and requirements of their country to ensure compliance and safety in drone operations.

The first country that is one of the best examples of positive experience is New Zealand. They first passed the Drones Act, the New Zealand Civil Aviation Authority (CAA), which regulates the use of drones for commercial and recreational purposes, as well as for scientific and research purposes. The law provides for the registration of drones and the requirement to obtain a license for certain activities, such as aerial photography or delivery. Here are some positive aspects of drone regulation in New Zealand: (Civil Aviation Authority of New Zealand, 1999).

Registration of drones and pilots: in New Zealand, all drones used for commercial purposes must be registered with the Ministry of Transport and licensed. In addition, drone pilots must also undergo special training courses and pass exams to obtain qualifications.

No-fly zones for drones.: New Zealand has designated areas where drones are prohibited from flying, for instance, airports, hospitals, and prisons. In addition, the maximum flight heights for drones are determined depending on their specifications.

Application of technologies to ensure security: in New Zealand, various technologies are used to help ensure the safety of drone flights. For example, automatic collision warning systems with other aircraft, GPS navigation systems, flight zone restriction systems, and others.

Cooperation with the public: New Zealand actively engages with the public and other stakeholders to ensure safety and understanding around the use of drones. Various information campaigns, trainings and education programs for drone pilots are conducted, and information on the regulation on the use of drones is made available to the general public.

Development of the drone industry: New Zealand has a state-of-the-art drone industry, which ensures the production and advancement of new technologies. This makes it possible to reduce the cost of drones and makes these technologies available to a wide range of users.

Use of drones in various fields: in New Zealand, drones are exploited in numerous fields, including the forestry and agricultural industries, environmental monitoring, delivery of

goods and services, tourism and others. This ensures the development of the economy and the reduction of the impact on the environment.

All these aspects contribute to the growth of the use of drones in New Zealand and ensure the safety of flights and the use of these technologies in various areas (Civil Aviation Authority of New Zealand, 1999).

The second country, where drones are used in many areas, including land management and agriculture, is Japan. Japanese authorities introduced drone regulation in 2015, and in 2019 elaborated national safety standards and requirements that include drone registration and compliance with certain rules to ensure safe flights. Thus, Japan has experience in regulating the use of drones, which can serve as a positive example for other countries. It is deemed necessary to highlight some aspects that have become key in this process:

Regulatory Framework: Japan has enacted legislation that regulates the use of drones. The government has established no-fly zones, set maximum flight altitudes and required registration of these devices by the owners. This allowed the government to control the use of drones and prevent dangerous situations.

Owner Qualifications: Japan requires drone owners to complete certain training courses and obtain qualifications. This ensures that drone owners have the necessary knowledge and skills to operate the devices safely.

Cooperation with industry: Japan actively collaborates with drone manufacturers and other stakeholders to develop safety standards and technical requirements. This enables the use of drones that meet high safety and quality standards.

Warning system: Japan has developed a warning system that automatically detects drones approaching airplanes or other aircraft. This is a way of preventing dangerous situations and ensuring safety in the air.

Regulation of the use of drones in Japan began with the adoption of the law “On special measures to ensure the safety of drones”, which was passed in 2015. Under this law, drone owners must register their devices and obtain permission from the authorities. Areas where drones are prohibited from flying were also identified, such as airports, military bases and other location.

The Japanese government is also actively working with drone manufacturers and other stakeholders to develop safety standards and technical requirements. In particular, in 2018, a task force was established to draft safety standards for drones, which consists of government representatives, drone manufacturers, academic experts and other stakeholders.

Moreover, Japan has developed warning systems that automatically detect drones approaching airplanes or other aircraft. Such warning systems are effective means of preventing dangerous situations and ensuring safety in the air. (Japan Civil Aviation Bureau, 2007).

A third example under analysis is Sweden, where rather progressive rules for the use of drones exist. It is prohibited to fly drones over private land without the owner’s permission, and there is also a limit on the maximum flight height. Sweden has also developed a special program for registering drones and identifying their owners (Federal Office of Civil Aviation Act).

Sweden is one of the countries that shows positive experience in regulating the use of drones. Sweden has adopted legislation that regulates the use of drones, including safety and privacy requirements.

In Sweden, drones that weigh more than 7 kg or fly at an altitude of more than 120 meters require a special flight permit from the Civil Aviation Administration. Also, drones must be registered and have an accident insurance policy. (Federal Office of Civil Aviation, 1920)

Sweden also recognises the potential of using drones in various sectors of the economy, such as agriculture, medicine, logistics and others. Swedish companies already use drones for data collection, mapping, research and other purposes.

In addition, Sweden is home to many innovative companies that develop drones and other unmanned systems. In particular, the Ericsson company develops communication systems for drones, which allows them to work safely and efficiently in large cities and other territories.

Overall, Sweden is an example of a country that understands the importance of using drones and creates the necessary conditions for their safe and responsible use.

The fourth country showing successful experience is Canada. In 2019, they introduced the new Unmanned Aerial Vehicle Act, which enforces stricter safety requirements and protects people's privacy rights. The law requires drones to be registered, licensed and follow certain rules to ensure safe flights.

Canada also has a track record of regulating the use of drones and flight safety, which details the following positive aspects:

Establishing rules for the safety of drone flights: Canada has a drone safety program that includes rules that drone pilots must follow to ensure safe flights and avoid potential hazards. Such rules include maximum flight altitude, distance to airports and other restrictions.

Registration of drones: in Canada, drone pilots must register their device and obtain a registration number, which must be displayed on the drone. This makes it easier to identify drones and their owners in case of drone violations.

Prohibition of flights over certain territories: Canada has bans on drone flights over certain areas, such as airports, military installations and other high-risk facilities. This ensures flight safety and reduces the risk to public health and safety.

Partnership with industry: Canada has a partnership with the drone industry that promotes the development of new technologies and the regulation of the use of drones. This contributes to the development of the economy and ensuring the safety of drone flights.

Research and development: Canada is home to research and development in the field of drones, which contributes to the advancement of new technologies, as well as ensuring the safety of flights. For instance, in Canada remote control system for drones that allows pilots to control drones from a distance, which allows them to avoid hazards and ensure safe flights, was invented.

Broad opportunities for commercial use of drones: there are ample opportunities for the commercial use of drones in Canada. For example, drones are used for filming movies and TV shows, for security on construction sites and in the energy industry, for delivering goods, and in other fields.

Active interaction with the public: Canada has a variety of drone safety events and awareness campaigns that help engage the public in the debate about drone regulations and ensure flight safety.

Consequently, Canada has a track record of regulating the use of drones, which is based on ensuring flight safety and promoting the technology and their commercial use. Active

interaction with industry and the public allows us to solve the issue of regulating the use of drones at all levels and ensure the safety of flights. (Transport Canada Civil Aviation 1936)

The fifth country - Australia has a wealth of experience in regulating the use of drones, which is based on ensuring flight safety and promotes the development of technology and commercial use of drones (ACD). It is expedient to cite some positive aspects of the regulation of the use of drones in Australia (Civil Aviation Safety Regulations, 1998).

Introduction of requirements for the safety of drone flights into legislation: in 2016, the Australian government adopted changes to national legislation relating to the safety of drone flights. These amendments included requirements for drones to be registered according to their weight and use GPS systems and other technologies to ensure safe flights and avoid incidents.

Advancement of technologies for the safe use of drones: in Australia, a system of automatic control of drones has been created, which allows ensuring the safety of flights and avoiding dangers. Remote control system for drones has also been developed, which provides the ability to control drones from a distance.

Regulations for the commercial use of drones: in Australia, regulations have been drafted for the commercial use of drones, allowing their use in various industries, such as television, photography, delivery of goods, etc.

Interaction with the public and industry: the Australian Government is actively co-operating with the public and industry to ensure the safety of flights and the growth of drone technologies.

Professional training and certification of drone owners: in Australia, there is a system of professional training and certification of drone owners, which ensures quality of fulfilling the tasks of using drones.

Development of innovative projects using drones: the Australian government supports the state-of-the-art projects related to the use of drones, which enhances the development of technology and the commercial use of drones.

Ensuring equal opportunities: in Australia, equal access to the use of drones is ensured for all population groups, which allows for a level playing field for the advancement of the technology and commercial use of drones.

Thus, Australia has extensive experience in regulating the use of drones, based on ensuring flight safety and promoting the growth of the respective technology and commercial use of drones. Regulation on the use of the aforementioned devices in Australia is focused on ensuring safety, supporting innovation and commercial application, which are important factors for the successful use of drones in various industries.

The European Union pays considerable attention to the regulation of the use of drones in order to ensure security and protect human rights. In 2018, the EU adopted new rules for the safe use of drones.

These regulations set drone registration requirements, flight permits, and restrictions on flight height and distance. In addition, the regulations contain provisions on mandatory insurance for damages that may be caused by drones, and ensuring privacy and protection of personal data.

One of the main purposes of regulating the use of drones in the EU is to ensure flight safety and avoid dangerous situations, such as collisions with aircraft or other air vehicles. For this,

the EU sets limits on the height and distance of flights from airports and other important objects.

The EU also pays attention to the protection of privacy and personal data. The rules governing the use of drones in the EU prohibit the collection, storage and processing of personal data without the consent of the person concerned. In addition, drones cannot be used for illegal surveillance or stalking.

The European Union is also working on creating a single airspace management system that will allow drone flights to be regulated in the EU. With the help of this system, authorities will be able to closely monitor drone flights and make appropriate decisions regarding their safety. In addition, the EU is also working on technologies that will allow drones to be operated in small cities and other areas, providing safe and efficient transport.

The EU recognises the potential of drones in various fields such as logistics, medicine, agriculture, cartography, science and others. In this context, the EU supports the research and development of new technologies that will allow the use of drones with maximum efficiency and safety.

In general, the EU recognises the importance of the use of drones and creates the necessary conditions for their safe and responsible use. Regulation of the use of drones in the EU is aimed at ensuring safety and protection of human rights, as well as supporting the development of new technologies and the use of drones in various sectors of the economy.

The United States is considered to be one of the leading countries in the development and use of drones, as well as in the regulation of their use. Here are some positive aspects of drone regulation in the US.

Federal legislation: there is legislation in the US that governs the use of drones, including the Federal Aviation Administration's (FAA) "Drone Policy". This allows to ensure the safety of drone flights and establish requirements for drone pilots.

Advancement of a drone registration system: in 2015, the Federal Aviation Administration implemented a drone registration system that allows for the identification of drones and the collection of the respective statistics.

Availability of specialised organisations: in the US, there are several administrative bodies that draft regulations on the use of drones and promote this industry. They are the Association for Unmanned Vehicle Systems International and the Drone Manufacturers Alliance.

Implementation of a drone pilot certification program: in 2016, the FAA elaborated a drone pilot certification program to ensure the safety and quality of drone operations. Initiatives for the use of drones in the field of security are being actively introduced in the US, in particular, the use of drones for road monitoring.

Development of technologies to ensure the safety of drone flights: in the US, technologies are actively being developed to ensure the safety of drone flights, in particular, collision avoidance systems and obstacle detection systems.

Availability of programs for the use of drones in various fields: in the USA, there are several programs aimed at using drones in various areas, in particular, for the delivery of goods, agriculture, monitoring the state of the environment, and others.

Development of local legislation: some states in the US have their own laws governing the use of drones at the local level, which allows for additional control and safety of drone flights.

Availability of specialised educational institutions: in the USA, there are several specialised educational institutions that train drone pilots and specialists in the field of using drones in various fields.

Advancement of the drone market and related services: the market for drones and related services in the United States is constantly evolving, which contributes to the promotion of new technologies and employment.

In general, the United States is proficient in regulating the use of drones, which allows to ensure the safety and quality of the execution of tasks using these devices. The USA is actively introducing the use of drones in various fields, which allows for innovative growth. (Federal Aviation Administration, 1958).

Taking into account the experience of Japan, New Zealand, Canada, Australia and the USA, it can be concluded that the regulation on the use of drones is an important and urgent international problem. The aforementioned countries are actively working on the elaboration of a legal framework that regulates the use of drones, as well as on the introduction of innovative technologies to ensure safety in the air.

The use of drones has the potential to improve operational efficiency in various fields such as transportation, logistics, agriculture, environmental monitoring, and rescue operations. However, the use of drones must also be carried out in compliance with safety rules considering the possible consequences for people's lives and health.

Therefore, enhancing the safety of drone flights, introduction of effective regulatory methods and using the latest technologies are important tasks for countries in the field of the use of drones.

CONCLUSIONS

In the modern world, drones are becoming increasingly popular in various sectors, including military, civic, and commercial domains. However, the use of drones also poses challenges to human rights and privacy, particularly regarding the protection of personal data, illegal collection and use of information, and intrusion into private living spaces.

Therefore, the legal regulation of the use of drones is becoming increasingly important, both at the national and international levels. Legislation should ensure the protection of human rights and privacy while establishing rules for the use of drones to avoid dangerous situations and accidents.

Drones play a crucial role in military purposes, but they also have numerous other applications, such as emergency response, search and rescue, border patrol, forest fire monitoring, traffic monitoring, humanitarian aid, crop monitoring, commercial security, and land mapping.

At the same time, confidentiality and security are key considerations in the discussion and development of regulatory acts and scientific research related to drone applications. Despite their usefulness, drones raise a range of societal issues, including their impact on social justice, sustainability, safety, and human rights.

Establishing an effective system of control and supervision of the use of drones, as well as establishing accountability for violations of legislation, is crucial to ensure safety and protect human rights. Additionally, the possibility of using drones for video and photography should be considered with certain restrictions and regulations.

Comparing regulatory acts and developing the foundations for the legal framework are important not only for policymakers but also for engineering, journalism, research, logistics, and other fields, as mentioned in the article.

Summing up the above information, the use of drones should be regulated by a comprehensive set of legislative and legal norms that strike a balance between the specification of drones and the protection of human rights and privacy.

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