REDD+ Carbon

REDD+ carbon offsets refer to activities that compensate for the emission of greenhouse gases (GHGs) by reducing deforestation, enhancing forest management, and promoting afforestation or reforestation projects. These initiatives help maintain and expand forested areas, which play a critical role in sequestering carbon dioxide (CO_2), thereby reducing overall GHG emissions. REDD+ activities that contribute to carbon offsets include protecting existing forests, restoring degraded lands, and supporting sustainable land use practices.

Carbon Offsets

These activities can be eligible for carbon credits, which represent the amount of carbon dioxide equivalent (CO_2e) that the REDD+ project prevents or sequesters. CO_2 is the most significant GHG, so all other GHGs are compared to CO_2e. Typically, one carbon credit is issued for each metric ton of CO_2e that is avoided or removed. These carbon credits can then be traded in carbon markets, allowing organizations and individuals to offset their emissions by supporting REDD+ initiatives.

Forevergreen Project 3

Location: Acre, Brazil

Project Type: REDD+ (Reducing Emissions from Deforestation and forest Degradation)

Annual Reduction: 120,147 tCO2e

Project Standard: Verified Carbon Standard (VM0007)

Carbon Calculations

The CO2e of any GHG is calculated by multiplying the amount of the GHG by its global warming potential (GWP). The U.S. Environmental Protection Agency defines the GWP as "how much energy the emissions of one ton of a gas will absorb over a given period of time, relative to the emissions of one ton of carbon dioxide."

Gas Compound	20 Year GWP	100 Year GWP
Carbon Dioxide (CO2)	1	1
Methane (CH4)	84	25
Nitrous Oxide (N2O)	264	298
HFC-134a	3710	1430
CFC-11	6900	7390
Carbon tetraflouride (CF4)	4880	17200

CO2e = GHG x GWP = 4 tons CH4 x 25 = 100 tons of CO2e

*Methane (CH4) has a GWP of 25, meaning 4 tons of CH4 released into the atmosphere will trap as much heat as 100 tons of CO2.

Carbon Markets

Carbon markets can be categorized as either voluntary or regulatory (compliance) markets. Compliance markets are regulated by governments, while voluntary carbon markets consist of individuals, companies, and governments dedicated to reducing their carbon footprint. These organizations work to lower their GHG emissions and purchase carbon credits in carbon markets to offset any residual emissions. Carbon credits are issued and traded through a carbon registry. Often, private companies and individuals collaborate with landowners to develop, enroll, and validate carbon offset projects.

Carbon Registries

Carbon registries operate as a marketplace for carbon credits. Before a carbon credit can be registered for sale, an independent third party must verify that an approved protocol was followed to measure the amount of CO2e . Upon successful verification, carbon credits are issued and tracked with a unique serial number to prevent double counting. Registries must address the following requirements:

Additionality – carbon credits must only be issued for projects that otherwise would not have occurred in the absence of the issued credit.

Leakage – carbon offset projects must not shift CO2 emissions elsewhere as a consequence of the project.

Permanence – carbon offsetting projects must not be reversed before the allotted time after the issuance of the carbon credit.

Exclusive – carbon credits must be issued for at least one metric ton of CO2e and to only one entity for each credit.

Verified – carbon credits must be quantified based on scientific evidence, verified through a third-party, and enrolled in a credible carbon registry.

REDD+ Credits

Overview of REDD+ Carbon Credits

REDD+ carbon credits are generated through activities that reduce emissions from deforestation and forest degradation, as well as through the conservation, sustainable management, and enhancement of forest carbon stocks. These projects are recognized for their ability to prevent the release of carbon stored in forests, thereby reducing greenhouse gas (GHG) emissions and contributing to global efforts to combat climate change. The credits are typically sold on carbon markets, where companies or individuals can purchase them to offset their carbon emissions.

Types of REDD+ Projects

Large-Scale REDD+ Projects:
- **Forest Conservation:** These projects involve the protection of large forest areas that are at risk of deforestation. By preventing deforestation, these projects ensure that the carbon stored in trees remains sequestered, thereby avoiding GHG emissions.
- **Carbon Credit Generation:** Large-scale REDD+ projects can generate significant amounts of carbon credits due to the vast areas of forest protected. These projects are crucial in regions where deforestation rates are high, and when implemented responsibly, they can provide substantial benefits to local communities and ecosystems, making them a valuable component of broader climate mitigation strategies.

Small-Scale REDD+ Projects:
- **Community-Led Reforestation:** These projects involve the restoration of degraded lands through tree planting and sustainable land management practices led by local communities.
- **Carbon Credit Generation:** While the carbon credits generated are smaller in volume compared to large-scale projects, these credits are often more attractive in voluntary carbon markets due to their focus on community engagement and the additional co-benefits, such as biodiversity conservation and poverty alleviation.

REDD+ Carbon Credit Calculation and Methodology

The calculation of carbon credits from REDD+ projects involves several key steps:

- **Baseline Scenario:** Establishing a baseline scenario is the first step. This involves estimating the amount of deforestation or forest degradation that would have occurred in the absence of the REDD+ project.
- **Monitoring and Verification:** Continuous monitoring of the project area is required to track changes in forest cover and the associated GHG emissions reductions. Independent third-party verifiers must validate the emissions reductions.
- **Emission Factors:** Emission factors are applied to determine the volume of carbon credits generated based on the amount of forest carbon preserved or sequestered. In regions where deforestation pressures are high, the emission factor would be greater, resulting in more carbon credits.