



An Impact Investment Opportunity through Man Made Reefs.
– Enhancing the CSR value of your organization.



Dead limestone gives new life to the ocean. A man made reef can reduce CO₂ in the atmosphere, increase biodiversity in the ocean and create sustainable working opportunities for people in the developing world.



You can make an impact by investing in an Ocean Reef World project.

Man Made Reefs

Outside the northern coast of Kenya, close to the picturesque fishing village of Shella, Ocean Reef World is launching a man made reef project. The artificial reef will have many different environmental and social purposes, such as:

- CO₂ sequestration, comparable to reforestation.
- Increased marine biodiversity, from plankton to large fish populations.
- Sustainable local work opportunities.
- Increased access to protein-rich food in the area through sustainable fishing.
- Eco-tourism e.g. relating to the reefs.

The cultivation of plankton and algae on Ocean Reef World's man made reefs has the same benefits, environmentally and biologically, as planting a forest.

By building artificial reefs on barren seabeds one can create life that otherwise would not have existed there. The artificial reefs are constructed with rocks rich on silicate minerals and are a superior tool to attract plankton and algae, which in turn represent the essential building block for all ocean based marine life.

Impact Investments is a way for an organization to take a significant environmental and corporate social responsibility (CSR) through direct, concrete and measurable action. Ocean Reef World provides such an opportunity for Impact Investment. Instead of focusing on monetary return this allows interested parties to benefit from measurable, reportable and verifiable environmental effects, such as CO₂ reduction while also increasing the marine biodiversity and sustainable local work opportunities.

Mikael Odell – Ocean Reef World CEO and Founder

Mikael Odell has worked with and studied shellfish systems, aquaculture plants and coral reefs in all kind of climates around the globe as well as in public aquariums and marine labs. As an entrepreneur, consultant and partner Mr Odell is a well-known person in the marine sector. During the last 20 years, Mr Odell has worked with man made reefs and established a base in Kenya where he operates from Shella. In Stockholm, Mr Odell owns and operates the Butterfly House Haga Garden.





BOOMING BIODIVERSITY!

The reef provides thousands of niches for juvenile fish. It also provides livelihood for shrimps, urchins, crustaceans, worms, algae's, and soft and hard coral. All sharing the same man made reef and thriving together.

As time passes, more and more life populates and thrives on the reef which now is home for the entire ecosystem of marine organisms. Where there once was nothing but sand, there is now a plentitude of life!

Reducing CO₂

The cultivation of plankton and algae on a man made reef has basically the same effect on the atmosphere as planting a forest, i.e. capturing CO₂ while growing. The major difference is that the man made reefs accumulate CO₂ at a 6-8 times higher rate per square metre compared to land based reforestation. From one block of a man made reef, approximately 300 m³, the CO₂ sequestration from the atmosphere is around 20,000 tonnes during a project's first seven years, which correspond to the emission from 8,000 cars during one year.



From dead limestone to life

What can be better and more suitable than using mother nature's own raw material, so called porous limestone, to create man made reefs? This limestone material, which actually is formed from once ancient now mineralized reefs, is accessible in abundance in the tropical regions of our planet. When the limestone blocks are correctly placed on a barren seabed these will immediately attract plankton and algae, which in turn allow biodiversity to explode all around and rapidly attract all types of marine life.



Sustainable job opportunities

The only way to build an artificial reef in a fully environmentally friendly and sustainable way is to construct the artificial reef by hand. The limestone is transported from land and carefully placed in blocks of 30 x 5 x 2 metres on the seabed. Once the stones are in place they are regularly supervised, maintained and measured by divers to assure the formation of plankton and algae to finally create the artificial reef. After a while the reef will create sustainable fishing jobs and eco-tourism, for example diving expeditions.



Scientifically proven CO₂ reduction

After one to two years, the organic growth on the man made reefs is estimated to be 4 percent of the limestone reef mass, according to four different scientific tests conducted in 2010. This rate is expected to increase to more than 8 percent, after years three and four, and that rate will remain at a status quo during the entire remaining lifetime of the reef. The CO₂ reductions are scientifically measured by means of incinerating limestone material from the artificial reefs and tests indicate that the quantity of CO₂ reduction for a reef is approximately 64 kg CO₂ per m³ reef material during the project's first seven years.



The Shella Man Made Reef project.

After several years of tests and studies, Ocean Reef World has pinpointed an area close to the village of Shella on the northern part of Kenya's coast, Lamu Island and Manda Island, for a project to build artificial man made reefs. Shella itself is a small fishing village that has existed for more than a thousand years and whose population has always been dependent on the ocean and Shella's resources to survive and thrive. Today, industrial fishing has endangered the fish populations.

Ocean Reef World has been present in the Shella area for over a decade and has well established relationships with the local population and local organizations, both private and public. Through this network, Ocean Reef World has full access to the relevant project competences to execute the Shella project successfully. The project will be fully controlled by Ocean Reef World but executed together with local partners.

The Shella project location was selected given its shallow protected waters, attached to the huge Northern Kenya banks, resulting in the very best conditions for protected reefs to be placed. Also, climate and wind conditions are excellent throughout the year and storms and natural disasters are very rare.

The man made reefs planned for the Shella project are expected to increase the marine biodiversity in the area, contribute to increased fish population and thus enhance the availability of protein rich food for the local population through a sustainable fishing industry. Also, any project partner will be able to benefit from the positive environmental effects from the reduction of atmospheric CO₂ captured by the man made reefs and the possibility to enhance the CSR value of your organization. We welcome you to join us for this unique project, please contact us for more information.

About Ocean Reef World

We have more than 20 years of experience of both nature made and man made coral reefs, ranging from smaller test reefs to full size ocean-based reefs. We can make man made reefs come true only because we have extensive knowledge and experience on how and where a reef should be located, placed and seeded to get it to prosper and grow. Although reefs like it best where it's warm

(within the 20 Celsius isotherm, just as we do) they can be constructed anywhere. There is no limit to the possible ocean locations around the world where a man made reef can be placed and hence no limit to the positive effects they could bring. Join us on our unique quest to improve the environment whilst making a positive social impact where it is most needed, make a Man Made Reef!

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