



Title/Heading.

Developing a scalable business model to support large-scale global coral reef restoration

1. Context and rationale.

Over 50% of global coral reefs have died since the 1970s, and we're on track to lose 90% by 2050. This ecological tragedy, which threatens 25% of marine life, is also a serious socio-economic catastrophe. Coral reefs directly support 1B people and generate \$30B annually via tourism, fisheries production, and coastal protection.

Scientists have refined coral farming as a means to revive reefs' health. But restoration has been limited to NGO's and institutes implementing localized ocean-based coral farming projects. Reliant on disparate grants and donations, these can only grow limited species, cannot enhance coral resiliency to climate change, are jeopardized by storms, and must be established near each restoration site.

Tackling degradation requires jumpstarting capital flows into restoration to catalyze engineers, designers, geneticists, and others to solve this pressing issue. Given corals' tremendous value, there're technology and market-based opportunities to better protect threatened reefs. Coral Vita addresses these challenges by implementing ecologically and economically-scalable reef restoration solutions.



2. An overview of the contribution

Coral Vita's land-based farms integrate breakthrough methods to accelerate coral growth up to 50x (microfragmenting) while enhancing their resiliency to warming and acidifying oceans (assisted evolution). And our model scales: one land-based farm can potentially supply an entire nation's reefs.

Underpinning this high-tech coral farming is a business model to sustain large-scale restoration. Given reefs' tremendous value, we're working to transition the restoration space to a commercial industry. This facilitates diverse revenue generation and better scalability than existing restoration practitioners. Our farms not only grow coral for restoration projects, but also function as eco-tourism attractions and education centers for local communities. By proving out this financial model, we can help inject the capital needed into solving this global problem.

3. How the contribution leverages living natural systems as a solution to avert climate change?

Corals grown for restoration are transplanted back into reef ecosystems. Doing so revives reef health/ecosystem services, using natural and native coral. Climate change is one of the key threats to healthy reefs.



Transplanting resilient corals can enhance the survivability of reefs as ocean conditions deteriorate due from warming and acidification.

4. How might the contribution support both climate, mitigation and adaptation as well as other important co-benefits and social, economic and environmental outcomes in coming years. They may include:

This contribution increases climate resilience (e.g. healthy reefs reduce wave energy by 97%), has a positive social impact (create restoration economy jobs alongside local community education initiatives), generates revenue to support additional restoration (while protecting reef assets worth billions in USD annually), is connected to SDGs 1/2/4/8/9/13/14/17, enhances food security (providing critical habitat for fisheries), and minimizes species extinction and ecological losses while fostering an increase of biodiversity (through large-scale restoration).

5. Which countries and organisations are involved in the contribution?

Coral Vita's currently building its pilot coral farm in The Bahamas. We have existing partnerships with institutes like the Mote Marine Laboratory and Gates Coral Lab and with international organizations like the Global Island Partnership (GLISPA). We ultimately envision a worldwide network of large-scale land-based coral farms in the nearby country and territories with coral



reefs, and are building relationships for future farms in places including (but not limited to) Mexico, British Virgin Islands, Seychelles, Maldives, Egypt, Australia, and USA.

6. How have stakeholders (for example local communities, youth and indigenous peoples, where applicable) been consulted in developing the contribution?

Coral Vita has a community-based approach to our model. As corals are grown for restoration, the farms simultaneously serve as education and job training centers for local communities. Ultimately, the health of the reefs most impacts those who depend on them for food, jobs, and shelter, and the projects are more successful by integrating them. We plan to hire local as much as possible for positions like farm manager or the coral transplantation team, as well as integrate local knowledge when designing restoration initiatives.

7. Where can the contribution be put into action?

Coral Vita's Bahamas' facility (the world's first commercial land-based coral farm for restoration) is launching on May 31, 2019. We're already exploring



locations and partners for future farms in new countries, alongside customers and investors.

8. How the contribution will be delivered? How will different stakeholders be engaged in its implementation? What are the potential transformational impacts?

Depending on farm size, hundreds of thousands or millions of corals can be grown from each site annually. For perspective, the largest existing coral farming project (which only grows fast-growing species without enhanced resiliency on dependent on a single grant for funding) grew 40,000 corals one time. Contribution execution involves government regulators, the private sector, local communities, scientific experts, and others, a process Coral Vita's already engaged in. If deployed at scale, this contribution can preserve coral reefs from destruction and extinction until meaningful climate change mitigation measures are enacted. It also can help jumpstart the creation of a 'Restoration Economy,' incentivizing other forms of scalable and financially sustainable ecosystem restoration while creating good new jobs for local communities around the world.



9. Is this initiative contributing to other Climate Action Summit workstreams (industry transition; energy transition; climate finance and carbon pricing; infrastructure, cities and local action; resilience and adaptation; youth and citizen mobilization; social and political drivers; mitigation strategy)?

This initiative contributes to climate finance, infrastructure, cities, and local action, resilience and adaptation, youth and citizen mobilization, and social and political drivers.

10. How does this contribution build upon examples of experience to date? How does the contribution link with different ongoing initiatives?

Microfragmenting and assisted evolution have been shown to work in wild reefs by marine labs. It also offers opportunities to collaborate with existing restoration practitioners and scientists, rather than displacing any.

11. What are the mechanisms for funding (with specific emphasis on potential for partnerships)?

- 1) Selling restoration services to reef-dependent customers (e.g. hotels, developers, coastal property owners, governments)



- 2) Eco-tourism (e.g. tourists paying to adopt or plant corals)
- 3) Conservation financing mechanisms (e.g. debt-for-adaptation swaps, reef insurance, blue bonds)

12. What are the means of stewardship, metrics for monitoring?

Results are measured through a rigorous monitoring process, tracking impact metrics before, during, and after each project. Social metrics include: local jobs created, fishermen trained, students educated, and individuals engaged in restoration. Environmental metrics include coral cover change, transplant survivorship, sexual propagation of transplants, coral growth rates, changes in marine life population/species diversity, wave energy suppression, and total reef area restored. Setting standards for measuring these metrics is done in consultation with coral scientists, reef managers, ecosystem economists, hydraulic engineers, and community leaders.

13. What is the communication strategy?

Education and communications are key parts of the restoration strategy. Given corals' importance and aesthetic appeal, we plan to leverage restoration work to raise awareness about what's happening to coral reefs, why they matter, and how they can be protected. We use digital media, on-site engagement and education, and other initiatives to reinforce restoration's impact and reach.



14. What are the details of proponents (indicating the degree of commitment among the countries and organizations that are named).

Coral Vita – mission-driven reef restoration company

Grand Bahama Port Authority/Grand Bahama Development Corporation –
Coral Vita's pilot farm partner

Government of the Bahamas – approved permits/publicly supported Coral
Vita's pilot farm

GLISPA – Coral Vita is an Affiliate Member