URBAN AIR MOBILITY

What? UAM is a new safe, secure and more sustainable air transportation system for passengers and cargo in urban environments, enabled by new technologies and integrated into multimodal transportation systems.
The transportation is performed by electric aircraft taking off and landing vertically, remotely piloted or with a pilot on board

When? Commercial operations in EU cities are expected to start around 2025 with delivery of goods by drones or transport of passengers by piloted aircraft

WHAT ARE THE BENEFITS FOR THE EU?

By 2030, 340 million people will live in EU cities and experience UAM

Positive economic impact with creation of 90,000 jobs by 2030

EU as a market leader with 31% of the global market (€ 4.2 bn total market size)

Safer mobility: lower risk to be involved in a fatal accident in an air taxi vs. road transport

Faster mobility: 15 to 40 minutes saved on average on a standard city travel time and more than 70% time savings for emergency/ medical delivery

Cleaner mobility: no local CO_2 emissions for electric propulsion

CONDITIONS FOR UAM OPERATIONS

Safety and security

Safety and security of UAM vehicles are among the top three concerns of citizens.

Safety
- Concerns on drones mentioned by 44%, on air taxis by 37%
- High safety level can increase public acceptance by 23%
- Citizens expect that operations are as safe as current aviation

Security
- Concerns on drones mentioned by 39%, on air taxis by 29%
- Level of trust on security and cybersecurity of UAM technology just slightly above 50%
- Half of the respondents would better trust UAM if security and cybersecurity regulations were adopted, preferably by all levels of European authorities working together

Noise and environmental impact

Noise
- Noise pollution is a concern for drones (52%) and air taxis (53%)
- Level of annoyance varies with lack of familiarity with the sound; familiar city sounds at same decibel levels are better accepted
- Distance, duration and repetition of the sound impact acceptance

Environment
- Negative impact on animals is the biggest environmental concern (for drones 62%, for air taxis 56%)
- Environmental and climate impact from production, incl. battery production (43%, 42%)
- UAM is expected to help decrease air pollution and congestion on the ground

Integration into the city and local transport network

UAM services need to be integrated into the existing local mobility system. Visual impact of aircraft and infrastructure should be limited and preserve city landscape

Citizens are concerned by noise (48%) and safety (41%) of vertiports

Drone delivery preferred close to the house (garden 68%, station in neighborhood 67%)

Affordability

Involvement of local authorities

To increase societal acceptance, authorities on all levels should work hand in hand

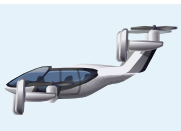
Similar trust level towards local, regional, national and European authorities to address UAM

Expectation by respondents that local actors are involved in decisions

Public acceptance

VEHICLE TYPES, MAIN USE CASES AND INFRASTRUCTURE

Vectored thrust



Lift and cruise

Wingless

Benefits

Vectored thrust	Lift and cruise	Wingless
Optimised for both hover and cruise	Redundancy benefits of multicopter without collective or cyclic actuation	High redundancy and simple controls
Lift provided by wings for cruise for highest efficiency	Wing configuration allows for more energy and speed in cruise	Significantly quieter than helicopters
Highest cruising speeds		Lower maintenance and lightweight

Implications

Vectored thrust	Lift and cruise	Wingless
Greater mechanical complexity	Suboptimal for both hover or cruise	Slowest cruising speed/ least efficient
Increased airframe weight		

For example passenger transport	For example emergency/ medical flights	For example goods delivery
Commercial transport of people (e.g. flights between city centre and airport, or within a metropolitan area, or flights for sightseeing)	Both passenger transport and goods delivery aircraft can be used or modified for emergency missions	Transport of goods for commercial or industrial application (e.g. last-mile delivery, delivery to a hub, rural delivery of supplies) excluding emergency and medical goods
Planned passenger numbers range from one to six	Passenger carrying vehicles can be used, e.g. for transport of medical emergency personnel to an accident site or transport of patients to a hospital	Delivery could take place into a garden, station nearby, roof, etc.
Most manufacturers plan to start operations with vehicles with a pilot on board	Unmanned drones can be used for emergency use cases such as evaluation of emergency areas, direct firefighting, delivery of medical and emergency supplies	Stated payload of concepts ranges from 0.7 to 200 kg
		Some concepts will initially be remote controlled, while others are already planned to operate autonomously from the beginning

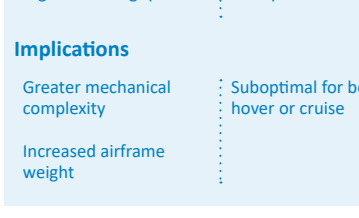
Vertiports for air taxis

Delivery stations for drones

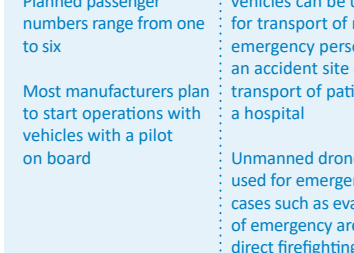
PILOT PROJECTS

Europe is already one of the world leaders in Urban Air Mobility.

Test projects are delivering goods with drones and others will see transport of passengers with air taxis, including for medical or emergency purposes



EASA'S UAM ENABLING ACTIVITIES



Aircraft airworthiness

Airspace integration

Operations and pilot licensing

Study on societal acceptance of urban air mobility

EASA has prepared a number of regulatory documents for UAM, including the first worldwide regulation on U-Space recently adopted by the European Commission.
The full overview of these documents can be found in the Appendix of the study report.

EASA
European Union Aviation Safety Agency

Your safety is our mission