Machine Learning used by GCACH

GLOBAL CARBON CHECK

Adopting Machine Learning (ML)

This document outlines our approach to implementing machine learning technology in ecological simulation to rate the project based upon the project progress, project risk and accuracy of the information and data provided through project development report.

At Global Carbon Check , we are committed to advancing the state of the art in ecological simulation by leveraging cutting-edge technologies like machine learning. By combining data, process-based modeling, and machine learning techniques, we aim to provide more accurate and detailed insights into the complex dynamics of ecosystems, including forests, wetlands, and grasslands.

In particular, we have been focused on using machine learning to enhance our forest growth modeling capabilities. By understanding the effects of different restoration strategies and risk factors on forest outcomes, we hope to provide decision-makers with the tools they need to make informed choices about land management and restoration.

How we use Machine Learning (ML)

For analysing the carbon project Global Carbon Check utilizes machine learning (ML) and multiple types of satellite data to estimate and identify specific features.

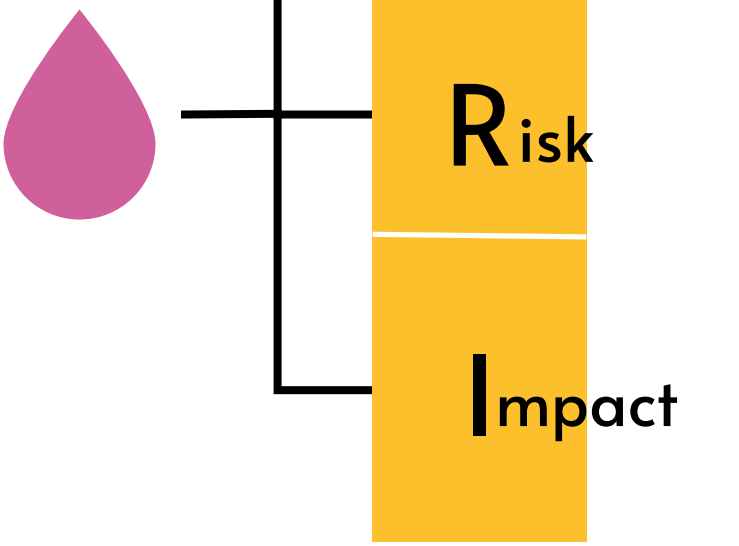
FEATURE SCOPE

- Forestaion and Reforestation
- Canopy Height
- Canopy Cover
- Above Ground Biomass
- Natural Risk Modeling
- Deforestation Risk Assesment

How can machine learning provide insights to generate project ratings ?

To determine the Global Carbon Check credit rating, we compare the project reports to our modeling results.

Reminder of our rating piller



- Forestation and Reforestation
- Canopy Height
- Canopy Cover
- Above Ground Biomass

- Natural Risk Modeling
- Deforestation Risk Modeling

- Impacts are Derived using SDG Rating system

The carbon score for a project is determined by comparing the results of our modeling approach with the project reports. If we identify the same area of forest growth as reported and no unreported losses, the carbon score will reflect the full carbon benefits of the project. However, if we identify any discrepancies, such as a smaller area of forest growth than reported or any unreported forest loss, the carbon score will be adjusted accordingly.

We use our modeling approach and a quality control process to ensure accuracy in the carbon score. We also use our ML results to test for over-crediting risk in the Additionality component of our ratings framework. If a project developer has cleared any primary forest prior to the project start, the area of primary forest cleared is considered ineligible and represents an over-crediting risk. Our ML results help us track any historic primary forest loss prior to the project start to quantify this risk.

To ensure a high level of accuracy in the Carbon Score, the outputs of our models undergo a thorough quality control process, which is driven by VVB information on project description report. We compare the changes in forest growth that we have identified to the project reports in order to identify any discrepancies. This helps us to ensure that the results of our modeling approach are representative of what is happening on the ground within the project area.

For example, we may detect both positive and negative impacts on carbon levels from the project start to the latest monitoring report. If the project reports less carbon loss than we detect, such as from harvesting activities, this will be taken into account when calculating the carbon score.

ML models help to calculate the risk of natural disasters such as fire, drought, and disease ,etc. We start by using global models based on historical impact and Earth System Model projections of likely future climate change. These models help us to quantify the likelihood of natural risks to the project site.

Risk Scope's Included

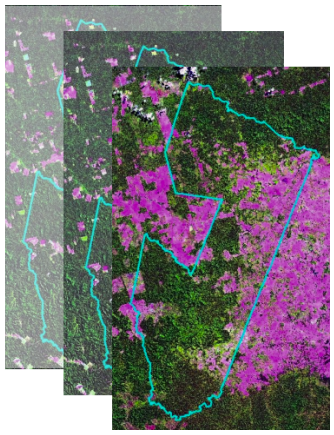
- Pest / Pathogens
- Fire
- Storm
- Flood
- Drought
- Anthropogenic

To further assess the risk of deforestation, we use the deforestation risk Model. This tool utilizes multiple publicly available datasets based on satellite imagery to quantify land eligibility, deforestation baselines, and risk. Our approach generates a rigorous and detailed assessment that goes beyond the requirements of the most widely used greenhouse gas crediting programs. Integration with machine learning provides full automation, enabling us to evaluate global deforestation risk at scale.

With this information, we can provide an accurate assessment of the project's risk and Accuracy.

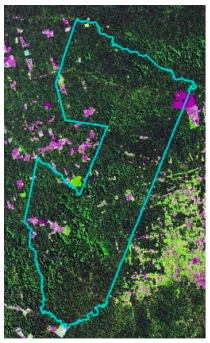
Accuracy Assesment

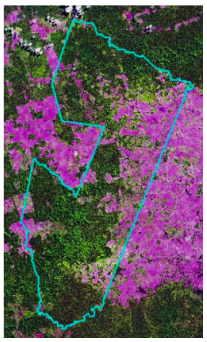
Assessment on Forestation and De-forestation



1

Data Collected over years





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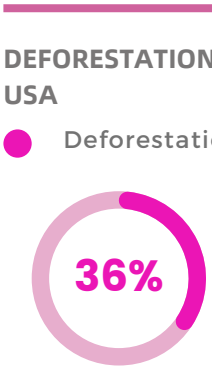
Predicting Forest area gained or lossed



3

Loss Observed

Risk Assessment

Assessment on Fire Risk

1

Predction on Fire Risk

FIRE ALERTS IN AREA IN GUJARAT, INDIA

There were **3 VIIRS** fire alerts reported in **Area in Gujarat, India** between **6th of March 2023** and **6th of April 2023**, of which **67%** were **high confidence alerts**.

- High confidence alerts
  2
- Other alerts
  1

2

Prediction Confidence level on Fire Risk

At Global Carbon Check, we strive to adopt financially viable best practices that have a positive impact on small and large communities alike. Our advanced rating platform technology provides an extra layer of transparency for sustainable leaders, stakeholders, traders, and buyers, allowing for more informed financing decisions.

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