

**CONCEPT
of the use of unmanned aviation to reduce disaster risk,
prevent and respond to emergency situations in Central Asia**

The modern world cannot do without introduction of innovative information and communication technologies that allow effectively implement a whole range of tasks to protect population and territories from emergencies, and ensure the safety of human life.

A generalization of the best practices of the functioning of the system for protecting the population and territories from natural disasters, man-made accidents and catastrophes shows that the effectiveness of disaster risk reduction and emergency response can be increased through the introduction of advanced technologies, the use of airmobile rescue equipment and equipping units with high-performance technical means.

In the 21st century, many states around the world are intensively developing and using unmanned aerial vehicles. Unmanned aerial vehicles (*hereinafter - UAVs*) of various purposes, various aerodynamic schemes and with a variety of tactical and technical characteristics use by various countries. Currently, options of UAVs are huge, both the demand and the supply of their newest designs are expanding.

The success of the use of UAV is associated, firstly, with dynamic development of microprocessor computers, control systems, navigation, data transmission, artificial intelligence.

Achievements in this field allow to flight in automatic mode from take-off to landing, solve difficult and specific tasks, which are in many ways practically difficult to perform, and often impossible by the person himself.

The UAV includes the UAV itself, a control point (operator console, transceiver equipment), a communication system with the UAV (this can be direct radio communication or satellite communication), software for processing the results obtained, additional equipment required for the transportation or maintenance of the UAV.

At present, most of the structural units of the emergency authorities of Central Asian countries are not sufficiently equipped and need a significant replenishment of the UAV fleet. Each country, depending on the needs and availability of resources, determines the number and range of the required UAVs, their type, modification, technical parameters and completeness.

To date, the United States, Israel, France, Germany, Great Britain, and China have achieved the greatest success in creating complexes with UAVs. In total, more than 30 countries of the world are developing about 300 complexes and more than 70 aircraft, multi-rotor, aerostatic, convertiplane types and hybrid UAV models, differing in design and principle of operation, takeoff/landing and destination

The main prerequisites for the use of UAVs to reduce disaster risks, prevent and eliminate emergencies in Central Asia are:

- exposure of territories of the region, which is home to about 80 million people, to almost all types of natural and man-made disasters, including earthquakes, floods, landslides, mudflows, avalanches, drought, extreme temperature, epidemics, dam breakdown and emission of hazardous substances, industrial and household fires;
- the presence of trends in the region of scaling-up negative disaster consequences, accidents, increasing the people's vulnerability to disasters impedes the successful implementation of strategies, programs and sustainable development plans;
- the need to increase the efficiency of fire and rescue units and civil protection services in case of emergencies of a natural, man-made and transboundary nature

- the need of swift localization of emergency zone and reduce or minimalize possible negative effect of hazardous factors;
- the need to ensure the safety of rescuers and affected people during rescue operation;
- the need to improve the interaction of rescue units of emergency authorities of Central Asian countries.

Introduction and the use of UAV allows headquarters, rescue and other units of emergency authorities of Central Asia:

- to strengthen the management effectiveness of rescue forces and means, localization and response to emergencies;
- to set up the process of aerial photography specified with topographic reference, and video-photo-documentation of the control objects to receive detailed images;
- to reduce the time of rescue to affected people, providing them with aid;
- to strengthen responsiveness and shorten duration of rescue operations;
- to reduce the number of rescue teams and other human resources and improve their safety;
- to ensure the delivery of small-sized freights, first aid needs to hard-to-reach areas;
- to enhance the effectiveness in monitoring of hazardous natural processes and phenomena, disaster forecasting;
- to ensure correct orientation, focusing and escorting of rescue teams;
- to improve the detection of precise coordinates and boundaries of emergency zone and rescue objects;
- to ensure communication and data transmission;
- to enhance the effectiveness of real-time video control of emergency zones,
- to reduce the time for notification and informing stakeholders;
- to ensure digital mapping of emergency zones, creation of 3D terrain model of different scales and formats;
- improve the ways of addressing a number of other issues in disaster risk reduction, prevention and elimination of emergencies.

The economic benefit of the use of UAV is due to simplicity of the use, ability of take-off and landing in any chosen area, as well as possibility of manual and automatic mode of flight.

The adoption of a set of organizational, legal and technical measures on development, improvement, implementation and use of UAVs will significantly enhance the capacity of the emergency authorities of Central Asian countries in disaster risk reduction, prevention and response to emergencies.