

# CALL FOR EXPRESSIONS OF INTEREST IN CARGO DRONE

With the  
participation of

<https://asf-fr.org/en>

aimed at

**(a) Publicize & assess the potential of your drone in the humanitarian sector**

and if possible

**(b) Involve you in a pilot project in the humanitarian sector**

**DEADLINE: January 24th, 2024**

extension of deadline (short) upon justified request

## How to participate?

See indicative questionnaire below. Answer as many questions as possible.

Provide one replay per device. Not answering all the questions is not an exclusion criterion.

Send to [drones@aviation-sans-frontieres-fr.org](mailto:drones@aviation-sans-frontieres-fr.org)

**Aviation Sans Frontières - Aviation Without Borders (ASF-AWB) is a Non-Governmental Organization (NGO) which puts the expertise and the resources of the aeronautical sector to the service of the actors of humanitarian aid and environment conservation since 40 years.**

**With its aeronautical expertise, humanitarian experience and development approach, the association implements "last mile" drone / ultra light aviation / airship / aircraft solutions to bring lasting improvements to the lives of the most hard-to-reach communities.**

The association is (a) making an inventory of all the cargo drone systems on the market and (b) experimenting with a last mile supply chain in the context of a complex humanitarian crisis in the conflict zone in the east of the DRC, with the help of institutional funding (MEAE - *Ministère de l'Europe et des Affaires Étrangères, France*. French Ministry of Europe and Foreign Affairs)

**Humanitarian aid in figures:** In 2022, international humanitarian aid was financed to the tune of \$46.9 billion, \$38.1 billion of which came from institutional donors, led by the USA and European institutions. For 2023, the total amount is estimated at \$54.9 billion. For DR Congo alone, \$2.23 billion have been requested. The USA provided aid amounting to \$486 million. **Logistics, the backbone of humanitarian aid, represents 60 to 80% of expenses depending on the sector of activity.**

## What is the mission ?

Having made Africa its main flight airspace for more than 40 years, ASF-AWB is used to making sure that access, security and operational flexibility are possible in a difficult environment. For a UAV manufacturer, having a partnership with ASF-AWB is a great opportunity to test and reach conclusions on its aircraft performance and operational practices in a tough humanitarian and logistical environment.

In order to satisfy urgent humanitarian air transport needs in Africa, ASF-AWB is intending to operate UAVs with a large payload capacity in order to improve its aviation service. UAVs are also a great opportunity to reduce costs in a sustainable way (economic development, rehabilitation, climate change prevention, and environmental sustainability), strengthening the ecological and environmental credentials of ASF.

Flexibility and responsiveness to a humanitarian need are key concepts ASF want to prioritize. UAVs are inherently characterized by their high flexibility and mobility which is a real advantage when operating in infrastructure damaged environments encountered in sensitive locations such as conflict and disaster zones.

### **What kind of UAVs do we need ?**

In order to maximize this flexibility, ASF experiment an UAV operable network using two types of UAV.

The first type is a long-range UAV (greater than 250 km / 160 mi) with a high payload capacity (>50 kg / 110 lb). It will be the link between two sites. Planes are very well suited to this type of use.

The second type is a medium range UAV (greater than 100 km / 65 mi) with a medium payload capacity (>5 kg / 11 lb). Transported by mobile teams, this UAV have to be easily operated. VTOLs and Copters are very well suited to this type of use.

Ideally, both of could be equipped with a refrigerating unit. UAVs so equipped would need a permanent electric power supply of 100 W.

Electric propulsion is preferred but, depending on the autonomy required and the performance of the payload, we are however aware that thermal or mixed engines must also be considered in the interest of the finality of the project, especially more than interesting efforts are being made to reduce emissions from such propellants.

**In order to make a selection for the first tests in [2Q] 2024, we wish to receive by January 24, 2024, your expression of Interest for this project. Your response should include the following information (as much s possible) relating to technical documentation & operating costs. We are of course ready to sign a Non Disclosure Agreement to protect sensitive technical information.**

Please fill up following blanks. Answer as many questions as possible.

One per aircraft.

#### **1. The aircraft overview**

- 1.0. Commercial name
  - 1.1. Is it a prototype? A well-known commercial product?
  - 1.2. Motorization type : electrical or ICE (Internal Combustion Engine) or both
  - 1.3. The payload
    - 1.3.0.Weight
    - 1.3.1.Dimensions
  - 1.4. On board electric supply available (W)
  - 1.5. Range

#### **2. The aircraft reliability and endurance**

- 2.0. A detailed description of the current uses of the drone or prototype is requested in point 5.
- 2.1. Explain in your own technical terms the reliability and endurance of your product, as well as the added value and what sets your product apart from others on the market.
- 2.2. What is the class of your aircraft?
  - 2.2.0. Class 1 : <= 5 kg Maximal weight on ready for take-off configuration
  - 2.2.1. Class 2 : > 5 kg <= 25 kg idem
  - 2.2.2. Class 3 : > 25 kg idem

## 2.3. Reliability :

### 2.3.0. Aircraft :

- 2.3.0.1. Time Between Failure
- 2.3.0.2. Time Between Inspections
- 2.3.0.3. Time Between Overhaul
- 2.3.0.4. Communication system (type and redundancy)
- 2.3.0.5. In-flight safety system (parachute)
- 2.3.0.6. IP Norms (aircraft and electrical / mechanical connectors)

### 2.3.1. Manufacturer :

- 2.3.1.1. Commercial name
- 2.3.1.2. Contact
  - 2.3.1.2.1. Phone / Whatsapp
  - 2.3.1.2.2. Email
- 2.3.1.3. Apart from UAV, what is your experience in the aeronautical domain?
- 2.3.1.4. ISO Norms
- 2.3.1.5. Experience in humanitarian work
- 2.3.1.6. Experience in logistic
- 2.3.1.7. Experience in refrigerated transportation
- 2.3.1.8. Experience in the transport of medicines

## 2.4. Unfolded / dismounted aircraft dimensions and weight

## 2.5. Ready for Take-off aircraft dimensions and weight

## 2.6. Range of action (km or mi)

## 2.7. Noise level of the engine

## 2.8. Payload

- 2.8.0. Is the weight of the tank/battery included in the payload weight?
- 2.8.1. Maximal electric power supply available on board
- 2.8.2. Insulation (from thermal variations and from mechanical vibrations)

## 2.9. Aircraft performance :

### 2.9.0. For the aircraft to be ready

- 2.9.0.1. Mounting time
- 2.9.0.2. Number of parts to be assembled
- 2.9.0.3. How many people is needed ?
- 2.9.0.4. Do the operators need to be qualified or trained ?

### 2.9.1. Take-off and landing

- 2.9.1.1. Distances and surface areas required
- 2.9.1.2. Wind limits values
- 2.9.1.3. Stall air speed
- 2.9.1.4. Minimal approach / landing airspeed
- 2.9.1.5. Are there flaps ?
- 2.9.1.6. Are there a foldable landing gear ?
- 2.9.1.7. Is there take-off / landing systems (i.e. catapult) ?

### 2.9.2. Cruise

- 2.9.2.1. Cruising airspeed
- 2.9.2.2. Maximal operating altitude
- 2.9.2.3. In case of a copter : Hovering Out of Ground Effect altitude
- 2.9.2.4. Climbing rate (maximal flight path angle flap configuration)
- 2.9.2.5. Maximal load factor
- 2.9.2.6. Maximum rain density tested (IP norms)

### 2.9.3. Motorization :

- 2.9.3.1. Engine mechanical power
- 2.9.3.2. Total capacity of the fuel tank (L) / the battery (Wh)

### **3. Measurement of standard performances**

Specify the meteorological conditions and the flight conditions (airspeed, altitude, etc.) in which :

- 3.0. Your aircraft performance has been measured (see list of parameters in 2) ).
- 3.1. Your UAVs are usually used (use type, frequency, performance parameters).
- 3.2. Very hard in-flight conditions (use type, frequency, performance parameters).
- 3.3. Curves / charts available between Action radius / Payload / Speed / Altitude, etc.

### **4. Strategic choices**

Explain how you made your choice about your aircraft equipment:

- 4.0. Motorization (Internal Combustion Engine / electrical / both).
- 4.1. Aircraft structure (STOL / VTOL / Mixt).

### **5. Development and certifications**

Please precise:

- 5.0. Stage of development :
  - 5.0.0. Is it still a prototype ? what are the next improvements?
  - 5.0.1. How do you manage the updating?
  - 5.0.2. Are there conditions for the clients to benefit from these improvements?)
- 5.1. Certifications you have in the aeronautical sector.
- 5.2. The number of units produced (type, sector of activity, main customers).
- 5.3. The conditions of use and geographical coverage.
- 5.4. Other applications / other areas of use (imaging, spraying, etc.).

### **6. Guidance system and safety**

Indicate which guidance, command and control systems and safety systems provide full guarantees, particularly in terms of flight safety, in BVLO conditions (air safety, redundancy, command, safety, guidance, etc.). Do you have a BVLO experience with this drone? If yes please explain (IMPORTANT).

### **7. Cold chain**

Indicate whether the drone operated with a cold storage and, if so, give all possible details. Does the electrical power be available on board ?

### **8. Skills transfer**

Please explain how you train your customers' staff to operate the drone independently? How long does it take, does it necessarily have to be done on the project site or is it possible to organize it elsewhere? Do you follow up with customers? This question is related to the next one, concerning the personnel necessary to operate the drone. This will need to be included in your price offer.

### **9. Minimum equipment and staff of the main operational base and sub-bases**

Could you explain/describe what is the minimum equipment necessary for the permanent operational base, as well as the personnel (number, function, qualification). This will need to be included in your price offer. Same thing for the sub bases. A sub-base is a destination / transit / relay base where the drone delivers its payload, it can pick up a payload and it can be recharged with electricity (or battery change) or fuel.

We are also considering the use of mobile bases to intervene temporarily when emergencies occur outside the network of sub-bases. Depending on the case, it will be a mobile main base or a mobile sub-base which will have to be moved by all-terrain vehicle. Could you imagine this and think about all the scenarios, if it would be feasible with one or two vehicles, what would be the constraints, would it be necessary to disassemble and reassemble the drone, is it better to create the base and then send the drone, what is the packaged weight-volume of the equipment, etc.

## 10. Pricing - Financial terms & conditions

The context of this call for expressions of interest is to EXPERIMENT drones in real conditions for humanitarian missions. For this trial, ASF plans to favor rental over a few months, or partnerships, but is not closing the door to purchases at very competitive prices.

More generally, we also need to know what your usual rental and/or sale conditions are for future projects which will be in the humanitarian sector in the longer term.

It is in this context that we ask you (1) what are the usual purchase and rental conditions, and (2) to let us know your best offer for the experimental project.

- 10.0. Explain what are your **usual conditions** of sale or rental
  - 10.0.0. Conditions of sale with full equipment
    - 10.0.1. Are you ready to consider dry leasing (providing an aircraft *without* staff)? Terms and conditions?
    - 10.0.2. Are you ready to consider wet leasing (providing an aircraft with complete crew, maintenance, and insurance)? Terms and conditions.
- 10.1. Explain what are the operational and financial conditions for short periods on a **pilot project (3, 6, 9 months)**.
- 10.2. Could you consider making an operational drone or a prototype available for free for the pilot project? For the drone and assistance, or just the drone? For how long? Are you able to provide funds for drone testing in operational conditions? This criterion will be assessed while taking into account the technical, operational and innovative qualities of your drone.
- 10.3. Are you considering making special conditions for the humanitarian/Non-profit sector? If yes, which ones?

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