SWEDD+

PROJET D'AUTONOMISATION DES FEMMES ET DIVIDENDE DÉMOGRAPHIQUE EN AFRIQUE SUBSAHARIENNE+

SUB-SAHARAN AFRICA WOMEN'S EMPOWERMENT AND DEMOGRAPHIC DIVIDEND PROJECT+

KEY FINDINGS, SWOT ANALYSIS AND RECOMMENDATIONS:

# Leveraging Drone Technologies for Last-Mile Health Service Delivery

SWEDD PROJECT

THE AFRICAN REGION

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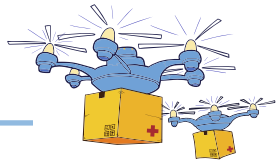


In recent years, the use of drones for last-mile health service delivery (LMHSD) has emerged as a disruptive technology with the potential to address logistical challenges, including in low-resource settings.[1] By bypassing traditional infrastructure limitations, drones offer a novel solution to provision hard-to-reach locations, and grant underserved populations access to essential goods and services. This brief summarizes results from a knowledge-sharing workshop held within the framework of the Sub-Saharan Women's Empowerment and Demographic Dividend (SWEDD) project. SWEDD receives financial and technical support from the World Bank, and technical assistance for implementation from the United Nations Populations Fund (UNFPA) and other key regional bodies, including the West African Health Organization (WAHO, part of the Economic Community of West African States – ECOWAS), the Economic Community of Central African States, and the African Union.

The workshop's participants included representatives from the following SWEDD countries: Benin, Burkina Faso, Cameroon, Chad, Côte d'Ivoire, Mali, Mauritania, Niger and Senegal. A delegation from Madagascar was invited to share their experiences with SWEDD countries. Delegations were comprised of representatives from ministries of health and of defence (particularly air forces), non-governmental organizations (NGOs) such as the Africa Resource Centre and Help Logistics, and the private sector (Zipline).

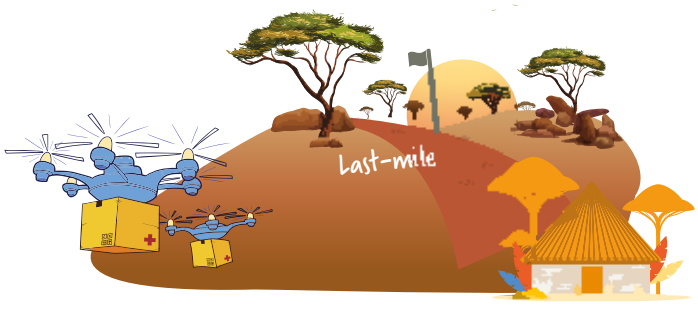
Regional workshop objectives covered presenting feasibility studies, sharing experiences from drone projects, assessing current regulatory frameworks in Africa, defining human resource requirements and formulating recommendations for drone distribution. The workshop included presentations, discussions, and a thorough strengths, weaknesses, opportunities and threats (SWOT) analysis. A detailed report on workshop activities and presentations can be found here: https://www.sweddafrica.org/distribution-innovante-de-produits-de-sante-en-afrique-utilisation-de-drones-pour-la-livraison-au.


## I. Key findings

**Successful projects:** Noteworthy achievements have been observed in projects implemented in Benin, Côte d'Ivoire and Madagascar, where drones have facilitated the delivery of essential medical supplies over long distances and in emergency settings. Feasibility studies for drone use were conducted in Benin, Chad and Côte d'Ivoire; in the absence of a standard methodology for such assessments, these studies used different approaches and methodologies. Some feasibility studies focused on technical specifications and precise use cases. Others were seen as an opportunity to sensitize stakeholders about the advantages of using drones, and provide a rather high-level assessment of the considerations required to design a drone project.

Several other countries have expressed their desire to adopt the use of drones as a strategy for the delivery of health products, mainly in hard-to-reach areas affected by humanitarian conflict and environmental hazards such as floodings. Thus far, the use of drones in the health sector in Africa has been implemented through public-private partnerships (PPPs). These projects have shown the potential efficacy of drones in enhancing healthcare access by ensuring timely delivery of life-saving products. For example:

- Benin used drones to deliver 22 kg of products over 137 km during a pilot project between March and August 2021.[2]
- Cote d'Ivoire has delivered 400,000 medical units, saving an equivalent of 604 lives, including 52 mothers haemorrhaging while in labour, since March 2023.
- Madagascar made 297 deliveries to transport 308 kg of medicines over 25,718 km in 2022.[3]



## II. SWOT analysis

The SWOT analysis on using drone technologies to support LMHSD, was prepared by countries based on their experiences and national contexts in terms of climate-related challenges, political and social considerations, and national/regional regulatory environments. SWOT analysis results include:

### STRENGTHS

- **Improved access:** Drones can reach remote and inaccessible areas, ensuring timely delivery of essential medicines.
- **Reduced delivery time:** Drones can significantly reduce delivery times compared to traditional methods, improving patient outcomes.
- **Cost-effective:** In the long term, drone delivery can potentially lower costs compared to traditional transportation methods, especially in rural areas.
- **Disaster relief:** Drones can be invaluable in delivering medical supplies during emergencies or natural disasters.
- **Leverage private sector expertise:** PPPs can bring in technological expertise, operational efficiency and financial resources.
- **Reduced carbon footprint:** Drones using electric or hybrid power sources can result in significantly lower greenhouse gas emissions compared to gas-powered vehicles. In addition to a faster, more efficient delivery time, they can cover long distances, and require minimal infrastructure, reducing the need for road construction and expansion, thus protecting natural resources.

### WEAKNESSES

- **Infrastructure:** Developing countries often lack the necessary infrastructure (e.g. air traffic control, communication networks) for drone operations.
- **Regulations:** Many countries have limited or no regulations governing civil drone use, which can hinder implementation. While progress has been made in establishing regulatory frameworks for drone operations in the healthcare sector, challenges persist in terms of regulatory restrictions, guideline clarity and standardization across different regions.
- **Technical challenges:** Factors like weather conditions, battery life and payload capacity can affect drone performance and reduce their ability to reach more remote locations.
- **Public acceptance:** There might be initial resistance or concerns about privacy and safety that need to be mitigated by a strong communications strategy. Further, in fragile, conflict-affected and vulnerable settings, citizens might see drones as a threat.
- **PPP challenges:** Building effective PPPs requires careful negotiation, risk-sharing and alignment of objectives.

### OPPORTUNITIES

- **Economic growth:** Drone delivery can create new jobs and stimulate economic growth in the logistics sector.
- **Healthcare innovation:** Integration of drone delivery with healthcare systems can lead to innovative solutions for patient care.
- **Partnership opportunities:** Collaboration with governments, NGOs and private companies through PPPs can accelerate implementation.
- **Data collection:** Drones can be used to collect data on healthcare access and infrastructure, informing policy decisions.
- **Shared risk and reward:** PPPs can distribute risks and rewards between the public and private sectors.

### THREATS

- **Security risks:** Drones can be vulnerable to hacking or misuse, posing security threats. This was highlighted in discussions with air force representatives during the workshop, emphasizing the need to involve them in discussions, particularly in countries with high levels of insecurity.
- **High initial investments:** The initial financing to put in place launch pads, ensure connectivity and availability of electricity, and purchase drones and related supplies such as batteries, can pose a challenge in low-resource settings.
- **Competition:** Traditional delivery methods might resist change and create competition. The use of drones as a solution should be presented in complement to existing supply chain systems, and not as a replacement.
- **Economic inequality:** If not properly implemented, drone delivery could exacerbate existing inequalities in access to healthcare.
- **PPP risks:** PPPs can be complex and time-consuming, with potential for conflicts of interest and performance issues.

## III. Recommendations

The workshop closed with the development of a set of recommendations, with inputs from country participants and experts in implementing drone projects. These recommendations are based on the results from the SWOT analysis presented above.

1. **Develop strong feasibility studies:** Thorough studies should include operational, technical, economic, social and regulatory considerations, as well as drones project conceptualization, including the definition of implementation arrangements and initial stakeholder engagement. Countries including Côte d'Ivoire, Ghana, Kenya, Madagascar, Nigeria and Rwanda, and have conducted preliminary feasibility studies to be continued after the workshop. By conducting a comprehensive study, stakeholders can make informed decisions about whether a drone project is a viable option to respond to supply chain constraints and ensure timely delivery of health commodities. A more detailed outline of the key elements of feasibility studies can be found in Annex 5 of the workshop report.

2. **Defining right use cases:** The identification of the right use cases should be built into the feasibility studies described above. Countries seeking to implement drone projects should carefully assess which health commodities would be appropriate, considering the availability of the commodity in the national supply chain, and storage and temperature requirements for some commodities (vaccines, perishable medications), among other considerations.

3. **Strengthened collaboration:** Collaborative efforts should involve ministries of health, defence forces, civil aviation authorities, local authorities and private sector partners to ensure an effective implementation of drone delivery programmes. Coordination mechanisms should be put in place from the start of the feasibility study, and throughout project design and implementation. The involvement and collaboration with a country's ministry of defence was a crucial point of discussion, given some countries' high levels of insecurity in certain regions.

6. **Regulatory alignment:** Advocating for the harmonization of national and regional regulations governing drone operations will promote consistency and transparency, facilitating the scale-up of drone initiatives for healthcare delivery. A strong regulatory framework can also help attract private sector investment by demonstrating that there are mechanisms in place to provide legal and regulatory clarity, mitigate risks related to safety and liability, and allow for innovation in a controlled regulatory environment.

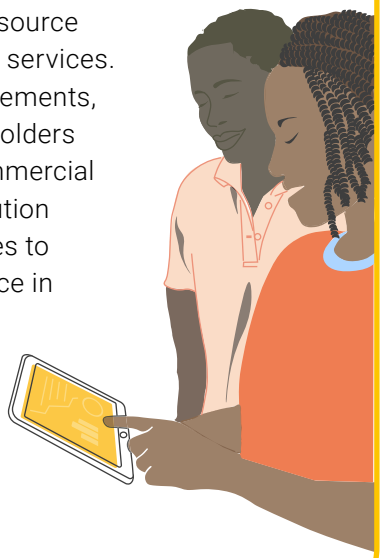
4. **Preparation of a strong communications strategy:** Given the challenges in terms of the social and political acceptance of drone projects, a communications strategy should be developed for engaging communities. This will help reduce community concerns and fears, and enhance acceptance of new technologies.

7. **Sustainable financing strategies:** Exploring innovative financing models, such as PPPs and donor support, can help ensure the financial viability and long-term sustainability of drone-based LMHSD initiatives. This point is critical for instances in which drone projects are supported by external financial institutions.

5. **Capacity enhancement:** Investing in comprehensive training programmes and certifications for drone operators, maintenance staff and healthcare workers is vital to optimize operational efficiency, compliance with regulatory standards and technical proficiency.

8. **Scalability and impact assessment:** Developing robust scaling strategies and evaluation frameworks to assess the impact, cost-effectiveness and scalability of drone programmes can guide evidence-based decision-making and policy formulation.

The integration of drones as an added support for LMHSD operations has the potential to improve the efficiency of supply chains, including in low-resource settings, allowing for timely and reliable access to essential goods and services. By addressing regulatory challenges, investing in technological advancements, building local capacity and fostering collaborative partnerships, stakeholders can unlock the full potential of drone technology for humanitarian, commercial and public health purposes. Embracing drones as a viable delivery solution not only enhances the efficiency of service delivery, but also contributes to the achievement of Sustainable Development Goals and builds resilience in vulnerable communities.



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[2] UNFPA (2021, 10 November). Des drones transportent des produits de santé maternelle dans les zones rurales du Bénin. ***UNFPA***. https://www.unfpa.org/fr/news/des-drones-transportent-des-produits-de-sante-maternelle-dans-les-zones-rurales-du-benin

[3] UNFPA Madagascar (2024, 3 March). Compte à rebours pour sauver la vie de Pela : les drones qui sauvent des vies. ***UNFPA Madagascar***. https://madagascar.unfpa.org/fr/news/compte-a%CC%80-rebours-pour-sauver-la-vie-de-pela-les-drones-qui-sauvent-des-vies