

# The African Drone Forum and Lessons Learned from Frontier Use Cases



**Catalina Ochoa**  
Senior Transport Specialist  
World Bank  
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- *with Edward Anderson, senior DRM Specialist (co-TTL)*





Economists calculate the total Africa needs to spend to sustain current development

**US\$38 Billion**  
a year on Transport Infrastructure  
+  
**US\$37 Billion**  
on Operations and Maintenance



2 km



2 km



All-Weather Road

**Only 34% of Africans**

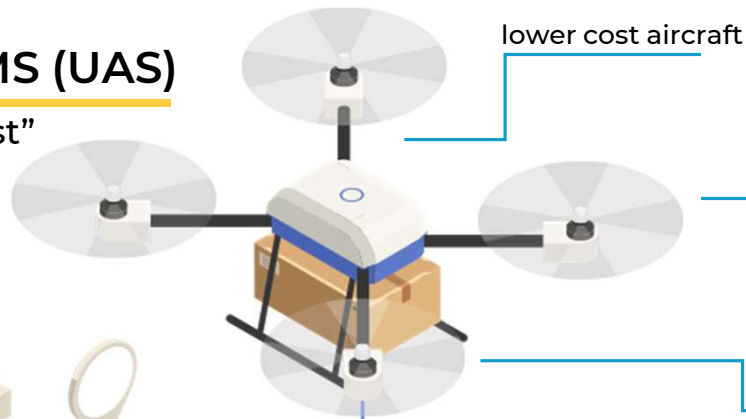
live within 2 km of an all-weather road in rural areas compared to over 90% in East Asia

The current gaps in road transport infrastructure in Sub-Saharan Africa more broadly are vast, amounting to billions of U.S. dollars annually.

Traditional understanding of “resilient transport” has often ignored the enormous potential of the lower skies as a resilient resource for surveying and mobility.

## UNMANNED AIRCRAFT SYSTEMS (UAS)

Drones, are a prime example of “low cost” resilient emerging technologies of this new industrial era



lower cost aircraft

cheaper to operate & maintain

opens delivery routes to: smaller airfields, hard to reach communities, natural disasters where manned aircraft are not able to fly

These flying robots have the potential to unlock the lower skies as a highly resilient mobility resource and as an enabler of new applications.



**Lower capital requirements:  
Drone ports are expected to cost  
about as much as a petrol station**



The opportunity is to **rethink** the infrastructure needs for a new kind of supply chain, bringing greater reach and resilience.

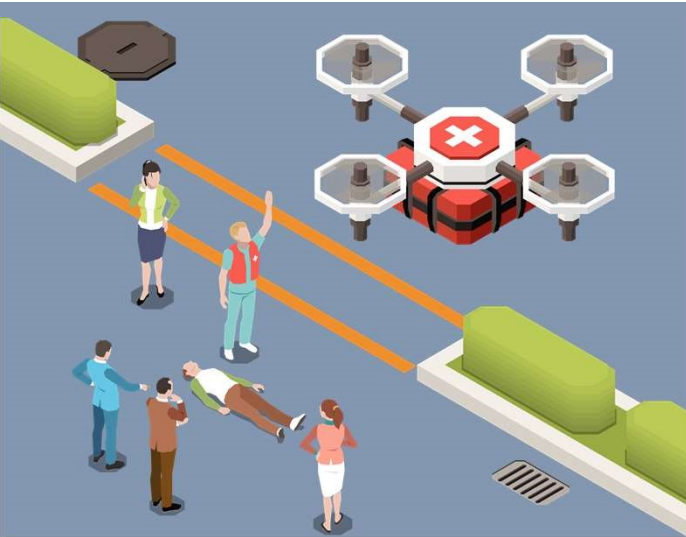
**The immediate opportunity:**  
speed up deliveries and  
connect the excluded

**The medium to long term potential:**  
enable a greener transportation  
sector with universal reach

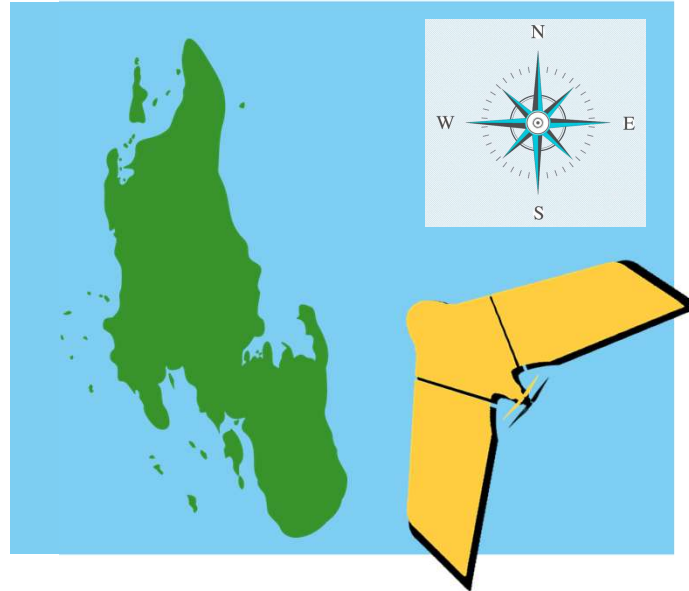
**1 ¢ per kg / km**

with **Zero emissions**

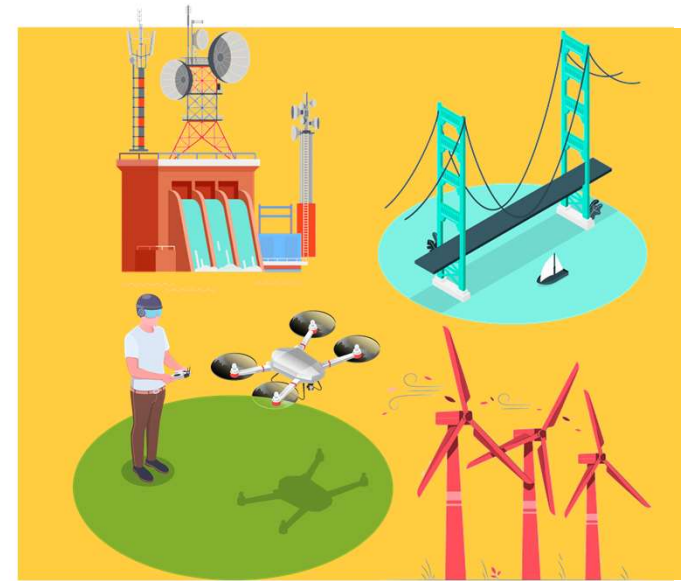
... while delivering significant human and societal benefits



Lives can be saved by getting essential medical goods and blood for transfusion to patients who would otherwise die;



Drones provide quality benefits and time savings compared to satellite imagery while building local technical capacity

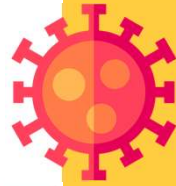


They provide human safety benefits when used in infrastructure inspection and infrastructure works supervision in FCV contexts



## EAC cargo transport crisis amid Covid-19

WEDNESDAY APRIL 29 2020



The potential cost and flexibility advantages of drones are magnified in the context of COVID-19

The COVID-19 global health and economic crisis shows that **essential supply chains** are highly vulnerable not only to **climatic events** but also to **health pandemics**.



## Covid-19: 23 Tanzanian truck drivers denied entry into Kenya after testing positive

WEDNESDAY MAY 13 2020

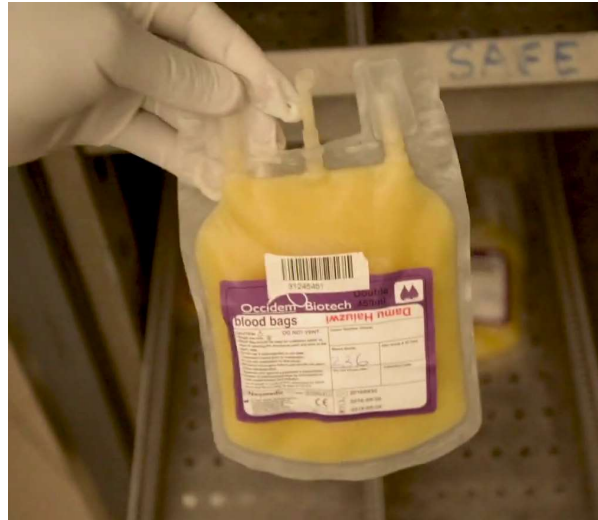


# Drones have already been deployed in fighting the pandemic



14 countries have deployed drones during COVID-19

- + *Delivering essential medicine*
- + *Collect Patient Samples*



Most Countries had drone services in place prior to the pandemic



Source: [www.reuters.com](http://www.reuters.com)



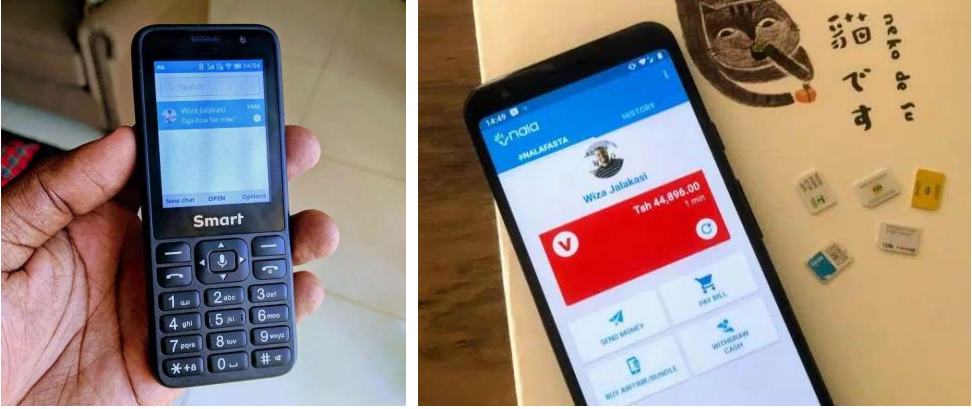
Greater Izaneen Municipality

Source: [www.voanews.com](http://www.voanews.com)

- Some non-effective applications include
- + *Spraying Drones*
  - + *Fever-Detecting Drones*
  - + *Surveillance Drones*

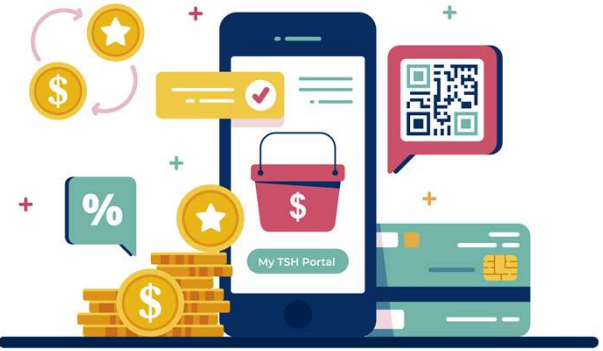


# The “moonshot” opportunity here is to accelerate eCommerce and the Digital Economy



Source: QUARTZ AFRICA article By Wiza Jalakasi

Most African adults now have a mobile phone - and in some countries the adoption rates are above **80 and 90%** already.



### In Africa by 2025:

- 1 Billion SIM card connections
- Over 620 million unique subscriptions

### By 2023:

The mobile services share of GDP will increase to 9.1%.

### Today:

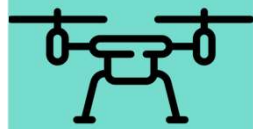
Digital network contributes over 3.5 million jobs in Africa, and 8.6% of GDP.







This massive network of connected people and business is an opportunity.

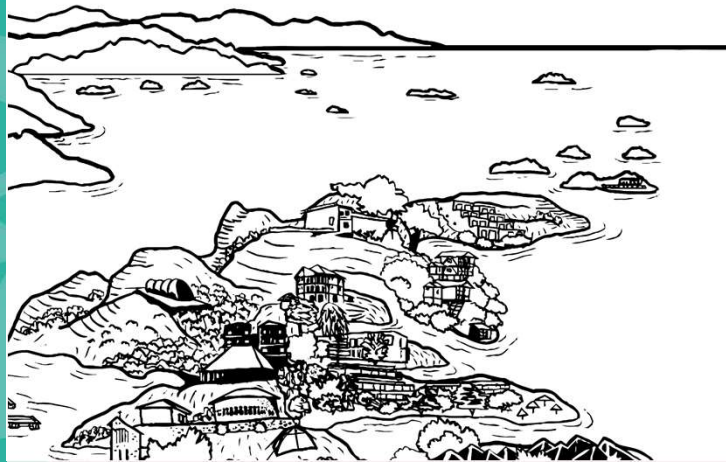


The cargo and supply chain drones can serve businesses and communities that are digitally online, but physically isolated



About the

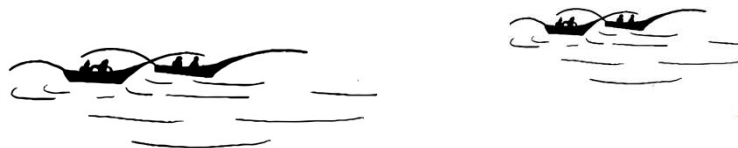
# African Drone Forum



The African Drone Forum aims to be a multi-year and multi-stakeholder engagement program **connecting** new **drone technology** with emerging **African market opportunities**.

The ADF focuses on the **enabling environment** for creating economically and socially beneficial **drone services** in Africa. This means working with regulators, users, local startups, investors and new technology pioneers.

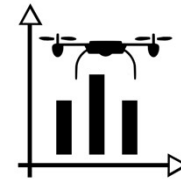
The ADF also aims to **inspire, connect and train** key stakeholders involved in advancing drone industry policies, investment roadmaps and updating regulations.



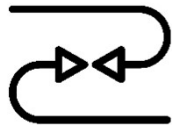


A three-day **Symposium and Regulator's Summit** to discuss the future of the African drone ecosystem.

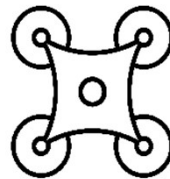
# The Showcase



The African **Drone Business Challenge** to identify new business models enabled through drone technology and data.



The **Lake Kivu Challenge flying competitions** to address critical supply chain needs in the Lake region and drive innovations.



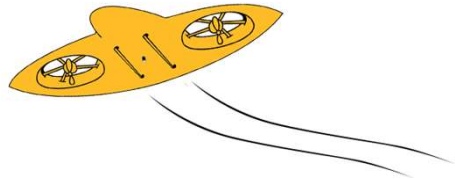
An **Expo** to showcase curated drone innovations relevant to African use cases.



Demonstration of **UTM services** to facilitate discussions between civil Aviation Authorities and Industry



# About the Lake Kivu Challenge Flying Competitions



## EMERGENCY DELIVERY

Safely deliver an emergency package of at least 1kg from the mainland droneport to Bugarura Island in Lake Kivu and return to land safely at the starting point. The distance between the droneports is around 20km.

## SAMPLE PICK UP

Teams must take off from the mainland droneport and safely pick up as many 250g modules as possible from the droneport on Bugarura Island on Lake Kivu and return them to the mainland droneport.

## FIND AND ASSESS

Provide location coordinates of land- and water-based targets covering around 2km<sup>2</sup> of a search area that is 20km from a droneport on the mainland in Lake Kivu, then return and land safely at the starting point.





# Lake Kivu Challenge Flying Competitions

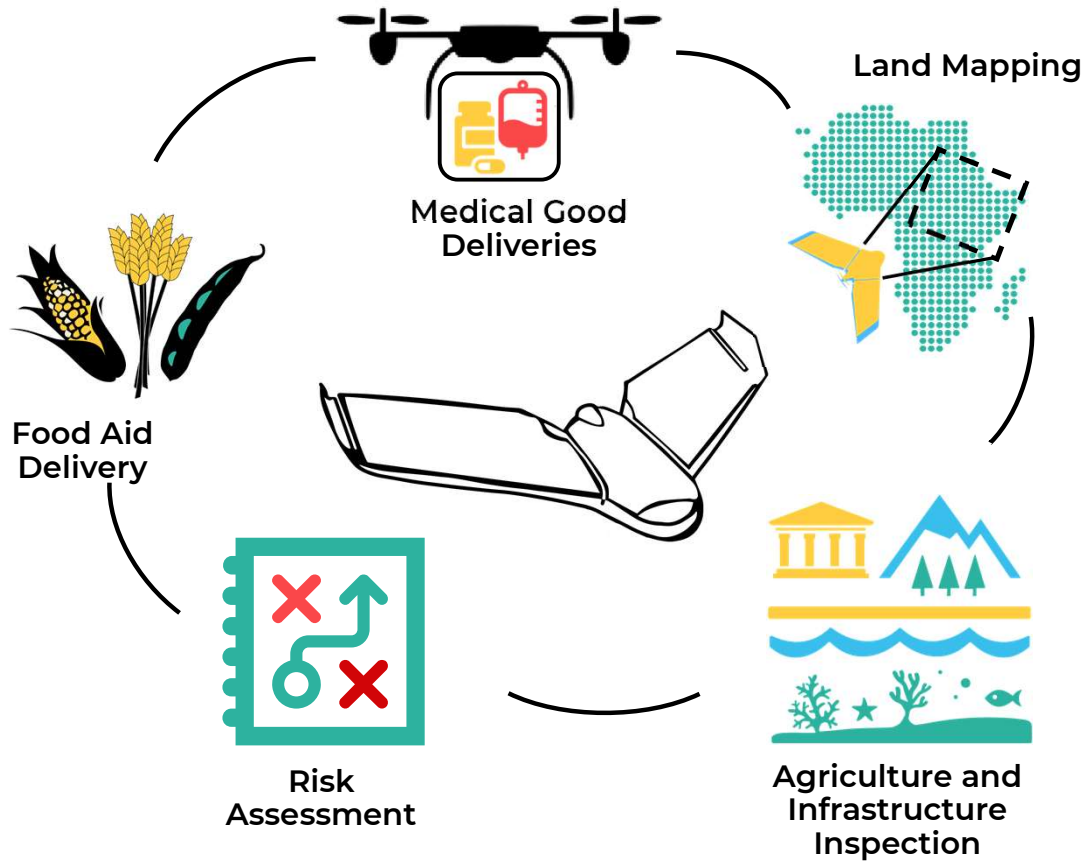


Drone Technologies





# Cost Benefit



Published Study –



*"Unlocking the Lower Skies:  
The Costs and Benefits of  
Deploying Drones across Use  
Cases in East Africa"*  
(A. Stokenberga, C. Ochoa) 2020

Drones today can cost-effectively bridge some of the gaps in current infrastructure by augmenting delivery networks and enhancing the resilience of rural communities.

# Cost Benefit



Drones can reduce the number of deaths by almost 80% compared to traditional transport

*Based on the information collected in healthcare facilities in the Ukerewe Islands*

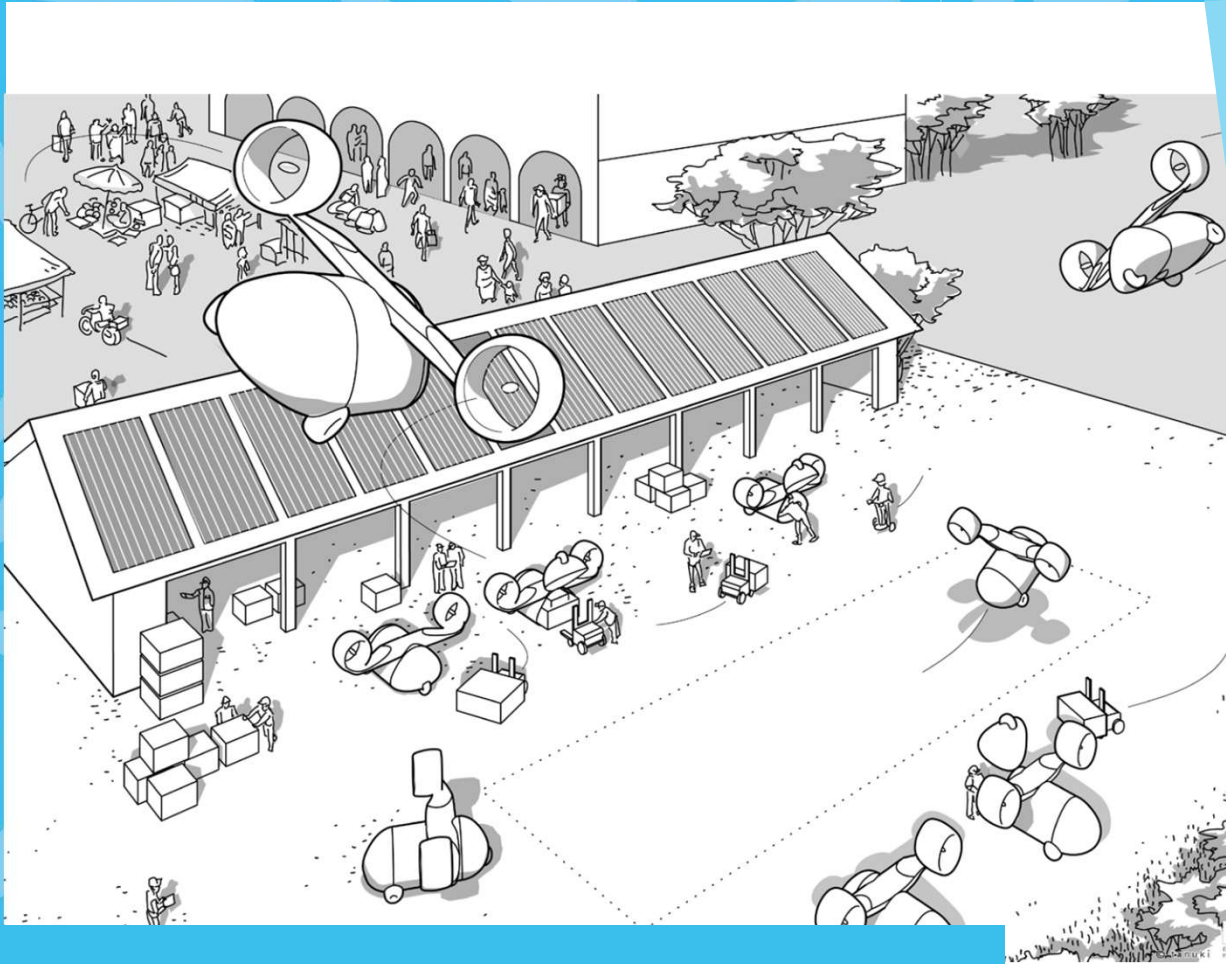
Published Study –



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Completed Study –



*“Traffic Management of the Future Today: A primer on Unmanned Traffic Management Systems”*  
WB with WEF

**More aircrafts than ever:**  
The skies of the near future will be much more crowded - and far more complex to manage – than they are today.

# Airspace Management

# Drone Governance

**More than 50%**

have no UAS regulations, rules, or guidance in place..

Completed Study



*"A systematic review of UAS regulations and rules in African Union member states" (2021)*

*WB with IFC + ICAO +DT4D*

**18 African Countries**

(33% of those on the continent)



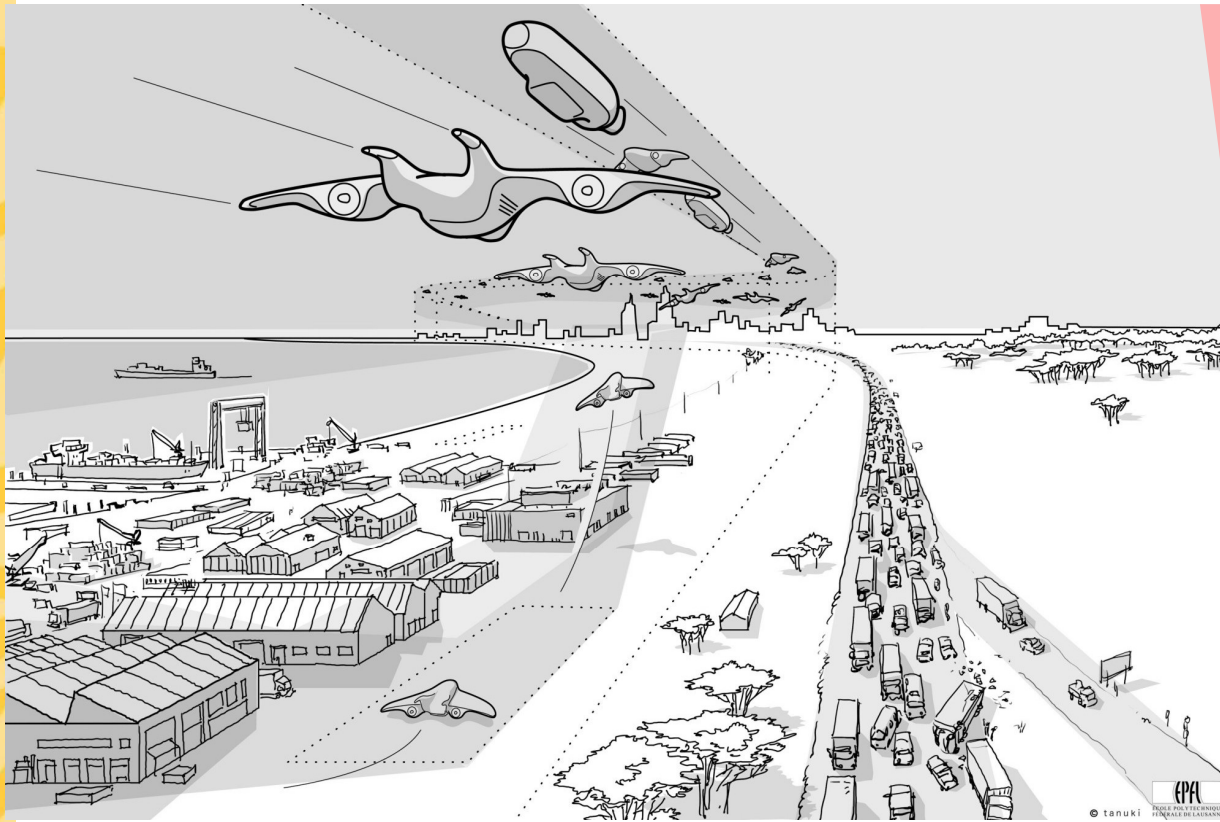
Have enacted drone regulations by April 2021

**14 African countries**

Currently Drafting new Regulations



Drone activity is currently limited by the slow pace of regulatory change globally and regionally.



Completed Study –



*“Harmonization Readiness Framework” (2021), and*

*“EAC Harmonization Framework” (2021)  
WB with IFC*

Harmonization streamlines compliance for entrepreneurs and helps drive innovation in the development of UAS products and their commercial applications

# Drone Governance





# Drone Strategy Roadmap

Completed Study



*“Playbook for Enabling Civilian Drone Operations”*  
World Bank + UNICEF + ICAO

An end-to-end roadmap of elements that enable ecosystems for safe, sustainable and high-frequency drone operations



As a result of ADF we are seeing a surge in external and internal demand for preparation of drone activities. We are currently focusing our efforts on:

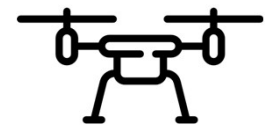
1. Deploying the playbook in **Selected Countries**
2. Supporting client countries and private sector to transition from pilots to operations – seizing opportunities to **Scale up through integration with Bank lending**
3. Working with key partners to **tackle knowledge gaps** by developing a solid analytical base
4. Accelerating regional **Regulation harmonization dialogue**
5. Keeping the 1500+ member ADF community active and raising funds to continue supporting the **drone ecosystem** in Africa and beyond.





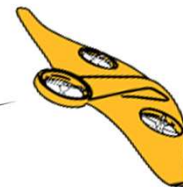
**Thanks for your support!**

**Catalina Ochoa**  
[mcochoa@worldbank.org](mailto:mcochoa@worldbank.org)



**Edward Anderson**  
[eanderson1@worldbank.org](mailto:eanderson1@worldbank.org)

# ADF Partners







# Symposium & Expo

**1000+ registered participants**  
from **53 countries**  
including **60+ regulators**  
from **26 African countries**

**50 exhibitors**  
incl. **2 Government**  
(Rwanda and South Korea)  
**8 Development Partners**  
**40 companies**  
**40+ drone displays**

Over a three-day program  
**100+ speakers**  
on technology, regulations,  
business & applications



Live drone displays for  
**250+ participants**  
to *Zipline Muhanga* operations  
& *Doosan Mobility* demonstration



**4 breakout tracks:**

Regulations, Technology, Logistics, Connected Skies



# Skills & Opportunities



## The African Drone Business Challenge

**10 Finalists** from **9 African Countries**  
(selected from 148 applications)



## 200+ Rwandan Youth delegates & World Bank African Drone Youth Scholarship

for **21 Scholars** from **11 countries** (selected from 400+ applications)

Start-up mentoring,  
networking &



**60 Regulators** and **250+ students** at *Rwanda Integrated Polytechnic Regional College in Karongi* received Introduction to Drones Hands-on-Training from *African Flying Labs*

*Dronemasters Academy* launched in Africa to introduce youth and adults to drone technology

# Lake Kivu Challenge



**10 teams**  
from **7 countries**



**3 flying competitions**  
based on African use cases



**400k USD in prizes**  
+ prequalification for pilot service contracts

**68 Automated Flights**  
Beyond Visual Line of Sight Electric



**3500+ Safety expert hours**  
implementing state-of-the-art  
Concept of Operations



Live showcase of  
**UTM technologies** for Africa

