ARR GUIDE

orbify

ARR Carbon Projects and Their Role in Carbon Markets

2024

Table of Contents

Introduction to Carbon Markets

Carbon markets serve as a system where carbon credits, each representing one tonne of carbon dioxide or an equivalent greenhouse gas, are traded. These credits are generated through projects aimed at reducing, capturing, or avoiding emissions. By purchasing carbon credits, companies and individuals can offset the emissions they cannot eliminate in their operations, contributing to global efforts to mitigate climate change. Once a credit is used to offset emissions, it is retired, ensuring it cannot be traded again.

These markets play a crucial role in addressing the climate crisis, especially as greenhouse gas emissions continue to rise globally. Carbon markets offer a practical solution by providing an incentive for investment in climate projects, especially in regions where financial resources are scarce. Many countries and companies are now turning to carbon markets to bridge the gap between their climate goals and the required action, making them a key component in achieving global climate targets.

By facilitating the trading of carbon credits, these markets encourage the funding of projects that help reduce emissions, such as reforestation, renewable energy, and sustainable infrastructure. As the demand for these credits grows, carbon markets continue to evolve, offering a pathway to a more sustainable future.

Source: 2024 State of the Voluntary Carbon Market, Ecosystem Marketplace

Carbon Project Types

There are many types of carbon offset projects, each designed to remove or avoid gas emissions. These projects span a variety of sectors, including renewable energy, energy efficiency, forestry, and waste management. In this guide, we will focus on forest carbon projects, which play a vital role in mitigating climate change through the natural carbon absorption capabilities of forests.

Carbon Removal Projects:

These projects focus on actively **removing** carbon dioxide from the atmosphere and storing it. Forest carbon projects such as afforestation and reforestation fall into this category, as they plant new trees that absorb CO2 as they grow. Technologies like direct air capture and carbon capture and storage (CCS) are other forms of carbon removal, where carbon is directly extracted from the atmosphere and stored safely.

Ex. **Afforestation** (planting new forests), **Reforestation** (restoring deforested areas), and **regeneration**. Forests act as carbon sinks, naturally absorbing carbon dioxide from the atmosphere, making them a critical component of global emission reduction strategies.

Carbon Avoidance

These projects **prevent** the release of greenhouse gases that would otherwise enter the atmosphere. A prime example is avoided deforestation, where Established forests are preserved, preventing the significant emissions that would occur if trees were cut down and the carbon stored in them was released. Other avoidance projects include reducing methane emissions from landfills or improving industrial practices to lower emissions.

Ex. Avoided Deforestation, Projects that generate power from clean energy sources such as solar, wind, hydro, biomass, tidal, and geothermal energy.

Main Forest Carbon Project Types

Forestry carbon projects are essential for both avoiding carbon emissions and removing carbon from the atmosphere. They fall into three main categories: ARR (Afforestation, Reforestation, and Revegetation), REDD+ (Reducing Emissions from Deforestation and Forest Degradation), and IFM (Improved Forest Management). Each category focuses on different aspects of forest management and carbon sequestration.

1. ARR Carbon Projects (Afforestation, Reforestation, and Revegetation)

Afforestation refers to the planting of trees on land that has not been forested for a long period, or potentially ever. Reforestation focuses on replanting trees in areas that were recently deforested or degraded. Revegetation extends this concept by encouraging natural growth on degraded land. ARR projects are particularly effective at removing carbon from the atmosphere, as growing trees act as natural carbon sinks. These projects sequester large amounts of CO2 as new forests mature.

2. REDD+ Carbon Projects (Reducing Emissions from Deforestation and Forest Degradation)

REDD+ projects focus on the conservation of existing forests that are at risk of deforestation or degradation. Forest conservation is critical because mature forests store vast amounts of carbon in both their biomass and soil. Deforestation releases this stored carbon, making forest conservation a key carbon avoidance strategy. REDD+ projects earn carbon credits by preventing emissions that would occur if forests were destroyed, helping to keep CO2 locked away in trees.

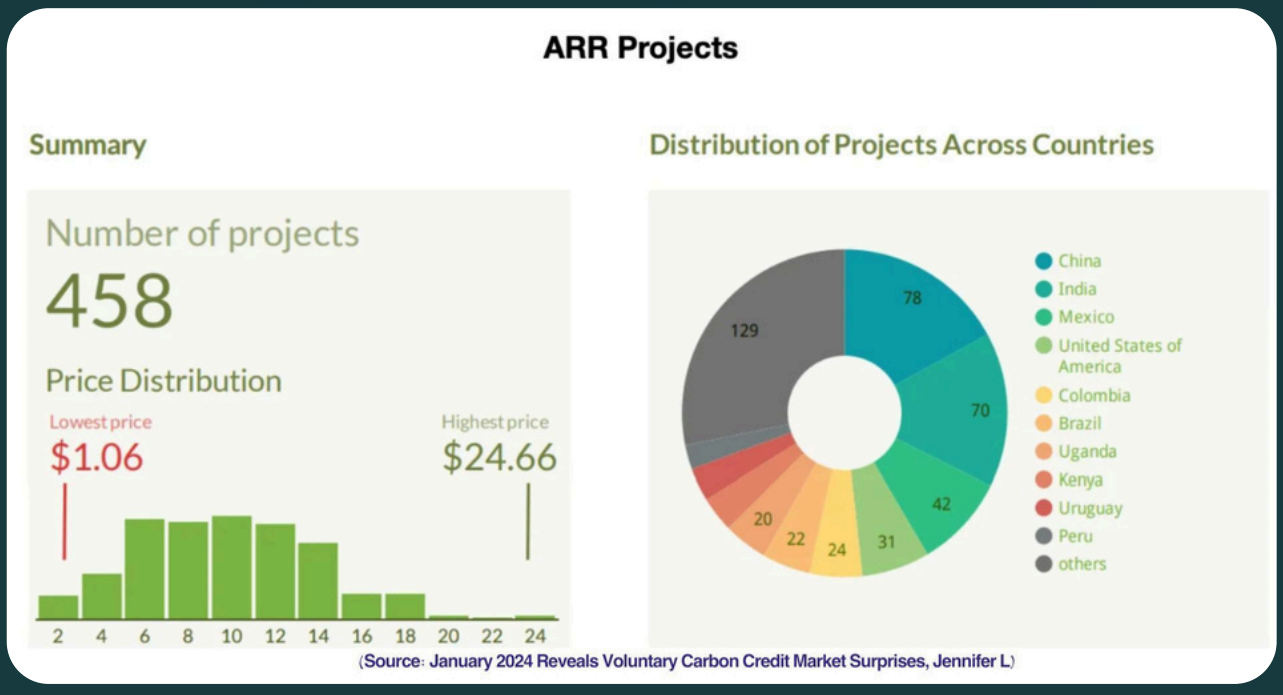
3. IFM Carbon Projects (Improved Forest Management)

Improved Forest Management (IFM) projects focus on enhancing the carbon storage potential of Established forests through better management practices. Instead of planting new trees or protecting forests from destruction, IFM projects optimize the management of forest resources to increase the amount of carbon stored. This can be achieved by increasing the age of trees, reducing harvest levels, managing tree species, or extending the time between harvest rotations.

Current Market Context for Forestry Credits

As of mid-2023, forestry credits dominate the Nature-Based Solutions (NBS) sector, making up 88% of total credits issued. With 661 million forestry credits issued (June 2023), the sector is the backbone of the voluntary carbon market (VCM). While the first half of 2023 saw a temporary slowdown in the issuance of forestry credits, the longer-term trend remains optimistic.

One of the key factors influencing the demand for forestry credits this year is the scrutiny surrounding the efficacy of REDD (Reducing Emissions from Deforestation and Forest Degradation) credits, especially those related to unplanned deforestation. Market confidence in REDD+ projects—focused on preventing deforestation—was shaken by concerns about the reliability of the carbon reductions achieved.



(Source: January 2024 Reveals Voluntary Carbon Credit Market Surprises, Jennifer L)

Current Market Context for Forestry Credits

The wider market is now beginning to distinguish between projects of varying quality, with higher scrutiny placed on the additionality of projects (i.e., whether the carbon reductions would have happened without the project). This shift has been facilitated by new frameworks released by international bodies like the Integrity Council for the Voluntary Carbon Market (ICVCM) and the Voluntary Carbon Markets Integrity (VCMI). These frameworks aim to standardize and enhance the credibility of carbon projects, helping to rebuild market confidence.

Despite some optimism around ARR credits, challenges remain. The price of these credits still falls short of what is necessary to scale up reforestation efforts. Many buyers are looking for projects that not only offer carbon reductions but also provide co-benefits such as local job creation, food security, improved water quality, and biodiversity protection. These additional benefits encourage community participation, which is critical for the long-term success of forest restoration projects.

The market's recent experiences underscore the need for continuous improvement in how carbon credits are measured and verified. Buyers are increasingly gravitating toward projects that demonstrate clear additionality, robust monitoring, and strong environmental and social benefits. This marks a shift toward a more mature and accountable voluntary carbon market, where high-quality forest credits are expected to play an ever-more significant role in global climate action.

	2022			2023		
Project Cluster	Volume ($MtCO_2e$)	Value (USD)	Price (USD)	Volume ($MtCO_2e$)	Value (USD)	Price (USD)
REDD+ (ALL)	57.4	$584.2 M	$10.19	28.2	$222.3 M	$7.87
Afforestation-Reforestation and Revegetation (ARR)	10.8	$129.8 M	$12.05	4.1	$64.8 M	$15.74
Improved Forest Management (IFM)	4.5	$66.2 M	$14.67	2.4	$38.9 M	$16.21

Source: 2024 State of the Voluntary Carbon Market, Ecosystem Marketplace

Benefits of ARR Projects

ARR projects are increasingly recognized for their effectiveness in sequestering CO_2 and helping combat climate change, while also offering numerous additional benefits. By restoring and expanding forests, ARR projects help meet global climate goals while generating positive economic, environmental, and social impacts.

1. Tangible Impact

ARR projects offer a clear, measurable impact in terms of carbon sequestration, making them highly appealing to both investors and the general public. These projects create visible results, such as newly planted forests or restored ecosystems, which resonate with a wide audience. The tangible nature of these projects allows stakeholders to easily comprehend the positive outcomes, whether through the physical sight of growing forests or the quantifiable carbon reductions. The visible success of ARR initiatives fosters engagement and encourages support from both local communities and investors, showcasing their effectiveness in mitigating climate change.

2. Community Engagement

A key benefit of ARR projects is their emphasis on community involvement. Many ARR initiatives actively engage local populations in planting and maintaining forests, offering economic opportunities and fostering a sense of ownership over the restored ecosystems. By creating jobs in tree planting, forest management, and monitoring, ARR projects contribute to local economies and provide sustainable livelihoods. Community participation also enhances the long-term sustainability of the projects, as local knowledge and traditional practices are often integrated into the restoration efforts.

3. Co-Benefits

Beyond carbon sequestration, ARR projects provide a wide array of environmental co-benefits. These include improving soil health, preventing erosion, enhancing water retention, and restoring biodiversity by creating habitats for wildlife. Trees also play a crucial role in air purification by absorbing pollutants, which helps improve air quality, particularly in urban areas. Additionally, restored ecosystems contribute to flood control and water resource management by regulating water flows and maintaining watershed health. These benefits make ARR projects a holistic approach to sustainability, addressing environmental, social, and economic needs simultaneously.

Risks of ARR Projects

1. Non-Permanence and Reversal Risk

One of the most significant risks in ARR projects is the potential for carbon reversals, which can compromise the longevity of carbon storage. These reversals occur when natural disasters such as wildfires, floods, droughts, or storms destroy forests, releasing stored carbon back into the atmosphere. ARR projects are especially vulnerable in areas prone to wildfires, or regions susceptible to floods and sea-level rise, where storm damage can result in significant tree loss.

Human activities like illegal logging and land use changes, such as deforestation for agriculture, also pose risks to the permanence of carbon storage. The growing impact of climate change, including rising temperatures and prolonged droughts, further amplifies these risks. Regions like the Amazon rainforest face increasing threats from droughts and wildfires, while pests and diseases, which thrive in warmer conditions, are more likely to damage forests, as seen in the bark beetle infestations in North America.

Mitigating these risks involves selecting resilient tree species and implementing management practices such as firebreaks and clearing underbrush to reduce fire spread. Additionally, continuous monitoring using satellite imagery and other technologies allows for the early detection of pests or illegal activities, enabling timely intervention to protect carbon storage.

2. Non-Native or Monoculture Species

The introduction of non-native species or the establishment of monoculture plantations within ARR projects can create significant ecological issues. Non-native species, which have not evolved in the local ecosystem, can disrupt the balance of the local flora and fauna. For example, the introduction of eucalyptus trees in some areas has led to water depletion, negatively impacting the surrounding environment. Monocultures —planting a single species of tree—are also particularly vulnerable to pests, diseases, and climate-related stresses due to their lack of genetic diversity.

For instance, plantations of a single species, such as pine trees, may be decimated by pests like the pine beetle or diseases like pitch canker, leading to the failure of entire ARR projects. In contrast, projects that prioritize the use of native species and promote biodiversity are more resilient to these risks and better equipped to provide a wider range of ecosystem services.

3. Ecological Disturbance

ARR projects can cause temporary ecological disturbances during the land preparation and planting phases. Clearing land for tree planting can lead to soil erosion, habitat loss for certain species, and disruptions to local flora and fauna. These impacts are usually short-term and can be minimized through proper planning and the use of techniques such as mulching to prevent soil erosion.

Overview of Verra's VM0047 Methodology

Verra's VM0047 methodology, introduced in September 2023, represents a significant step forward for Afforestation, Reforestation, and Revegetation (ARR) projects in the carbon market. This methodology aims to enhance the credibility and impact of reforestation projects by introducing a dynamic baseline approach, improving on previous ARR methodologies.

1. Dynamic Baseline Approach
The methodology utilizes dynamic baselines to establish a reference point by comparing changes in the project's vegetation with similar, 'matched' plots in the surrounding region. Instead of relying on historical data and forecasts, it calculates additionality retrospectively (ex-post), after the project has commenced. This method ensures that factors like natural regeneration and replanting, which might have been overlooked in previous baseline calculations, are now considered, ultimately strengthening the accuracy and credibility of the project's claims.

2. Improved Additionality Criteria
The dynamic baseline approach enhances additionality by incorporating local trends in afforestation and natural regeneration, providing a more accurate reflection of real-world conditions. Unlike traditional methods that rely on historical data and projections, this approach utilizes statistical techniques to generate baselines that align with current developments. This ensures that additionality claims are not only more credible but also result in higher quality projects, leading to more reliable project outcomes.

3. Control Plots and Stocking Index (SI)
Under the dynamic baseline, control plots within a 100km radius of the project area are selected based on several matching factors such as ecoregion, policy environment, and land tenure. These control plots must share similar ecological characteristics with the project site and are used to measure a stocking index (SI)—a value that indicates the density of biomass in a given area. The stocking index is then used to estimate the baseline carbon stocks.

Overview of Verra's VM0047 Methodology

Factor	AR-ACS0003 and AR-AMS0007	VM0047
Baselines	Both methodologies employ alternative scenario analysis, which identifies the most likely scenario in the absence of the project, and uses that to set the baseline.	Offers two approaches: **Area-based**: Employs traditional plot-based sampling methods in matched control plots outside of the project area, in combination with remote sensing data, to establish a project's baselines. **Census-based**: Primarily designed for projects where the activity does not result in a change in land use, such as agroforestry, and where a complete census of plantings is practical.
Additionality	Both AR-ACS0003 and AR-AMS0007 demonstrate additionality through barrier, investment, and common practice analysis, or an approved standardized baseline appropriate to the project.	Additionality testing depends on the baseline setting approach. However, both approaches require regulatory surplus tests, plus an investment analysis when there are revenues/financial incentives other than carbon credits. **Area-based:** Must exceed the carbon storage that is evidenced from the same dynamic performance benchmark that is used in the baseline setting. **Census-based**: Must occur in lands with less than 10% forest cover and subject to continuous cropping, in settlement(s), or on lands categorized as 'other lands'. Projects must also apply a common practice assessment which considers anything over 15% to be common practice.
Leakage	Leakage for both methodologies is estimated using the CDM tool AR-TOOL15. The tool estimates the increase in emissions based on changes in carbon stocks in the affected carbon pools in the land receiving displaced activities. It considers increases in GHG emissions associated with secondary effects to be insignificant and therefore they are not accounted for. This tool does not stipulate time spans from and for which leakage assessment must be derived or applied.	Requires projects to apply the newly published leakage module VMD0054. This provides a standardized approach to accounting for leakage associated with displacing pre-project agricultural activities caused by the baseline agent or other actors. It incorporates a set historical period of three years or one crop rotation, whichever is greater, and quantifies leakage for five years following project establishment.
Carbon pools	In AR-ACM0003 and AR-AMS0007, accounting for deadwood, litter and soil organic carbon pools is optional, whilst non-woody biomass is not included.	In the area-based approach litter and aboveground and belowground non-woody biomass must be included if the project activity significantly reduces these carbon pools. Soil organic carbon must be included where soil disturbance from the project activity occurs more than once during the crediting period, and/or when it involves soil inversion to a depth exceeding 25 cm.

Source: Assessment of Verra's new VM0047 ARR methodology, BeZero

Strengths of VM0047

1. **Flexibility in Quantification:** VM0047 offers both area-based and census-based approaches, allowing it to adapt to different types of projects, from large-scale afforestation to smaller agroforestry initiatives, ensuring appropriate baseline settings.

2. **Dynamic Performance Benchmarks:** These benchmarks account for natural biomass regeneration, and other activities such as replanting, helping prevent over-crediting. This approach aligns with best practices in carbon crediting for Nature-Based Solutions.

3. **Algorithmic Matching for Control Plots:** Statistical methods like k-nearest neighbor ensure data-driven, accurate matching between project and control plots, enhancing baseline reliability.

4. **Common Practice Benchmarks:** The methodology strengthens additionality testing by excluding project activities with adoption rates above 15%, ensuring only additional projects receive credits.

5. **Improved Additionality Criteria:** The dynamic baseline approach strengthens additionality by accounting for local trends in afforestation and natural regeneration. This method ensures that additionality claims are more accurate and reflective of actual regional developments, leading to more credible and reliable project outcomes.

6. **Enhanced Transparency on Leakage:** The leakage module improves transparency by assessing lost productivity over a specific period, addressing gaps in previous methodologies.

7. **Inclusion of Non-Woody Biomass and Soil Carbon:** Accounting for these pools increases the accuracy of carbon removal estimates and enhances project monitoring, particularly during planting and management phases.

8. **Better Monitoring of Over-Crediting:** VM0047 improves monitoring of over-crediting risks by incorporating more comprehensive data on land use, carbon pools, and leakage effects, ensuring more accurate carbon accounting.

Areas of Improvement for VM0047

1. **Native Species Emphasis**: The methodology does not prioritize or mandate the use of native species in reforestation efforts, which could compromise biodiversity and ecological sustainability. Requiring the use of native species or setting a minimum percentage for native flora would ensure projects contribute more effectively to local ecosystems, and discourage monoculture or non-native plantations that may have negative environmental impacts.

2. **Standardization of Remote Sensing Practices:** The current allowance for variability in remote sensing data sources and processing methods introduces inconsistency across projects, potentially skewing evaluations. By standardizing remote sensing protocols, including specifications for data accuracy and methods for analyzing changes in land cover, project assessments would become more consistent and reliable.

3. **Handling of Uncertainty in Dynamic Benchmarks:** While dynamic performance benchmarks are a strength of the methodology, their current implementation lacks provisions for handling uncertainty in the matching process between project areas and control plots. Enhancing this by incorporating additional factors beyond the stocking index—such as environmental variables like climate or soil conditions—could lead to better matching quality and more reliable baselines.

4. **Transparency in Control Plot Selection:** Currently, the location of control plots is not disclosed, limiting external scrutiny of the dynamic performance benchmark process. By requiring transparency and public disclosure of control plot locations, third parties could verify that control plots are appropriately matched to project areas, increasing the credibility of the evaluations.

Orbify’s ARR Template

At Orbify, we’re excited to introduce two robust templates designed for Afforestation, Reforestation, and Revegetation (ARR) projects, ensuring they align with the VM0047 methodology. These tools streamline the assessment of your project’s impact, risks, while making the monitoring process more efficient.

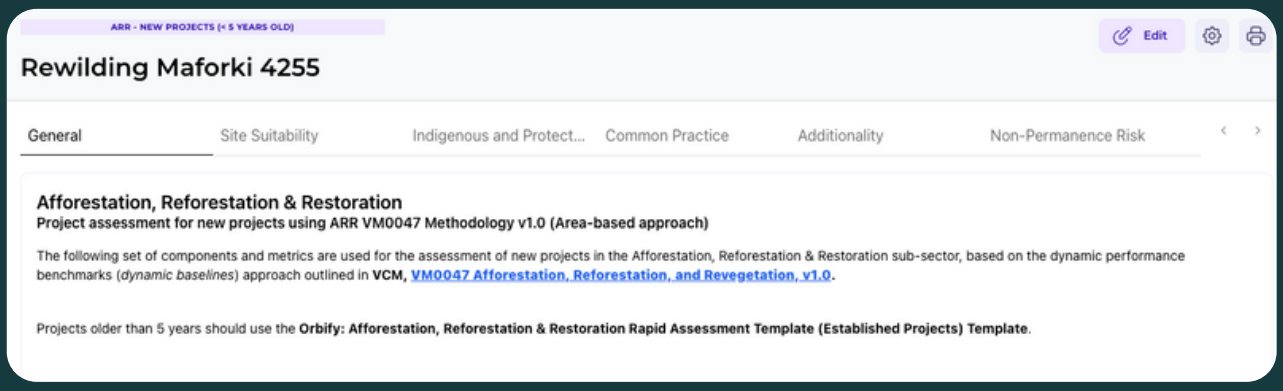
Established Projects Template: Designed for projects over 5 years old, this template emphasizes:

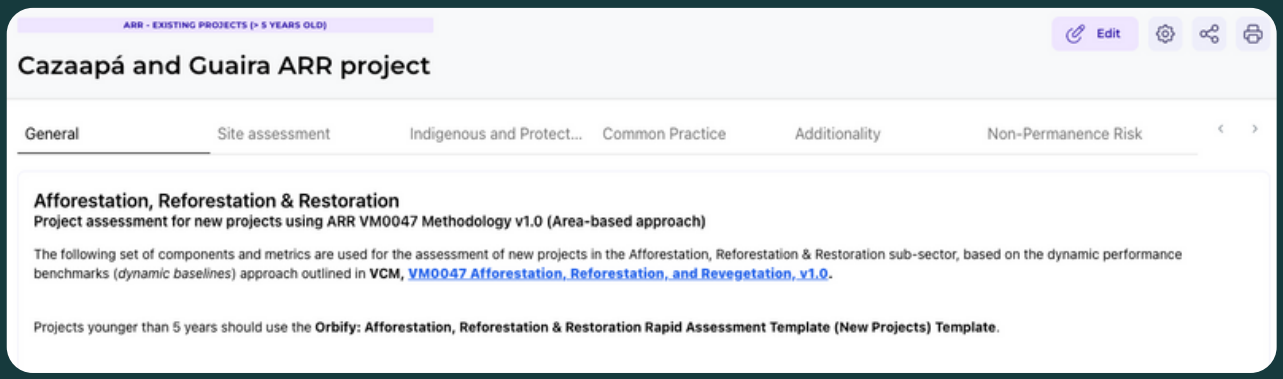
- Site conditions.
- An estimation of the ongoing project’s additionality.
- Climate-related risks.

New Projects Template: This template is for projects under 5 years old, focusing on:

- **S**uitability and eligibility of the project plot for an ARR project. Estimation of the expected additionality of the project.
- Project risks.

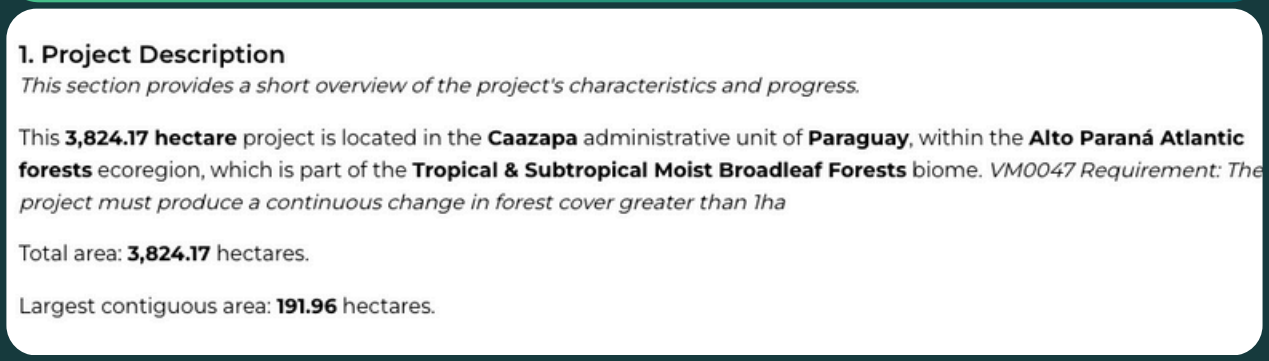
These templates ensure your project remains on track and compliant with the latest industry standards, supporting your sustainability goals efficiently.





Orbify's ARR Established Projects Template

Project Overview
The first step for assessing ongoing ARR projects using this template is the Project Overview. It provides a comprehensive description of your project, including critical details such as location, ecoregion, and total area. Additionally, the template flags if the project may not be suitable for the VM0047 methodology due to plot size, giving you an early understanding of your project's scope and helping identify potential compliance issues.



1. Project Description

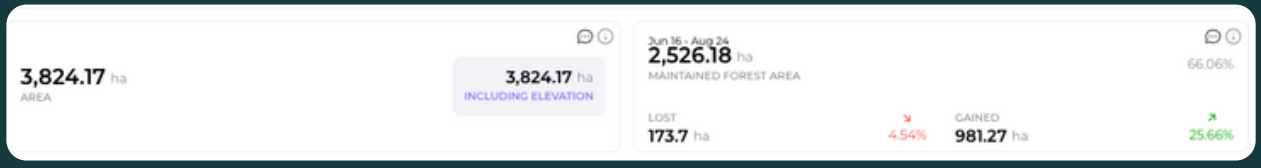
This section provides a short overview of the project's characteristics and progress.

This **3,824.17 hectare** project is located in the **Caazapa** administrative unit of **Paraguay**, within the **Alto Paraná Atlantic forests** ecoregion, which is part of the **Tropical & Subtropical Moist Broadleaf Forests** biome. *VM0047 Requirement: The project must produce a continuous change in forest cover greater than 1ha*

Total area: **3,824.17** hectares.

Largest contiguous area: **191.96** hectares.

Precise Area Calculation:
The template uses Digital Elevation Models (DEM) to calculate the total project area with high accuracy, factoring in terrain slopes to reflect real-world conditions. This ensures that your project's area is measured precisely, which is essential for reporting, validation, and making informed decisions. By providing a realistic representation of the terrain, the DEM-based calculations support reliable project assessments and help guide more accurate decision-making.



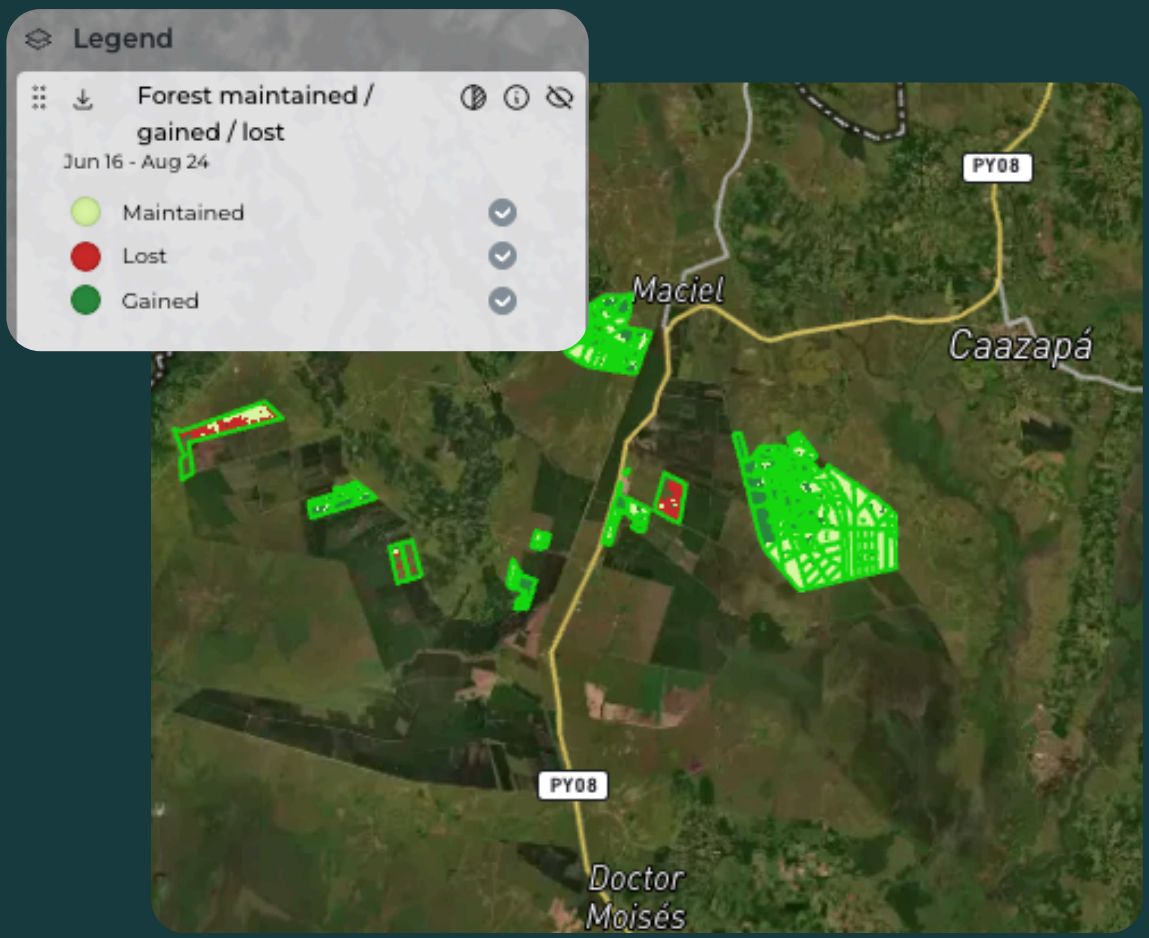
Orbify's ARR Established Projects Template

Visual Land Use Analysis:
The template provides a visual breakdown of land use within the project area, utilizing high-resolution Sentinel-2 imagery to create pie charts. This feature enables a quick assessment of current land cover, highlighting dominant land use types and helping project developers make informed decisions about land management. By visually presenting the distribution of land use, it ensures that the project remains aligned with its environmental goals.

Orbify’s ARR Established Projects Template

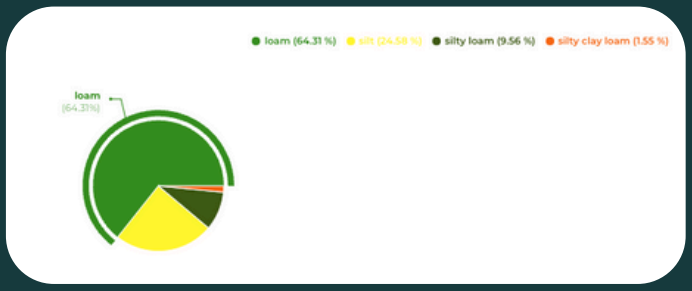
Forest Loss Monitoring:
The template tracks and quantifies annual forest cover loss, monitoring the shift from forested to non-forested areas. It offers valuable insights into deforestation trends, allowing you to assess the environmental impact of human activities.

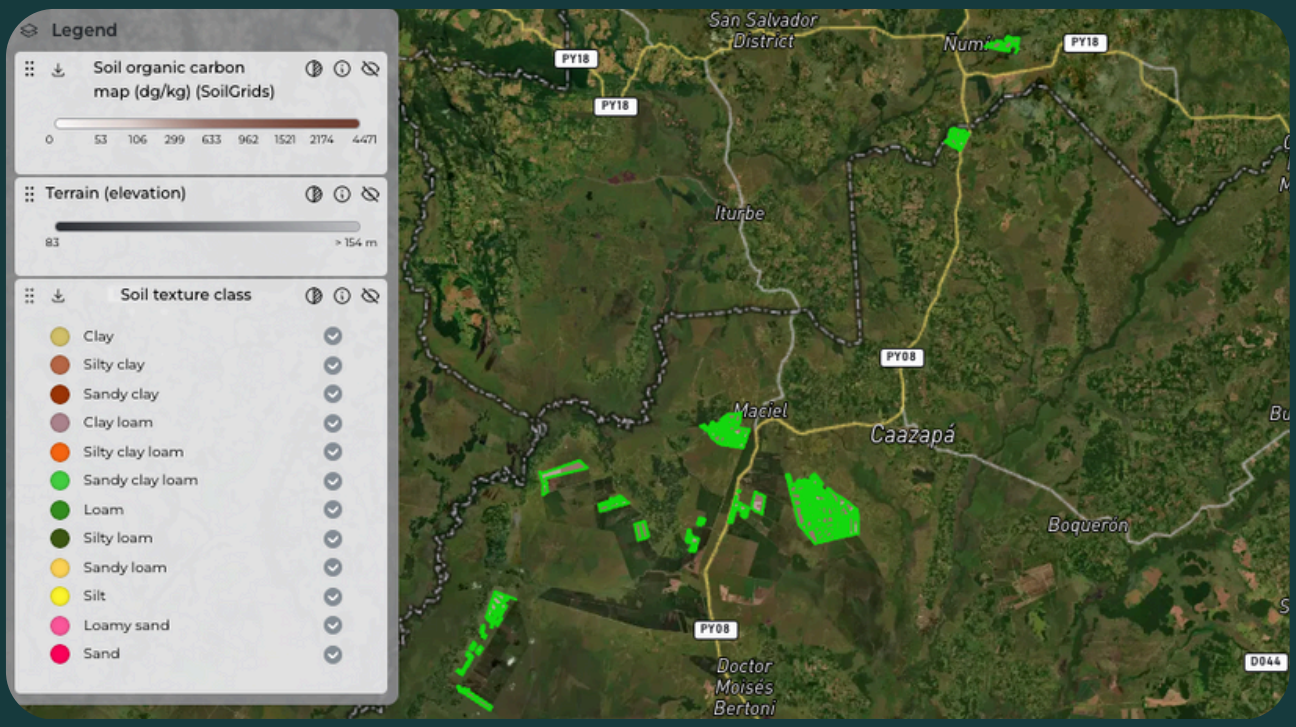
With these analytics, you can develop effective strategies to mitigate land degradation and make informed, proactive land management decisions.



Orbify's ARR Established Projects Template

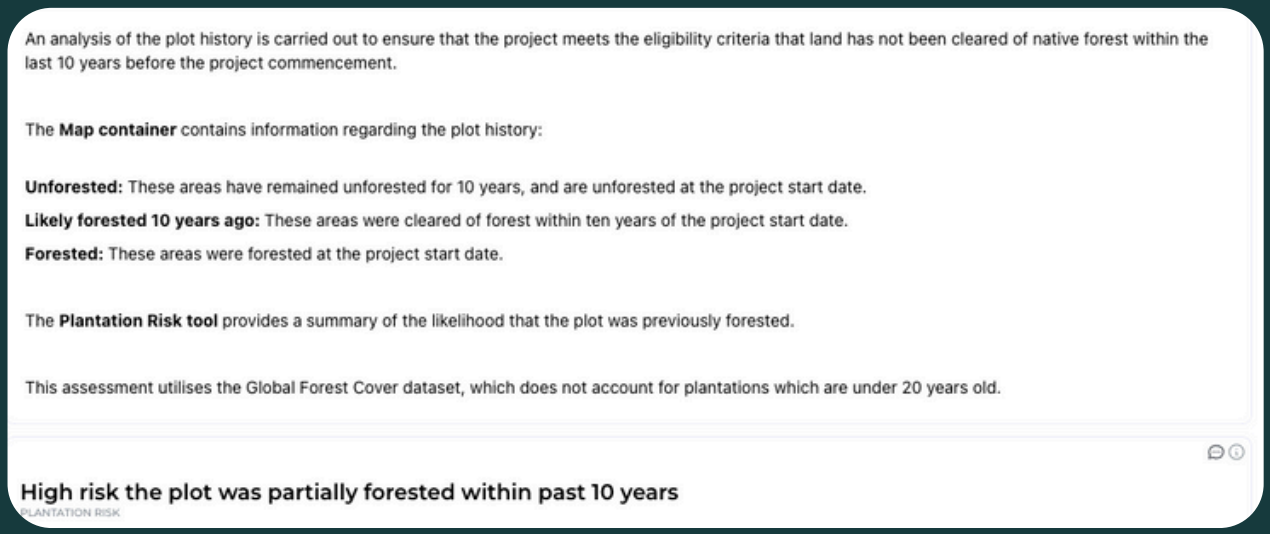
Comprehensive Site and Soil Assessment:
A detailed assessment of soil and terrain characteristics is provided, comparing the project area with surrounding regions. This includes analysis of soil texture classes based on the USDA classification system, offering insights into soil composition. This information is critical for selecting appropriate species for reforestation and ensuring that the project's activities are well-suited to the local environment.

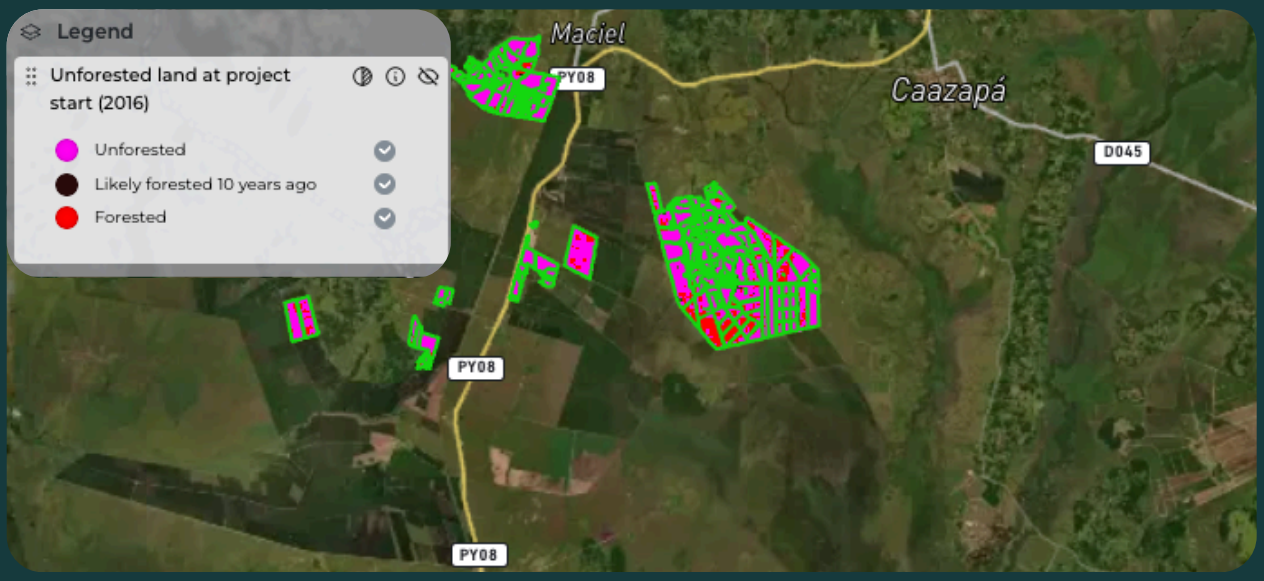




Orbify's ARR Established Projects Template

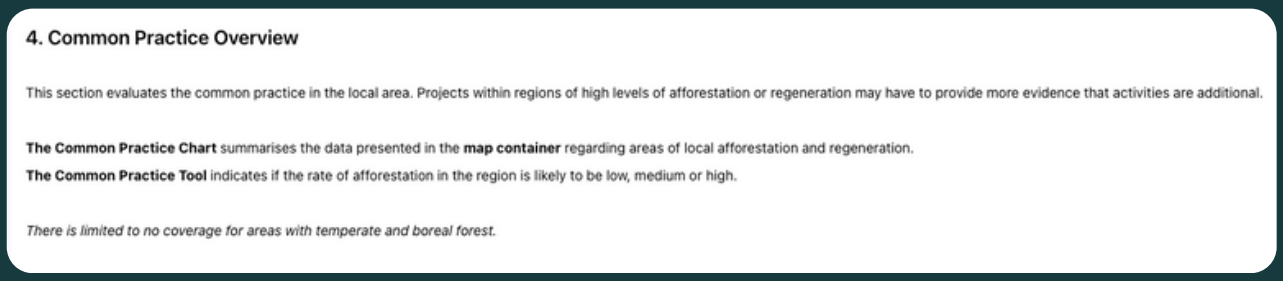
Plantation Risk Evaluation:
The template assesses the likelihood that the project area was forested within the past 10 years, categorizing the risk as low or high. A low-risk designation indicates minimal to no forest cover, while a high-risk designation suggests significant forest cover, potentially affecting the project's eligibility. This evaluation helps users understand historical land use, which is crucial for determining the project's eligibility and additionality, ensuring compliance with the VM0047 methodology and justifying its contribution to carbon sequestration.





Orbify’s ARR Established Projects Template

Common Practice Analysis:
The template assesses local afforestation, reforestation, and regeneration activities to determine whether your project is considered additional or aligns with typical ‘business as usual’ practices. By evaluating the prevalence of these activities in the area, this analysis helps differentiate your project and supports its claim of additionality, which is essential for securing carbon credits and demonstrating the project’s unique impact.



4. Common Practice Overview

This section evaluates the common practice in the local area. Projects within regions of high levels of afforestation or regeneration may have to provide more evidence that activities are additional.

The Common Practice Chart summarises the data presented in the **map container** regarding areas of local afforestation and regeneration.
The Common Practice Tool indicates if the rate of afforestation in the region is likely to be low, medium or high.

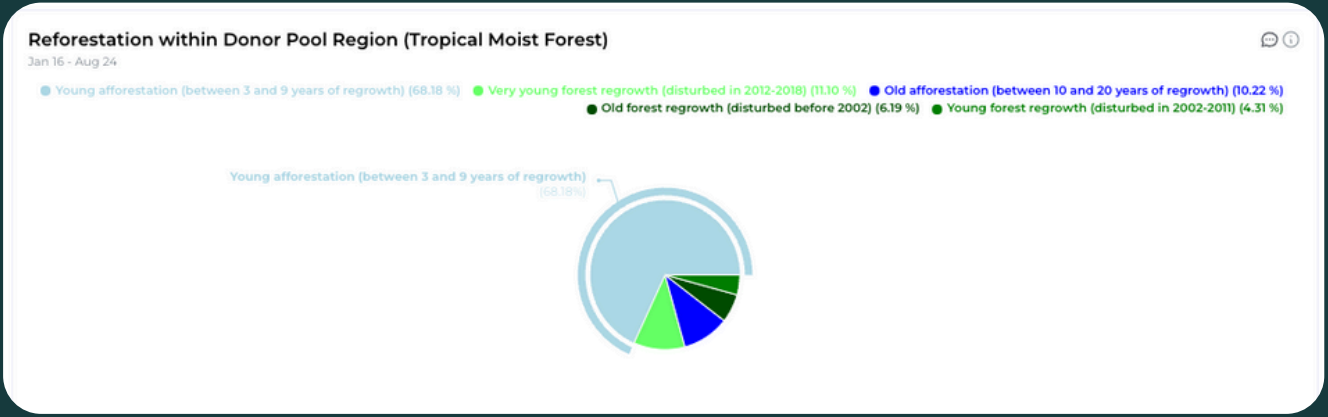
There is limited to no coverage for areas with temperate and boreal forest.

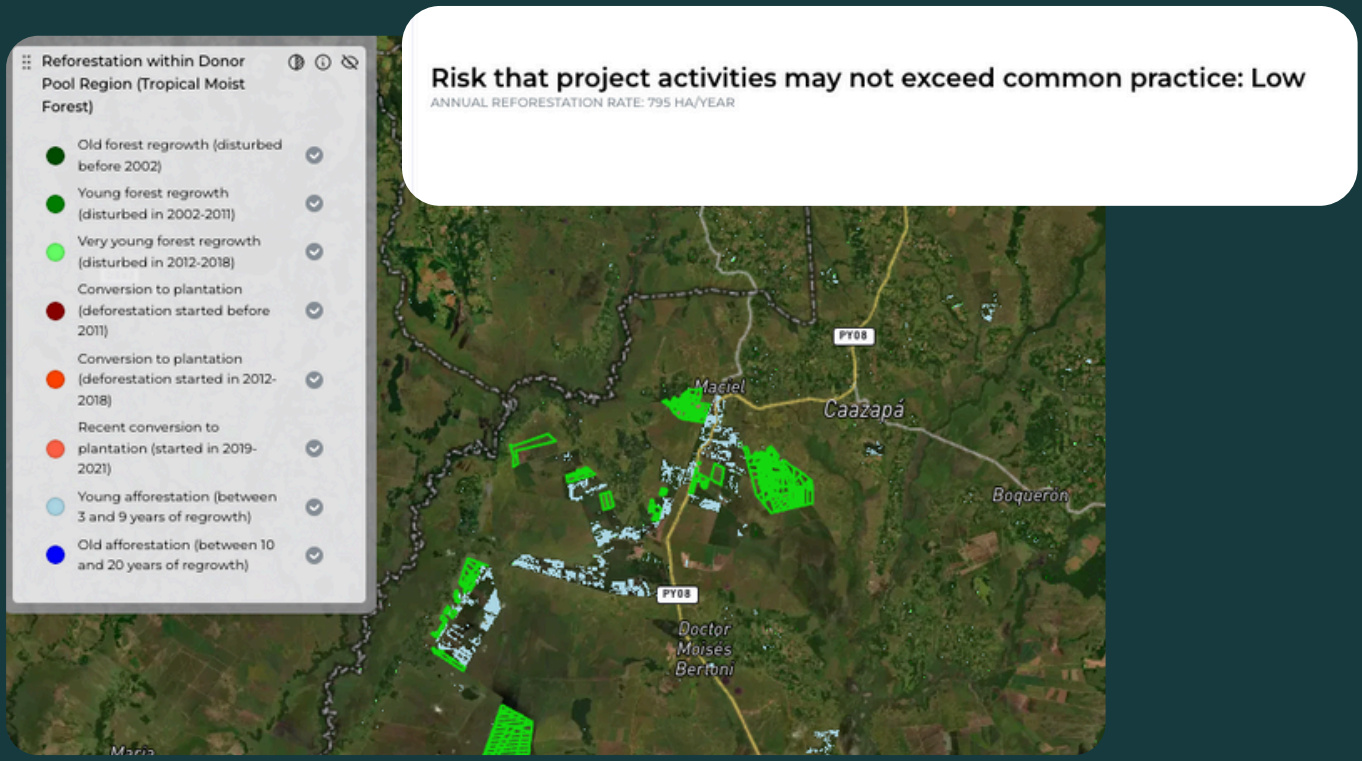
Orbify's ARR Established Projects Template

Indigenous Territories and Protected Areas
To ensure the quality of ARR carbon projects, our template includes an assessment of Indigenous Territories and Protected Areas, using multiple datasets to define these territories. A base layer is built using the NativeLand Digital map for improved accuracy. Protected areas are designated for their natural, ecological, or cultural significance, and are safeguarded from human exploitation or development.

Orbify's ARR Established Projects Template

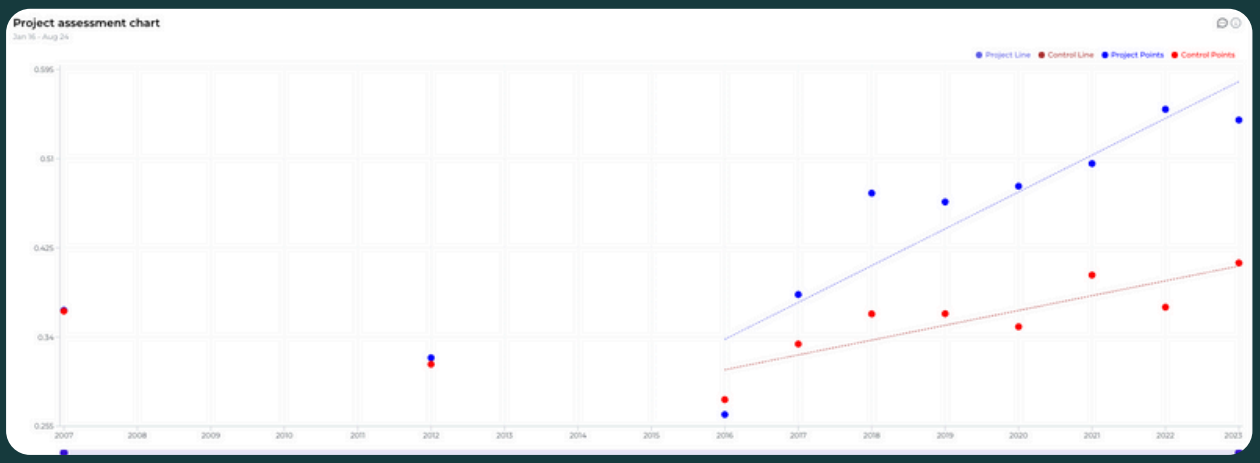
Regional Reforestation Visualization:
The template visualizes forest regrowth in the surrounding region, generating pie charts and maps that display the types and extents of forest regrowth within a buffer zone. This analysis offers insights into local afforestation practices, helping to ensure that your project meets reforestation criteria and supports the results of performance benchmarking.

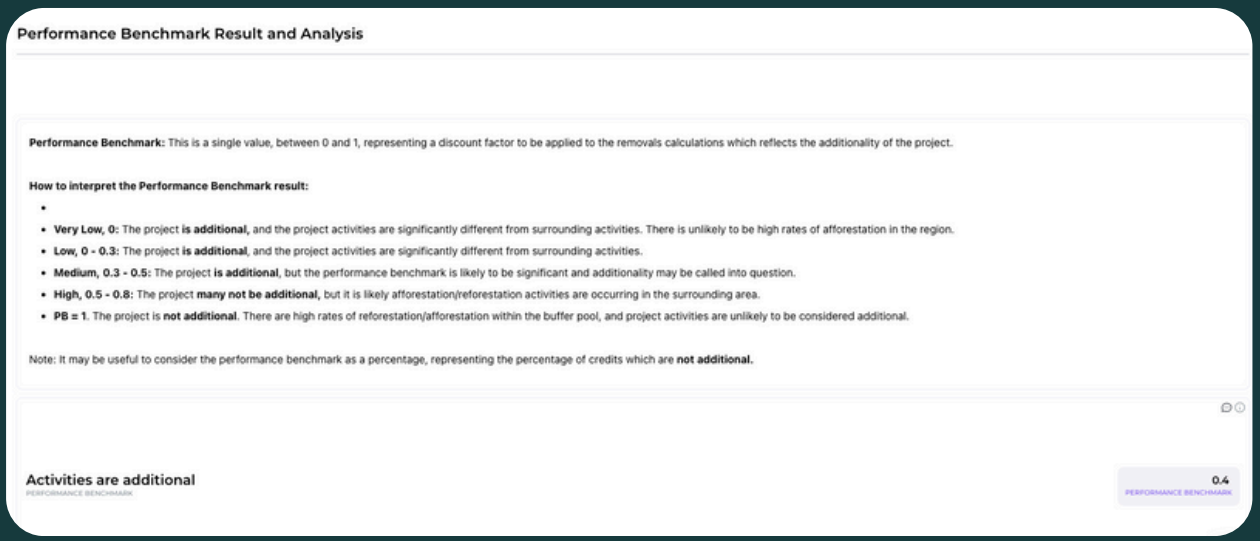




Orbify’s ARR Established Projects Template

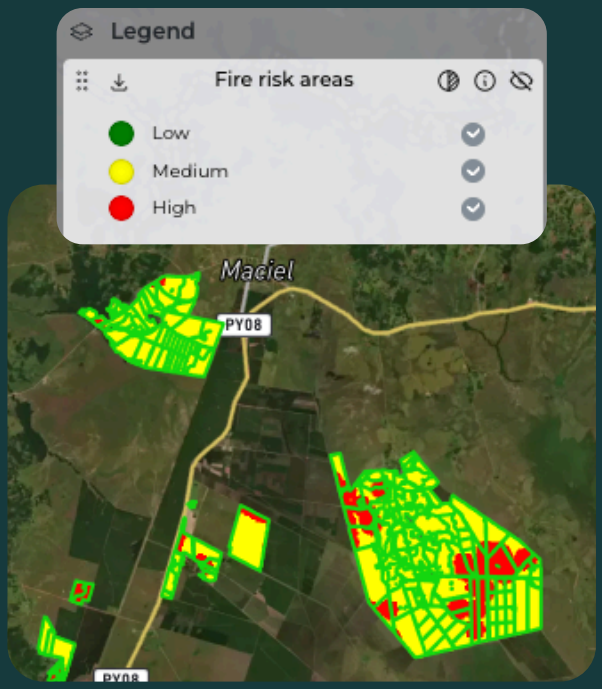
Performance Benchmarking:
The template tracks the project’s performance over time by comparing project and control plots, it uses data 10 years prior to the project start date to match project and control plots, and then monitors the stocking index over time to determine the performance benchmark. This feature allows you to assess the effectiveness and additionality of your project activities, ensuring that your efforts are making a significant and measurable difference compared to local vegetation changes.

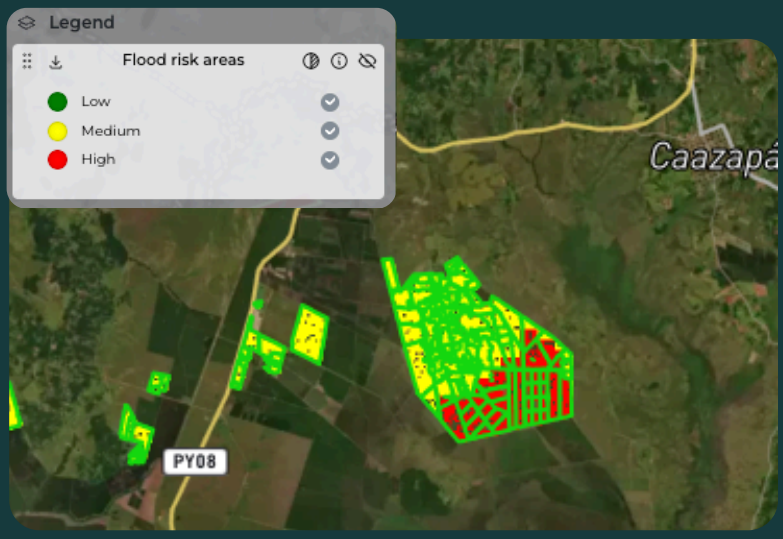




Orbify’s ARR Established Projects Template

Natural Non-Permanence Risk Assessment:
The template evaluates the risks to carbon stocks from natural hazards such as floods, fires, and droughts, categorizing them as minor, major, or devastating based on their likelihood and potential impact. This assessment helps you understand and mitigate risks, ensuring long-term project sustainability and the effectiveness of your carbon sequestration efforts. By planning for natural threats, you can better protect your project and maintain its environmental impact over time.





Orbify's ARR New Projects Template

The **ARR New Projects Template** (for projects less than 5 years old) follows a similar structure to the Established Projects Template, beginning with a Project Overview, Project Area Calculations, Forest Loss Monitoring, and Land Use Categories.

A key distinction is the inclusion of a **Site Suitability Assessment** in the New Project Template, which focuses on soil and terrain characteristics, whereas the Established Projects Template includes a **Site Condition Assessment.**

The **Site Suitability Assessment** highlights land suitable for ARR projects based on the ESRI land cover classification, with the following land cover classes identified as suitable for afforestation:

- Crops
- Bare ground
- Rangeland

Additionally, a **historical assessmen**t ensures project eligibility by confirming that the land has not been cleared of native forest within the past 10 years.

The **Plantation Risk Tool** assesses the likelihood of prior forestation, categorizing the risk as low or high. This evaluation is essential for ensuring compliance with the VM0047 methodology and validating the project's contribution to carbon sequestration.

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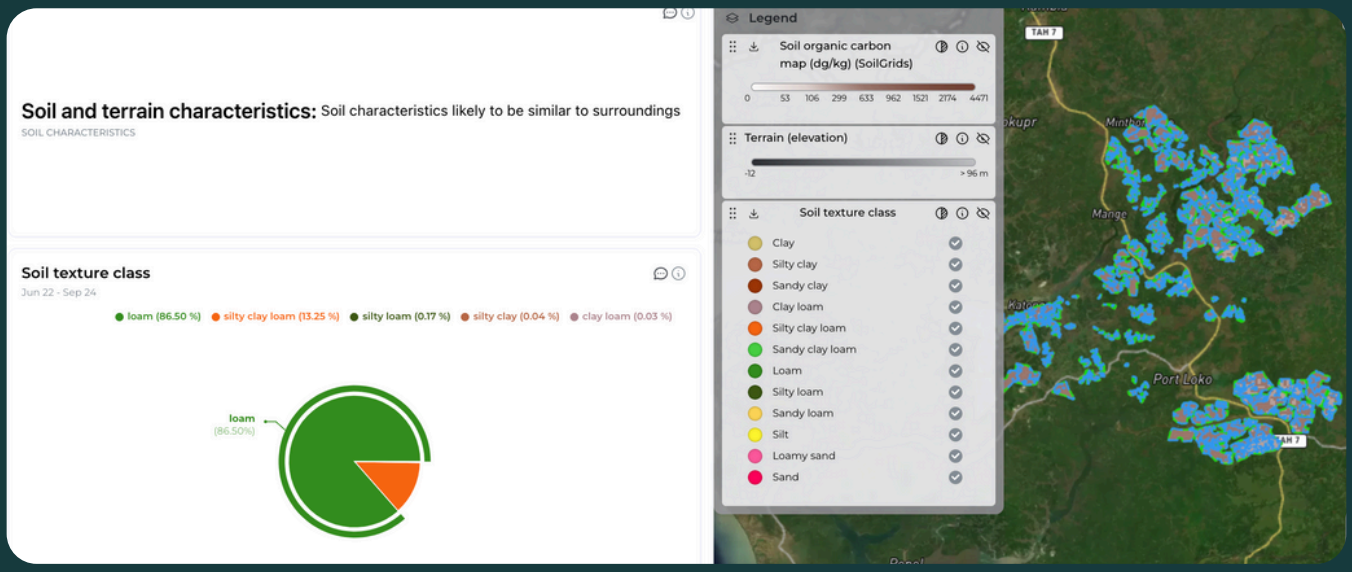
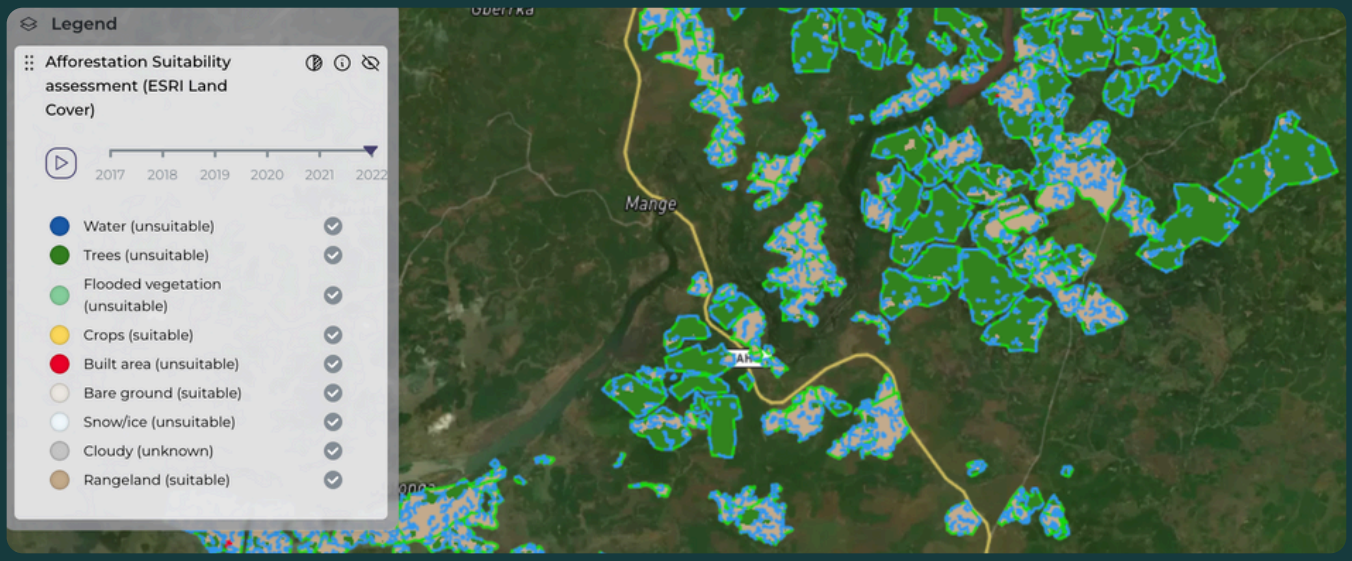




An analysis of the plot history is carried out to ensure that the project meets the eligibility criteria that land has not been cleared of native forest within the last 10 years before the project commencement.

The **Map container** contains information regarding the plot history:

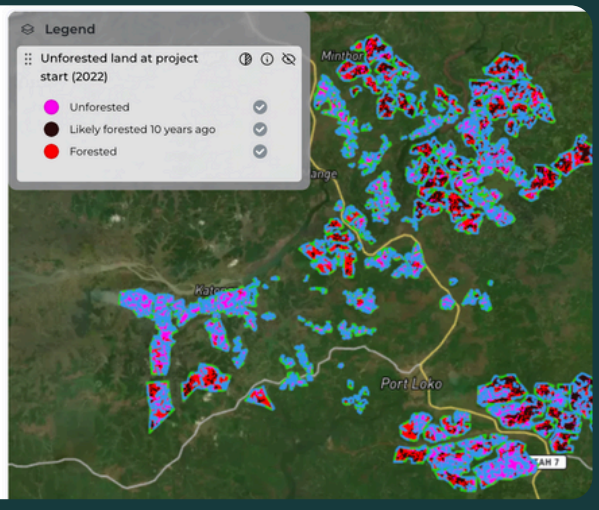
Unforested: These areas have remained unforested for 10 years, and are unforested at the project start date.

Likely forested 10 years ago: These areas were cleared of forest within ten years of the project start date.

Forested: These areas were forested at the project start date.

The **Plantation Risk tool** provides a summary of the likelihood that the plot was previously forested.

High risk the plot was partially forested within past 10 years
PLANTATION RISK



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Continuing similarly with the Established template, the **ARR New Projects Template** also provides analytics to determine whether the project area overlaps with **Indigenous Territories and Protected Areas.**

Additionally, the **Regional Reforestation Visualization** feature generates pie charts and maps to depict forest regrowth within a buffer zone around the project. This analysis helps ensure the project aligns with reforestation criteria and supports performance benchmarking. It also evaluates common practice in the region, where projects in areas with high levels of afforestation or regeneration may need to provide more evidence to prove the additionality of their activities.

The Common Practice Chart summarizes local afforestation and regeneration data, while the Common Practice Tool assesses regional afforestation levels as low, medium, or high. Note that coverage is limited for areas with temperate and boreal forests.

Another key difference in the New Projects Template is that it includes an **estimate of the expected additionality** of the project, while the Established Projects Template provides an **estimate of the additionality for an ongoing project.**

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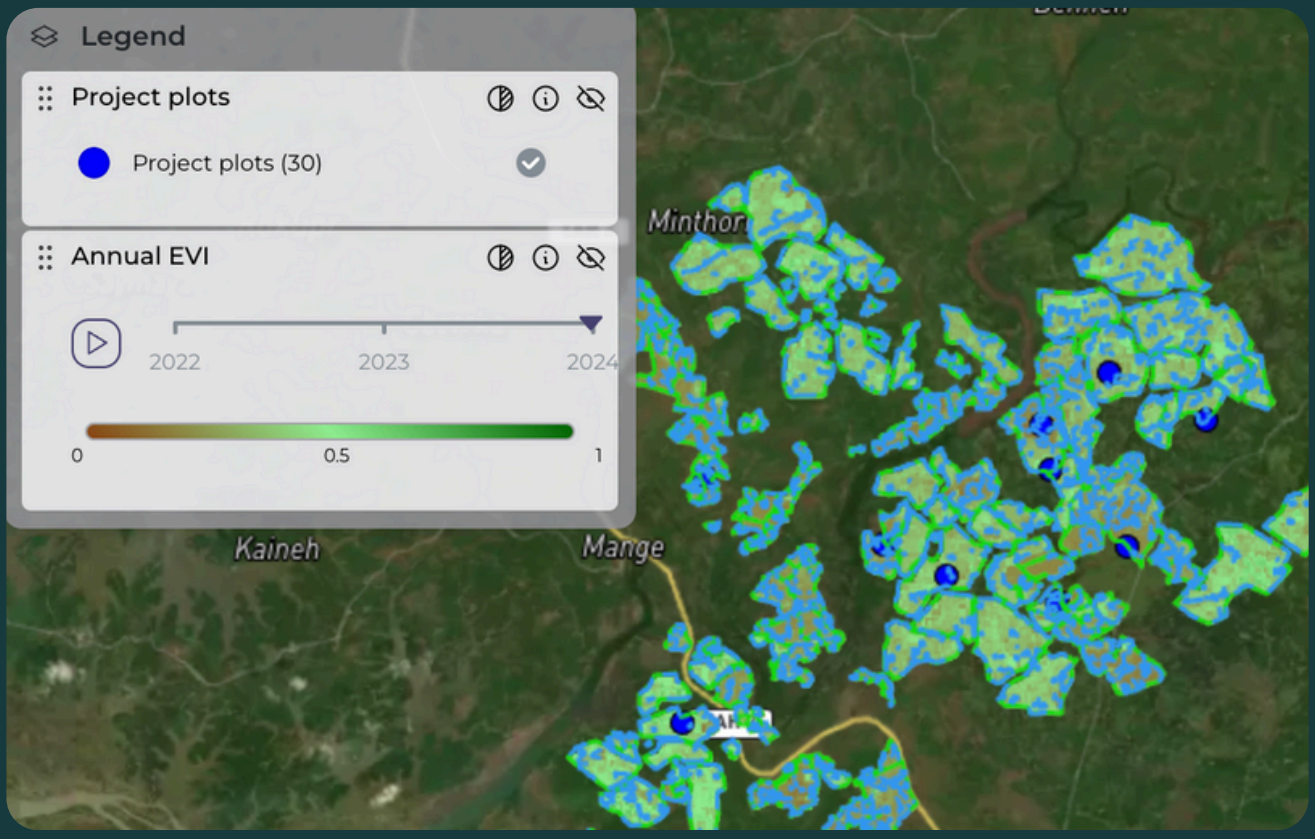


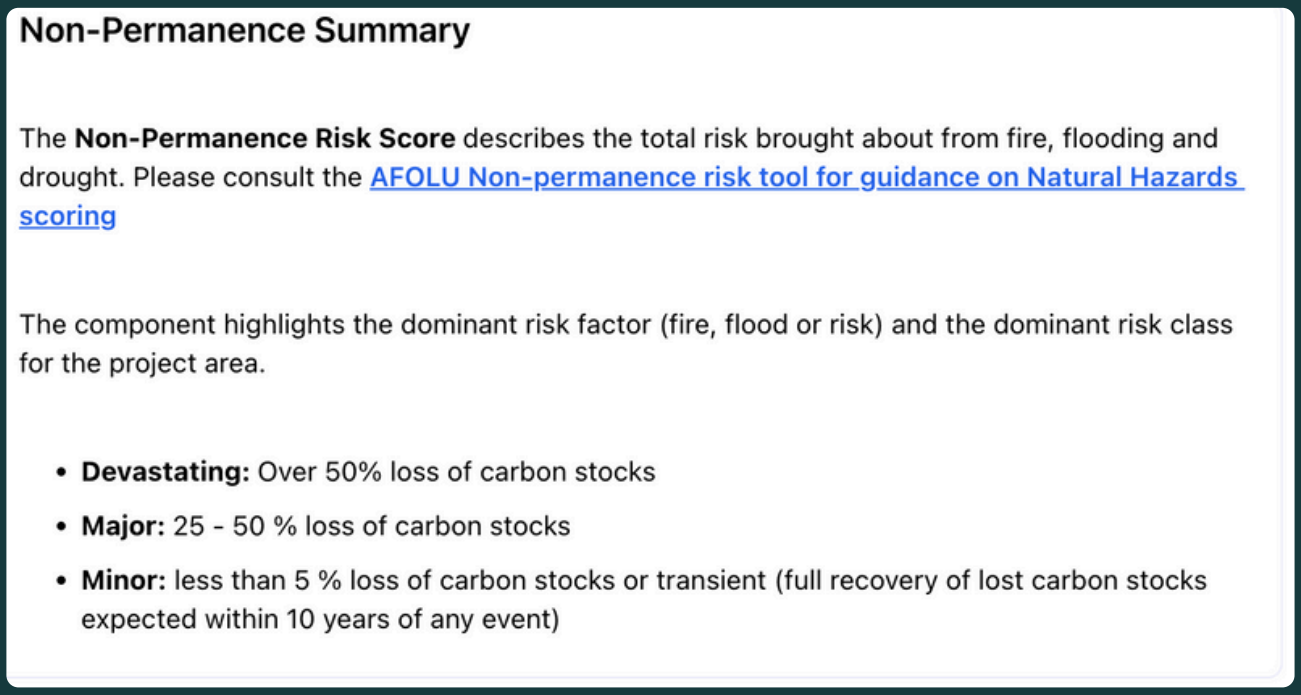
Orbify's ARR New Projects Template

Lastly, the two templates have identical non-permanence sections, both addressing risks from natural hazards such as fire, flooding, and drought.

In both the New Projects and Established Projects Templates, non-permanence risk is equivalent to climate risk. Each template includes a Non-Permanence Risk Score based on the AFOLU Non-Permanence Risk Tool, which evaluates risks as follows:

- Devastating: Over 50% loss of carbon stocks
- Major: 25-50% loss of carbon stocks
- Minor: Less than 5% loss of carbon stocks, or transient with full recovery expected within 10 years

This consistency ensures that non-permanence risks are uniformly assessed across both templates.



Non-Permanence Summary

The **Non-Permanence Risk Score** describes the total risk brought about from fire, flooding and drought. Please consult the AFOLU Non-permanence risk tool for guidance on Natural Hazards scoring

The component highlights the dominant risk factor (fire, flood or risk) and the dominant risk class for the project area.

- **Devastating:** Over 50% loss of carbon stocks
- **Major:** 25 - 50 % loss of carbon stocks
- **Minor:** less than 5 % loss of carbon stocks or transient (full recovery of lost carbon stocks expected within 10 years of any event)

Thank you!

If you're looking to effectively **manage your ARR projects**, Orbify offers a comprehensive satellite-powered solution!

Our platform offers insights into your projects, ensuring the success and quality of your ARR initiatives while streamlining carbon project management.

Ready to get started? Contact our experts today to learn more!

Schedule a call with our experts!

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