

GROVE

Blockchain-based conservation platform for regenerative mangrove forestry in coastal communities



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Background

Mangroves qualify as one of the most effective ecosystem-based solutions for climate change. On the one hand, mangrove forests are “**green shields**” protecting coastal communities against rising sea levels, storms, and disasters such as tsunamis. On the other, mangroves are “**green lungs**” offering effective ways to carbon sequestration. However, over 30% of mangrove forests worldwide have been destroyed in the last two decades because of land-clearing for infrastructure, urban development or because of increasingly degraded coastal ecosystems.

Until now, existing funds for mangrove reforestation are not able to effectively counteract this trend: Fees for major carbon registries range from \$100–350k, while project developers and validators charge an additional \$65–300k for project notes, validations, and verifications. These costs push small-scale projects out of the market and cripple communities’ ability to secure funds for land rights, reforestation efforts and livelihood development. Tokenizing support for mangrove reforestation can be a way to foster demand for natural capital land increasing the speed and scale of adaptation and mitigation impacts.

Solution Overview

GROVE – the **Global Reforestation Objective Virement Ecosystem** – is set up by the Global Mangrove Trust (GMT). GROVE is a digital platform that runs as a decentralised foundation utilising smart contracts and satellite verification to crowdfund forest growth. Building on peer-to-peer connections, the platform provides an investor-to-community architecture that enables international (cooperate) donors to undertake direct, transparent, and efficient support for community-managed mangrove forest projects. Investors are receiving Global Reforestation Objective coins (GRO-coins) that directly support a dedicated community mangrove forest. In turn, coastal communities are backed by smart contracts and planter tokens for their commitment. Over a satellite and on-site monitoring data transparency and accountability is provided and activates the smart contracts organizing escrow

Focus:	Climate change adaptation
Ecosystem Impact:	Access to finance; Access to markets; Entrepreneurial mind-set
Lab Cycle:	Climate Finance, Thailand 2018
Challenge Hosted by:	Global Mangrove Trust

payments from the GRO-coin escrow account to communities for redemption of cash claims linked to the “Planter-Coins”.

Key Features

Participating investors and communities engage as digital growers and planters respectively in the GROVE forests – representing the total area of restored mangroves – and can act by gaining and spending coins and tokens:

- **GRO-Coins:** a natural-capital backed digital utility coin to be deployed on the Ethereum blockchain (ERC-20 Token) dedicated to investors. The GRO-Coin is designed to be geo-intelligent allowing the coin-holder to identify the parcel of his/her financially supported community mangrove forest
- **Planter-Coins:** serve as the ‘stake coin’ underlying the GROVE solution and are non-fungible. The Planter-coin is directly connected to a community mangrove project and is geo-intelligent to verify the long-term impact that can be transformed into cash claims.
- **CBO-Tokens:** In cooperation with the Singapore University of Technology and Design (SUTD), an impact evaluator will be installed to measure the carbon sequestration ability, support of biodiversity and oxygen production of the **real-word GMT mangrove forest**. Based on these estimates, the GMT platform will generate and distribute CBO-Tokens daily to GRO-Coin holders.



Innovative Characteristics

- **Blockchain in conservation financing** is an innovative tool that can make funding processes more streamlined, efficient, transparent, and help mobilise new sources of financing.
- **Incentive system for local communities to plant mangrove trees:** By receiving Planter-Coins, communities will be rewarded in planting mangroves using their own land and maintaining trees on an ongoing basis
- **Interactive monitoring and impact verification** enabled by geo-intelligent coins that offer real-time data of invested tokens in mangrove projects.

Target Market

- **Community Mangrove Projects (CMP):** Communities are invited to submit proposals to the GMT for a mangrove forestry contract. On approval, nurseries may register as a CMP and upload documents showcasing the CMP to the platform. Each CMP establishes at least one nursery administrator to organise Planter-Coin wallets with stakeholders and coordinate redemptions of Cash Claims.
- **Suppliers of Finance:** engage different buyers of the GRO-Coin to support restoration measures that may include international donors, foundations, national governments or individuals interested in community-orientated conservation.

Impact Potential

- **Climate impacts of mangrove forestry:** Mitigating up to five times more CO₂ than

terrestrial trees and reducing the danger of coastal erosion due to sea-level rise.

- **Disaster prevention:** Mangroves protect lives and properties from cyclones and other extreme weather and offer a natural shield for agricultural land (e.g. rice fields) from sea- and saltwater inundation caused by typhoons.
- **Climate-resilient communities:** Mangrove forests mitigate CO₂ for carbon trading with long-term income to coastal communities. The mangrove forestry projects provide employment opportunities for communities and other business opportunities (e.g. ecotourism).

Solution Developer



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SEED Practitioner Labs Climate Finance empower participants during the hands-on and collaborative Labs process to turn major financing challenges into robust prototypes. SEED Practitioner Labs Climate Finance are part of the implementation of "Financing and capacity building for micro and small climate-smart enterprises: Filling the gap of the missing middle", a project supported by the German Federal Ministry for the Environment, Nature Conservation, and Nuclear Safety.