

HOW TO GUIDE

Rapid due diligence for forest carbon projects

Learn how to quickly assess projects, before you purchase, using Earth observation data and global climate datasets.



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Introduction

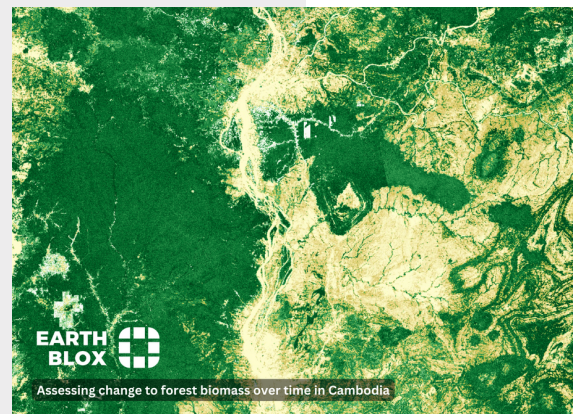
Nature Based Solutions (NbS) projects are a popular source of credits on the voluntary carbon market. As well as avoiding or removing carbon emissions, they commonly offer 'co-benefits' such as biodiversity conservation and sustainable livelihoods.

However, not all credits are made equal, and purchasers are increasingly concerned about the quality of the projects they get credits from: they don't want to be accused of greenwashing, and they don't want to discover that the projects they've paid for are offsetting less carbon than they've claimed.

Today, many purchasers conduct their own due diligence on projects, and use a combination of Earth observation and geospatial data to:

- ✓ Quickly assess if a project has high-quality carbon offsets
- ✓ Verify project developers' claims using independent data
- ✓ Safeguard their reputation and defend integrity of projects by demonstrating a credible baseline assessment was conducted

In this guide we explore the due diligence process many of our customers use Earth Blox to rapidly assess projects before they purchase carbon credits.



How NbS projects work

Carbon markets can be complicated, so let's first look at how these projects work. A typical project might look something like this:

Origination

A **Project Developer** discovers an opportunity for an NbS Project. They'll identify the type of project (REDD+, ARR etc.), and the methodology (VCS, Gold Standard, ACR) they wish to use. Based on those choices, they'll need to complete the appropriate project documentation for review and approval by a VVB.

Validation

An approved **Validation / Verification Body (VVB)** will examine the proposed project to determine whether it complies with the rules of the chosen methodology.

Implementation

Once validated, the **Project Developer** can get started with the project. During the course of the project, they'll need to report regularly on how the project is going and performing against their chosen methodology and claims.

Verification

An approved **Validation / Verification Body (VVB)** will verify that the figures provided by the **Project Developer** are accurate, and that the project has correctly quantified the carbon reductions/removals as described in the project plan. They will then give the green light for credits to be issued.

Credit issuance

The project is reviewed by the organisation who is issuing credits. Once approved, offset credits are deposited in the **Project Developer's account**.

Due diligence

Purchasers who wish to buy the credits from a project may perform their own due diligence on a project (or outsource this) - their goal is to satisfy themselves of the quality of credit being issued.

Monitoring

Purchasers who have invested in projects generally want to be aware of the state of projects (and don't want to rely on the mandatory reporting from the **Project Developer** which can be infrequent).

These final stages of due diligence and monitoring also happen at other points in the process, including before credits have been issued.

How due diligence for NbS works

The process for getting a project validated and verified is complex and onerous; due diligence is not an attempt to recreate the entire methodology - but it does cover the same principles:

- ✓ Checking **additionality**
- ✓ Checking **carbon measurements**
- ✓ Identifying risks of **non-permanence**
- ✓ Identifying **leakage**

The aim is to assess these areas, often remotely - avoiding the high costs of site visits; and therefore satisfy the purchaser that the project is of high quality. Some due diligence activities may not relate to the specific project site - such as monitoring changes in national legislation - however, quickly understanding a project site and its surroundings is where remotely-sensed data comes into its own, and tools like Earth Blox can help.

Due diligence with Earth Blox

Now, let's take a look at how our customers use Earth observation data and global climate datasets on Earth Blox to help assess a REDD+ (reduction in emissions from deforestation and forest degradation) project.

This list isn't exhaustive, but the value of a flexible tool like Earth Blox is that you can tailor it to your exact requirements. Many of our customers report this process takes them hours on Earth Blox, versus days using other types of software or external consultants.

Check additionality

1. Check if planned deforestation is likely to take place, based on the land history.

Create a time series to assess trends in deforestation going back at least 10 years around your project site to assess risk of further forest loss. For example if no forest removal is visible, and there is no road encroachment, the risks are less than if we can see forest removal over time.

It is important to differentiate between planned and unplanned activities. Time series analyses can help differentiate between forest loss in plantations versus forest loss due to illegal activities. For example plantations generally follow a rotation pattern: plant, grow, harvest, plant, grow harvest over time.

This analysis can be performed using a dataset such as Hansen Global Forest Change for a quick estimate, which can also be compared with other land cover classification products to get an overall view of the land cover in your project area.

These datasets are good for a quick assessment and to give you a high-level overview of land cover dynamics, forest loss, and deforestation. However they are global products designed to work over large areas, which introduces inaccuracies at a more local level. Many of these are known, and warned about, such as with the Hansen dataset. This is almost inevitable when you create global datasets like this, and you are trading accuracy for speed and ease. Site-specific supervised classifications can be used for greater accuracy.



Template project: NbS: Assess historical deforestation

Dataset: Hansen Global Forest Change



[Watch the video](#)

Check additionality

2. Check that project boundaries do not include areas that are unlikely to be deforested anyway (such as steep ravines - which tend to be difficult to deforest).

View project boundaries against a map of slope gradients. You can also classify the slope into “gentle” slope (<15%) and “steep” slopes (≥15%) or look at the area of 500 metre elevation bands.

Areas that are on steep slopes and/or at high elevations are less likely to be at risk from deforestation compared to low-lying areas on relatively flat land, which are more accessible for machinery.



Template project: NbS: Assess project terrain steepness from elevation data

Dataset: SRTM Digital Elevation Data



[Watch the video](#)

3. Ensure the reference region is representative of the deforestation practices of the wider region (this ensures the baseline is valid).

Undertake step 1 (forest loss assessment) as above, but this time for the reference region, and a wider area. Here you want to ensure that your reference region is a good representation of deforestation in the wider area in which your project is located. This provides a robust baseline level of forest loss.



Template project: NbS: Assess historical deforestation

Dataset: Hansen Global Forest Change



[Watch the video](#)

Check additionality

4. Check the project's reference region has similar characteristics to the project site.

Undertake steps 1 and 2 (forest loss assessment, and terrain analysis) as above, but this time for the reference region. Here you are ensuring that your reference region is similar to your project site, and are comparing like with like. This helps you to produce a robust baseline with which to determine the success of your project.



Template project: NbS: Determine land cover with Dynamic World

Dataset: WRI Dynamic World



[Watch the video](#)



Template project: NbS: Assess project terrain steepness from elevation data

Dataset: SRTM Digital Elevation Data



[Watch the video](#)

Check additionality

5. Check reported forest extent and its change over time for a reference area matches documentation.

Calculate forest loss using a dataset such as Hansen Global Forest Change for a quick estimate; other classifications can be used for comparison, and a site-specific supervised classification can be used for greater accuracy.

As discussed above, these datasets give you a good high-level overview of forest extent in your area, and how that has changed over time. This is suitable at this due diligence stage, however for Verification purposes a more accurate approach would be required.



Template project: NbS: Estimate forest cover from deforestation data

Dataset: Hansen Global Forest Change



[Watch the video](#)



Template project: NbS: Determine land cover with Dynamic World

Dataset: WRI Dynamic World



[Watch the video](#)

Check carbon measurements

6. Check if reported carbon density for the project site and reference region fits with other data sources.

Estimate forest carbon using Earth Blox's global carbon maps. These aren't a replacement for ground-truthed data, but can highlight major discrepancies which should be investigated.



Template project: NbS: Calculate forest biomass change over time

Datasets: Global PALSAR-2/PALSAR Yearly Mosaic, Hansen Global Forest Cover, Landsat 4/5/7/8/9 Combined



[Watch the video](#)

Template projects currently available for Africa, Brazil, Cambodia and Indonesia (contact us for other regions)

Identify risks of non-permanence

7. Assess indicators of drought risk.

Look at trends in precipitation (e.g. from ERA5 reanalysis data), to assess frequency of drought years.



Template project: NbS: Analyse drought risk

Dataset: ERA5 reanalysis data



[Watch the video](#)

8. Assess indicators of flood risk.

Look at trends in surface water, using a dataset such as JRC Yearly Water Classification to see if the project site is susceptible to flooding.



Template project: NbS: Analyse flood risk

Dataset: JRC Yearly Water Classification



[Watch the video](#)

9. Assess indicators of fire risk.

Analyse previous fire data - across the region - to assess risk to the project site of fire events.



Template project: NbS: Analyse fire risk monthly

Dataset: Terra Thermal Anomalies & Fire Daily Global



[Watch the video](#)

10. Assess indicators of wind risk.

Look at wind speed trends using reanalysis data to understand the chance of high winds affecting a project site in the future.



Template project: NbS: Analyse wind risk

Dataset: ERA5 reanalysis data



[Watch the video](#)

11. Assess indicators of extreme temperature risk.

Look at the trend in temperature extremes, and how often they affect a project site (e.g. from ERA5 reanalysis data).



Template project: NbS: Analyse temperature risk

Dataset: ERA5 reanalysis data



[Watch the video](#)

Identify leakage

12. Check if deforestation has increased in the project's surroundings since the start date of the project.

Measure the rate of deforestation in the surrounding region, both before and after the project start date. This will give you a good high-level overview of forest loss, which is suitable at this due diligence stage. However if you are wanting to undertake Verification then a more accurate approach would be required.



Template project: NbS: Assess historical deforestation

Dataset: Hansen Global Forest Change



[Watch the video](#)

 All of the videos referenced above can be viewed [on this NbS due diligence playlist.](#)

Monitoring approved carbon projects

Even once you've approved a carbon project, you'll want to keep an eye on how it's doing. That's where a tool like Earth Blox comes into its own - allowing you to monitor the project site continually to ensure that it's delivering on expected benefits, and making sure that you're the first to know of any issues (such as fire damage) that arise.

Next steps

Want to use Earth Blox for a rapid due diligence assessment on your next NbS project?

Contact us at team@earthblox.io to get started with a 14-day free trial

About Earth Blox

Earth Blox gives busy data analysts the tools to build and run satellite image analyses in minutes. Access to the Earth Engine catalogue, combined with code-free workflows, makes Earth Blox the data-platform of choice for businesses, governments, and NGOs to inform critical decision making around climate and security risks, environmental degradation, and adaptation to climate change.

The company was founded in 2019 by a team of remote sensing scientists and PhDs who understood the only way to accelerate the adoption of Earth observation insights in the fight for our planet, was to make it more accessible.

Founding team



**Dr Genevieve
Patenaude**
CEO



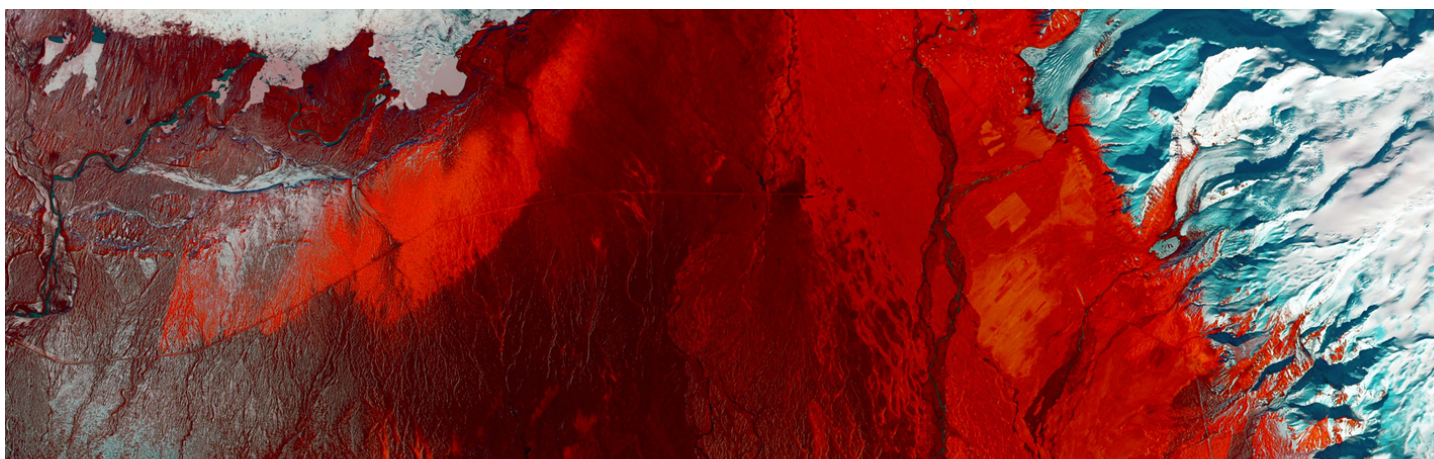
Sam Fleming
HEAD OF
CUSTOMER
SUCCESS



Ben Butchart
HEAD OF
DEVELOPMENT



**Prof. Iain
Woodhouse**
KNOWLEDGE &
OUTREACH LEAD



Meet our customers

Our customers use Earth Blox to inform critical decision making around climate and security risks, environmental degradation, and adaptation to climate change.



Budget saved

\$150,000 per FTE/yr
\$95k/mth in storage



Time saved

From 80 hours to 30 minutes
Upskill non-experts



Increased confidence

Faster, more accurate decisions



Our team can quickly and easily conduct the initial assessment. They don't wait four weeks for me to do it.



We gain confidence with our customers because we can answer their questions more quickly.



We're down to 40 mins from start to finish - and have confidence in the results.

Want to use Earth Blox for a rapid due diligence assessment on your next NbS project?

Contact us at team@earthblox.io to get started

