# WFP Drones

## Unmanned Aircraft Systems (UAS) Coordination

The World Food Programme (WFP) is scaling technology and innovation as part of its strategy to end hunger by 2030. Looking to improve its ability to prepare for and respond to humanitarian emergencies, WFP has been developing the use of unmanned aircraft systems (UAS), commonly known as drones, since 2017. With support from the Government of Belgium, WFP created a **UAS coordination model,** and in parallel, is building local capacity to use drones in countries at risk of natural hazards. Moreover, WFP acquired substantial knowledge during its work with drones in Mozambique following cyclones Idai and Kenneth in 2019. This has enabled WFP to better identify needs and opportunities for using drones in emergency response and to develop a new 10-day course, "UAS Emergency Response Training" which was conducted for the first time in Mozambique in December 2020.

With decades of experience in Aviation, Logistics and Telecommunications, which it uses for humanitarian response in over 80 countries each year, WFP is well positioned to **develop**, **coordinate** and **deliver** the standardized, **safe and ethical use of drones** for its own operations as well as those of partners and the wider humanitarian community.

WFP is focusing on three functional areas related to drone technology — **data collection, cargo delivery** and **connectivity** — which are being developed into **common humanitarian services** with support from partners and funding from United Kingdom's Foreign, Commonwealth and Development Office Development (FCDO). Prepositioning drones and an investment in Information Management are at the heart of the WFP's approach to this drone project.

Internal collaboration has also allowed WFP to integrate machine learning (ML) with drone technology. WFP's Emergency Response division (EME) and the drones team have designed a tool called the "Digital Engine for Emergency Photo-analysis," or DEEP. The open-source application can be installed on any laptop to run a model that assesses damage to buildings. The tool can classify infrastructure images as damaged or intact and plot these on a map to support decision making on the ground. Integrating ML with drones can shorten the time it takes to conduct damage assessments in the field from weeks to hours.

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## WFP EXPLORES
## USING DRONES FOR:

**DATA COLLECTION**

**CARGO DELIVERY**

**INTERNET CONNECTIVITY**

The humanitarian community has identified several ways to use drones in emergency preparedness and response:

-Damage assessment

-Site Survey

-Line of Sight

-Search & rescue

-Flood modeling

-Project Management

-Community Participation

-Cargo delivery

-Connectivity (Wi-fi in the Sky)
-Communication (public information & advocacy)

## What has been done so far

WFP has been active with drones in **30 countries** — from prepositioning equipment in high risk countries and strengthening local emergency preparedness efforts through training and workshops, to supporting emergency responses when disaster hits.

**Emergency response:** When two powerful cyclones struck Mozambique in 2019, WFP worked with the country's National Institute of Disaster Management (INGD) to coordinate and deploy drones for the first time. The operation required **deconflicting airspace** and ensuring operational safety; **managing humanitarian needs and partner activities** to minimize duplicated efforts; and **delivering drone services** to fill operational gaps. Drones were used to capture thousands of images, creating detailed maps to improve rapid disaster assessments and support the work of over 20 humanitarian organizations.

**Capacity building:** WFP has designed a complete **UAS training exercise package** divided into three modules: Let's COORDINATE (to strengthen cooperation between national stakeholders), Let's MAP (a practical course on processing data obtained from drones ) and Let's FLY (a hands-on flight workshop).

**Preparedness:** As part of its strategy to improve local food security, WFP is exploring how drone technology can be used for emergency preparedness by monitoring crops and livestock as well as mapping out flood planes to bolster resilience and support local small holder farms.

## Working with the humanitarian community

### Technical Working Groups

While UAS technology holds tremendous potential in humanitarian operations, it also poses key challenges notably legal and operational issues, ethical procurement, partnerships, privacy and data protection, and community perception. To help steer the responsible use of drones and build a community of humanitarian stakeholders, WFP set up four technical working groups (TWG) around the following thematic areas: Regulation and Operation, Ethics, Connectivity, and Imagery.

The TWGs began in September 2020 and each group has had seven sessions so far.

## TYPES OF ORGANISATIONS
## PARTICIPATING IN UAS TWGS

Academia 9%

Government 12%

UN 40%

Private 16%

NGO 23%
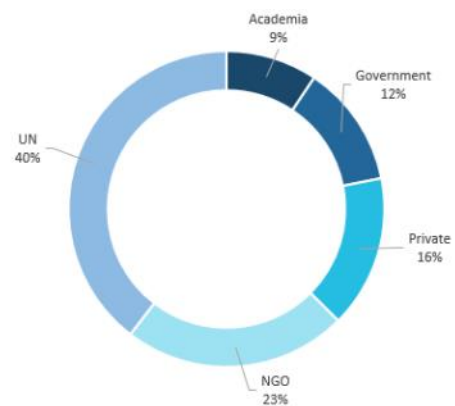
## Connectivity (R2C2)

To help provide connectivity and reach communities affected by disasters, the team created a solution that became to be a successful candidate in INKAs Innovation bootcamp.

The solution that has recently been called R2C2 (Rapid Response Connectivity Carrier) creates a blanket of coverage over an area up to 12 kilometres squared by using a tethered drone as a portable mobile tower. In the past only very small numbers of people who could reach community hotspots would be able to connect, but with range offered by R2C2 we aim to extend the connection to where they are. This will mean we can connect the affected populations in high risk areas without them having to leave their homes.

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