The Global AAM/UAM Market Map

A guide to advanced and urban air mobility projects around the world

Introduction and copyright terms

The **Global UAM/AAM Market Map** is aimed at urban air mobility/advanced air mobility (UAM/AAM) industry OEMs and supply chain partners, transport planners, finance companies, consultants and local authorities who need a detailed understanding of what programmes are underway around the world and the market opportunities that exist within these programmes. It provides a unique guide to competitive industry information, global/regional market size and trend analysis, with a specific focus on routes, route lengths, host cities/regions and eco-system suppliers.

It is based on many months of research by the worldwide editorial team and the sources of each entry are referenced.

While most UAM/AAM market intelligence studies are focused on the value and forecast for eVTOLs and associated industry suppliers, the **Global UAM/AAM Market Map** analyses operational plans and confirmed industry participation broken down into geographical areas.

The database gives details on plans to develop passenger UAM/AAM services over 40 countries and 80 cities, with timelines and descriptions along with details on industry participation, broken down into the following areas:

- Cities and routes (with route lengths)
- eVTOL manufacturer partner
- Electric fixed wing platform manufacturer
- UAM/AAM aircraft operators
- UAM/AAM training
- UAM/AAM aircraft operator maintenance and support
- UAM/AAM aircraft charging and power supplies
- Vertiport/airport developer/operator
- Vertiport/airport safety and security
- Airspace integration
- Local authority partner/client
- Others

Information is validated and updated on a weekly basis – the sources for all information are outlined in the on-line version of this report.

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Country introduction

In October 2022 Auro Aero, a French manufacturer of a 19-seat Electric Regional Aircraft (ERA), announced its order book which includes an order for 10 aircraft from Afrijet in Gabon. The company plans the first flight of its full-scale prototype in 2024. The aircraft is reported to have a maximum payload range of 1,000 nm, reduced to 215 nm for all-electric operations, and a cruise speed of 300 knots.

Kenya

Country introduction

In March 2022, a subsidiary of Eve Holding and Kenya Airways' subsidiary, Fahari Aviation, signed a Letter of Intent (LoI) for up to 40 eVTOLs. The agreement includes joint studies through a working group to develop and scale the UAM market and a business model for cargo drone operations in Kenya.

South Africa

Country introduction

UK-based Welkin Aero in partnership with Verti-Go Solutions and strategic partners including AM Risk solutions, Slick Holdings and ARFF South Africa, is investigating the potential of developing an eVTOL vertiport alongside a helicopter refuelling base along the Johannesburg to Durban route. Phase one of the project involves a dual-purpose heliport and vertiport to be located north of Harrismith and includes "satellite helistops" with either Bergville or Winterton being considered as a suitable location.

Meanwhile, UTM company Altitude Angel and iOCO, South Africa's largest ICT solutions supplier, have agreed to work towards developing UAM infrastructure projects throughout the country.

In November 2020 South Africa's air navigation service provider ATNS presented a foundational Concept of Operations (ConOps) for its UTM system during the webinar hosted by ATNS entitled Harmonising manned and unmanned aviation in a disrupted airspace on 4 November 2020. ATNS' ATM Operations Systems Specialist Francois Barwise outlined a likely UTM framework in anticipation of ATM community members supporting the establishment of a UTM system to manage drone services in South Africa, including, eventually, eVTOL activities.

The framework targets four levels of capability – ranging from low demand less populated areas to higher risk urban environments – aimed at different user applications.

- Capability 1 is designed for agricultural applications, infrastructure monitoring and firefighting. After making an airspace reservation, the drone operator is responsible for contingency measures.
- Capability 2 includes more advanced BVLOS operations and is accompanied by a series of rules of the air and procedural requirements. This applies to activities above sparsely populated areas.
- Capability 3 is directed at BVLOS operations and includes interaction with manned air traffic. It includes tracking capability, for example vehicle to vehicle, or vehicle to UTM, and applies to public safety, package delivery and similar commercial operations.
- Capability 4 is designed to support operations in an urban environment and represents the level ATNS is working to achieve. It requires vehicle tracking, internet connection, large scale contingency and mitigation measures.

In July 2021 UTM company Altitude Angel and iOCO, South Africa's largest ICT solutions supplier, agreed to form an alliance with the strategic aim of providing the building blocks on which the country's UAM (UAM) infrastructure can be built and supported.

Australasia

Australia

Country introduction

Australia is likely to be a UAM global pioneer, as Government high-level strategic plans and industry bottom-up plans move closer together. Melbourne was originally chosen as a launch city for Uber's UAM services, but since the takeover by Joby of Uber these plans have been delayed. The city is still on Joby's list of target cities and the company has been reported as working towards launching its first commercial services there as early as 2024, though other operators are targeting the start of 2026 for first commercial operations.

Eve, Joby and Wisk are all developing eVTOL routes in the country, while cities and states are drawing up regional service plans, with Brisbane's target of having air taxi operations in place for the 2032 Olympic Games an important focus for accelerating eVTOL route planning. In parallel, several projects in the country are under way to use eVTOL platforms for medical and emergency services in rural and urban areas.

From a high-level viewpoint, in December 2020 EmbraerX, Embraer's business subsidiary, and Airservices, Australia's Civil Air Navigation service provider, published a new "concept of operations" (CONOPS) for the air taxi market. Using the City of Melbourne, Australia as a model, CONOPS has examined how existing air traffic management solutions can initially enable UAM operations, while simultaneously preparing for the scale of operations through new traffic management technologies.

In July 2022 Australia's Civil Aviation Safety Authority (CASA) published its remotely piloted aircraft system (RPAS) and advanced air mobility (AAM) roadmap. Here are the highlights for the near-term.

Immediate term (2022 to 2023)
Aircraft and aircraft systems

- Publish acceptable industry consensus standards for piloted AAM
- Review applicable maintenance policies for AAM.
- Review international frameworks, standards and methods for certification and assurance of RPAS. This includes consideration of adoption of the FAA durability and reliability process for low-risk RPAS.
- Review applicable maintenance policies for RPAS.
- Publish guidance on the evidence requirements from the OEM versus the operator for RPAS operational approvals.
- Airspace and traffic management.
- Through the AFAF (Australia Future Airspace Framework), develop a transparent, consistent and scalable method to manage Australian airspace that supports RPAS and AAM integration.
- Research how existing separation standards may apply to RPAS and AAM. Identify future changes required including conspicuity and equipage considerations.
- Review existing flight rules against the future needs for RPAS and AAM.
- Work with DITRDC (Australia's Department of Infrastructure, Transport, Regional Development, Communications and the Arts) and Airservices Australia to develop a regulatory oversight framework for UTM.

Operations

- Develop and publish further guidance material for RPAS operations already enabled in existing regulations, including acceptable means of compliance.
- Develop and publish guidance material for approval of research and development operations.
- Review and publish guidance on the carriage of dangerous goods by RPAS.

- Implement regulatory changes from the post-implementation review of CASR Part 101. Conduct a gap analysis of CASR parts to identify regulatory changes required to support RPAS and AAM operations. Publish more standard scenarios and SORA guidance for low-risk RPAS operations and emergency services.
- Talk with model aircraft, drone sport and recreation flyers to find opportunities for improved collaboration and consultation.

Infrastructure

- Develop guidance material, design requirements and regulations for vertiports and other infrastructure required to support AAM operations.
- Develop guidance for the infrastructure required to support research and development activities.
- Work collaboratively across government to understand and establish spectrum requirements for RPAS and AAM.
- Work with DITRDC to set up the National Drone Detection Network and support all safety aspects of the infrastructure planning framework.
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From the bottom-up, industry development perspective:

- In January 2022 Skyportz, the Australia-based air taxi infrastructure start-up, announced a partnership with Secure Parking to deliver up to 400 potential new vertiport sites. Skyportz is working with the Australian Federal and State governments to help develop the standards, regulations and zones which will enable "mini airports" in new locations in and around cities and regional centres.

- In September 2021 Eve Urban Air Mobility, an Embraer company, and Microflite, an Australian helicopter operator, announced a partnership to commercialise UAM services in the country by 2026.

- In February 2022 Eve Urban Air Mobility announced a partnership with Aviair and Helispirit leading to "an order of up to 50 Eve eVTOLs", followed by a collaboration with Microflite in the purchase of up to 40 eVTOLs.

- In July 2022 Switzerland-based Dufour Aerospace announced it had partnered with V-Star Powered Lift Aviation to fly the eight-seat piloted Aero3 aircraft, with a targeted cruising speed of 350 km/h (215 mph), a range of up to 1,020 km (630 mi), and a useful load of 750 kg (1,650 lb) on regional routes throughout Australia. Certification is planned for 2025.

Press reports suggest all-electric flights are planned from Sydney to Canberra three times a day and over the Great Barrier Reef by 2026, following the deal between Sydney Seaplanes, Nautilus and Eve Air Mobility to fly 60 eVTOLs in Australian airspace by 2026. Tourism flight operator Nautilus – which has bases in Cairns, Port Douglas, Townsville, Horn Island and Darwin, plans to fly 10 Eve eVTOLs on scenic flights over the Great Barrier Reef and other tourist attractions. Sydney Seaplanes will also take delivery of 50 Eve eVTOLs by 2026 to fly new routes from the company's Rose Bay terminal (subject to community consultation). Sydney Seaplanes currently operates inter-urban flights from its Rose Bay terminal to destinations such as Palm Beach in Sydney's north.

Australia is also embracing the concept of using eVTOLs in medical and healthcare roles. In November 2020 aeromedical charity CareFlight and eVTOL aircraft developer AMSL Aero – manufacturer of the Vertiia airborne ambulance – teamed up in Sydney to launch a new eVTOL air ambulance service to tackle rural and regional healthcare inequality in the country. The programme is part of a AD3 million Cooperative Research Centres Project grant from the federal government, for a two-year collaborative project with the University of

Sydney and autonomy and sensing specialists Mission Systems. Test flights were planned to take place at the company's facility in Narromine Airport in regional New South Wales.
In early September 2022 AMSL Aero announced it had received AD23 million in private equity funding to develop its 300kmph Vertiia eVTOL, with a range of 1,000 km in its hydrogen-powered version. According to a report in the *Australian Financial Review*: "If the aircraft are adopted for commuting between regional areas and cities…people at the outset could expect to pay about USD130 for a trip from Melbourne to Geelong on a 15-minute flight. In NSW, a trip from Sydney to Terrigal would be similar."

Skyportz has selected Electra as preferred OEM partner with up to 100 eSTOL aircraft for extensive air mobility infrastructure network in Australia. Electra is currently developing a hybrid eSTOL aircraft that can take off and land in a space the size of a soccer field yet cruise at 175 knots, with in-flight battery recharging, The piloted fixed-wing aircraft will initially carry up to nine passengers or 2500 pounds of cargo up to 400 nautical miles in all weather conditions.

Eviation Aircraft in November 2022 announced that Northern Territory Air Services (NTAS), an Australian scheduled airline and charter aircraft operator, has signed a Letter of Intent (LOI) for 20 all-electric Alice commuter aircraft. In a press release the company Alice will typically operate flights ranging from 150 miles to 250 miles.

NTAS is based in Alice Springs, the gateway to the Northern Territory of Australia's outback, providing a link to major airlines for passengers arriving and departing from Alice Springs, Uluru and Mt. Isa Airports. It specializes in scheduled and charter air services for business groups, private and tourist travel, and cargo transport. The company has prioritized the adoption of carbon-free and sustainable technologies and is working with a range of stakeholders to support the introduction of all-electric flight," said the press release.

In December 2022 the New South Wales Government published its electric aviation brochure. "Our vision is to ensure this new technology is fully integrated into a multi-modal network that benefits passengers….New and emerging electric aviation has the potential to reshape how people and goods travel in regional NSW" reads the statement which continues: "Emergency medical supplies, urgent freight and even passengers could soon be transported by state-of-the-art electric aircraft. Electric planes and drones could make transport cheaper, cleaner and more convenient than ever before. They could open new routes for passengers, connect communities and increase freight efficiency." The statement elaborates further saying "The electric aviation sector must grow in a manner that is safe, secure and considerate of the environment. It should enable economic activity, create new job opportunities and strengthen existing communities."

Canberra

Timeline
Planned – *to be launched within two to five years; funds have been committed and key industry partners identified*

Route(s)
Canberra – Sydney (286 km)

Programme description
The Government of the Australian Capital Territory has published its National Emerging Aviation Technologies Policy covering drone and eVTOL industries.
Some key passages from the document include:

The ACT Government is optimistic about the potential benefits of drones and drone delivery services, from empowering local businesses to reach more customers, to cutting greenhouse gas emissions and making life easier for Canberrans living with mobility challenges. We are also interested in further exploring the wide range of situations and possible applications for drone technology, including in the context of Emergency Services.

The ACT Government supports the proposed policy approach that the Australian Government should lead the development of a coordinated and informed approach to infrastructure planning, investment, requirements and approvals. The two areas that the Australian Government might focus on are:

- *site selection for "launch" sites for commercial operators, and*
- *site and operational requirements, particularly in relation to technical and assessments considerations once a site has been identified.*

Guidance for operators and land-use regulators on criteria for site selection will be invaluable in the future consideration of drone sites, as well as for the planning of such sites in future land releases. This might include guidance on considerations including appropriate location of such sites, sizes, connectivity to ground-based transport, proximity considerations (e.g. sensitive receptors, utility services and powerlines, vulnerable environments, privacy, potential flightpaths and approach zones, and proximity to other secure facilities), appropriate configuration of sites and compatible and incompatible land uses.

Site selection also raises a fundamental threshold question of when a site and its associated operations are insignificant enough to be considered as a type of "local aviation depot" (albeit closely integrated within the urban environment), and when it becomes a proposal to consider the site to be of greater land use significance with more significant potential impacts, i.e. 4 Paragraph 3.26 Inquiry into Drone Delivery Systems in the ACT, when does it become a de facto airport or heliport for UAVs or eVTOL operations?

Some clarification or guidance at a Commonwealth level about this would be gratefully received. On site and operational requirements currently there is very little, if any, guidance for regulators from the Commonwealth in their consideration of a potential launch/operational site for eVTOL operations. This could potentially cover a wide range of matters, such as sizes of launch pads, onsite storage facilities and maintenance requirements, securing the site (including fencing, lighting and surveillance requirements), utility services requirements, vegetation clearance requirements, site rehabilitation (in the case of temporary use), likely trip generation rates (and corresponding likely flight generation rates) for different operators, signage, access and parking requirements.

Meanwhile, Press reports suggest all-electric flights are planned from Sydney to Canberra three times a day and over the Great Barrier Reef by 2026, following the deal between Sydney Seaplanes, Nautilus and Eve Air Mobility to fly 60 eVTOLs in Australian airspace by 2026. Tourism flight operator Nautilus – with bases in Cairns, Port Douglas, Townsville, Horn Island and Darwin – plans to fly 10 Eve's eVTOLs on scenic flights over the Great Barrier Reef and other tourist attractions.

Gold Coast

Timeline
Intended – *an outline vision has been agreed*

Programme description
In March 2022 Skyportz and Sea World Helicopters announced a partnership to bring eVTOL operations to the Gold Coast. John Orr-Campbell, CEO of Sea World Helicopters said: "We intend to be at the forefront of the industry as it morphs into cleaner and quieter electric propulsion. We have existing helicopter landing infrastructure on the Gold Coast which we can activate with electric eVTOL aircraft as soon as they become available." He added: "We can foresee that many of our tourist operations will be very well suited to electric aviation."

The announcement builds on the previous partnership announcement in Victoria between Skyportz and Microflite helicopters, as well as with Secure Parking which has over 50 sites in the Gold Coast/Brisbane regions that could potentially be activated.
Tom Tate, Gold Coast Mayor, said: "I can see a place for Skyportz' s operations not only in our city, but across the SEQ region. Between the major SEQ cities, more than three million people reside but equally, we attract in excess of 13 million annual visitors, so the market is certainly there for innovative transport solutions like this."

Partners
UAM/AAM aircraft operator
Sea World Helicopters

Vertiport/airport developer/operator
Skyportz

Melbourne, Victoria

Timeline
Planned – *to be launched within two to five years; funds have been committed and key industry partners identified*

Programme description
In August 2022, at the Australian Association for Uncrewed Systems (AAUS) annual Advanced Air Mobility summit in Melbourne, Skyportz announced it would develop the first vertiport in Australia at Caribbean Park in Melbourne's east, in conjunction with Contreras Earl Architects, to70 aviation, Arup and Microflite.

At the end of August 2022, the Victoria government also published its Advanced Air Mobility Vision report. According to the report:

"Victoria's regional centres, such as Traralgon, Geelong, Ballarat and Bendigo, have growing commuter markets, thriving commercial centres and strong tourism opportunities. AAM has the potential to provide fast, cost-effective methods for connecting city/town pairs, especially where the cost and complication of scaling traditional aviation, or constructing fixed infrastructure, do not justify the likely demand."

Melbourne was originally chosen as a launch city for Uber's UAM services but since the takeover by Joby of Uber, these plans have been delayed. The city is still listed as one of Joby's list of target cities and the company has been reported as working towards launching its first commercial services there as early as 2024.

In March 2020 Skyportz and planning group Arup announced they were jointly developing specifications to support property developers wanting to prepare their buildings for UAM and eVTOL aircraft, in anticipation of the launch of Uber Elevate services.
Advancing UAM services has the support of the Victorian Government and Invest Victoria.
Meanwhile, the partnership between Eve Urban Air Mobility and Microflite, an Australia-based helicopter operator, foresees the introduction of eVTOL flights to the city as early as 2026.

Partners
eVTOL manufacturer
Eve

UAM/AAM aircraft operator
Microflite

Others
Arup
Contreras Earl Architects
to70 aviation, AruMicroflite

Perth

Timeline
Planned – *to be launched within two to five years; funds have been committed and key industry partners identified*

Route(s):
Initially, tourism routes

Programme description
In March 2022 electric aircraft dealer FlyOnE announced a collaboration with eVTOL maker AIR "to facilitate the delivery of 25 two-seater aircraft", reported a Press release.
FlyOnE announced the rollout of "mobile water-landing pads with aircraft recharge capabilities as well as partnerships with key airfields to operate recharge nodes for existing electric fixed-wing aircraft on the Lilypad Elevate electric aviation network with operations beginning this month."

Korum Ellis, Founder of FlyOnE, commented: "FlyOnE is excited to be working with AIR to bring the world's first metropolitan eVTOL network to Perth as early as 2025." He continued: "With our unique Lilypad landing and charging system, the AIR ONE personal two-seater electric VTOL can access a variety of waterfront destination sites and airport locations up to 100 kilometres away.

"In addition, existing fixed-wing electric aircraft available now can access select runway sites on this same network from March 2022."

Key aspects of the partnership include:
• Some of the world's earliest delivery of recreational eVTOL aircraft being allocated to FlyOnE clients in Australia.

• Enabling the world's first International standard AS6968 eVTOL network of charge nodes, and metro eVTOL self-piloted air travel to be established and operated in Perth.

• Construction of the network and operation and training around the aircraft piloting and maintenance will generate jobs in western Australia, stimulate employment and drive unique tourism opportunities.
• The connection of new and existing tourism destination sites with point-to-point self-piloted electric air travel.

Partners
eVTOL manufacturer
AIR

Queensland, Brisbane

Timeline
Planned – *to be launched within two to five years; funds have been committed and key industry partners identified*

Route(s)
Brisbane city centre – Olympic Park (6km)
Great Barrier Reef tourism routes

Country introduction
Skyportz is planning to build a series of vertiports to take visitors from the city centre to the Olympic Village for the 2032 Olympic Games, establishing a Moreton Bay air taxi hub. The hub would be part of the planned Australian Advanced Manufacturing Centre of Excellence, to be constructed in the Moreton Bay council area by 2023.

In parallel, UAM facilitator consortium Greenbird is building an industry collaboration platform to bring together UAM players and engaging with government to develop commercial eVTOL operations for the Olympic Games. According to press reports Greenbird is initially focused on establishing UAM/AAM operations in Queensland in time for the Olympics, with a view to expanding throughout the country.

Founding Greenbird partners comprise eVTOL ground infrastructure specialist Skyportz; Australian eVTOL developer AMSL Aero which has designed and developed the Vertiia electric battery and hydrogen-powered aircraft; Queensland-based helicopter operator Nautilus Aviation, which has an order for 10 of Eve's eVTOL aircraft; specialist helicopter operator Aviator Group; Queensland's Archerfield Airport and Griffith University; clean energy company H2 Energy Company (h2ec); engineering consultancy AvLogix Solutions; and uncrewed systems management platform FlyFreely.

In June 2022 Wisk Aero signed a Memorandum of Understanding with the Council of Mayors, which will see the two organisations "working together to introduce a safe, sustainable and scalable, autonomous air taxi service to South East Queensland".

Wisk intends its presence in Queensland to be "long-term, and will be working with local government toward providing the city with green tourism and transport options. The company will also be displaying its 5th-generation aircraft in Brisbane in July."
Lord Mayor Cr Adrian Schrinner said: "Council of Mayors kickstarted our Brisbane 2032 Olympic and Paralympic Games journey because we knew it would attract global businesses and innovative industries to our region, bringing with it new jobs and new economic opportunities. On the back of the Brisbane 2032 Games, we're delighted to be working with Wisk to look at how South East Queensland can capitalise on the new jobs and economic opportunities associated with this new and exciting industry. We expect to see the emergence of advanced air technology in places like Paris and Los Angeles, and by 2032 I'd love to see it supporting new and innovative experiences for tourism and travel in South East Queensland."

In December 2021 Eve and Nautilus Aviation, a division of Morris Group and Northern Australia's largest helicopter operator, announced a collaboration to develop the UAM ecosystem in Australia. The partnership will see the introduction of Eve's eVTOL Aircraft serving various Queensland tourism attractions including the Great Barrier Reef. As part of this agreement, Nautilus has ordered up to 10 of Eve's eVTOL aircraft, with flights taking off over the Great Barrier Reef by 2026.

In February 2023 Wisk Aero and the South East Queensland Council of Mayors (COMSEQ), Australia's largest regional local government organization, published a paper outlining the

benefits Advanced Air Mobility (AAM) will bring South East Queensland (SEQ). Queensland Government modelling suggests that by 2036, skies across SEQ could host hundreds of daily passenger and freight services. Existing aviation infrastructure, such as Brisbane Airport, Sunshine Coast Airport and Wellcamp Airport, and heliports, are likely to be key locations in SEQ's AAM network.

According to the report:

"It is envisaged AAM will complement existing infrastructure development, like the fully electric fleet from Brisbane Metro and Cross River Rail, and connect with existing modes of transport, such as bus and rail networks. In regional communities such as Scenic Rim, Somerset, Toowoomba and Lockyer Valley, AAM can enable shorter travel times from the city fringe and regional areas to major metropolitan centres and transport hubs. AAM can also provide regional, remote and island communities with enhanced mobility options at significantly lower infrastructure cost.

"Importantly, the geographic distribution of urban and regional centres throughout SEQ presents significant opportunities for air taxi services. Advanced aircraft, such as Wisk's Generation 6 air taxi, will unlock new opportunities that have the potential to transform mobility such as:

- Connecting travellers at Brisbane Airport to the Sunshine Coast in only 22 minutes, saving at least an hour sitting in traffic,
- Opening new tourism possibilities with flights from Brisbane CBD to the islands of Moreton Bay, or to the pristine wilderness areas of the Scenic Rim, in under 15 minutes, and
- Improving health outcomes for regional communities by connecting communities in the regional communities to medical services in major centres in less than 25 minutes.

"With Australia poised to capture around 3% of the global AAM market, according to a recent Roland Berger study, it is projected that AAM could contribute over AUD66 billion, or 3.1%9 of national GDP, to the Australian economy by 2040. A recent Nexa Capital study (December 2022) has identified, with the adoption of AAM, the SE Queensland GDP will increase by an estimated USD3.7 billion over the coming 25 years. The revenue forecast for AAM services in the SEQ region over the next 12-15 years is expected to be significant: driving major investment in infrastructure, job creation and advances in technology. Forecasts are for an AAM industry with a combination of passenger, business aviation, urban and regional air mobility to receive revenues of up to USD1.7 billion by 2045."

Partners
eVTOL manufacturer
AMSL Aero
Eve
Wisk

UAM/AAM aircraft operator
Aviator Group
Nautilus

UAM/AAM aircraft charging and power supplies
H2 Energy Company

Vertiport/airport developer/operator
Skyportz

Airspace integration
FlyFreely

Others
Archerfield Airport
Griffith University
AvLogix Solutions

Sources

Advanced Air Mobility Presents Opportunity to Bring Economic, Social, and Environmental Benefits to South East Queensland

Sydney

Programme description
In December 2021 Eve announced a partnership with Sydney Seaplanes for electric air taxi operations in Greater Sydney.

"With the partnership, Sydney Seaplanes has placed an order for 50 of Eve's electric vertical take-off and landing aircraft (eVTOL), with progressive deliveries expected to commence from 2026," said a company press release. "The new partnership accelerates the progress towards 100% of Greater Sydney's local tourism and commuter flights coming from zero emission electric aviation."

"Subject to community consultation, we expect some flights will operate from our iconic Rose Bay aviation terminal in Sydney Harbour. This service will have a widespread appeal which will allow us to open new routes beyond the Harbour and throughout the Greater Sydney region," said Aaron Shaw, CEO of Sydney Seaplanes.
Meanwhile, Press reports suggest all-electric flights are planned from Sydney to Canberra three times a day and over the Great Barrier Reef by 2026, following the deal between Sydney Seaplanes, Nautilus and Eve Air Mobility to fly 60 eVTOLs in Australian airspace by 2026.

Denmark

Country introduction
Germany's Evia Aero airline plans to fly electric aircraft services from Elde in the Netherlands to London, Brussels, Duesseldorf, Hamburg, Frankfurt and Copenhagen, as part of a network of 15 European destinations in place by 2027. The company has also signed a letter of intent with the UK company Cranfield Aerospace Solutions (CAS) for the delivery of ten Britten Norman Islanders powered by hydrogen fuel cells. The aircraft is aimed at coastal routes in Germany, the Netherlands and Denmark.

Odense has become the centre of the country's urban air mobility programme. In May 2022 Odense Municipality announced it was targeting future green mobility solutions at Hans Christian Andersen Airport (HCAA). According to a report from the local authority's economics committee:

"It is the Mayor's Administration's assessment that the airport faces a unique opportunity to become an epicenter in Denmark and (Northern) Europe for the use, testing and development of drones for passenger transport. An assessment that is based, among other things, on:

- A brief initial screening of opportunities and potential carried out by the Mayor's Administration in February 2022, which is attached to the case as an appendix.
- Strong support from Naviair (the state's company for airspace traffic management), which points to Odense as a natural center for this development.

"Based on these assessments, the Mayor's Administration is now uncovering the potential for urban air mobility (UAM) and vertiports (landing facilities for personal drones) in more detail - in order to be able to position Odense Municipality and Hans Christian Andersen Airport as visionary players in drone mobility in the long term. On the basis of the above, the mayor's administration has set up a fast-working working group, which in future will facilitate a focused and short-term cover-up effort, which will uncover the potential and prepare a business case, a project plan, defined milestones and a draft budget.

"The working group works on the basis of the attached memorandum of the case, and consists of Odense Municipality and relevant actors, who must jointly prepare solutions to the above objectives. In this connection, the focus will be particularly on the establishment of a Danish/Finnish solution for personal drone mobility in the context of future infrastructure."

Odense

Timeline
Imminent – *to be launched within the next three years*

Programme description
A new partnership between HCA Airport in Odense and Copenhagen Helicopter was announced in February 2023 the "first in Denmark to build an infrastructure for electrically-powered flying taxis to ferry people between the country's largest cities" according to UAS Denmark Test Center.

In statement of the company's website it says "The aim is to showcase the first flying taxi by summer 2023, and in the slightly longer term the goal is to establish one or more landing sites, so-called vertipads or vertiports, in Odense – initially on top of Odense Station.

"Initially, the partnership wants to attract foreign AAM operators to HCA Airport, which already hosts the UAS Denmark Test Center. This could be in the form of testing and demonstration activities or, in the longer term, service and maintenance.

"Copenhagen Helicopter offers transport such as taxi flights in traditional helicopters, which the company says is a growth area. According to Martin Andersen, CEO of Copenhagen Helicopter, the company's own calculations, which are based on international and national reports, indicate that the AAM area has huge potential and could transport 84,000 passengers a day and remove 120,000 tonnes of CO2 from Danish roads by 2035.

UAM/AAM aircraft operator
Copenhagen Helicopter

Vertiport/airport developer/operator
HCA Airport

Sources

https://uasdenmark.dk/hca-airport-part-of-partnership-to-establish-landing-and-take-off-site-for-flying-taxis-on-top-of-odense-station/

Hamburg

Programme description
In June 2021 Andreas Scheuer, Federal Minister for Transport and Digital Infrastructure, signed a memorandum for cooperation with the four German Urban Air Mobility model cities and regions of Aachen, Ingolstadt, Hamburg and North Hesse. According to Federal Minister Andreas Scheuer, quoted on the Hamburg Aviation website on June 28: "Today we are starting a new innovation network for the use of drones in Germany. Aachen, Ingolstadt, Hamburg and North Hesse are pioneering regions for the new air mobility. In the future, we will work even more closely together to bring drone innovations into practice. The know-how 'Made in Germany' is there. We want to use that even more. To do this, we bring everyone together: the drone community, start-ups, research, cities and municipalities. The goal: to make Germany the lead market for drone innovations. We also take the citizens with us and show them how drones can make life easier."

The goal of the agreement was to make Germany the lead market for urban air mobility, for example through:

- Infrastructure construction and reconstruction: The network wants to develop technical and legal solutions, for example for vertiports or the charging and communication infrastructure. These can help cities and municipalities as blueprints for building the infrastructure.
- Airspace integration: The network wants to create real laboratories and test fields for setting up U-Spaces
- Best practice examples: The network wants to create joint drone and air taxi projects that provide municipalities and rescue services with new impulses and insights into their possible uses. The innovation network will bring the drone community, science, business and administration together in its own conferences, workshops and network events. The aim is to exchange ideas, learn from each other and then put the knowledge into practice.
- Social acceptance: Citizens should be better educated, informed about developments in urban air mobility, and taken along, for example through dialogue events and best practices.

The pioneering regions in Germany have been working on developing procedures and standards for drones and urban air taxis, developing new standards for UTM and ground infrastructure to support both sectors. In February 2022 the Government announced it was planning to go ahead with the launch of several U-space areas in the country during 2023 following the publication of recommendations and results of the Port of Hamburg sandbox U-space trials.

In a statement published by U-space service provider (USSP) Droniq GmbH, Volker Wissing, German Federal Minister for Digital and Transport said: "The U-space sandbox has answered many important questions for us for the establishment of U-space. We are now using this valuable practical experience to progress onwards. The first U-space areas are to be set up in Germany as early as next year. In doing so, we are ensuring safety in German airspace and facilitating more innovations in unmanned aviation."

Hamburg, which hosts the country's largest aerospace cluster, has a strong technology base in next generation aerospace engineering and is likely to become a key centre of urban air mobility operations, though the initial UAM/AAM routes in Germany are centred further south in Bavaria. But the city has developed a strong ecosystem of local authority (especially the port), OEM and research collaboration, with several electric aviation programmes under development. Hamburg began its UAM investment back in May 2019 with the launch of the "Windrove 2.0" programme which built on the Network for Promoting Drone Activities in Metropolitan Regions, launched in Hamburg in 2017. Within the Hamburg Aviation Cluster

and the ZAL Centre of Applied Aeronautical Re-search, the aim for "Windrove 2.0" was to open up potential application scenarios for urban air mobility in Hamburg. Hamburg State, the European Regional Development Fund (ERDF), and ZAL provided almost EUR 850,000 to fund project management between now and 2022.

Significant UAM events and programmes underway in the city include:

- Volocopter's eVTOL VoloDrone performed a first public flight demonstration on October 2021 at the ITS World Congress event in Hamburg, Germany. Volocopter teamed up with its strategic investor DB Schenker for the demonstration, which simulated multimodal last-mile delivery.
- Germany's Evia Aero airline plans to fly electric aircraft services from Elde in the Netherlands to London, Brussels, Duesseldorf, Hamburg, Frankfurt and Copenhagen, as part of a network of 15 European destinations in place by 2027.
- Together with DFS Deutsche Flugsicherung, Droniq established a U-space sandbox in the Port of Hamburg in 2021 to demonstrate that the U-space concept developed by the European Union Aviation Safety Agency (EASA) can function even with the current toolset of airspace design. It aims to ensure the safe and efficient use of manned and unmanned air traffic in urban areas. At the launch of the sandbox Federal Transport Minister Andreas Scheuer said: "We are now starting Germany's first test field for a drone airspace in Hamburg and creating the conditions for the transport system of the future. In the U-Space real-world laboratory, we are testing in practice how drones and, in the future, air taxis can be safely and intelligently integrated into the airspace." The sandbox area consists of two interconnected regions: one is located to the north and the other to the south. The northern area extends over parts of Francop as well as Altenwerder and borders on Waltershof and Moorburg. The southern area, which is largely intended for the test flights, includes the Steinwerder area as well as parts of Grasbrook and borders on parts of Hamburg-Mitte and Hafencity. The aim of the test flights is to transfer the mandatory services applicable in a U-Space from 2023 into practice. The project is funded by the Bundesministerium fur Verkehr und digitale infrastruktur (BMVI) and includes the following partners: DFS Seutsche Flugsicherung, Hamburg Port Authority (HPA) Anstalt offentilichen Rechts, HHLA Sky, Ministry of Economy and Innovation Hamburg, Hamburg Aviation, and project consortium UDVeo.
- In the "Partnership for Clean Aviation" planned within the framework of Horizon Europe, Hamburg Aviation has set itself the goal of making Hamburg become one of the partner regions. The prerequisite for this is that a technological roadmap and financial support be coordinated with the "Clean Aviation" partnership and defined in a Memorandum of Understanding.
- The launch in 2020 of the Hamburg Medifly programme, funded by the BMVI, is demonstrating the use of drones for acute transport of medical samples.

Meanwhile, Hamburg is part of the EU's Urban Air Mobility Initiative Cities Community (UIC2). The Urban-Air-Mobility Initiative Cities Community (UIC2), of the EU's Smart Cities Marketplace, was established in October 2017. According to the programme's website "UIC2 is a city-centric (and regions) and citizens' needs-driven community that brings the voice of European cities and regions in the emerging sector of urban air mobility. UIC2 fosters collaboration across disciplines and sectors pertinent to UAM with the aim to jointly shape the future of UAM."

Rio de Janeiro

Timeline: Planned – *to be launched within two to five years; funds have been committed and key industry partners identified*

Route(s):
Rio de Janeiro's Barra da Tijuca - Tom Jobim International Airport (24km)

Programme description
In May 2022 EVE announced it has finalised a concept of operations (CONOPS) for UAM services in Rio.

In August 2021 EVE announced it is cooperating with strategic partners and government entities for the development of CONOPS for the city.

According to a company Press release: "Under EVE's coordination, the initiative brings together ANAC (Brazil's National Civil Aviation Agency) and DECEA (Brazil's Department of Airspace Control) who will work to assess the existing infrastructure and air traffic management (ATM) solutions to safely enable UAM operations through the development of upcoming technologies.

"The substantial CONOPS collaboration includes partners such as Helisul Aviation, one of the largest helicopter operators in Latin America; Skyports, a company that designs, builds and operates vertiports; Flapper, an independent platform for on-demand flights, and EDP, one of the largest companies in the energy sector. Also included in this project are Beacon, an EmbraerX spinoff with a platform that connects the ecosystem of aviation maintenance services, and Atech, an Embraer Group company responsible for the development, implementation and support of air control systems, and air traffic management (civil and military).

"All parties will work on safely introducing and accelerating the UAM market's growth in Brazil and are supported by RIOgaleão, responsible for Rio de Janeiro's Tom Jobim International Airport, and Universal Aviation, one of the largest airport support companies, as well as Brazilian Association of General Aviation (ABAG, Associação Brasileira de Aviação Geral).

Conventional helicopters will be used simulating EVE's eVTOL platform operations. The simulation will be monitored by the National Civil Aviation Agency (ANAC) and the Department of Airspace Control (DECEA).

In May 2022 the company announced it had concluded the trial flights, the goal being to "enable safe autonomous operation in complex urban environments".

The company says that the "aerial data collection and real-time evaluation of these technologies in urban scenarios used regular piloted helicopters as part of the Embraer Autonomous Systems project ('Project EASy'), which uses an agile testing process for the development of best-in-class solutions that will enable the autonomous aviation of the future." Embraer says it worked in direct collaboration with partners Daedalean, Iris Automation and Near Earth Autonomy for seven full days. During this time, the companies explored nominal and edge-case scenarios for take-off, climb, cruise, approach and landing flight phases.

According to a July 2021 *BlueSKy Business Aviation News* Press report, EVE expects to provide Flapper with up to 25,000 hours of flight time per year across key cities in South America, including São Paulo, Rio de Janeiro, Belo Horizonte (all in Brazil), Santiago de Chile (Chile), Bogotá (Colombia), and Mexico City (Mexico). "The parties plan to foster a culture of on-

demand UAM booking using helicopters to serve as data collection for the future development of the EVA. This agreement has the potential to bring up to 25 of EVE's Electric Vertical Aircraft to Flapper's platform."

Partners

eVTOL manufacturer:
EVE

UAM/AAM aircraft operator:
Helisul Aviation
Flapper

UAM/AAM aircraft maintenance and support:
Beacon

UAM/AAM aircraft charging and power supplies:
EDP

Vertiport/airport developer/operator:
Skyports
Jobim International Airport

Airspace integration:
DECEA
Atech
ANAC

Others:
Brazilian Association of General Aviation
Universal Aviation

Sao Paulo

Timeline: Planned – *to be launched within two to five years; funds have been committed and key industry partners identified*

Programme description
VPorts and Air Traffic Management Inc (VPorts) have been selected to build and operate a vertiport hub at Aeroporto Internacional de São Paulo (GRU) as part of a 40-year concession agreement. The new 5,100 square metre building, which will be located on the site of GRU São Paulo Airport, will open at the end of 2023. The new GRU private terminal will include the vertiport, which will be ready to enter into service as urban air travel vehicles take flight in the coming years. By 2026, eVTOLs and air taxis will be connecting Guarulhos to other areas in São Paulo. VPorts is also planning to deploy its South American VPorts Operation Control Centre (VOCC) in the City of São Paulo and will oversee the operation of all its vertiports in South America from this centre.

According to industry estimates the UAM/AAM industry in São Paulo will reach USD15 billion US in revenues by 2045, with 20 million passengers per year, "giving São Paulo a worldwide leadership role".

According to I*nternational Airport Review:* "In the State of São Paulo, VPorts will start by identifying other locations for its vertiports, based mainly on cargo demand and the current airspace configuration. VPorts will work with Brazil's National Civil Aviation Agency (ANAC) and eVTOLs operators to develop the plan for collaborative operations of these vertiports and make them available for São Paulo and GRU airport passengers from across the globe."

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Flapper has ordered 30 Electra eSTOL aircraft to on-demand private aviation booking platform Flapper. Electra is currently developing a hybrid eSTOL aircraft that can take off and land in a space the size of a soccer field yet cruise at 175 knots, with in-flight battery recharging, The piloted fixed-wing aircraft will initially carry up to nine passengers or 2500 pounds of cargo up to 400 nautical miles in all weather conditions.