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The Impact of Unmanned Aerial Vehicles on Risk Situations and Insurance Interests: Problem Statement

D.S. Tulenty, M.A. Selivanova
Financial University under the Government of the Russian Federation, Moscow, Russian Federation

ABSTRACT

The study is devoted to identifying the impact of unmanned aerial vehicles (UAVs) on changes in the risk situation and insurance interests in the Russian Federation. The relevance of the topic under consideration is determined by the large number of UAVs at the disposal of the population and organizations, and the high level of freedom in their use, which generates significant risks. The aim of the work is to identify specific changes in the risk landscape and the corresponding insurance needs that arise from the widespread introduction of UAVs. To achieve this goal, the following tasks were formulated and solved: the risks associated with the use of UAVs were classified and the specifics of their manifestation were analyzed; the interrelationships between changes in the risk situation and the development of insurance interests of potential policyholders were identified; ways to increase the effectiveness of insurance protection, primarily against the risks of illegal, sabotage and military use of UAVs, were proposed. When writing the article, analytical and statistical methods were used to assess the quantitative and qualitative indicators of the Russian and international drone markets. The article systematizes the risks of using UAVs by subjects and purposes of use, and provides a comparative analysis of insurance products of Russian insurers. It has been established that the mass use of UAVs generates specific risks. For UAV owners, the risks of Comprehensive Insurance and liability are relevant; for third parties, there is a risk of physical/material damage from the use of UAVs, as well as from military and terrorist attacks. In the face of growing demand, Russian insurers offer products that insure UAV deaths, liability, and cargo, but exclude military and terrorist risks. The results show a need to adapt existing insurance protection mechanisms to meet new insurance requirements. The authors argue for the need to develop military/terrorism risk insurance for the use of UAVs through reinsurance mechanisms, pools, mutual insurance, and government support. The authors emphasize the importance of a more inclusive discussion of the issue, involving all stakeholders.

Keywords: unmanned aerial vehicles (UAVs); unmanned aerial systems (UAS); reinsurance; cyber security; risk situation; insurance interests

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INTRODUCTION

The research is based on the hypothesis that fundamental changes in the technological structure of society inevitably lead to changes in the risk situation and insurance interests of subjects, in one way or another related to the use of new technologies.

In recent years, there has been a significant and diverse use of unmanned aerial vehicles. These devices, with their high mobility and autonomy, are widely used in various fields, including agriculture, logistics, construction, environmental monitoring and security.

Thus, unmanned aerial vehicles are becoming not just a part of existing technologies, but contribute to radical changes in various industries, forming a new technological order based on automation, efficiency and sustainable development.

The proposed hypothesis suggests that the purpose of the study is to identify the links between the use of UAVs as one of the most important elements of the new technological order, changes in the risk situation, as well as in the associated insurance interests. Achieving this goal involves solving the following tasks:

- to systematize current areas of UAV application in various industries;
- to study the impact of the use of UAVs on a risky situation;
- to identify the relationship between changes in the risk situation and the insurance interests of potential policyholders.

THE CONCEPTS OF "CLASSIFICATION" AND "AREAS OF APPLICATION OF UAVS"

The era of innovation in the field of UAVs is showing impressive progress and increasing integration into various fields of human activity, such as military, civil aviation, agriculture and environmental monitoring. With the accelerated growth of technology, the importance and key role of UAVs are becoming more and more obvious; they are in demand all over the world, which is due to their advantages over manned aircraft to solve many tasks.

In recent years, the scientific literature has been actively discussing possible applications of UAVs in various industries. So, in the research of domestic scientists [1–10] and foreign researchers [11–15], attention is paid to the collection and processing of aerial photography data using UAVs, including their use in agriculture.

The issues of the use of artificial intelligence in UAV control and the associated risks have been studied quite deeply. [1, 16–20].

The Mordor Intelligence analytical agency estimates the global UAV market at $ 35.3 billion in 2024 and predicts its growth to $ 67.6 billion in the next 5 years.[1] Currently, China is the undisputed leader in the production of UAVs. The USA, France and Israel are also important players in this market segment. The main market share in quantitative terms is occupied by consumer UAVs (84%), 16% are accounted for by corporations and law enforcement agencies.[2]

The Russian Federation has a small share in the global drone market, but the UAV market is growing every year. In 2024, experts estimated the Russian commercial UAV market at 8 billion rubles and predicted its growth to almost 82 billion rubles by 2028.[3] (*Fig. 1*).

With high real and potential growth rates, the UAV market in the Russian Federation requires the formation of a legal framework and an integrated infrastructure, as well

[1] Detailed report on the unmanned aerial vehicle market with industry analysis, size and forecast from 2025 to 2030. 2023. URL: https://www.mordorintelligence.com/industry-reports/uav-market https://www.mordorintelligence.com/search?q=UAV (accessed on 01.12.2024).

[2] Analysis of the current state of the domestic market for civilian UAS applications. The Internet portal "Russian drones". 2019. URL: https://russiandrone.ru/publications/2-analiz-sushchestvuyushchego-sostoyaniya-otechestvennogo-rynka-primeneniy-bas-grazhdanskogo-naznach (accessed on 03.07.2024).

[3] The unmanned aerial vehicle market. Volume, dynamics, and scenarios for the use of drones in economic sectors, Rostelecom, 2024. URL: https://ai.gov.ru/knowledgebase/tekhnologii-i-produkty-ii/2024_rynok_graghdanskih_bespilotnyh_apparatov_obyem_dinamika_i_scenarii_primeneniya_bespilotnikov_v_otraslyah_ekonomiki_rostelekom/?ysclid=lzsemkes17660636443 (accessed on 10.06.2024).

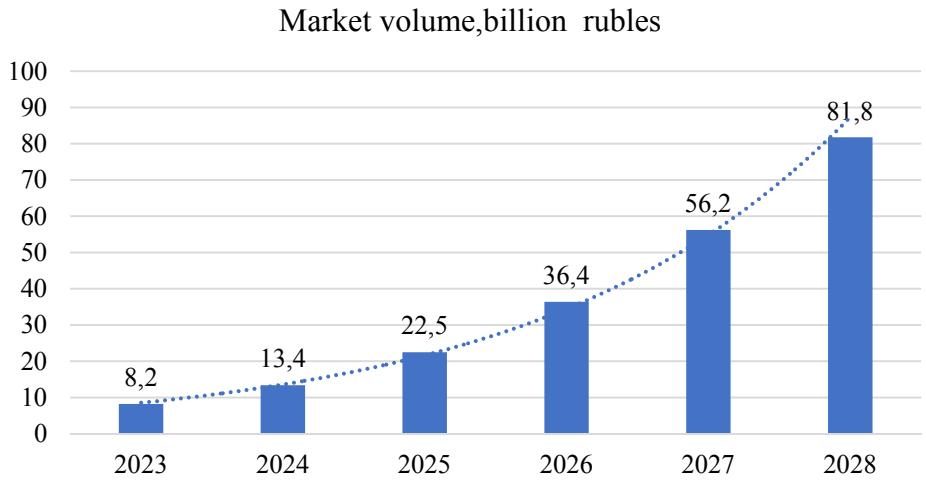

Fig. **The Dynamics of the Commercial UAV Market in Russia in 2023 and Forecast Until 2028**

Source: Compiled by the authors based on Rostelecom data. URL: https://ai.gov.ru/knowledgebase/tekhnologii-i-produkty-ii/2024_rynok_graghdanskih_bespilotnyh_apparatov_obyem_dinamika_i_scenarii_primeneniya_bespilotnikov_v_otraslyah_ekonomiki_rostelekom/?ysclid=lzsemkes17660636443 (accessed on 10.06.2024).

as the creation of a system for training qualified personnel. The Strategy for the Development of Unmanned Aircraft until 2030,[4] adopted by the Government of the Russian Federation, is aimed at solving these problems.

In addition, at the end of 2022, Vladimir Putin, the President of the Russian Federation, approved a number of instructions for the development of unmanned aircraft systems (UAS),[5] including

- creation of a Government commission on Unmanned Aircraft.;
- planning the parameters and targets of the UAV market; Development of state support measures for the development of unmanned aircraft;
- creation of a unified certification and operation system (UAS);
- creation of the UAS insurance system.

On January 1, 2024, the implementation of the National Project "Unmanned Aircraft Systems" began in the Russian Federation, the amount of funding for which until 2030 is set at 696 billion rubles.[6]

According to experts, by 2025, as a result of the allocation of significant amounts of financing, the share of Russian-made UAVs in the Russian market will be able to exceed the figures of 2024 (42% and 39 thousand units). The Ministry of Industry and Trade estimates the volume of government orders until 2030 for unmanned vehicles in the interests of state-owned companies and government bodies at 200 billion rubles. The State Transport Leasing Company is developing a massive UAV leasing program. UAVs are used in both civilian and military fields [21], which is schematically shown in *Table 1*.

THE IMPACT OF USING UAVS ON A RISKY SITUATION

Let's consider the possible risk groups associated with the use of UAVs, depending on the subjects:

[4] Order No. 1630–p dated June 21, 2023 on the Strategy for the development of unmanned aircraft until 2030, 2023. URL: http://government.ru/news/48875 (accessed on 14.06.2024).

[5] A list of instructions on the development of unmanned aircraft systems. 2022. URL: http://www.kremlin.ru/acts/assignments/orders/70312 (accessed on 14.06.2024).

[6] The national project "Unmanned Aircraft Systems" has been approved, 696 billion rubles have been allocated for it until 2030. 2024. URL: www.kommersant.ru/doc/6442459 (accessed on 03.07.2024).

Table 1

UAV Application Areas

Civil		Military	
Objectives	Examples	Objectives	Examples
Science	Geodetic surveys	Offensive operations	Attacking fortified positions
Business activities	Spraying fields to control insect pests	Determining the coordinates of the targets' locations	The use of UAVs for counter-battery operations
State and municipal needs	Adherence to land legislation	Reconnaissance and espionage	Radio reconnaissance, visual reconnaissance
Public safety and fire protection	Fire fighting	Supply	Delivery of valuable goods, ammunition, logistics
Cargo transportation	Delivery of orders	Counteracting enemy systems	Setting up radio interference and creating electronic suppression fields
Healthcare	Delivery of medicines to remote areas	Ensuring the stable operation of communication systems	Removing the radio horizon
Entertainments	Filming movies	Pilot and operator training	Use as simulators and simulations
Sports	Drone racing		
Work in the Arctic region, radiation and chemical contamination areas, etc.			

Source: Compiled by the authors.

The risks of UAV owners (operators).

UAV owners and operators face a number of specific risks. The technical aspects of these risks include the possibility of malfunctions, failures in navigation or communication systems, as well as the need for regular maintenance. Operational aspects are related to external factors such as weather conditions, the level of operator training, and the degree of development of UAV motion control systems.

It should be noted that these risks are typical for owners (operators) of most vehicles and, accordingly, traditional tools can be used to manage them: compliance with technical conditions and operating rules, compliance with safety measures, as well as comprehensive and collision vehicle insurance (CASCO)[7] and liability insurance, which is a proven means of protecting the interests of both potential victims and UAV owners.[8]

In addition, the risks associated with the integration of UAVs into the airspace are relevant. Unlike manned objects, the airspace in which UAVs are used can be assessed as poorly controlled, which creates

[7] Drone insurance: experts have assessed the market prospects. 2018. URL: https://ria.ru/20180614/1522727561.html (accessed on 12.05.2024).

[8] Why it is important for aircraft owners and operators to insure their liability. 2017. URL: aeronest.aero/press_room/analytics/2017_11_07_pochemu_vladeltsam_i_expluatantam_bvs_vazhno_strakhovat_svoyu_otvetstvennost (accessed on 12.05.2024).

problems for air traffic control. As a result, the risk of UAVs colliding with manned aircraft and other aerial objects increases. UAVs operated by inexperienced operators may violate controlled airspace or occupy echelons, endangering other participants in air traffic[21].

The safe integration of UAVs into the airspace is provided by a special infrastructure, which should include rules for the use of UAVs, as well as methods and tools for monitoring their implementation.[9]

2. *Risks of physical and material damage to third parties as a result of the use of UAVs.*

Along with widespread use in various sectors of the economy and spheres of public life, UAVs are increasingly being used for military purposes. During combat operations, unmanned aerial vehicles are used for direct strikes against the enemy, infrastructure facilities; for reconnaissance purposes; to determine coordinates and target designation; create false targets or interference; ensure the stable operation of communication and telecommunications systems.

Modern UAVs use previously inaccessible altitude ranges (ultra-low and ultra-high), can operate in conditions of overloads and temperature conditions that were previously considered critical [22], unlike manned objects. UAVs also have the ability to abruptly change their trajectory and speed modes. The use of unmanned vehicles is much cheaper, since there is no need to train the crew, create and maintain life support systems, etc. [23].

These specific features of UAV use, on the one hand, present advantages, but on the other, they increase the risk of their misuse by intruders for illegal or sabotage and terrorist purposes. One of the basic conditions for the organizers and perpetrators of illegal actions is to ensure personal safety. Unmanned technologies meet this condition because there is no pilot, and it is extremely difficult to locate the operator, especially in urban environments. It is also difficult to prove the involvement of the organizers of the crime and the drone operator in its commission.

Examples of potential threats of illegal use of UAVs in large modern urban areas are presented in *Table 2*.

It should be noted that the current means of detecting aerial targets used by air defense systems do not provide a detection probability acceptable for building a reliable protection system. There are also no means of influencing UAVs that guarantee full protection of civilian objects and the population from the consequences of the illegal use of drones [22].[10] First and foremost, this applies to miniature and micro models of civilian UAVs that are freely accessible.

Thus, the possibility of harm to human life and health, as well as damage to property as a result of the illegal use of UAVs, enters everyday life and becomes an "everyday risk". At the same time, there is every reason to assume that this risk will be relevant at least in the next 5–10 years.

In this regard, measures to manage this risk are becoming particularly in demand. The following measures can be suggested as such:

1. To develop and adopt comprehensive legal, organizational and technical measures that determine the procedure for using any UAVs in places where they can cause maximum damage.

2. To take measures to prevent illegal use of UAVs, identify locations of illegal production, upgrade devices, and train operators.

3. To develop and improve economic measures to protect against these risks, insurance is the primary solution.

[9] Decree of the Government of the Russian Federation No. 658 dated May 25, 2019 "On Approval of the Rules for State Registration of Unmanned Civil Aircraft with a Maximum Take-off Weight from 0.15 kilograms to 30 Kilograms Imported into the Russian Federation or Manufactured in the Russian Federation". Federal Law CL of the Russian Federation. 2019; 22. Art. 2824.

[10] The drones are being crewed. 2020. URL: https://www.kommersant.ru/doc/4531085 (accessed on 30.06.2024)

Table 2

The Threat of Illegal Use of UAVs in Modern Urban Areas

Type of critical object	List of threats using UAVs
Energy facilities	Mechanical damage to power lines, destruction of distribution substations and other electrical equipment in the network; artificial creation of a short circuit by spraying special substances; destruction of supports and other load-bearing structures
Transport facilities	Suppression of motion controls; artificial damage to the road surface and transport communications; mechanical damage to vehicles
Communication equipment	Artificial damage to antennas and communication facilities; interference with communications and broadcasting
Housing and community services	Damage to pipelines, power and signal cables, control equipment; attacks on storage facilities for flammable and explosive materials and dangerous substances. decommissioning of ventilation, cooling, and water treatment systems and other vital elements of urban public infrastructure
Places of public gathering	Direct attacks on event venues; coordination of terrorist activities

Source: Compiled by the authors.

CHANGES IN INSURANCE COVERAGE DUE TO THE USE OF UAVS

Worldwide, there is an increasing interest in insuring against the risks associated with the use of UAVs (unmanned aerial vehicles). Leading insurance companies are actively developing and implementing relevant products to meet this demand.

According to the Business Research Company, insurance premiums in this market segment amounted to $ 1.33 billion in 2023. Despite the fact that at the moment the absolute size of the segment is significantly inferior to others, traditionally classified as leaders, experts predict for it one of the highest relative growth rates.[11]

A significant increase in the number and use of UAVs leads to an increase in the number of related incidents [23] and an increase in the demand for insurance, which insurers seek to respond to. The risks associated with the use of UAVs were initially included in insurance coverage under comprehensive household insurance contracts. This insurance applied only to UAVs used for recreational purposes (commercial use was excluded); the insured amount for the risks of damage (death) of the UAV and for the risks of liability was significantly limited.[12] The need for more complete protection of the insurance interests of individuals, as well as insurance interests related to the commercial use of UAVs, has led to the emergence of specialized insurance products. Difficulties in the creation and sale of these products are primarily due to the high level of individual risk and the lack of knowledge about them among insurers,

[11] Report on the global drone insurance market for 2024. 2024. URL: https://www.thebusinessresearchcompany.com/report/drone-insurance-global-market-report (accessed on 01.12.2024).

[12] Drones and insurance by Leavitt Group. 2024. URL: https://news.leavitt.com/personal-insurance/drones-and-insurance-101 / (accessed on 01.12.2024).

which significantly complicates the process of underwriting and claim settlement. This led to the formation of specialized departments within large insurance companies and the emergence of startups in the area of UAV insurance.

Currently, many countries have developed a specialized offer to insure the risks of death and damage to UAVs of both private and commercial types, as well as the risks of liability for damage to third parties. This insurance is increasingly being implemented using special mobile applications and other digital tools that provide remote conclusion of insurance contracts upon the use of UAVs and at the same time offer customized solutions to ensure flight safety.[13]

For example, in the United States, UAV insurance provides a wide range of coverage options[14]: Comprehensive Insurance (damage caused to the drone itself), liability insurance, insurance of special drone equipment (such as cameras or sensors), insurance of ground equipment used to control the drone, etc.

Commercial loss risk insurance as a result of UAV incidents is in the initial stage, currently there is a high demand for this insurance from companies providing delivery. The issue of cyber risk insurance for UAV applications is currently under long-term consideration.[15] Similar trends can be observed not only in other countries, but also within Russia.

INSURANCE INTERESTS OF UAVS OWNERS (OPERATORS) IN RUSSIA

The basis for the formation of the insurance interests of UAV owners is their awareness of the technical, operational, organizational and economic aspects of the risks of their use. This requires Russian insurers to develop specific and individualized insurance products. In general, they meet these requirements and offer customers both standard and extended insurance coverage for commercial use of UAVs. Currently, almost all major Russian insurance players, insurance brokers and independent agencies, as well as various aggregators and marketplaces, offer risk insurance products for UAV owners (operators). Standard risk assessment procedures and the conclusion of insurance contracts in an online format using digital technologies are used. The most common products are listed in *Table 3*.

According to experts, the demand for UAV Comprehensive insurance is growing by 10–15% annually.[16] Ingosstrakh made one of the first insurance payments for this type of insurance in July 2021: during a scheduled flight in Chukotka, due to a loss of power supply, a UAV landed hard on board, which led to the complete destruction of the aircraft and the death of all on board. The case was recognized as insured, and the insurance indemnity amounted to 3.6 million rubles.

In cases of commercial use of unmanned aerial vehicles (UAVs), comprehensive insurance is often supplemented by other types of coverage, such as insurance against damage during transport or storage, theft of equipment or accessories, and cargo insurance. In the near future, in industries that are heavily dependent on the use of UAVs (logistics, agriculture, construction and operational control, environmental monitoring, etc.), insurance against loss of income as a result of damage (death) of UAVs will be in demand. The developed competencies and accumulated experience of Russian insurers give grounds to assert that they are ready to satisfy these insurance interests.

[13] Flock provides flexible insurance for businesses and drone operators. 2020. URL: https://www.unmannedsystemstechnology.com/2020/08/flock-provides-flexible-insurance-for-enterprises-drone-operators / (accessed on 01.12.2024).

[14] Guide to Drone Insurance in the USA. 2024. URL: https://www.thedroneu.com/blog/drone-insurance-guide / (accessed on 01.12. 2024).

[15] An overview of the cybersecurity of unmanned aerial vehicles. 2023. URL: https://www.ijcna.org/Manuscripts/IJCNA-2023–O-46.pdf (accessed on 01.12.2024).

[16] VSK: The demand for drone insurance has increased almost nine-fold in five years. URL: https://www.asn-news.ru/news/82073 (accessed on 23.07.2024).

Table 3

Insurance Products Related to the Risks of UAV Owners (Operators) in Russia

Insurer	Insurance Product	Description
Ingosstrakh*	Liability insurance for owners of unmanned aerial vehicles	Liability for any damage caused to third parties' lives, health, or property during the operation of the UAV
	Comprehensive and collision insurance (CASCO) of unmanned aerial vehicles	Compensation in case of damage or complete loss of the UAV during flight
VSK**	A comprehensive product	The protection of unmanned aerial vehicles and the liability insurance for drone owners
Euroins***	Insurance coverage of quadrocopters	Protection of unmanned aerial vehicles
	Protection of civil liability	Civil liability insurance can help protect the property interests of a drone owner in case harm or damage is caused to a third party due to their fault

Source: Compiled by the authors.

Note: * Insurance of unmanned aerial vehicles. 2024. URL: https://www.ingos.ru/corporate/bpla; ** VSK has created a separate policy to insure damage from drones and drones. 2023. URL: https://www.forbes.ru/finansy/499552-vsk-sozdala-otdel-nyj-polis-dla-strahovania-userba-ot-bespilotnikov-i-dronov; *** URL: https://euro-ins.ru/strakhovanie-yurilic/strakhovanie-kvadrokopterov (accessed on 20.10.2024).

The use of unmanned aerial vehicles (UAVs) for both industrial and personal purposes carries the risk of causing harm to others. This risk creates insurance interests for both the owners (operators) of UAVs and potential victims. Liability insurance provides economic protection for the UAV owner, while at the same time the victim is guaranteed compensation for damage even in cases where this is not ensured by the financial situation of the culprit. It is quite reasonable to carry out this insurance in a mandatory form or as imputed insurance when registering a UAV.

Insurance interests related to possible violations of the rules governing the use of airspace have not yet been fully developed. This is due to the lack of organizational and legal regulation of the use of unmanned aerial vehicles (UAVs) and their interaction with manned aircraft. In 2024, work started on creating a unified digital platform for safely integrating UAVs (unmanned aerial vehicles) into air traffic. The platform will allow for the flights of UAVs and provide information support for all users of airspace, while reducing administrative barriers and simplifying access to airspace. It will also facilitate interaction between manned and unmanned aircraft and air traffic control agencies. As a result, insurance interests associated with the use of UAVs will develop and be systematized. Insurers will be able to incorporate these interests into their liability insurance policies for air traffic control services..

INSURANCE INTERESTS RELATED TO THE CONSEQUENCES OF THE USE OF UAVS

It has been mentioned above that the widespread use of UAVs introduces a new dimension to the risks of property damage and harm to life and health, creating new insurance needs. It should be noted that risks of damage to property caused by aircraft are typically included in insurance coverage for property (fire) insurance, cargo insurance, and insurance for construction and installation projects. A similar situation is observed in personal insurance (accident insurance). In addition, these losses can potentially be compensated as part of liability insurance for UAV owners (operators). In modern conditions, insurers include the risks of using new technologies in the calculation of their own market risk [24].

However, insurance coverage does not apply to losses caused by military operations, and it is limited to the use of UAVs for terrorist purposes. Most often, justifying this position, they refer to the provisions of Article 964 of the Civil Code of the Russian Federation, which exempts the insurer from paying insurance compensation when the insured event occurred as a result of military operations, military maneuvers and events, civil war and popular unrest. There is a widespread misconception about the imperativeness of this rule,[17] when in fact it is of a dispositive nature (it can be changed with the consent of the parties to the insurance contract). Currently, the underwriting policy of most Russian insurers assumes that the risks of terrorism can be covered to a limited extent, while military risks are still excluded from insurance coverage.[18] This orthodox approach was confirmed when the Russian National Reinsurance Company (RNRC), together with the Bank of Russia and the Ministry of Finance of Russia, developed proposals for insurance in new Russian territories. These proposals involve the inclusion of two sections in the insurance contract: one with standard insurance risks, the second with military risks. Referring to the Civil Code of the Russian Federation, it is still proposed not to include military risks in the scope of insurance coverage, and payment for related losses is proposed to be carried out at the expense of public funds, through the RNRC and the Ministry of Finance.[19]

It has been demonstrated above that the risks of illegal use of unmanned aerial vehicles (UAVs) for military and sabotage-terrorist purposes are becoming increasingly common in the near and medium term, and significantly affect the insurance interests of legal entities and individuals [25, 26]. This issue is becoming especially relevant against the background of the increased frequency of UAV attacks on enterprises and civilian facilities. The greatest demand for UAV crash damage insurance for any reason is observed among fuel and energy and mining enterprises, as well as enterprises in Moscow, the Moscow Region, the Krasnodar Territory[20] and the Republic of Tatarstan.[21] In those rare cases when insurers assume the risks of UAV strikes, experts note a significant increase in insurance premiums.[22]

A number of major claims against insurers on the occurrence of these losses have been officially recorded. Thus, JSC "VSK" received claims for insurance claims in the event of a

[17] Will insurers pay citizens in case of military action? 2023. URL: https://www.asn-news.ru/news/84324 (accessed on 27.07. 2024).

[18] RNRC agrees to reinsure only a quarter of the largest factories against terrorism. 2023. URL: https://www.asn-news.ru/news/84216 (accessed on 27.07. 2024).

[19] The departments are preparing a two-tier procedure for insurance protection of cargo transportation in new regions. 2023. URL: https://www.asn-news.ru/smi/39016 (accessed on 28.06. 2024).

[20] Kuban business has increased the number of applications for UAV insurance by 5 times. 2024. URL: https://kuban.rbc.ru/krasnodar/freenews/670cf9149a7947fac42b5da7 (accessed on 18.10.2024).

[21] Tatarstan businesses have increased their demand for drone crash insurance. 2024. URL: https://www.asn-news.ru/smi/39999 (accessed on 02.10.2024).

[22] The cost of insurance for the risks of UAV arrivals has increased in Russia by 100–150 times. URL: https://www.insur-info.ru/press/196900 (accessed on 12.11.2024)

UAV crash from the Azovproduct oil depot and the Polevoy oil depot for 916 million rubles.[23] Oskolsky Electromechanical Plant named after Ugarov, in turn, is suing SOGAZ JSC in the amount of 7.3 billion rubles. This amount is estimated to be the losses incurred by the company in August 2022, when unidentified persons blew up power lines in the Kursk region.[24]

There is a growing interest in providing insurance protection against the risks of using UAVs for military, sabotage, terrorist and illegal purposes and in the political sphere. In particular, in the middle of 2023, a bill was submitted to the State Duma, providing for the mandatory inclusion in property insurance contracts of risks associated with damage from the illegal use of UAVs.[25]

In February 2024, the chairman of the "Fair Russia — For Truth" party, S. Mironov, proposed to the Government of the Russian Federation to expand guarantees for compulsory state insurance for various categories of civil servants in cases of damage to health as a result of UAV strikes.[26]

At the same time, most leading insurers either classify UAV strikes as a terrorist act, which is an exception to insurance coverage, or have not fully determined their position on UAVs.[27]

There are only local attempts to introduce relevant insurance products to the market. So, in 2023, CAO VSK offered the market separate insurance policies in case of damage from UAVs and already in September 2023 paid compensation for cases related to the UAV strike in Ramenskoye district under mortgage insurance policies.[28] Similar products are offered by AlfaStrakhovanie, Rosgosstrakh and Soglasiye.[29]

Taking into account the above-mentioned widespread risks of using UAVs for military and terrorist purposes, it seems advisable to recommend insurers to gradually expand the offer of loss insurance from the effects of UAVs, including for military and sabotage-terrorist purposes. It should be noted that the global insurance experience does not completely exclude the possibility of insuring these risks, moreover, quite significant experience of such insurance has been accumulated [27]. It should also be noted that Article 964 of the Civil Code of the Russian Federation also does not prevent the inclusion of military and terrorist risks in insurance coverage, if the insurer is ready for this.

When insuring losses from any illegal use of UAVs, it is advisable to rely on the experience of the Russian Anti-terrorist Insurance Pool (RATIP), which successfully, without government support, carries out reinsurance of terrorism risks under insurance contracts concluded by its members. The RATIP's activities are based on the special acceptance procedure, in which pool members, based on collective competencies, jointly assess and rate risks.[30] A similar scheme of work can be implemented with respect to the risks of military and sabotage use of the UAV [28].

In our opinion, it is advisable to take an active part in the establishment and development of risk insurance for military

[23] VSK received claims for 916 million rubles from the owners of the attacked UAV tank farms. 2024. URL: https://www.asn-news.ru/news/87477 (accessed on 19.09.24).

[24] The appeal supported SOGAZ in a dispute for 7 billion. 2024. URL: https://www.asn-news.ru/news/88118 (accessed on 12.12.2024).

[25] The insurance companies said: "Goodbye!" 2024. URL: https://www.asn-news.ru/smi/39576 (accessed on 28.06.2024).

[26] Mironov proposed to expand insurance for municipal employees due to increased risks. 2024. URL: https://www.insur-info.ru/press/189560 (accessed on 28.06.2024).

[27] Will insurers pay citizens in case of military operations? 2023. URL: https://www.asn-news.ru/news/84324 (accessed on 25.07.2024).

[28] VSK has paid compensation to the victims of the drone crash in the Ramenskoye district of the Moscow region. 2024. URL: https://finance.rambler.ru/realty/51683081/?utm_content=finance_media&utm_medium=read_more&utm_source=copylink (accessed on 23.09.2024).

[29] Who insures property against drone attacks? 2023. URL: https://www.asnnews.ru/news/84335?ysclid=m4wogw2k0171091439 (accessed on 01.12.2024).

[30] Insurance against terrorism needs innovations that free insurers from anti-selection risks. 2022. URL: https://www.asn-news.ru/post/1100?ysclid=lsgbczd09a685301598 (accessed on 22.06. 2024).

and sabotage use of UAVs. In this case, the experience of working with sanctions risks can be used, which provides for a mandatory assignment in favor of RNRC by insurers and the reinsurer's obligation to assume responsibility for the transferred risks.

The relevance of the problem under consideration is confirmed by the experience of the mutual insurance Company RT — mutual insurance. In particular, taking into account the positive results of the work for 2022, the members of the MIC decided to expand the terms of insurance for the property of Rostec Group enterprises, to include in them the risk of damage (destruction) of property as a result of the impact of UAVs and to ensure the fastest possible restoration of the enterprises' operability.[31] In addition, due to the formed funds from the positive financial result of the work in previous years, the mutual insurance company plans to finance the creation of UAV protection systems at enterprises. Mutual insurance instruments can be used as soon as possible to provide insurance protection against UAV attacks by enterprises of state corporations, state concerns and vertically integrated companies. Considering that today, on the one hand, there is an objectively urgent need to insure the risks of military and terrorist use of UAVs, and on the other, insurers have not yet formed an array of information sufficient to assess and manage potentially catastrophic risks, it is advisable to provide government support measures. Part of this support can be provided through participation in the RNRC insurance process, which was discussed above. In addition, the government could provide its own guarantees to compensate for losses exceeding the limits of commercial insurance.

[31] Rostec companies will insure themselves against drones. 2024. URL: https://www.comnews.ru/content/231923/2024–03–07/2024-w10/1008/kompanii-rostekha-zastrakhuyutsya-bespilotnikov (accessed on 30.10. 2024).

CONCLUSIONS

Changing insurance interests related to the use of UAVs is turning UAV risk insurance into a promising development area for insurance companies. With the increase in the number of UAVs and the expansion of their fields of application, the need for insurance of this type of equipment will only grow. However, for the full development of this market, it is necessary to continue working on risk management, establishing a single standard for their assessment and improving the legal framework. Only in such conditions can reliable and effective UAV insurance be guaranteed.

The insurance interests of UAV owners (operators) can be satisfied based on the experience of similar insurance in relation to other modes of transport.

The objective necessity of developing risk insurance for military and terrorist use of UAVs and the application of the successful experience of cooperation between RATIP and RNRC in this area is substantiated. The orthodox approach of excluding military and terrorism risks (sabotage) that some insurers follow may lead to a decrease in their market share. It is proposed to use pooling mechanisms, mutual insurance schemes, as well as government support measures, in order to ensure the long-term viability of insurance operations.

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ABOUT THE AUTHORS

Dmitry S. Tulenty — Cand. Sci. (Econ.), Assoc. Prof., Department of Insurance and Social Economics, Leading Research Scientist Leading Researcher at the Institute of Financial Research, Faculty of Finance, Financial University under the Government of the Russian Federation, Moscow, Russian Federation
https://orcid.org/0000-0001-9668-1354
Corresponding author:
dstulenty@fa.ru

Marina A. Selivanova — Cand. Sci. (Econ.), Assoc. Prof., Department of Insurance and Social Economics, Leading Research Scientist Leading Researcher at the Institute of Financial Research, Faculty of Finance, Financial University under the Government of the Russian Federation, Moscow, Russian Federation
https://orcid.org/0000-0001-7562-4414
maaselivanova@fa.ru

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