GENERAL INFORMATION BRIEF

COMMUNITY LED
ECOLOGICALLY DRIVEN
MANGROVE RESTORATION BY DRONE

Distant Imagery empowers communities through innovative and sustainable aerial and underwater solutions. Our self-engineered drones, kites, and balloons have been designed to support communities in restoring and monitoring their natural habitats at scale, including mangrove and terrestrial species reforestation. Our approach is based on affordability and sustainability, ensuring that communities have access to low-cost solutions that use easily accessible materials. We are committed to empowering communities through customized solutions and comprehensive training on aerial tool building, flight, maintenance, seed dispersal, and georeferenced mapping. Our innovative approach, tested and proven effective in the UAE, has the potential to make a positive impact worldwide. We believe that by working together, we can create a better future for our planet.

By partnering with us, project funders and partners can join us in our mission to empower communities worldwide. Together, we can build sustainable, self-sufficient futures for all. Join us in revolutionizing community development with innovation and collaboration.

Distant Imagery Solutions

For the sole use of general information and discussion.

At Distant Imagery, we believe in empowering communities to become self-sufficient through the use of our self-engineered and customized solutions. With a focus on drone technology and innovative rigging, we have developed a methodology proven effective through phased testing in the UAE.

Our approach is simple yet powerful: by providing communities with the tools and knowledge to build aerial solutions such as kites, balloons, and drones, using accessible materials, and utilizing our engineered rigging, we enable them to take control of their own development and restoration journey. This means they can seamlessly integrate drones into their long-term strategies, becoming nimble in assessing impact and mitigating risks to their growth areas.

One of the key benefits of our approach is the ability for communities to engage in drone terrestrial and marine habitat restoration, allowing them to fill in gaps in vegetation during the correct seasons as needed. Additionally, our self-built drones can be utilized for secondary site analysis or MRV throughout the year, further enhancing their utility and impact.

Our self-engineered mechanical rigging is at the heart of our solution, which we have developed using cutting-edge 3D printing technology. This allows us to remain agile and responsive, making design changes to accommodate different conditions and seed sizes in various regions.

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WE AIM TO HAVE, IN THE TRUEST SENSE OF THE WORD, EMPOWERED COMMUNITIES THAT ARE SELF-SUFFICIENT IN UTILIZING DRONES THROUGH AERIAL PLANTING METHODOLOGY AS WELL AS ANCILLARY ANALYSIS AS NEEDED. THIS ALS0 WILL SUPPORT THEIR LIVELIHOODS AND SUPPORT THEIR MOBILIZATION IN THE RESTORATION OF THEIR CRITICAL AREAS.

Our team of experts doesn't just provide instruction; we walk alongside community members every step of the way. From building custom low-cost aerial solutions to mastering flight techniques and environmental analysis, we work with the community towards hands-on training that instills confidence and fosters self-sufficiency.

We aim to create local teams capable of driving ecological restoration efforts, particularly in areas where access is difficult or rapid reforestation is needed.

WITH A FOCUS ON MANGROVE AND ENDEMIC TERRESTRIAL SPECIES REFORESTATION, OUR PARTNERSHIP TRAINING COVERS THE ENTIRE PROCESS. THIS INCLUDES BUILDING DRONES AND SEED DROP MECHANISMS, MASTERING FLIGHT TECHNIQUES, CONDUCTING MAINTENANCE, AND ENSURING ADHERENCE TO LOCAL REGULATIONS. ADDITIONALLY, WE ACTIVELY COLLABORATE WITH THE COMMUNITY TO COMPLETE THE INITIAL ROUND OF RESTORATION AS PER OUR PROJECT COMMITMENTS.

What sets our approach apart is our commitment to affordability and sustainability. Our drones are based on our self-engineered, low-cost designs, with frames made from wood to reduce overall costs and maintenance. We provide training on fixed-wing and multi-copter drones and custom-built, low-cost solutions for seed dispersal rigging.

In addition to hands-on training, we train in creating georeferenced orthomosaics for precise mapping, basic soil condition analysis, and raw aerial/ground videography and photos. We ensure communities have all the necessary resources to succeed, including 3D printing training for rigging and replacement components.

By partnering with us, communities gain the skills and resources necessary to drive their own ecological restoration initiatives.

THE FOLLOWING IS PROVIDED TO THE COMMUNITY:

1. **Full flight training and analysis** toward ecologically driven mangrove restoration
2. **Full training and build on custom-built, low-cost fixed wing and multi-copter** including the provision of seed dispersal rigging
3. **Full training on 3D printing** seed dispersal rigging and replacement components Georeferenced orthomosaics with a minimum GSD of 3 cm per pixel and minimum relative accuracy of 10 cm.
4. **Basic soil condition analysis** of the sites (if required)
5. As per the decided number of drone-planted propagules from natural stands in the selected site areas, **training run with the community**
6. **Raw aerial/ground videography and photos** from the training times
7. **Final report**

SEVERAL AREAS WITHIN THE DRONE-LED METHODOLOGY ALLOW FOR BROAD COMMUNITY LIVELIHOOD-ENABLED ACTIVITIES:

SITE ASSESSMENT:

Through the community conducting comprehensive site assessments, testing soil characteristics, noting ecological features, and supporting GIS elevation mapping. This critical data forms the basis for informed restoration patterns and increased success rates.

PREPARATION FOR PLANTING:

During the preparation phase, communities assist in harvesting seeds according to approved guidelines, germinating them, and crafting seed balls when needed using tested methods.

PLANTING PHASES:

Throughout the planting phase, communities provide critical assistance in sorting germinated seeds, preparing them for planting, and loading the drones. The drones plant 2000 seeds in roughly 8 minutes and more if flown in drone swarms. It is a rapid turnaround and intense working time. They then monitor drone flights to ensure precise seed dispersal and make sure the seeds are stuck into the ground.

MONITORING:

Communities are essential to monitoring the project's progress, including seedling counts, mapping activities, and observing landscape changes, as well as MRV needs if working towards a carbon offset project. This participatory approach fosters community ownership and ensures the sustainability of our initiatives.

SUCCESS RATES

Over the past five years, our projects in the world's harshest conditions have demonstrated remarkable success, paving the way for adaptation and implementation in varied environments. Here's why our approach is primed for success, further so when modified for local characteristics:

EFFECTIVE MONITORING:

Utilizing Distant Imagery technology, we conduct thorough monitoring during low tides to assess survival rates and identify infilling areas for future seasons. Our method of counting **each seedling** in the plot provides a more accurate percentage rate than traditional methodologies of estimating from a sample plot, ensuring reliable data for informed decision-making.

PROVEN SUCCESS IN HARSH CONDITIONS:

Despite the challenging conditions of the UAE, our restoration efforts have achieved success rates ranging from 35% to 40%. Variations in success rates are attributed to factors such as soil density and pneumatophore density. Areas with softer mud or higher pneumatophore density exhibit greater sapling density, highlighting the adaptability and resilience of our methodology.

STABILITY AND MINIMAL DIE-OFF:

Our data indicates a stable growth trajectory with less than 2% die-off once seedlings are established. We ensure their resilience and alignment with natural regeneration patterns by planting seedlings in situ rather than transferring them from pots. This approach promotes ecosystem stability, fostering long-term sustainability.

ECOSYSTEM RESTORATION AS THE GOAL:

Our ultimate aim is to restore functioning ecosystems that follow natural regeneration patterns. While some natural die-offs may occur due to competition, this process enriches soil biomass, enhances carbon absorption, promotes sediment accretion, and strengthens nutrient levels. This holistic approach prioritizes the health and resilience of the restored ecosystem.

Distant Imagery Solutions

With a track record of success in challenging environments, our methodology offers a promising solution for restoring ecosystems and enhancing community resilience worldwide. Join us in our mission to create sustainable, thriving ecosystems for generations to come.

ITEMS **TO NOTE**

As we embark on our journey together, we must address certain considerations to ensure clarity and accountability. Here's what you need to know:

TRANSPARENT COSTING:

Our proposed costs do not include gratuities, government fees, or unexpected smoothing costs. Any such expenses will be the client's responsibility.

COMMUNITY-CENTRIC APPROACH:

We prioritize training community members for project development, excluding involvement from universities or academics to avoid non-compete measures.

POST-TRAINING ARRANGEMENTS:

Following the training project period, communities will continue independently restoring mangroves under separate arrangements and payment. Distant Imagery Solutions offers two years of monitoring, reporting, and training support, with the option for extended monitoring if desired.

INTELLECTUAL PROPERTY RIGHTS:

All drones, technologies, solutions, and methodologies developed by Distant Imagery Solutions remain under our intellectual property for the duration of our company's existence.

CLIENT-LED PROJECT DEVELOPMENT:

The client leads project development, including negotiations with national government representatives and selecting sites and communities. Distant Imagery Solutions provides support throughout this process.

CLIENT RESPONSIBILITY FOR DRONE PERMISSIONS:

Clients are responsible for obtaining necessary permissions for importing drone parts, securing flight permissions, and drone registration.

ECOLOGICAL PRINCIPLES:

We adhere strictly to ecological principles in all our methodologies, meaning we plant only within appropriate seasonal timelines and rely on the quality and health of seeds. Sites selected for planting must adhere to methodological guidelines for best practices.

SCOPE OF WORK:

Our scope does not include site modifications, remediation, or enhancements. Our methodology focuses solely on ecological restoration practices.

With these principles and guidelines in place, we ensure a transparent, community-focused, and environmentally responsible approach to our projects. Together, we can achieve lasting positive impact while safeguarding the integrity of our work and the environment.