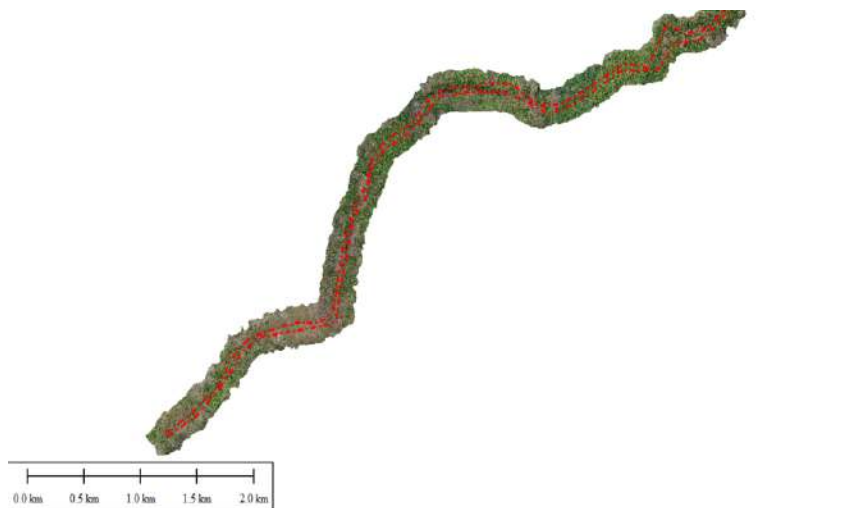


Developing a Transit Corridor Using Drone-Based Cartography to Resolve Conflicts Between Farmers and Herders



Benin Flying Labs team showcasing the drone to the local community



The orthomosaic overlaid with the corridor outline



Benin Flying Labs drone team during one of the flights



One of the drone images of cattle drinking at a water source

OVERVIEW	
Flying Labs	Benin Flying Labs
Geographic area	Bante, Benin
Date range	March - June 2022
Sector program	DevRobotics
Main SDGs	GOAL 11: Sustainable Cities and Communities GOAL 12: Responsible Consumption and Production GOAL 15: Life on Land GOAL 16: Peace and Justice Strong Institutions

SCOPE	
Project stakeholders	Bante Municipality District of Gouka in Bante District of Atokoligbe in Bante Farmers' Association Breeders' Association Local Development Committee
People impacted	Farmers, breeders and their family members
Number of people impacted	About 30 people
Challenge	Agriculture and livestock breeding are two important activities carried out by a significant part of the population in Benin. During their seasonal movements, transhumant animals often end up in nearby fields and plantations, causing enormous damage to crops and farms. Such situations lead to increasing

	<p>conflicts between herders and farmers, often resulting in destruction of property, fields and crops, killing of animals, and degradation of the social fabric and the local economy.</p> <p>This happens in many municipalities in Benin and in neighboring countries. One example is the Municipality of Bante, where there are consistent and growing disputes between the people of Bante and nomadic herders.</p>
Scope	<p>The project entailed creating a neutral corridor space for the nomadic herders to keep their animals away from fields. In order to achieve this, Benin Flying Labs collected drone images and created a map, allowing the local decision-makers to select the most convenient and appropriate limits for the corridor and secure that area as well as the population living there.</p>
Outcome	<p>Based on the drone data, it has been decided that the cattle will be allowed to circulate within the corridor space delineated by markers. Breeders now have their own passage route away from the farmers' premises. The map will also serve as a means to assess the use of the corridor when deemed necessary.</p>
Impact	<p>The breeders will lead their pasture without destroying any farm property. This will allow farmers to keep their farms intact and fully benefit from them, thus bringing peace to the area.</p> <p>In addition, this new development will improve the selling of local produce and in the long term will enable a more stable economy within the municipality.</p>
Next steps	<p>We will follow up to evaluate the actual impact of the corridor. The long term goal is to expand the project to surrounding municipalities.</p>

COMMUNITY ENGAGEMENT AND STAKEHOLDER SUPPORT

Consent for data acquisition	<p>We made a presentation to the relevant authorities and stakeholders, explaining the potential impact that the project would have on their current living situation and how the project would facilitate better land management. We also translated and printed consent forms to collect signatures from local authorities.</p>
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Activities to engage with the community	<p>This project was designed to encourage and allow the stakeholders and local communities to participate and directly contribute to its success.</p> <p>A series of meetings were held in the month of April at the commencement of the project:</p> <ol style="list-style-type: none"> 1. The first meeting was held with the Mayor of Bante to present the entirety of the project. 2. The second project presentation meeting consisted of delegates and councilors. 3. In addition to the above, we organized a meeting with the local associations, where we explained the project, showed them the drone, explained the technology and its purpose, and instructed them on how to keep safe during flights.
Community groups engaged with	<p>Community in general, community children, representatives from community-based organizations</p>
Community attendance	<p>Approximately 30 people</p>
Community feedback	<p>The local community was excited about the project and long to have similar projects in the future to improve their living conditions. Close collaboration on the project allowed them to gain a deeper understanding of the technology and the potential it has in solving the problems they're facing.</p>
Stakeholder support	<p>We conducted training sessions in which we introduced the stakeholders to the data analysis software. The stakeholders were taught how to manipulate and visualize data, which led to delimitation of the corridor.</p>

DATA ACQUISITION	
Size of area	<p>1342 ha (13.42 km²)</p>
Drone	<p>DJI Phantom 4 RTK</p>
Sensor(s)	<p>RGB</p>
Flight plan software	<p>DJI GS Pro</p>

Flight height	90 meters above ground
GSD (Accuracy)	2.5 cm/pixel
Number of images acquired	7965 images
Number of flights	33 flights
Time invested in data acquisition	10 days
Georeferencing	D-RTK 2 Mobile Station

DATA PROCESSING & ANALYSIS	
Processing software	PIX4Dmapper
Processing time	18 hours
Data products	Orthomosaic, Digital Elevation Model (DEM)
Analysis tools	QGIS
Analysis outputs	Map orthomosaic overlaid with the of the corridor outline
Final outputs shared with stakeholders	Orthomosaic, DEM, land owners database and the mapped land
Data sharing	USB Key