# PROSPECTS OF UNMANNED VEHICLES IN UZBEKISTAN

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**Annotation.** This article analyzes the development prospects of unmanned aerial vehicle (drone) technology in Uzbekistan. In recent years, this technology has been widely used in agriculture, geodesy, environmental monitoring, emergency management, logistics and defense. The article highlights the economic and technological advantages of the effective use of drones, as well as the existing opportunities and problems in their implementation. It also justifies the need to improve national legislation, develop the personnel training system and strengthen the innovative infrastructure. It is emphasized that the widespread implementation of unmanned technologies in Uzbekistan in the conditions of a digital economy will serve to increase the country's technological potential and strengthen its competitiveness.

**Keywords:** unmanned aerial vehicles, drone technology, digital economy, innovation, agriculture, monitoring, geodesy, logistics, technological development, Uzbekistan.

## INTRODUCTION

Over the past decade, technological progress has been developing rapidly on a global scale, and innovative solutions are being widely implemented in various fields. One of such advanced technologies is unmanned aerial vehicles (UAV), i.e. drones, which today occupy an important place not only in the military, but also in the civilian sphere. With the help of drones, tasks such as collecting information, monitoring territories, accurate mapping, transporting goods, and ensuring security are being carried out quickly and efficiently. This technology is distinguished by the

fact that it allows reducing the human factor, reducing time and costs, and increasing the level of security.

Large-scale reforms are also being implemented in Uzbekistan in the direction of the digital economy and innovative development. In particular, great attention is paid to the use of modern technologies in agriculture, energy, transport, geodesy, ecology and emergency situations. In this regard, unmanned aerial vehicles are considered one of the promising and strategically important technologies for our country. Drones are expanding the possibilities for effective control of land areas, rational use of water resources, increasing productivity, and monitoring infrastructure facilities.[5]

The development of this technology is also creating the basis for the emergence of new professions and specialties. The training of drone operators, technical engineers, software developers, and data analysis specialists is becoming a requirement today. This creates the need to open new areas in the education system and increase the potential of innovative personnel. At the same time, improving the legal and regulatory framework for the use of unmanned aerial vehicles, developing safety rules and ensuring their implementation are also urgent issues.

In the conditions of Uzbekistan, drone technologies have broad prospects, which will serve to increase economic efficiency, digitize the management system, and expand the scope of modern services. This article analyzes the development opportunities of unmanned aerial vehicles (UAVs) in our country, their areas of application, and future prospects.

## LITERATURE REVIEW AND RESEARCH METHODOLOGY

Scientific research on unmanned aerial vehicle (UAV) technology has increased dramatically in recent years. In international experience, this area has been studied mainly from the perspective of safety, aviation regulations, industrial

applications, and innovative control systems. In particular, regulatory documents developed by the International Civil Aviation Organization (ICAO) set international standards for the use of drones. ICAO materials highlight the integration of unmanned systems into air traffic control, safety, and liability issues as key areas.[3]

Also, analyses published by the Federal Aviation Administration (FAA) cover the system of drone registration, flight area restrictions, and operator certification. This experience is of great importance in shaping a model for the safe use of drones in the civilian sector. In Europe, a unified regulatory system has been developed by the European Union Aviation Safety Agency (EASA), which is based on the principle of classifying drones according to their level of risk and gradually controlling them.[1]

The development of the sector in Uzbekistan is being studied at a new stage. The country is implementing innovative technologies, including the use of unmanned systems, as part of its digital transformation processes is expanding. Based on national legislation and practical experience, work is underway to register drones, control them, and establish safety requirements. Literature analysis shows that although the technological capabilities are widely covered in existing scientific sources, comprehensive strategic research has not been carried out sufficiently in the conditions of Uzbekistan. Therefore, this topic is relevant.

Theoretical and analytical approaches were used in this study. The following methods were chosen as the methodological basis:

Literature analysis method - documents of international organizations, scientific articles, and regulatory sources were studied.

Comparative analysis - the experiences of ICAO, FAA, and EASA on drone regulation were compared.

Systematic approach - a comprehensive assessment of unmanned aerial vehicles as a technological, economic, and legal system was carried out.

Analytical generalization - based on the information obtained, conclusions were drawn on the prospects for development in the conditions of Uzbekistan.

## ANALYSIS AND RESULTS

The development of unmanned aerial vehicle (UAV) technology in Uzbekistan is currently considered one of the most important areas of innovative development. The conducted analysis shows that drones are primarily used effectively in agriculture. In the agricultural sector of our country, the issues of monitoring a large part of the land area, monitoring the condition of crops, identifying pests, and rational use of water resources are relevant. Drones make it possible to photograph and analyze large areas with high accuracy in a short time. This helps reduce farm costs and increase productivity.[1]

Unmanned aerial vehicles are also producing significant results in the field of geodesy and mapping. Compared to traditional methods, drones perform measurement work faster and safer. This technology is an important tool in monitoring construction sites, monitoring road infrastructure, and planning urban development processes. This has a positive impact on the development of digital control systems.

Also, the use of drones in the field of environmental monitoring is expanding the possibility of continuous monitoring of the state of the environment. Drones serve as a means of providing rapid information during the monitoring of water bodies, forest areas and industrial zones. The ability to quickly deliver the necessary information to rescue services during emergencies, including fires, floods or other natural disasters, is also an important result.

For the widespread introduction of drone technologies in Uzbekistan, it is necessary to improve a number of organizational and legal issues. In particular, it is important to clearly define flight areas, strengthen safety requirements and develop a system of professional training for operators. Also, one of the main tasks for the future is to establish local production and strengthen technological infrastructure.[5]

Unmanned aerial vehicles are highly effective in various sectors of the country's economy. They allow saving time, reducing costs, increasing safety and optimizing management processes. The use of drones accelerates the process of digital transformation and contributes to the formation of an innovative economy. In addition, this technology serves to create new jobs and develop a system for training specialists.[2]

In general, the results of the study confirm that the prospects for unmanned aerial vehicles in Uzbekistan are broad. By increasing technological potential, improving the regulatory framework, and strengthening scientific and practical research, the level of effective use of drones can be brought to a higher level.

## CONCLUSION

Unmanned aerial vehicles (UAVs) are one of the most promising areas of modern technological development. The analysis shows that drones are becoming an effective tool in various sectors of the economy, in particular, agriculture, geodesy, environmental monitoring, construction, transport, and emergency management. Their use allows you to speed up work processes, reduce costs, and increase the level of safety. In this regard, drone technologies play an important role in the process of digital transformation of our country.[4]

Reforms aimed at innovative development and the introduction of modern technologies in Uzbekistan are creating favorable conditions for the widespread use of unmanned systems. The use of drones, in particular, in the agricultural sector and

infrastructure projects will increase economic efficiency. At the same time, it is necessary to train qualified personnel for the development of this sector. It is necessary to strengthen scientific research and improve the legal and regulatory framework.

In the future, further improvement of drone technologies is expected to be achieved through artificial intelligence, automatic data analysis and integration with digital control systems. This will expand their capabilities and increase the efficiency of their use in various sectors of the economy. In general, unmanned aerial vehicles are of great strategic importance in strengthening the technological development and global competitiveness of Uzbekistan.

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