



Raising the bar for high-quality forest carbon removals

CommuniTree Carbon Program Annual Report
for year ended 31 December 2022.

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ANNUAL REPORT 2022

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CommuniTree farmer Obed Matutes Gonzalez in his maturing forest during a monitoring visit.

MESSAGE FROM THE

CommuniTree Leadership Team



Like all big transformation initiatives, success depends on our people.

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2022 marked a momentous year for the CommuniTree Carbon Program in terms of major milestones accomplished and initiatives launched. This year's issuance surpassed one million credits representing the largest single issuance in Taking Root and Plan Vivo's history. It was also the year Taking Root transitioned from version 3 to version 4 of the Plan Vivo Standard, requiring an update to our PDD and our third independent operational audit.

From an operational perspective, this meant a massive scaling of our operations and impact. This year, the project reached hundreds of communities across Nicaragua, purchased more tree seeds than people in Canada, created thousands of jobs to plant millions of trees, and invested millions of dollars with thousands of farming families across Nicaragua.

It is also personally fulfilling to see CommuniTree achieve a decade-long dream of creating a demonstration farm and forest processing facility. On visits to the project throughout 2022, it was inspiring to see the whole story of the project told in one location. Look to the left, and you see a newly reforested area of land. To the right, the production of biochar, woodcrafts and lumber demonstrates the long-term value that forests in the project represent to farmers and communities. The project is building a market for farmers' wood products and the farm is a physical representation to the communities the project serves that growing trees can make an important contribution to rural livelihoods.

While we are proud of what we have achieved, we are laser-focused on the major undertakings required in the years to come. More than ever, the market demands a

drastic scaling up of operations while raising the benchmark of what high-quality forest carbon removals mean. Seeing the market's willingness to value and pay for high-quality nature-based solutions drives the investment required to see forest restoration succeed at scale.

In response, we have launched a major push to build capacity and professionalize the project. This means re-imagining everything that we do, asking ourselves what is required to operate at a much larger scale, and making the difficult decisions needed to achieve a level of impact that seemed impossible just a few years ago.

Like all big transformation initiatives, success depends on our people. I have been blessed with meeting the most amazing people along the way, both inside and outside of Taking Root. From the farmers to our long-standing buyer partners, our staff, the Plan Vivo team, our board of directors, advisors, coaches, and mentors, thank you for allowing us to dream. Without you, our dreams for the restoration of the world's forests would never have started coming true.

**KAHLIL
BAKER**
CEO & Co-Founder

MESSAGE FROM THE

CommuniTree

Leadership Team



**LAURA
MORRILLAS**
Nicaragua Operations
Director, Taking Root

2022 has been a year of remarkable impact and learning as CommuniTree matures as a project. Over the last year, it has been inspiring to see Taking Root's Canada team and APRODEIN's Nicaragua team grow side by side both in size and in partnership. Thanks to this close collaboration, the CommuniTree project team has risen to the challenges of managing a project of such scale. Together, we have built efficient operational and technology-based solutions, streamlined and automated processes, enhanced reporting and transparency across the project, and co-created new community engagement and feedback processes to serve the thousands of farmers we partner with.

We end the year confident of the platform we have created to grow CommuniTree to its full potential, not only through scaling the project, but by having the capacity, tools and processes to keep improving on the reforestation outcomes the project delivers for our buyers and farmers we partner with. We finish the year feeling closer than ever to the land, the communities and our mission. This year has been an inspirational journey full of deep respect for what each member of the two teams, here in Canada and Nicaragua, as well as every farmer we work with, has to offer to the growth and the future of CommuniTree.



**ELVIN
CASTELLON**
Executive Director, APRODEIN

It is one thing to read about the CommuniTree Carbon Program at a desk, or to see satellite imagery of the farmers' plantations, but to live the project in the field is another thing entirely. When you are on the ground, you understand the context in which our team and the farmers we work with operate. The impact the project is having is unique. It is not just that we are growing trees; we are helping farmers and their communities to benefit and improve their livelihoods.

This year, the rising price of carbon credits has made a huge difference to the project. More farmers are motivated to join the project. The additional revenue has also enabled us to hire more operational staff and bring new leaders to the organization so we can grow while improving our quality. By investing in new infrastructure like our demonstration farm and forest processing facility, we can now showcase and expand our work to create an impact across the country.

We started this project many years ago without any resources. I always had a vision that one day we would make it. That vision is now being realized, but there is so much more to be achieved. We must keep going together with a focus on development, scalability and impact.

2022

Impacts at a Glance

In 2022, the impacts of CommuniTree continued to grow. Together, the smallholder farmers we partner with planted over six million trees, restoring more than four thousand hectares of land, which will sequester over one million tonnes of carbon in the years to come.

1,040,796

TONNES OF CARBON BEING SEQUESTERED

6,311,480

TOTAL TREES PLANTED

30,000,000+

SEEDS SOURCED THIS YEAR

4,739.28

HECTARES BEING RESTORED

1,187

FARMERS ADDED

Project Updates

HIGHLIGHTS

More than one million credits issued

This year, the CommuniTree Carbon Program achieved an incredible milestone. As a result of the project's interventions, the project generated 1,040,796 carbon credits to be issued by Plan Vivo. Having passed the one million mark, CommuniTree is now Plan Vivo's largest project. This milestone is a major achievement, solidifying CommuniTree's status as a model for smallholder reforestation at scale.

Achieving this feat required a substantial operational undertaking. Over 30 million seeds were sourced in order to achieve planting across Nicaragua. Recruitment for 2022 was started earlier than ever, and the project was expanded to two new operational regions: Santo Tomas and Diriamba.

As a result of this work, 3,326 farmers are now reforesting lands all across Nicaragua, with 1,187 joining for the 2022 season. In 2022 alone, these farmers have planted an estimated 6,311,480 trees and reforested 4,739.28 hectares of land.

1,040,796

CARBON CREDITS ISSUED



APRODEIN welcomes members of Taking Root and Arbor Day, June 2022.

Investment in capacity and professionalization to meet the demand for scale and quality

Driven by unprecedented market demand for high-quality carbon removals, Taking Root has set ambitious plans to increase CommuniTree's rate of expansion while transitioning from version 3 to 5 of the Plan Vivo Standard by 2026. The first goal has been realized, with significant steps taken towards the second. The area of new land planted in 2022 compared to 2021 increased by 67.4%, and the project transitioned from version 3 to 4 of the Plan Vivo Standard through a newly approved Project Design Document (PDD) and verification audit.

These achievements were made possible by launching a major drive to increase capacity and professionalization across the project to unlock bottlenecks to growth and raise the quality of CommuniTree's carbon credits. In particular, 2022 saw significant investments in the following three strategic initiatives:

01. Increased farmer recruitment capacity

Increasing the project's rate and quality of reforestation starts with recruiting enough farmers with suitable land in time for the planting season. 2022 saw the most ambitious recruitment targets to date, which meant reaching and engaging new farmers at a record speed and scale. Taking Root and APRODEIN worked together at the start of the year to re-think how to implement effective recruitment strategies.

So that more farmers could join the program, the project's geographic area was expanded across the entirety of Nicaragua. A dedicated recruitment team was created within the APRODEIN team in Nicaragua to reach farmers across the project's expanded geographies and begin recruitment 6 months earlier than in previous years. Specialized training and recruitment resources, such as eligibility checklists, were created to support technicians in engaging farmers and recruiting high-quality land into the program. Moving forward, this team is building on its success to continue growth beyond 2023 by recruiting farmers all year round and experimenting with

farmer outreach strategies, including referral incentives, in-country social media campaigns, and public radio advertisements.



02. Development of forest value chains

Taking Root's theory of change is that reforestation must improve people's livelihoods to be effective. Ensuring farmers can connect the forest products they grow to value chains is essential, so farmers are incentivised to care for the trees on their land over time. As CommuniTree matures, so do farmers' forests. Consequently, an increasing number of farmers are creating forest products such as fuelwood, thinnings and timber. In Nicaragua, there are significant market barriers which prevent farmers from receiving a worthwhile price for their forest products. In 2022, Taking Root and APRODEIN invested significantly in the infrastructure required to bring farmers' forest products to market, ensuring farmer income generation over the short, medium and long term.

Part of this infrastructure includes a new forest processing facility. This is housed on a 50-hectare plot of land bought in Somoto with the support of a philanthropic benefactor. It features two biochar reactors, a sawmill and a permanent woodworking shop enabling the production of biochar, lumber, and woodcrafts to be sold to local and international markets. The increased capacity to purchase, process and sell forest products generated over \$80,000 in additional income for farmers. Unlocking access to the market for forest products increases the incentive for farmers to manage their forests over time, increasing the durability of the project's credits. In addition, a demonstration forest was planted on the land to market the project to new farmers and exhibit the value sustainable forest management can provide to farmers and communities.

03. Enhanced project reporting

As CommuniTree grows, tracking project operations for timely decision-making and interventions becomes increasingly important to ensure successful reforestation outcomes across the thousands of parcels in the project. In 2022, this growth led Taking Root to enhance its technology and processes for data collection, cleaning and reporting.

In particular, the creation of specialized technician teams means that multiple technicians now work with the same farmers and parcels in different capacities, such as recruitment, parcel management and monitoring. To facilitate this new approach, Taking Root's software platform was completely restructured to enable multiple technicians to be assigned to, and gather data from, the same farmer and parcel. In addition, Taking Root invested in a new customer service function to provide field technicians with standardized training, and ongoing support and feedback on their data collection activities. Lastly, Taking Root now creates on-demand data quality reports, which enable APRODEIN and Taking Root to proactively identify data collection issues and address them quickly to ensure a high level of data integrity.

Given the increase in project activities and the volume of data being collected, reporting on key operational activities such as recruitment and parcel monitoring was increased to weekly updates. This enabled the CommuniTree team to make proactive decisions to meet operational targets throughout the year.

CommuTree teams increase capacity to grow the project with care

The initiatives to grow CommuTree while increasing credit quality through 2022 were made possible by significant investments into the project's teams in Canada and Nicaragua. The Nicaraguan team, through APRODEIN, grew to a total of 76 full-time staff and opened two new offices, bringing the total to six offices around the country. The creation of specialized teams has also enabled higher-quality operations through standardized training for staff, better support for farmers, and focused year-round activities for operations such as recruitment and monitoring. This specialization is setting a platform for the continued expansion of operations into the future.

The Canadian team has also seen significant growth. Taking Root grew from 19 to 32 staff this year, including a new Chief Operating Officer and Chief Growth Officer, to professionalize and scale the organization's work. A new team was assembled to act as APRODEIN's counterparts for the main operational components of the CommuTree project. They are now enabling successful operations by providing greater project management support for the local team in recruitment, silviculture, monitoring, and value chain development.

Numerous in-person encounters further strengthened the deep integration between the Canadian and Nicaraguan teams after a hiatus of project visits due to COVID-19. One-third of Taking Root staff visited CommuTree on five separate occasions. Each visit was a powerful opportunity to reconnect with APRODEIN and improve operational efficiencies.

Somoto

Limay

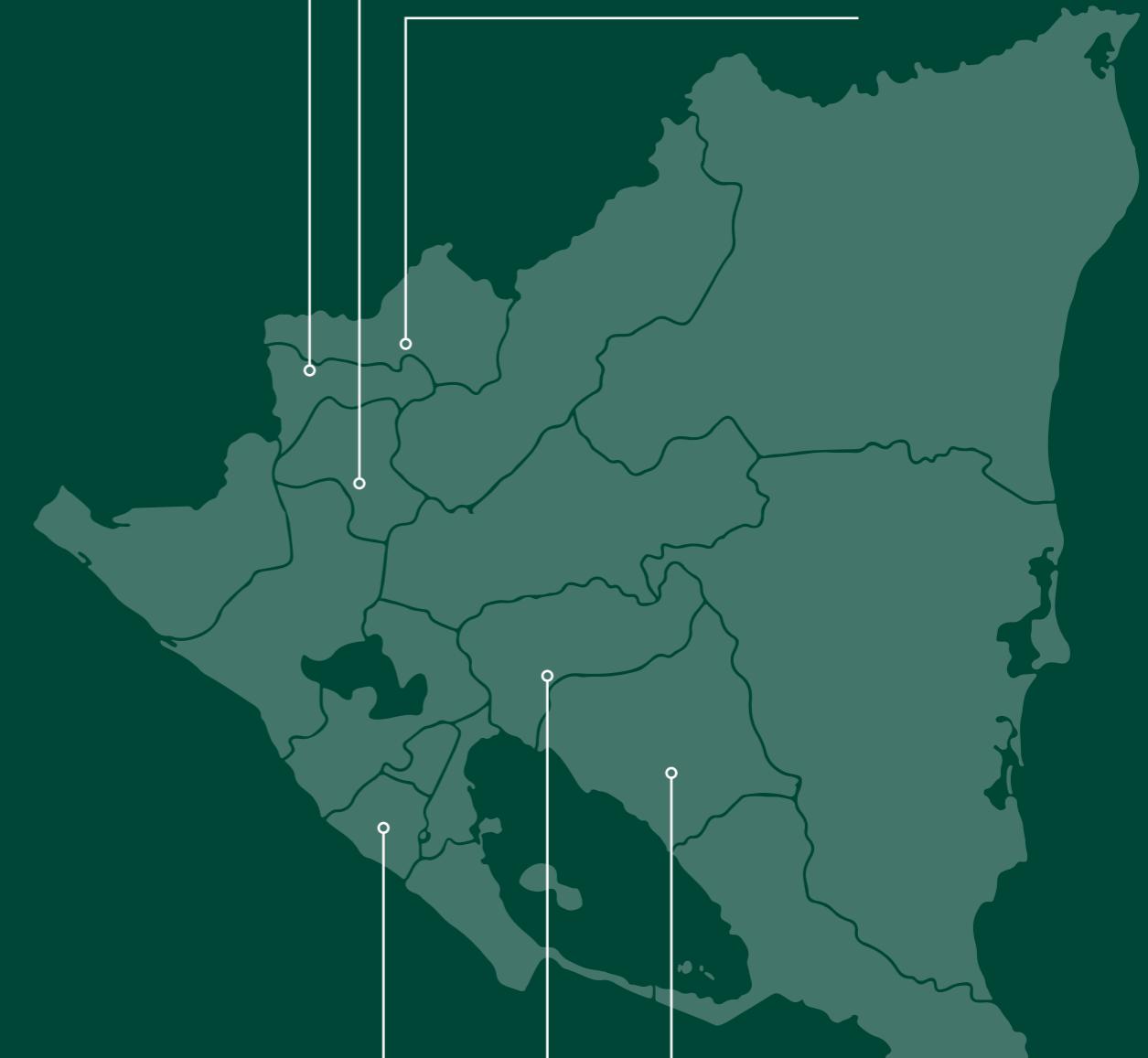
San Juan de Rio Coco

NEW

Boaco

Santo Tomas

NEW



LEARNINGS

Rising costs in the age of inflation create new barriers for farmers

Over the course of 2022, rising costs created new barriers for new and existing farmers. The greatest impact has been the increase in labour costs, which can make up 85% of the cost of farmers' reforestation activities. Labour shortages have driven rising labour costs in Nicaragua due to large-scale immigration into the United States and an overall increase in the cost of living due to global inflation. These macroeconomic shifts reduced the incentive for prospective farmers to join the project and have created challenges for existing farmers to manage their plantations successfully.

Labour is an essential part of reforestation activities in the project. When farmers join the CommuniTree Carbon Program, it is a co-investment. They receive cash incentives, materials, ongoing technical support and long-term market access for their forest products. In return, they invest a proportion of their land and labour to grow the trees. During the early years of their forest plantations, farmers often use their cash incentives to hire temporary labour for high-intensity silvicultural activities such as planting and weeding. These activities are critical for the forests' long-term success. Trees must be planted early during a limited rainy season, and weeding must be conducted regularly thereafter to ensure they survive their most vulnerable growth stage.

With rising seasonal labour costs, the project's attractiveness diminishes unless farmer payments are increased proportionately. Despite this year's recruitment being the most successful in the history of the project,

700 families did not join for the stated reason that the cash incentives were insufficient to join the project. To put the increased costs in perspective, in previous years, cash incentives covered approximately 70% of farmers' labour costs, with farmers investing their own labour to cover the remaining 30%. This year, the cash incentives received by farmers dropped to 49% as a proportion of their labour costs.¹

As well as limiting the project's growth, the increased costs posed significant challenges to existing farmers. Farmers who entered the project in previous vintages are on fixed payment plans linked to the price of the carbon sold at the time they joined. Faced with less purchasing power from their cash incentives, farmers relied less on hired labour and more on household labour to complete planting and silviculture activities. Unlike dedicated hired labour, relying on household labour means time needs to be divided between forest management and other farming activities. As a result, trees get planted later in the rainy season and weeding happens less frequently, leading to reduced tree growth and increased mortality during the dry season. The following year, more work is required to replant lost trees or provide additional care for weakened trees to grow successfully. This often creates a cycle of underperformance. These factors, alongside the new frequent reporting mechanisms introduced in 2022, as outlined on pages 14-15, have led to an increased number of historically planted parcels coming up short of their performance targets.

¹ The price of CommuniTree's carbon credits were increased for the 2022 vintage but the increase was lower than the rise in costs as most contracts were signed in 2021 before the major impacts of inflation were felt.

Seasonal workers prepare the land for planting.



My only problem was finding labour to help me because of widespread immigration to the United States.

LEONEL CASTILLO VALENZUELA

Farmer in the CommuniTree Program

”

Managing farmer attrition is key to long-term success

In 2022, Taking Root and APRODEIN took the difficult decision to remove 974.14 hectares of land from the project due to underperformance. The land and associated credits lost are being replaced by an equivalent amount of credits generated from land reforested in 2022. This ensures the total carbon being removed from the atmosphere remains the same but will be delayed.

Some annual attrition is always to be expected as a result of parcels failing to meet project targets over time. The project is centered on working with humans and nature, so variability is part of the everyday. The project accounts for and seeks to minimize attrition through a number of controls to support farmers with underperforming parcels. In 2022, attrition was significantly higher than in previous years. This increase has been accentuated by; minimal attrition reported for the 2016 to 2019 vintages, enhanced reporting and quality assurance in 2022, and rising costs in Nicaragua.

As the carbon market matures, increasing demand and willingness to pay for high-quality carbon removals provide the resources needed for projects like CommuniTree to drive quality improvements. The past year's investments into the project's technology and reporting processes, as detailed on pages 14-15, increased the transparency of parcel performance across the project. It was discovered that the majority of underperforming parcels were from vintages 2016, 2017, 2018 and 2019, years in which historically minimal or zero attrition had been reported. With these insights and the increased capacity of the local APRODEIN team, targeted follow-ups were implemented with underperforming parcels to assess the reasons for underperformance and viability to get them back on track.

In the vast majority of cases, poor parcel performance was caused by reduced early tree growth. Trees are at their most vulnerable and require the most labour at



Sabina Maradiaga Gutierrez caring for her coffee parcel.



Martin de Jesus Gonzalez with his maturing forest.

planting and during the immediate years following. If the trees grow successfully in those years, they reach a size where they require little maintenance, and farmers can start to reap the benefits of their forest with minimal effort. If initial tree growth is reduced, the trees remain vulnerable longer and require ongoing labour, such as weeding, to keep them alive. These activities require continued additional investment from the farmer in the form of their own or hired labour at a point in time where the trees provide few benefits to the farmer beyond the cash payments received through the project. This is demotivating for farmers, and with less incentive, they invest less time and thus continue the cycle of underinvestment and growth. As a result, it was found that some farmers had stopped following the project's recommendations. In these cases, farmers were not performing activities such as weeding and were allowing livestock to reenter the parcel, further harming the trees.

Underperformance is expected and built into the CommuniTree Carbon Program. Every year parcels miss their targets. When this happens, Taking Root and APRODEIN work with farmers to identify solutions to reverse underperformance, including replanting and additional training. The underperforming parcels identified in 2022 were assessed on a case-by-case basis to evaluate the viability of turning their performance around. It was found that on many parcels, there had been some tree growth and carbon removal, but well short of the project's targets as set out in its current technical specifications. While some continued tree growth and carbon removal could be expected, the additional

costs of raising the performance of these parcels to meet current project targets would be greater than starting over. In mutual agreement with the farmers, these parcels are being removed from Plan Vivo's certification.

This decision comes at a substantial cost to the project. The credits lost by removing these parcels will be replaced by reallocating the equivalent number of credits from the 2022 issuance. Moving forward, Taking Root and APRODEIN will work with the farmers and Plan Vivo to evaluate whether it is possible and worthwhile to continue working with the parcels removed in 2022. This will be based on an assessment of 1) whether the tree growth and carbon removal on these parcels could be recognised under CommuniTree's Plan Vivo certification; 2) whether it would be beneficial for farmers, and; 3) the cost-effectiveness of continued interventions and oversight by the project team.

While difficult, this decision was non-negotiable to meet Taking Root's promise of delivering high-integrity carbon removals. Removing underperforming parcels across the project highlights the benchmark Taking Root and APRODEIN set out to achieve for buyers and project participants. Moving forward, Taking Root will continue to invest significantly in reducing attrition rates and implementing new mechanisms to manage attrition when it occurs.

Continued growth requires higher prices

To continue growing the CommuniTree Carbon Program and increasing the quality of carbon credits produced, further investment will be needed. The most effective way to raise the necessary investment is through the market, increasing the price paid for CommuniTree carbon credits. This will enable greater cash incentives for new farmers to join the project, support initiatives to minimize farmer and parcel attrition, and help CommuniTree adapt its operational practices to meet evolving market demands. Taking Root has already begun working with its buyer partners to increase carbon credit prices for future vintages.

As high immigration and inflation rates persist, farmers' costs will continue to rise. It is essential for farmer payments to match this rise to incentivise new farmers to join and remain in the project. Under the Plan Vivo standard, a minimum of 60% of any carbon credit sale price is received by farmers. By increasing carbon credit prices, more money will be available to increase cash incentives for farmers and to invest in additional resources to help them succeed. In addition, increased prices will enable Taking Root to explore mechanisms to counteract the effect of eroding the purchasing power of farmer payments due to inflation. Higher prices will also drive continued investments into initiatives to enhance performance and minimize attrition across the project, outlined on pages 24-26.

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This year, the rising price of carbon credits has made a huge difference to the project.

ELVIN CASTELLON
Executive Director, APRODEIN

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Project Updates



Farmer Daniel Picado and his family outside their home in San Lorenzo, Boaco.

FUTURE

DEVELOPMENTS

Focusing on early tree growth for long-term farmer success

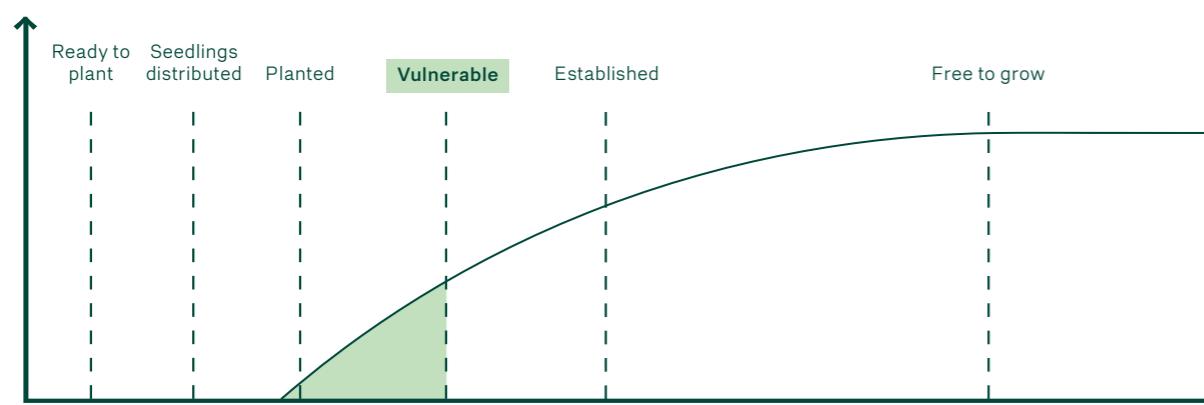
For the farmers participating in CommuniTree, long-term success is largely driven by a parcel's performance in the first two years. Until trees become tall enough to fend for themselves, they are at much higher risk of mortality due to natural events such as droughts, natural competition from grasses, and other risks such as cattle grazing. Because of this, the majority of work and cost for farmers take place upfront in the form of planting and plantation management activities, such as weeding. Once tree growth has been established, significantly less work and attention is required from the farmer for their trees to grow successfully. For this reason, Taking Root is undertaking three major initiatives to optimize tree growth within the first two years of planting:

The first is completing planting as early as possible in the rainy season. The earlier planting is completed, the longer trees are able to grow and build resilience to survive their first dry season. In 2023, Taking Root and APRODEIN are working to complete recruitment earlier in the year than ever before. This earlier date gives more time for parcels to be prepared and nurseries to be built, meaning

planting can begin the moment the rains come. In addition, APRODEIN will be working more closely with farmers to hire and provide temporary labour to accelerate their planting rate.

The second is by increasing the resilience and health of trees at the time of planting. Increased seed buffers have been put in place to ensure tree nurseries can be built on time to maximize tree growth before planting. The project is also continuing to experiment with adding inputs such as biochar to the tree nurseries. Adding biochar enhances tree growth by improving tree root development in the nurseries. It also enables the trees to retain more moisture in the soil when planted.

The third is increasing the frequency of weeding during the first two years to help early-stage tree growth after planting. Increasing weeding accelerates tree growth by reducing competition for available resources from competing grasses. As outlined in the next section, farmer payments have been adapted to reflect this increase in activities.



Tree growth over time by tree growth stage in CommuniTree.

Increasing the effectiveness of farmer payments

For future vintages, Taking Root will be adapting the amount, frequency and timing of farmer payments to maximize reforestation and livelihood outcomes for farmers. First, to maintain the incentive and purchasing power of farmer payments in the face of rising costs, Taking Root will increase the amount farmers receive through the project by increasing the sale price of carbon credits, as outlined on page 22.

Second, the timing and frequency of farmer payments are being updated to provide farmers with greater incentives to hit tree growth targets over time. Farmer contracts are being updated, so farmers' payments are more explicitly linked to the completion of specified milestones and their parcels' performance over time. Also, more money is being made available to farmers upfront to reflect the additional work and labour required for successful early tree growth. Alongside these updates, Taking Root and APRODEIN have launched a training program to ensure field technicians perform standardized evaluations of farmer and parcel performance. In turn, these evaluations will trigger farmer payments or timely remedial activities.



Farmers collecting payments for ecosystem services.



A farmer receives payment.

Investing in internal controls to keep raising the bar on quality

Taking Root and APRODEIN will continue to invest in the internal reporting and controls required to enhance farmer and parcel performance. In particular, this will involve further developing Taking Root's software platform and processes to better support and track the effectiveness of parcel management activities and farmer payments.

Alongside technology and reporting improvements, new processes and resources are being developed to ensure targets are being met. Following a successful pilot in 2022, a new quality control team has been established within APRODEIN. The team will be acting as an internal auditor for the project to review parcel, farmer and technician performance. This will help deliver consistency and identify issues across the project so they can be addressed in a timely fashion.

Building out value chains for continued livelihood opportunities

Building CommuniTree's value chains is a continuing strategic priority for the project. The creation of successful value chains will both incentivise more farmers to join the project, and increase the durability of the project's carbon credits by creating long-term value for farmers. Following the development of the forest processing facility in 2022, Taking Root and APRODEIN are creating business plans and looking to secure investment across the project's forest value chains to scale up market access for farmers' forest products.

Plans have already been set in motion to scale up existing production and demand for forest products from the project. For example, in 2023, Taking Root and APRODEIN are aiming to increase biochar production through the building of two new biochar reactors. This increase in production will enable biochar to be applied more widely across the project's tree nurseries for enhanced tree growth and resilience as highlighted on page 24. To deliver feedstock, targeted operations are underway to conduct pruning and thinnings on more mature parcels across the project. This will enable further tree growth on historic parcels while increasing the income farmers generate from their trees.

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It is important to focus on a circular economy approach in the program. From the moment we plant the trees we support the producer.

YUNIELKA CASTILLO

Business Manager, APRODEIN

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Yunielka Castillo stands next to the crusher machine which is used to break down coal for biochar production.

PROJECT DOCUMENTATION

UPDATES

Project documentation updates

Since last year's annual report, a new Project Design Document (PDD) has been approved by Plan Vivo. The updated PDD reflects the nationwide expansion and integrates a number of improvements to the project's quality, including information on Taking Root's technology platform, CommuniTree's technical specifications, and methodologies.

The field and desk-based audit of CommuniTree against the newly written PDD was completed in September 2022 by Aster Global. The first round of findings was shared with Taking Root in December 2022. Taking Root is working with Aster Global and Plan Vivo to finalize the audit process in order to publish the project's final audit and new PDD.

APRODEIN staff sow seedlings in the central San Juan de Limay nursery.



Last year, the Plan Vivo Foundation released version 5.0 of the Plan Vivo Standard. In 2023, Taking Root will assess and develop a plan in consultation with the project's stakeholders for when and how CommuniTree will transition to the new version of the Standard. Similarly, Taking Root will continue to monitor the development of Article 6 and explore how to adapt to international and national policy changes as needed.



Members of the Taking Root, APRODEIN and Aster Global teams.



Mansfield Fisher from Aster Global visits coffee parcels.

Farmer Interview

Leonel Castillo Valenzuela, a farmer from Esteli, joined the CommuniTree Carbon Program in 2022. During a visit to his farm in Las Calabazas, we asked Leonel about his experience of the project so far.

Name:
Leonel Castillo Valenzuela

Home:
Comarca las calabazas, Esteli

Name of farm:
El Chipote

Date joined the program:
2022



What do you think of the program?

I think the program is excellent! It mitigates global warming. It also provides work for me, my family, and my community, providing the financial support needed to move us forward.

My experience has been very good. I like to see my farm with trees, to see how life grows before my eyes. I have learned to view the trees as a crop that will benefit me all the time.

What are the benefits of the program for you, your family, and your farm?

The program helps us to reforest, giving us everything we need to plant trees. The technical assistance is incredible; the staff really help you to succeed. The program is also educational for my children. They are learning, together with me, the importance of trees for the environment and life.

“

I have learned to view the trees as a crop that will benefit me all the time.

”

Why did you join this program?

Firstly, because I want to reforest my property. Secondly, because I want to produce oxygen. Climate change is affecting us here in Nicaragua, impacting our local climate and our health. Together with the program, I am committed to achieving the change we need to improve the planet.

Planting trees on my farm has been something I've always been interested in. Until the program came along, it was never something I could do because planting trees is very expensive. Now, the program has given me what I need.



Leonel Castillo Valenzuela with an APRODEIN technician.



Leonel Castillo Valenzuela with an APRODEIN technician.

Summary of Credit Issuance

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Table 1: Program Summary

Project Overview	
Reporting Period	1 January 2022 – 31 December 2022
Technical specifications in use	Mixed Species Forest Plantation, Silvopastoral Planting, Coffee Agroforestry
Geographical areas	Nicaragua
Areas under management	
Total areas put under management and meeting targets from 2022 vintage (ha)	4,639.02
Total area lost in 2022 from previous vintages (ha)	974.14
New area allocated to 2022 Certificate issuance (ha)	3,664.88
Total areas under management as reported in previous years	7,698.46
Areas under management (program total)	11,363.34
Smallholders with plan vivos and PES agreements	
Smallholders reported in last annual report	2,330
Smallholders with existing plan vivos adding new land since last report	135
New smallholders with PES agreements since last report	1,187
Total smallholders with PES agreements (2022 vintage)	1,322
Smallholders dropouts in 2022 from previous vintages	191
Total Smallholders with plan vivos and PES agreements (program total)	3,326
Plan Vivo Certificates (PVC) and saleable tCO2	
Total PVCs generated from this year's planting activities (gross)	1,499.896
Risk buffer deduction (15%)	224,985
Total PVCs from this year planting allocated to issuance request (saleable)	1,274,911
Total PVCs lost from previous years (gross)	275,430

Saleable PVCs from this year planting allocated to cover losses from previous years	234,115
Risk buffer PVCs from this year's planting allocated to cover losses from previous years	41,314
Submission for PVC Issuance for new areas (2022 vintage saleable)	1,040,796
Submission for allocation to 2022 Plan Vivo buffer	183,670
Historical PVC issuance	2,286,689
PVCs issued to date (program total)	3,327,485

Table 2: Payments across all years

PES and community fund payments (USD)	Total
Total direct payments through 2022	\$5,096,901.61
Other payments to community through 2022	\$1,716,598.82
Total payments made from the Community Fund	\$6,813,500.42

Table 3: Funds held in trust

PES and community fund payments held in trust (USD)	Total
2022 increase	\$5,014,421.54
Prior year value	\$5,136,157.65
Total held in trust	\$10,150,579.19

Activities, Total Program Size, and Participation

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REPORT 2022

ANNUAL REPORT 2022

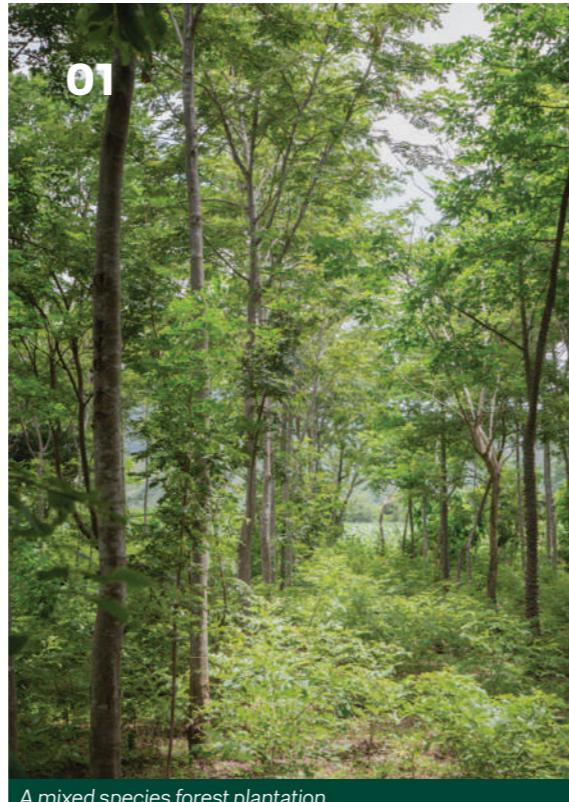
CURRENT LAND-USE ACTIVITIES

In 2022, Taking Root continued implementing its Mixed Species, Silvopastoral Planting and Coffee Agroforestry technical specifications while maintaining boundary planting used as a technical specification in previous years. All technical specifications are integrated into the CommuniTree PDD which can be downloaded from the Plan Vivo website:

<https://www.planvivo.org/communitree-documents>

01. Mixed Species Forest Plantation

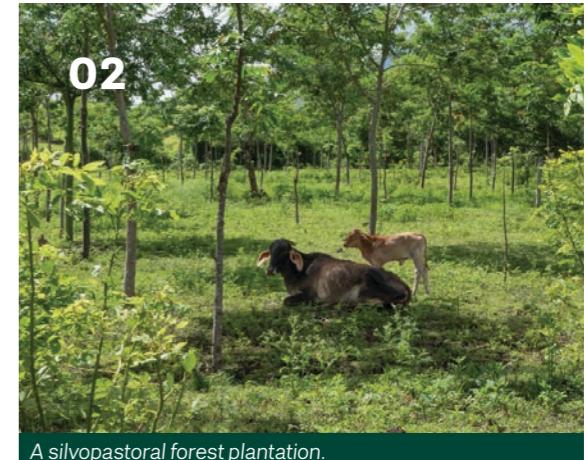
This technical specification involves planting and intensively managing multi-purpose mixed-species forest plantations on participating smallholders' land. All of the species selected are native to the region and are chosen in consultation with local smallholder groups and professional foresters. This technical specification was added in 2014.



A mixed species forest plantation.

02. Silvopastoral Planting

The Silvopastoral Planting technical specification acknowledges the need for cattle pastures by integrating trees and improved pastures with livestock. The trees improve pasture productivity, provide shade, and produce timber and forage for the farmers and their cattle. The short-rotation nitrogen-fixing species are harvested at a young age, providing building posts while fertilizing the soil. Silvopastoral Planting sequesters carbon dioxide, provides ecosystem services in the short term, and sustainably produced, highly prized timber in the long term. Additionally, the system helps improve the pasture below the trees and adds biomass to the soil. This technical specification was added in 2012.



A silvopastoral forest plantation.

03. Coffee Agroforestry

The Coffee Agroforestry technical specification is designed to help smallholders adapt to climate change by establishing new high-yielding rust-resistant coffee agroforestry systems at higher elevations in order to improve smallholders' income while mitigating climate change. Financial incentives, in the form of payments for ecosystem services, incentivize the establishment of new coffee agroforestry systems at incrementally higher elevations where temperatures are cooler and therefore less susceptible to rust attacks. Furthermore, we are introducing new high-quality, rust-resistant coffee varieties and providing technical training in the region. This technical specification was added in 2016.



A coffee agroforestry planting intervention.

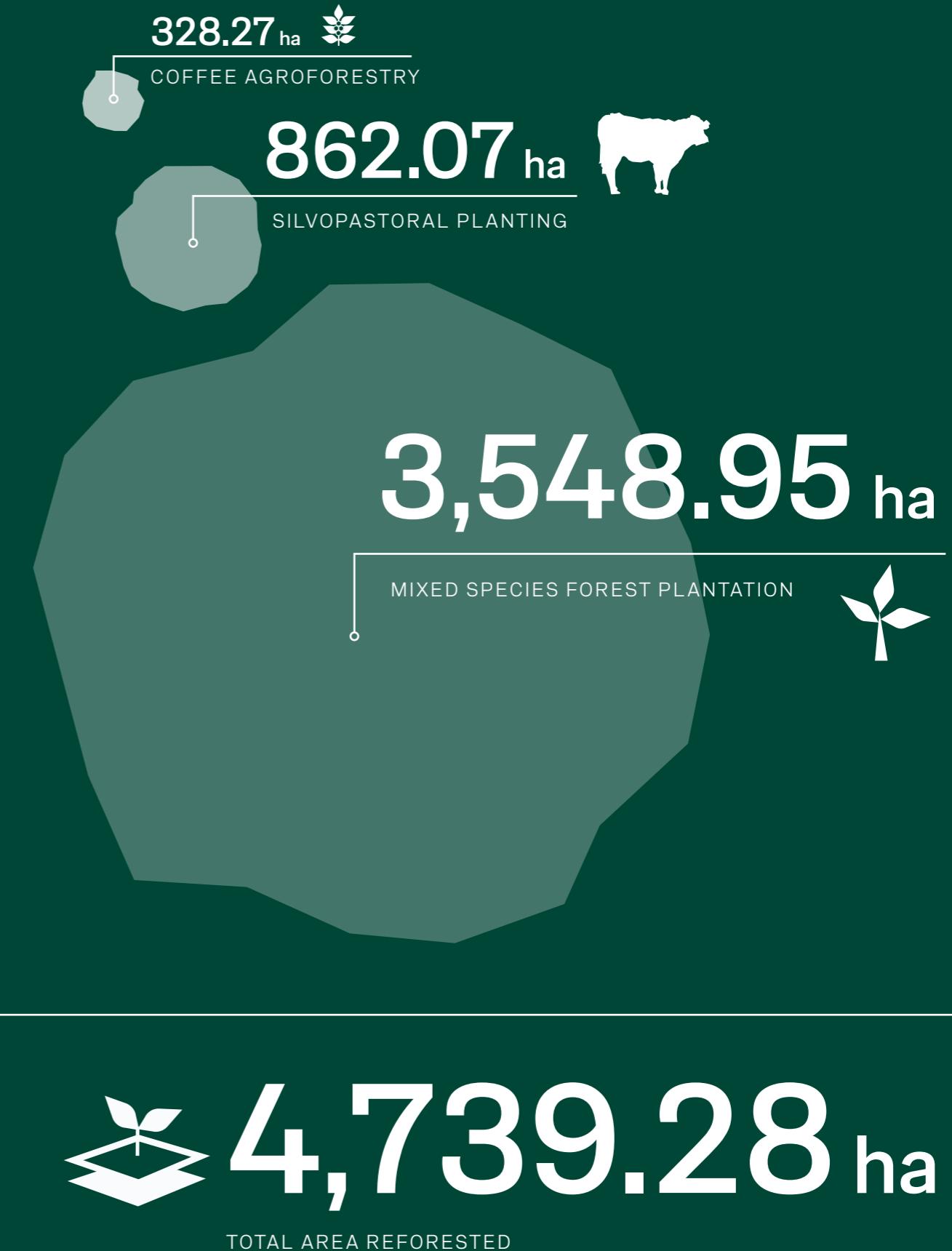
2022 PARTICIPATION AND PROGRAM SIZE

Table 4: Summary of new participation and program size to date (2022 vintages)

Participants	
Total smallholders with registered PES agreements	1,322
Total area reforested (ha)	4,739.28
Total trees planted	6,311,480
Technical specifications used	Area covered in hectares
Mixed Species Forest Plantation	3,548.95
Silvopastoral Planting	862.07
Coffee Agroforestry	328.27

Community technicians successfully recruited new participants from 212 new communities to meet the current demand for Plan Vivo Certificates (PVCS), bringing the project to a total of 781 participating communities as detailed in Appendix 2.

Activities, Total Program Size, and Participation



Ongoing Community Participation

APRODEIN continues to build community participation through tried and tested methods and the implementation of new initiatives based on the local team's and communities' feedback. Throughout 2022, historically successful methods to engage communities continued to be used, including publicizing the project through radio advertising, providing information on the project by running community consultations, and increasing farmer knowledge transfer through community led-trainings. At an individual level, smallholder participant farmers are engaged continuously through field visits from APRODEIN's field technicians.

Throughout the year, APRODEIN engaged with numerous stakeholders and industry groups to create close collaborations, communications, and support to enable the success of the project. Organizations engaged on a continuous basis include government agencies (INAFOR, MARENA), local councils in active project regions, universities (UNA and UNAM), other NGOs working in project areas (GIZ) and cattle rancher associations (FAGANIC and CONAGAN).

To further enhance community participation, a number of initiatives and resources were created in 2022:

New grievance mechanism launched:

Improving farmer livelihoods is at the heart of the CommuniTree project. To ensure the safeguarding of farmers participating in the project, a new grievance mechanism was launched for farmers. This is an important mechanism to ensure farmers have direct access to report any wrongdoings. It also provides another channel to receive feedback directly from farmers in order to improve upon the project. Farmers were educated on the new grievance mechanism through a series of local workshops, posters, and project documents to outline how farmers can report grievances and the process by which they are handled. To date, there have been 11 responses, all of which have been followed up by personal visits from a member of the APRODEIN leadership team.



CommuniTree farmer Carlos Perez



A CommuniTree brochure explains the project to new farmers.



An APRODEIN technician presents the project to a group of farmers.

New technician training materials created:

Technicians are the key touchpoint with farmers. By increasing technicians' knowledge and expertise, they are better placed to apply that knowledge to implement project operations and help farmers succeed. In 2022 new materials were created, including guidelines and checklists for farmer recruitment, improved documentation for silvicultural procedures, and field inventory training for monitoring.

New farmer recruitment brochure and program overview created:

A new brochure was created to help farmers understand the CommuniTree Program. This material will support recruitment activities by motivating more farmers to join the project. In addition, it will help ensure any farmer joining has a greater likelihood of success as a result of having clear expectations as to the benefits and implications of the project. The brochure includes the project's purpose, how farmers can benefit from the project, what farmers will be expected to provide in return, and the positive effects that growing trees have on the climate and the environment.



APRODEIN technicians receive training.

Monitoring Results

SOCIO-ECONOMIC AND ENVIRONMENTAL IMPACTS

Table 5 below displays some of the key socio-economic and environmental impacts of the CommuniTree project during this year. The data is collected from Taking Root's technology platform.

Table 5: Socio-economic and environmental impacts in 2022

Social Impact: Program Participants	
Participating new communities	212
Participating new smallholder families	1,187
Total participating smallholder families	3,326
Social Impact: Employment Created	
Total seasonal workers hired	5,297
% of temporary workers who are landowners	13.79%
% of temporary female workers	9.06%
Permanent positions	76
Total employment created	5,373
Social Impact: Capacity development	
Community project development workshops	11,613
Total session attendance	11,753
Environmental Impact: Trees planted	
Mixed species forest plantations	5,916,100
Silvopastoral plantations	344,827
Coffee Agroforestry*	50,500
Total trees planted	6,311,480
Number of unique tree species recorded	124

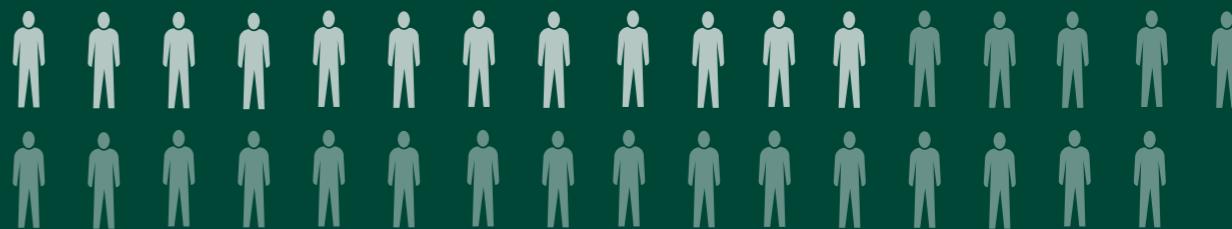
*does not include coffee plants (only planted trees)

2022 Socio-economic and Environmental Impact

 = 100 SMALLHOLDER FAMILIES

 = NEW Smallholder families

 = EXISTING Smallholder families



1,187 NEW SMALLHOLDER FAMILIES

 **76** PERMANENT POSITIONS

 **5,297** TOTAL SEASONAL WORKERS HIRED

5,373 TOTAL EMPLOYMENT CREATED

124 UNIQUE TREE SPECIES RECORDED

11,613 COMMUNITY PROJECT DEVELOPMENT WORKSHOPS



6,311,480 TOTAL TREES PLANTED

SUMMARY OF 2022 RESULTS FOR NEW 2022 PLAN VIVOS

Table 6 below is a summary of monitoring results for new plan vivos added in 2022. Complete details of the monitoring can be found in Appendix 2.

Table 6: Summary of 2022 monitoring results for 2022 plan vivos

2022 Vintage	
Area of land meeting monitoring targets (ha)	4,639.02
Area monitored (ha)	4,739.28
Percentage of monitored land meeting monitoring targets (%)	97.88%



Technician Brenda Perez and farmer Visitacion Polanco Martinez draw out the plan vivo for his parcel.

SUMMARY OF 2022 RESULTS FOR PRE-2022 PLAN VIVOS

Table 7 below provides a summary of the 2022 monitoring results for farms planted between 2010-2021. Monitoring data is provided from vintages 2012, 2017, and 2019 in line with CommuniTree completing formal field inventories of parcels in years 1, 3, 5 and 10 of them joining the project. Complete details of the monitoring can be found in Appendix 2.

Table 7: Summary of 2022 monitoring results for continuing 2010-2021 plan vivos

Vintage	2010-2021
Area of land meeting monitoring targets (ha)	819.65
Area monitored (ha)	1,047.48
Percentage of monitored land meeting monitoring targets (%)	78.25%



Monitoring the height of a young tree.



APRODEIN staff Yader Aguilera and Giselle Espinoza entering tree data into the Taking Root mobile app.

LAND ATTRITION

In 2022, 974.14 hectares were lost from previous vintages. Attributed to this loss, 191 farmer families exited the project. Much of the land removed was from the 2016, 2017, 2018 and 2019 vintages in which minimal attrition had been reported in previous years. For many of the parcels underperforming in those vintages, the project had been continuing to work with farmers to see if they could reverse underperformance and hit their targets. In the majority of cases, despite the continued support, tree growth was still far below targets, as described in the Learnings section. The difficult decision was taken to remove these parcels from the project because the cost of working with the farmers and their parcels to reach the carbon targets was greater than starting over.

As outlined in the Future Developments section, Taking Root is investing in a number of initiatives to reduce and manage attrition moving forward. These include designing operations to optimize for early tree growth, increasing the effectiveness of farmer incentives through the quantity and timing of farmer payments, and enhancing reporting for timely interventions in order for farmers and their parcels to succeed.

Monitoring Results



Farmer Ever Josue Palma inspecting his young trees.

Project Finances

PROGRAM SALES AND ALLOCATIONS

The following table summarizes the sale of CO2 for the 2022 Vintage.

Table 8: Program CO2 sales and allocations for the 2022 vintage

Metric	Value
Total volume of PVCs forward sold	984,987
Total sales for 2022 vintage (USD)	
Average PVC price (USD)	
Percent of sale price to community fund (%)	60%
Price to community fund per PVC (USD)	
Increase to community fund from this year's vintage (USD)	
Number of 2022 smallholders allocated to buyers	1,322
Total area represented by PVCs requested (ha)	4,639.02
Technical specifications applied	Mixed Species Forest Plantation, Silvopastoral Planting, Coffee Agroforestry

SALES SUMMARY VINTAGE 2022

The following table summarizes the distribution of Plan Vivo Certificates (PVCs) sold in the 2022 vintage through December 31st, 2022. For a detailed list of all carbon sales to date, see Appendix 2.

Table 9: Summary of carbon sales for vintage 2022

Vintage	Name of purchaser	PVCs purchased	Price/PVC (USD)	Amount signed (USD)
2022	Arbor Day Foundation	36,281		
2022	Arbor Day Foundation	450,000		
2022	Bean Fair	13		
2022	C-Level	8,000		
2022	C-Level	15,000		
2022	C-Level	10,000		
2022	Compensate	6		
2022	MyClimate	92,090		
2022	MyClimate	100,000		
2022	PrimaKlima	83,450		
2022	PrimaKlima	39,391		
2022	Tense Watch	56		
2022	Tree Nation	20,000		
2022	World Congress of Agroforestry	700		
2022	Zero Mission	130,000		
Total		984,987		

TOTAL PAYMENT FOR ECOSYSTEM SERVICES MADE

Table 10 below provides a summary of the payments for ecosystem services (PES) made to date for all current participating producers.

Table 10: PES summary – total payments made

Payment year	PES paid (USD)
2010	\$5,019.37
2011	\$28,202.49
2012	\$97,289.83
2013	\$121,694.42
2014	\$123,505.33
2015	\$178,911.53
2016	\$309,174.00
2017	\$372,811.19
2018	\$323,913.97
2019	\$147,072.22
2020	\$521,285.98
2021	\$906,795.16
2022	\$1,961,226.12
Total	\$5,096,901.61

ADDITIONAL PAYMENTS TO THE COMMUNITY

Table 11 provides additional payments to the community which include nursery expenses and occasional grafted fruit trees.

Table 11: Other payments to the community to date

Vintage (calendar year)	Additional payments (USD)
2010	n/a
2011	\$14,220.82
2012	\$33,288.19
2013	\$44,290.74
2014	\$52,616.07
2015	\$50,870.15
2016	\$113,955.09
2017	\$41,607.88
2018	\$91,109.51
2019	\$135,668.71
2020	\$267,820.21
2021	\$411,108.24
2022	\$460,043.21
Total	\$1,716,598.82



The husband of farmer Guisela Hoyes sorts seeds in El Castillito, Somoto.



Seasonal workers prepare seedlings at a nursery.

ORGANIZATIONAL EXPENSES AND REVENUE

The following table provides an overview of all organizational and operational expenses and revenue in US Dollars from 1 January 2022 – 31 December 2022. These figures include both Canadian and Nicaraguan finances..



Members of the Taking Root and APRODEIN teams in Nicaragua.

Table 12: Organizational expenses and revenue in USD for reporting period

Reporting Period	Jan 1 – Dec 31, 2022
Revenues (USD)	
Carbon offset sales	
Carbon offset sales - prior years	
Consulting and other services	
Other income	
—Interest income	
—Tree Sales	
Value Chain revenues	
Grants and donations	
Total revenue Expenses (USD)	
Cost of sales	
—COGS on books	
—COGS adjustment for PV	
Cost of Sales - other projects	
Human resources	
Transport and travel	
Administration	
Administration costs	
—Accrued expenses	
Operational Costs	
Financial fees and FX	
Total expenses	
Net income (loss)²	

² Starting in FY2023, Taking Root will be updating its financial reporting to more accurately reflect the future costs related to maintaining past and current vintages as per our PES agreements. The net income currently presented in Table 12, does not currently reflect or include the future liability of costs required to be set aside for land management. As this is a significant change to our accounting policy it will require the approval of our external auditors, which will not occur until the completion of the FY2023 financial audit. Based on preliminary estimates and conversations with our auditors, it is management's understanding that once effective any profit related to our 2022 or 2023 fiscal year end would be minimal.

Total Program Impacts

19,044,383

TREES PLANTED

3,327,485

TONNES OF CARBON BEING SEQUESTERED

11,363.34

HECTARES BEING RESTORED

3,326

PARTICIPATING SMALLHOLDER FAMILIES



I have children and grandchildren, and I will leave them the best inheritance: my trees.

LUCIA MARTINEZ

Farmer in the CommuniTree Program

”

APPENDIX 1:

Saleable tCO₂ per technical specification

Table 13 shows the equivalent tonnes of CO₂ removed per unit area for each technical specification currently in use.³

Table 13: Saleable tCO₂ sequestered per technical specifications

Technical specification	Saleable tCO ₂ sequestered per unit
Mixed Species Forest Plantation	299.7 tCO ₂ /ha
Boundary Planting	214.8 tCO ₂ /km
Silvopastoral	191.9 tCO ₂ /ha
Coffee Agroforestry	203.2 tCO ₂ /ha



Elvin Rene Pineda Roque on his silvopastoral parcel.

³ A PVC represents the long-term sequestration or mitigation of one tonne of CO₂e by a Plan Vivo-certified project..

APPENDIX 2:

Supplementary Information

Due to the high volume of information and data connected to the CommuniTree Carbon Program, Taking Root has included select information through an Excel file, viewable through this link:

https://www.dropbox.com/s/vmef6zbvougocmn/2022_CommuniTree_Annual_Report_Appendices_PUBLIC.xlsx?dl=0

The information in the file is broken into 6 different tabs:

01

LAND CHANGES IN 2022:

The Table A1 lists each parcel that was added to the program in 2022.

02

DETAILED CARBON SALES TO DATE:

The Table A2 provides a detailed list of Plan Vivo Certificates sold to date by vintage.

03

MONITORING RESULTS-2022:

The Table A3 contains Taking Root's monitoring results or forest inventory from 2022 for plan vivos planted in 2022.

04

MONITORING RESULTS-2010-2021:

The Table A4 contains Taking Root's monitoring results or forest inventory from 2022 for plan vivos planted in 2010-2021.

05

LAND AND FARMERS LOST IN 2022:

The Table A5 contains a comprehensive list of the parcels lost in 2022 along with accompanying farmer data.

06

PROGRAM COMMUNITIES:

The Table A6 contains all communities that have farmers participating in PES agreements and shows which of them are new communities in 2022.



APRODEIN technician Alba Gradiz helps farmer Catarino Ordoñez Valladares with trimming and pruning.

“

My favourite tree is the mandagual because it grows quickly. The trimmings can be used for poles, for wood fences, for firewood, for many things.

”

CommuniTree Annual Report

Annual Report for year ended 31 December 2022.

↑ Taking Root