



2022
Sustainability
Report



FARM PICTURED

Laconia

AR | **13,435**
U.S. | *Acres*

Introducing Nuveen Natural Capital

TIAA created a sustainable retirement system for teachers in 1918. Today, it has grown into a leading manager of retirement funds for those in academic, government, medical, cultural and nonprofit fields.

Nuveen is the investment manager of TIAA, providing capabilities across public and private asset classes since 1898, and pioneering responsible investing practices for over five decades.

Nuveen Natural Capital is the farmland and timberland investment specialist of Nuveen, and has been a global leader for more than three decades. The diversified portfolio of high-quality natural capital assets it manages is underpinned by local and global expertise in the most efficient producing areas in the world.

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WELCOME

Message from our Global Head

Over the past 25 years, institutional investors have become increasingly interested in farmland and timberland, attracted by their strong, stable returns and inflation hedge characteristics relative to other asset classes.

Beyond these traditional attributes, these asset classes offer solutions to address the prevailing nature, climate and food security challenges. Despite disruptions to global trade, food and timber production have proven relatively consistent during the devastating global pandemic and the war in Ukraine. Nevertheless, investment in agricultural and forestry production must expand dramatically to keep pace with increasing global demand.

Today's 7.9 billion population is projected to rise to nearly 10 billion by 2050 – which means that by that time the world's calorie and timber production will need to increase by an estimated 50%+ and up to 200%, respectively.¹ How will our agricultural and forestry systems meet this challenge?

We know we cannot simply double our productive land footprint: the prevailing climate and biodiversity crises require that we produce more on existing land. This means that food, fiber and timber production gains must come from innovations – refining methods that already exist and creating entirely new ones. What's more, every aspect of our operating approaches must be calibrated to deliver productivity and efficiency gains while also stepping our world closer to a carbon-neutral reality.

These imperatives have led Nuveen to establish a new “Natural Capital” organization that seeks to give institutions access to attractive investment options that directly impact the primary factors that sustain human life; namely, food and water, as well as security, which comprises housing, clothing and other necessities. By bringing together Nuveen's Westchester (farmland) and GreenWood (timberland) operations, we are poised to offer institutions the flexibility to gain investment exposure to natural assets that fit with their unique mandates and sustainability commitments.

This report is the first manifestation of this unified natural capital approach, providing insights into sustainability strategy, metrics and achievements that span what formerly comprised Nuveen's annual farmland and timberland sustainability reports. Noting that timberland published a sustainability report in November 2021, this report focuses more on farmland updates. Our intent is both to inform and to display our genuine excitement as we pioneer a new generation of investment opportunities that aim for strong financial results as well as profound benefits for Nature, Climate and People.



Martin Davies
Global Head of Nuveen Natural Capital

**2021 NUVEEN
NATURAL CAPITAL
ESG COMMITTEE**

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London, UK*

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*Head of Australia,
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*Head of U.S. Row Crops,
Memphis, TN*

Michael Vandre
*FP&A Manager,
Champaign, IL*

Supported by:
Lori Summers
*Head of Resource Information,
Portland, OR*

“ We are pleased to share our ongoing and upcoming collaborations across many stakeholders, including NGOs such as The Nature Conservancy, specialist consultants and supply chain partners. This report features testimonials from key partners, and highlights collaborations that will help accelerate and refine our Nature, Climate, People strategy.”

Cristina Hastings Newsome
Head of Sustainability



**MESSAGE FROM OUR
HEAD OF SUSTAINABILITY**

Natural capital: *toward a more holistic land management approach*

Responsible land stewardship plays a critical role in ensuring long-term productivity and delivering environmental benefits. This long-term perspective underpinned the rationale for combining our farmland and timberland asset management businesses to create Nuveen Natural Capital.

The term natural capital encompasses everything we derive from the natural environment, such as air, water, soil, plants and wildlife. It's easy to take natural capital for granted because it works silently and invisibly. Yet it tirelessly delivers ecosystem services, including regulating our climate and pollinating our crops. When people hike or bike in a forest, or eat food that's grown using soil and water, they are directly benefiting from the services of natural capital.

In the land management context, applying a natural capital lens can help mitigate the risk of causing unintentional harm in the single-minded pursuit of a certain objective. For example, a company might strive to cut carbon emissions yet fail to conserve water. The solution is to manage the more complex interplay of Nature, Climate and People-related goals. This means maintaining crop/timber production while optimizing our carbon profile, and stewarding the natural resources of water, soil health and biodiversity to enable long-term resilience.

To pursue such a goal, Nuveen Natural Capital is developing two global methodologies, in addition to the plethora of regional sustainability projects. The first is a natural capital balance sheet methodology. As a start, we are plotting the natural capital assets that exist on managed properties and estimating the ecosystem services

these assets provide. The second is an ESG Framework we began rolling out in 2021. The Framework's objective is to improve internal data at a property level, including yields, energy use, greenhouse gas emissions, water use, soil health and labor practices. By combining these two methodologies, we will have a rich and balanced approach to measuring and monitoring natural capital assets, which can deliver both long-term productivity and environmental benefits.

We are pleased to share our ongoing and upcoming collaborations across many stakeholders, including NGOs such as The Nature Conservancy (page 13), specialist consultants and supply chain partners. This report features testimonials from key partners, and highlights collaborations that will help accelerate and refine our Nature, Climate, People strategy across many dimensions.

By enhancing data quality to account for natural capital and increasing transparency, we believe we can contribute greatly to the resiliency of an asset over time, which enables more consistency in returns. Also, by integrating the natural capital concept into our work, we continue to meet the rising expectations of the investor, consumer, regulator, and value chain in the delivery of responsible, long-term land stewardship – to ultimately benefit Nature, Climate and People.



Cristina Hastings Newsome
Head of Sustainability

Global portfolio overview

Nuveen Natural Capital is a land-focused asset management platform. Combining expertise across farmland and timberland, we have over three decades of land-based investment experience.

With US\$10.5 billion of assets under management* and 3 million acres across 600 properties in 10 countries, our platform is equipped to deliver investment solutions to protect and enhance Nature, Climate and People.

Nuveen Natural Capital deploys a value-added mindset and regional hands-on management to land-based investments, to advance best practices and help create sustainable production systems for food, fiber and timber.

* Source: Nuveen Natural Capital. Assets under management as of December 31, 2021.

TOTAL PORTFOLIO

(as of December 2021 in US\$)



UNITED STATES | \$5.8B AUM (55%)

20%

OF TOTAL ACRES
(597,839)

BRAZIL | \$2.2B AUM (21%)

37%

OF TOTAL ACRES
(1,095,337)

PANAMA | \$0.07B AUM (1%)

<1%

OF TOTAL ACRES
(11,279)

COLOMBIA | \$0.009B AUM (<1%)

2%

OF TOTAL ACRES
(59,751)

CHILE | \$0.11B AUM (1%)

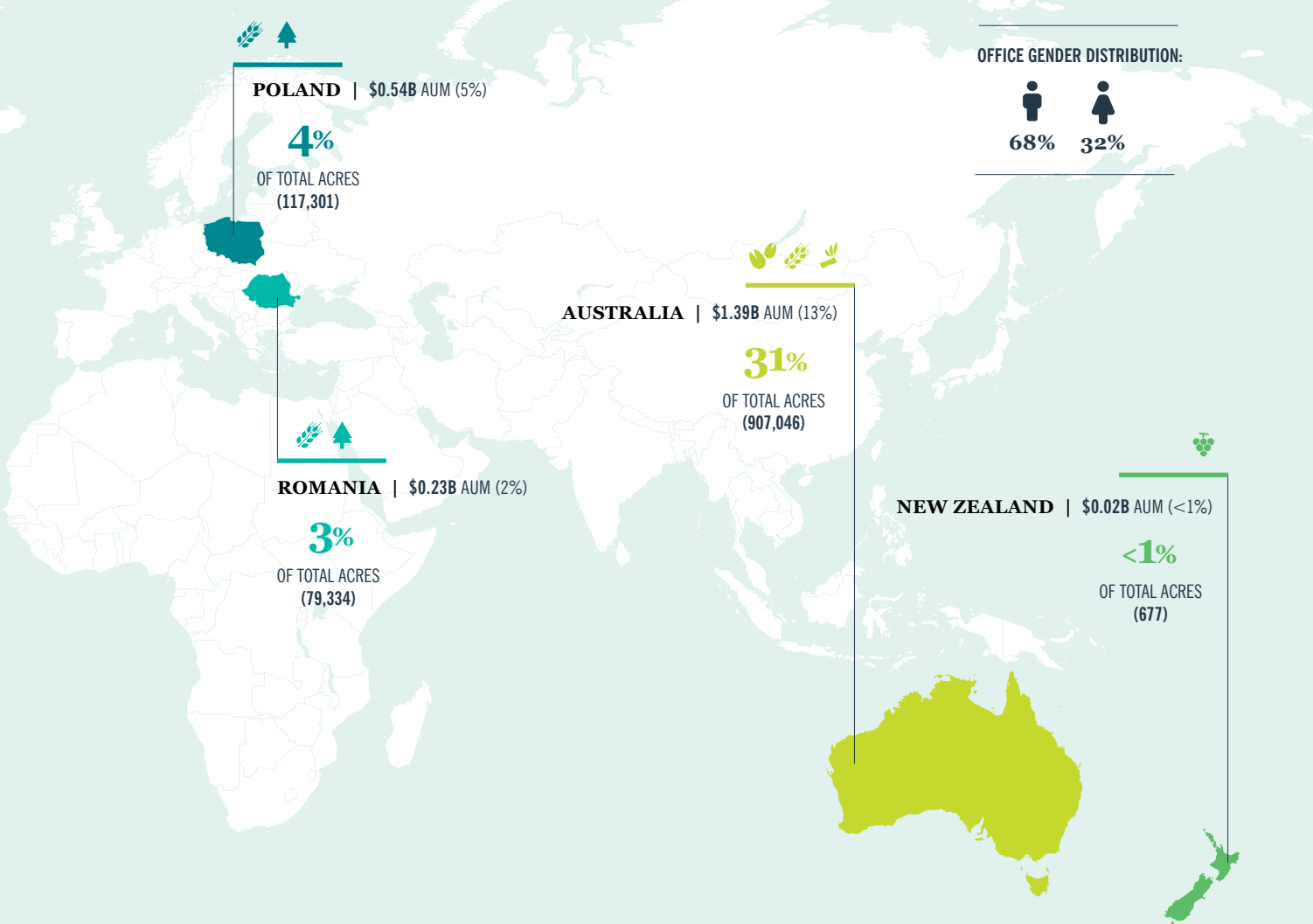
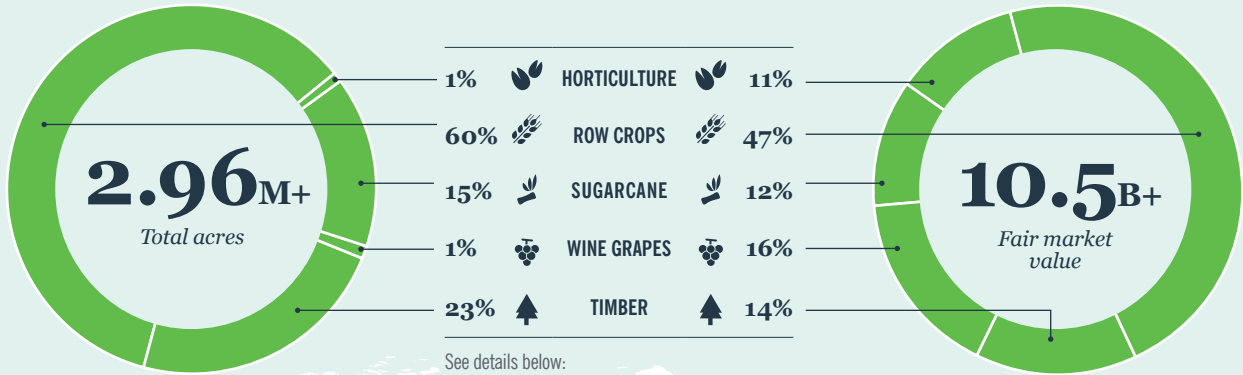
<1%

OF TOTAL ACRES
(5,596)

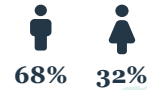
URUGUAY
\$0.1B AUM (1%)

3%

OF TOTAL ACRES
(80,909)



OFFICE GENDER DISTRIBUTION:



Horticulture: Almonds, apples, avocados, cherries, coffee, hazelnuts, lemons, oranges, pears, pistachios, table grapes, tangos and walnuts
Row crops: Barley, beans, blackberries, brussels sprouts, carrots, chick peas, corn, cotton, kale, lucerne, lupins, millet, mint, oats, peanuts, peas, peppers, potatoes, rapeseed, raspberries, rice, ryegrass, sorghum, soybeans, strawberries, sugar beet, sunflower, tomatoes and wheat
Timber: Douglas fir, eucalyptus, fine hardwoods, gmelina, hemlock, poplar, red alder, red ceiba, Southern yellow pine

Evolution of ESG strategy: Nature, Climate, People



Nature

Natural capital encompasses the soils, forests, water, biodiversity and how they function together. These resources provide ecosystem services that are essential for our human survival. Such services include climate regulation, natural dams for flood control, nutrient and water cycles, and pollination services by bees and animals. These ecosystem services typically are provided silently and invisibly, so they're often taken for granted. Yet some estimates value these silent services at \$140 trillion, or 1.5 times that of global GDP.²

The troubling reality is that nature's capacity to provide these services is being increasingly compromised. This is largely due to the depletion of the natural world, such as through deforestation and the resulting sharp decline of biodiversity.

Nuveen Natural Capital's approach

Nuveen Natural Capital regards the preservation and promotion of nature as a critical pillar of its Nature, Climate, People strategy. In 2018, Nuveen Natural Capital signed its zero-deforestation policy, and clearly set forth its commitment to conserve all native vegetation on managed agricultural properties in Brazil (see page 10).

In 2021, Nuveen Natural Capital built on this foundation by beginning to inventory and value the non-tillable land on managed landholdings. Although this non-tillable land may be "non-productive" in terms of directly growing crops, it provides habitats for species, enables pollination

services and arguably supports the resilience of the "productive" land.

The ultimate goal of our inventory program is to produce natural capital balance sheets across the portfolio. This will serve to:

- Value the programs already in place to conserve or restore native vegetation and forests, or to improve practices that minimize our footprint on the natural environment.
- Incentivize more of these programs by treating them less as operating expenses and more as natural capital balance sheet investments.
- Inform our stakeholders more transparently on the values of ecosystem services, and enable clearer comparisons of such values to the cost of investing in maintaining natural capital.

The goal is an ambitious one, given the 3 million acres under management across our timberland and farmland portfolio. We have started with several pilots, with a focus on properties in Brazil. For a given property, our methodology seeks to answer these questions:

- What natural capital assets are owned/managed or depended upon?
- What benefits flow from the assets?
- What is the value of these benefits and to whom do they accrue?
- What does it cost to maintain and manage these assets?
- What is the net impact on natural capital?

The accounting process makes note of the risks that put pressure on nature's capacity to provide the benefits our investments receive. Given the complexity of how nature works, our understanding of it and availability of data, our analysis focuses on what is material for both the business and nature.

Brazil NatCap Statements Pilot

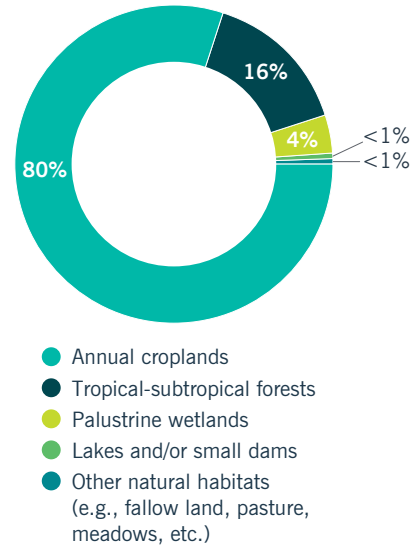
Nuveen Natural Capital has partnered with Economics for the Environment Consultancy (eftec) to inventory and estimate the value of natural capital in our managed portfolio by applying NatCap Statements™³ and the standard BSI 8632:2021 (Natural Capital Accounting for Organizations). These steps were undertaken for one pilot property, a 23,697-acre sugarcane leased farm in São Paulo state:

- Materiality/risk assessment of ecosystem services by each natural capital asset
- Creation of the property Asset Register (inventory of the natural capital assets, including forest/native vegetation, lakes/streams, cropland)
- Measurement and valuation of the ecosystem services provided by natural assets, production costs and returns associated with each natural capital asset
- Estimation of costs committed to maintain natural capital assets

Asset register

Pilot area by type of habitat

Total 23,697 acres



The key natural capital accounting outputs for the pilot property in Brazil are the Asset register (above) and the natural capital balance sheet (page 8).

TESTIMONIAL FROM OUR PARTNER, EFTEC

“eftec is delighted to be supporting Nuveen Natural Capital on its ambitious natural capital accounting project. This is highly innovative for a global portfolio, but can be tackled thanks to Nuveen Natural Capital’s strong existing sustainability data, and recent innovations such as the British Standard (BSI8632)⁴ and UN ecosystem accounting methods and guidance.⁵ Nuveen Natural Capital has started on the first step of the accounting process, which entails organising data on natural capital assets. This puts Nuveen Natural Capital on the front foot to align with the Taskforce on Nature-Related Financial Disclosures, as its TNFD beta framework includes a specific emphasis on measuring stocks of natural capital assets.⁶ The overall goal is an

exciting and far-reaching one: developing accounts so as to better measure and integrate sustainable practices such as habitat conservation and regenerative farming into investment strategy and business decisions.

Regarding the piloted natural capital balance sheet, eftec is pleased with the sound balance sheet construction, and coherent value-calculations. Whilst there are improvements which could be made with additional data, we are encouraged by work undertaken to date.”

Ian Dickie
Director, eftec

Natural capital balance sheet*Pilot property, in conjunction with eftec*

2021 reporting year <i>Present value (US\$ millions) calculated over 25 years</i>		Value to landowner	Value to tenant	Value to society	Total value
Asset values	Carbon sequestration			273	273
	Lakeshore bordering property			17	17
	Crops		229		229
	Rent income	83			83
	Forest bundle value			2	2
	Gross asset value	83	229	292	604
Material non-monetized asset values	Pollination	Contributes to crop yields			
	Biodiversity	4,775 acres of old growth and restored Atlantic forest			
	Air Quality	Trees can mitigate pollution from surrounding areas			
Liabilities	Production costs		-220		-220
	Natural capital maintenance	-0.09			-0.09
	Total liabilities	-0.09	-220		-220
Total net asset value		83	9	292	384

Explanations of the elements in the Balance Sheet

Asset values and **Liabilities** are the aggregated flows over the next 25 years, calculated as **Present values** using a 4.6% discount rate.⁷

Total value is the sum of value to landowner, tenant and society. This breakdown sheds light on those silent and invisible values that it is possible to quantify or express in monetary terms.

Asset values will differ across Estates, reflecting what is provided in each.

Total net asset value is asset values minus liabilities.

Material non-monetized asset values report any costs and benefits that can only be qualitatively stated or measured in units other than money.

Carbon sequestration: carbon sequestration rate in Atlantic Forest habitat⁸ valued at US Government social cost of carbon (US\$51/t). The area of

habitat cover is 1,358 ha of fully mature forest and 574 ha undergoing regeneration (from Nuveen's own data).

Lakeshore bordering property: protecting the ecosystem services of a similar lake in Brazil valued at US\$52.32/person/year.⁹ The value reflects the lake's use and non-use value, including the role for recreation, public water supply and maintaining flows for a hydroelectric plant. Adjustments for the value transfer include by population and length of the lakeshore that the property's forest helps to protect.

Crops: an average yield for sugarcane of 572,965 t/year (Nuveen's own data) valued at an average retail price of 130 BRL/t.

Rent income: rent paid by tenant to Nuveen for the use of the property.

Forest bundle value: ecosystem services from all Atlantic Rainforest were

valued at US\$61.41/ha/year.¹⁰ This is likely a significant underestimate given the age of the study and current knowledge of ecosystem services.

Production costs: costs for the production of sugar cane sourced from Nuveen's tenants' accounts.

Natural capital maintenance: costs of monitoring and managing riparian forest buffers from Nuveen's own data.

Disclaimer: While eftec has endeavored to provide accurate and reliable information, eftec is reliant on the accuracy of underlying data provided and those readily available in the public domain. eftec will not be responsible for any loss or damage caused by relying on the content contained in this report.

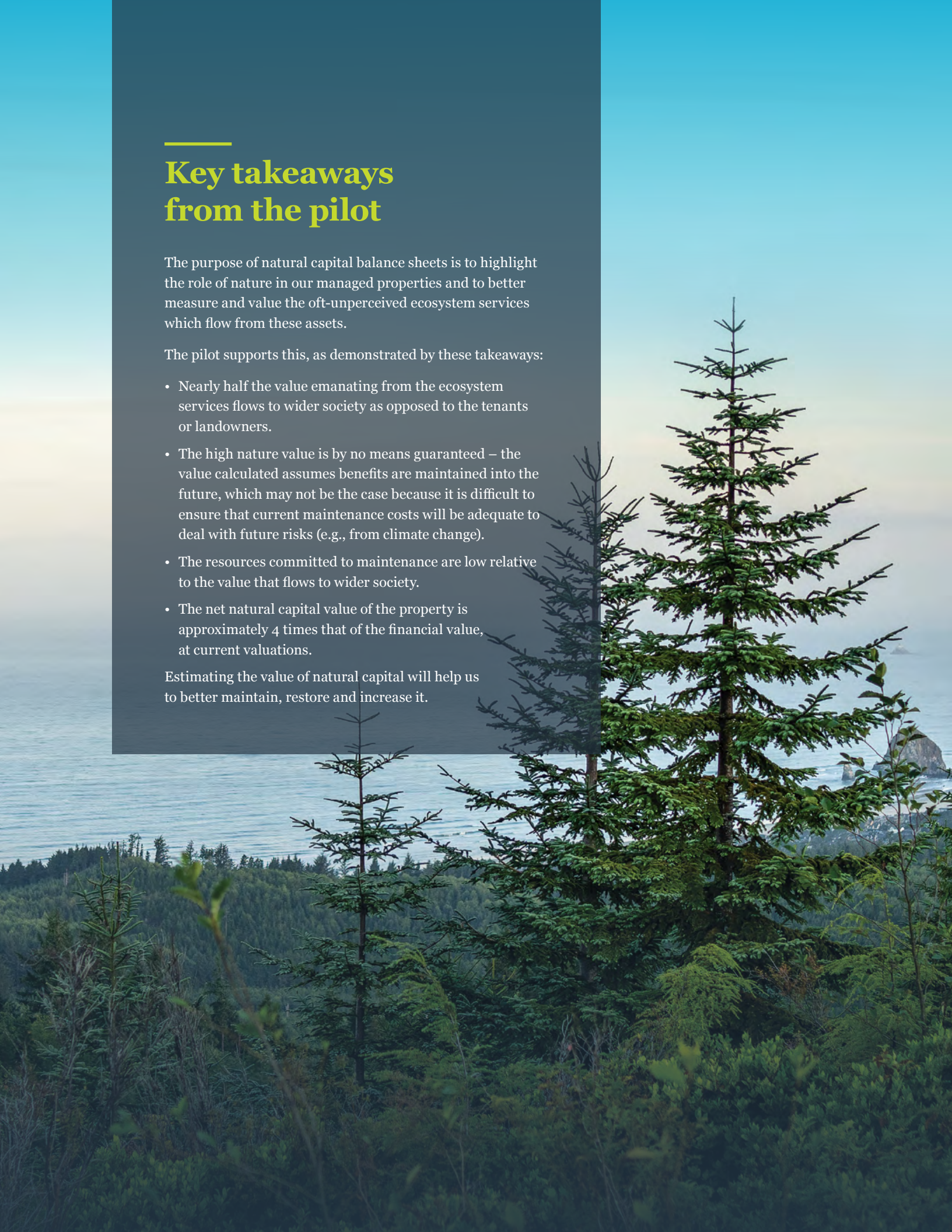
Key takeaways from the pilot

The purpose of natural capital balance sheets is to highlight the role of nature in our managed properties and to better measure and value the oft-unperceived ecosystem services which flow from these assets.

The pilot supports this, as demonstrated by these takeaways:

- Nearly half the value emanating from the ecosystem services flows to wider society as opposed to the tenants or landowners.
- The high nature value is by no means guaranteed – the value calculated assumes benefits are maintained into the future, which may not be the case because it is difficult to ensure that current maintenance costs will be adequate to deal with future risks (e.g., from climate change).
- The resources committed to maintenance are low relative to the value that flows to wider society.
- The net natural capital value of the property is approximately 4 times that of the financial value, at current valuations.

Estimating the value of natural capital will help us to better maintain, restore and increase it.





Climate

Greenhouse gas (GHG) emissions from agricultural production and land-use changes are estimated to rise to 15 gigatons by 2050. However, if we are to keep global warming well-below 2°C above preindustrial temperatures, GHG emissions from agricultural activities would need to decrease to 4 GT by midcentury.¹¹ Closing this GHG mitigation gap is critical to stabilize the world’s climate at acceptable temperatures.

Investments in natural capital provide an opportunity to address this gap. About 37% of the pathway to reach climate goals codified by the Paris Agreement could be met by natural capital solutions, including conservation, restoration and improved land management practices.¹²

Nuveen Natural Capital is well positioned to contribute to these solutions due to our deep understanding of land management at an operational level, our global footprint, and our technical knowledge of forestry and agronomy.

Nuveen’s zero deforestation commitment

Eliminating deforestation is the single most impactful step in reducing emissions. This is why in August 2018 Nuveen adopted a Zero Deforestation Policy for its farmland investments, with retroactive cut-off dates. Currently applied to our Brazilian farmland properties, the policy works to discourage speculative land development practices that may result in the depletion of forested areas and native vegetation. Specifically, the policy

prohibits acquisitions of land that has been cleared of native vegetation in five distinct biomes:

- Amazon Biome (July 2008)
- Atlantic Forest (December 2006)
- Caatinga (September 2017)
- Cerrado Biome (May 2009 or later, in accordance with criteria set forth by the Roundtable for Responsible Soy)
- Pantanal (January 2008)

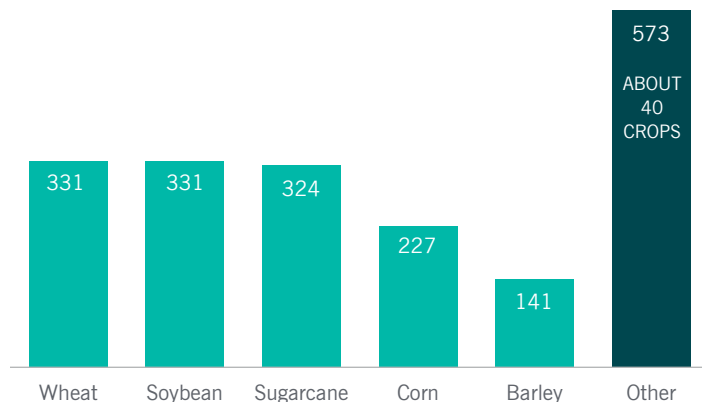
Measuring emissions from farmland operations

We estimate that our managed farmland portfolio generated approximately 475,630 MT of CO₂e from agricultural production in 2021. This is around 2% lower than 2020 estimated emissions (485,092 MT of CO₂e) due to differences in land area and the mix of crops.

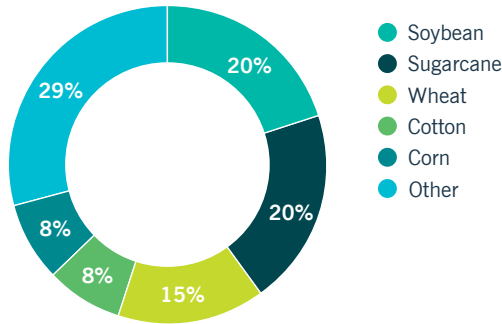
The acreage and emissions by crop type are presented in the charts below:

2021 top five crops, by area

Acre (thousands)

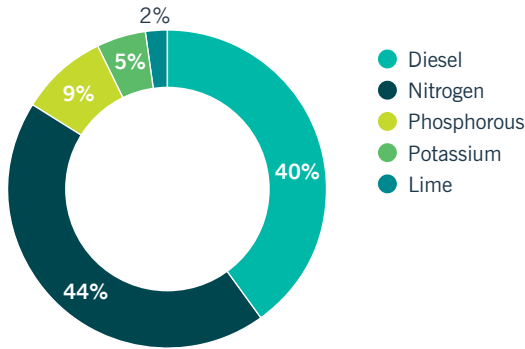


2021 estimated farm-gate emissions of GHG (or CO₂ equivalent) at NNC
(Co₂ equivalent MT)



These estimates are based on default values. We employed five input factors to estimate the emissions.

Five input factors



Emission estimates are performed for all farm-gate operations, including leased and directly operated properties. Inclusion of leased properties means that some Scope 3 emissions are included in our calculations.

We chose the five input factors following a materiality assessment of agricultural production emissions in 2019, and we have since used them annually. We plan to update this methodology next year.

Emissions associated with management practices

In addition to estimating the emissions from agricultural practices, we have estimated direct emissions based on management practices (farmland only). This estimate included office footprint, fuel for fleet, and airplane flights. The total 501 MT CO₂e generated in 2021 breaks down as:

- **Fuel for fleet:** 72% or 361 MT of CO₂e
- **Office footprint:** 21% or 106 MT of CO₂e
- **Flights:** 7% or 34 MT of CO₂e

Carbon stock

On farmland assets in Brazil, an estimated 36+ million MT of CO₂ are stored in above-ground biomass across 235,000+ acres of legal reserves and areas of permanent preservation, in line with the Brazilian Forest Code.

On timberland assets, we use commercial inventory data to quantify standing carbon stock on productive forests annually. The inventory methodology varies by region, but generally uses annual sampling to collect measured tree data across a subset of productive areas.

Merchantable timber inventory is extrapolated from the measurement data and projected forward annually to maintain an estimate of current inventory across all productive areas. From the merchantable inventory, carbon stock is estimated using species-specific conversion and biomass expansion factors. First timber volumes are converted to dry weight, then to whole-tree biomass to account for non-merchantable components of the trees (roots, branches, leaves), and finally to metric tons of CO₂e.

This methodology allows us to track carbon stocks for productive timberland assets every year as a part of our GHG accounting. In 2021, we estimated that the carbon stock held in the global timberland portfolio equaled 43.3 million MT.

Moving forward

Nuveen Natural Capital has identified opportunities to improve our GHG accounting, such as:

- Including energy consumption for agricultural operations in our emission estimates, where applicable
- Including emissions associated with pesticides, herbicides and fungicides
- Determining, as a first step, whether and how to account for the sequestration of tree crops and vines on farmland we manage

- Estimating the carbon stock of native vegetation of properties on farmland properties outside of Brazil
- Estimating the carbon stock of non-productive areas in timberland properties
- Estimating the emissions of timberland operations

Enhanced GHG accounting systems will help Nuveen Natural Capital identify ways to improve the GHG footprint of our farms through better management, conservation, or restoration. While the regional case studies exemplify approaches which are already in action today, these will be further enriched with more detailed GHG data.

2021 reporting year	Emission	Stock	Sequestration
Farmland tillable	475+ thousand MT CO ₂ e*	To be calculated	To be calculated
Farmland non-tillable	Not applicable	36+ million MT CO ₂ e**	To be calculated
Timberland production	To be calculated	43+ million MT CO ₂ e	4.3+ million MT CO ₂ e***
Timberland nonproductive	Not applicable	To be calculated	To be calculated

* Default values associated with typical crop production systems

** Above-ground biomass on Brazilian farmland holdings only using IPCC guidelines from 2006.

*** This indicator shows the average annual sequestration that has occurred throughout the lifecycle of the asset

DEVELOPING CARBON PROJECTS

The development of carbon credit markets creates a mechanism for land-based investors to realize the carbon value from investments in timberland and farmland. Carbon credits can be generated through changes in timberland and farmland management that reduce greenhouse gas (GHG) emissions or sequester CO₂ from the atmosphere. To quantify the climate benefits of these changes, there are established crediting standards and mechanisms for monitoring, reporting and independent verification.

Nuveen Natural Capital currently has four carbon projects in development totaling an estimated 3.5 million carbon credits. These projects include:

- Two improved forest management projects in the U.S. under the American Carbon Registry
- An afforestation/reforestation carbon project in Brazil under the Verified Carbon Standard (VCS)
- An afforestation/reforestation and REDD+ carbon project in Colombia under BioCarbon

ANNOUNCING A NEW PARTNERSHIP

“The Nature Conservancy is looking forward to supporting Nuveen Natural Capital in its ‘Nature, Climate and People’ strategy. The partnership will look to measure the environmental and social performance of its assets and to accelerate the transition of its existing farmland and timberland operations to enhanced nature-positive practices.”

Greg Fishbein

Director, Agriculture Finance
The Nature Conservancy





People

“People” represent the third pillar of Nuveen Natural Capital’s sustainability strategy. Our commitment to people encompasses providing sustenance – food, fiber and timber – and supporting local communities in which we work, as well as providing transparency to our many stakeholders.

Providing sustenance

Projections of population growth by 2050 mean that the world must increase timber production by up to 200% and calorie production by 56% to keep pace¹³ – all while preserving existing natural ecosystems.

Compounding the macro challenges of demand-growth and supply constraints are recent shocks to the global supply chain. COVID-19 presented unprecedented challenges to global trade, and now our supply chains are further disrupted by the war in Ukraine. The two countries have an outsized contribution to the global export markets of fertilizers, grains and oilseeds. As a result, the impacts to agricultural value chains include higher costs of production, restricted availability of some nutrients in certain geographies, displaced trade flows, and food shortages in some destination markets.

Meeting these demand-growth and supply-constraint challenges requires broader value chains to collectively innovate to “do more with less”. To this end, Nuveen Natural Capital is embarking on a four-year collaboration with World Resources Institute, Princeton University and an agronomic consultancy in South America to explore ways to “produce more with less” and to “produce and protect” (see page 15).

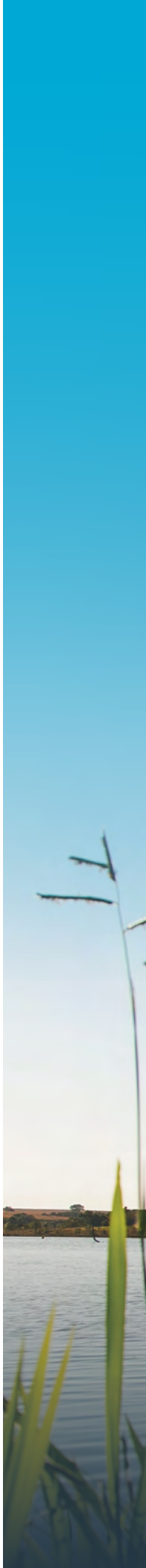
Contributions to local communities

With operations in regions worldwide, Nuveen Natural Capital works closely with local communities. This takes the form of many initiatives, some of which are shared in the Portfolio in focus sections. Our Corporate and Social Responsibility (CSR) programs ensure funding allocations to help our team add value to surrounding communities, with a focus on educational, environmental and social engagement.

Continuous improvement in transparency

Nuveen Natural Capital has taken several recent strides to improve transparency, foster communication with a greater variety of stakeholder groups and strengthen its on-the-ground partnerships. Initiatives include:

- **Faces From the Field:** In 2021 we launched a [new video series](#) to showcase the perspectives of our partnering tenants and crop managers, many of whom have been working with us for decades. We intend to expand our library of Faces from the Field videos over time.
- **Transparency map:** We have upgraded our [interactive online map tool](#) to include property-level data for all farmland assets, including operating strategy, crop types and property boundaries.
- **Sustainability priorities Q&A:** In 2021, we also published a [Q&A document](#) that offers Nuveen Natural Capital’s responses to important sustainability-related questions and concerns. This Q&A is updated regularly.



ANNOUNCING A NEW PARTNERSHIP IN SOUTH AMERICA

“World Resources Institute and Princeton are delighted to be collaborating with Nuveen Natural Capital on a project involving its agriculture and timberland properties in South America. The project will explore ways to improve the environmental performance of Nuveen Natural Capital’s managed landholdings in the face of rising demand for food, fiber and climate change imperatives.

**“ We must create mechanisms to both
‘produce and protect’ as we strive to
meet the world’s growing demand.”**

Professor Timothy D. Searchinger

Senior Fellow & Technical Director, Food Program,
World Resources Institute; and Senior Research Scholar,
Princeton University – School of Public and International Affairs

Climate mitigation will require increased food and timber production on the same footprint of land, but elevated yields alone can’t guarantee that forests will be protected. Hence, we must create mechanisms to both “produce and protect” as we strive to meet the world’s growing demand. Our collaboration will focus initially on agricultural and forest landholdings in Brazil and will explore improvements involving GHG emissions, biodiversity protection, water management and yields, with a view to disseminate our learnings broadly. This project has been generously funded by the Norwegian Agency for Development Cooperation (NORAD) and Nuveen Natural Capital’s parent company, TIAA.”

Sustainability indicators

The Nuveen Natural Capital ESG Framework represents the culmination of 10+ years of reporting on ESG metrics. The Framework draws on knowledge gained from internal and external resources, and its underlying indicators have been mapped to several major certification schemes to promote consistency.

- 1.** The **FARM PROFILE (FP)** was designed to track quantitative data at a property level, such as inputs related to soil, water, agricultural chemicals and greenhouse gas emissions. This survey is to be completed every year to capture inputs relating to the planting/harvesting cycle.
- 2.** The **CODE OF PRACTICE (CoP)** survey is a qualitative assessment that tracks the operational practices of the tenant and crop manager. This survey focuses on practices relating to nutrient application, maintenance of soil health, management of water and agricultural inputs, and labor practices. This survey is completed every three years, given that operational practices do not vary greatly from one year to the next.

The purpose of the Framework is to gather consistent, property-level ESG data, and to communicate on key metrics. We will discuss these results with crop managers and tenants, and offer recommendations. We launched the Framework in the second half of 2021, along with training for teams in all regional offices.

Sustainability indicators

We have established indicators that reflect the most appropriate, material factors for the various regions in which we operate, considering our current investment approach and strategy. This first group of indicators aims to measure factors related to water use, soil health and chemical use, and climate change. We intend to improve and evolve these measures over time to keep them relevant for our strategy and operations.

We initially focused the rollout of the ESG Framework on farmland properties, which account for roughly 2.3 million gross acres. All survey answers were self-declared by tenants and crop managers, with no external audit. Except indicator #10 (water extraction points with meters), results were calculated based on tillable acres to represent the extent to which practices were implemented.

The latest timberland sustainability report, published in November 2021, illustrated that most timberland-related ESG indicators had been met. In the spirit of continuous improvement, these metrics are now being upgraded. Timberland's new framework will be aligned with farmland and will appear in our next Nuveen Natural Capital sustainability report.

Due to the use of acreage as a basis, calculated results below are more heavily weighted toward row crops. Therefore, to improve clarity we split the table to account for crop type, row and permanent.

The table below presents farmland data gathered in 2021, referencing 2020:

KPI	CROP CATEGORY			
	All	ROW	PERMANENT	
Category 1: Farm management				
1	Tillable acres with a Code of Practice survey completed (last 3 years)	37%	34%	99%
2	Tillable acres with Farm Profile completed (last crop year)	20%	18%	83%
	Tillable acres with a completed Farm Profile survey*	374,474	319,375	55,100
3	Tillable acres with at least one declared sustainability third-party certification/program	49%	45%	73%
Category 2: Soil				
4	Tillable acres practicing cover crops	29%	29%	29%
5	Tillable acres where crop residue is maintained	77%	87%	20%
6	Tillable acres practicing crop-rotation**	76%	76%	–
7	Tillable acres practicing conservation tillage	35%	35%	35%
8	Tillable acres practicing no till	36%	38%	29%
9	Tillable acres reporting average organic matter content (%)	68%	65%	84%
Category 3: Water				
10	Water extraction points with meters	40%	14%	88%
Category 4: Agricultural chemicals				
11	Tillable acres with an existing crop protection program which adheres to Integrated Pest Management (IPM)	90%	89%	98%
12	Tillable acres applying beneficial organisms and/or bio pesticides for pest or pathogen management	41%	45%	21%
Category 5: Climate change				
13	Percentage of farms for which we have estimated GHG emissions resulting from agricultural production	100%	100%	100%

* All KPIs from 3 onward apply only to operations (A) for which a profile was completed and (B) for which the respondent answered in the affirmative.

** This indicator does not apply to permanent crops due to the nature of their production



FARM MANAGEMENT

Indicators #1 and #2

We track the percentage of crop managers with a Code of Practices completed within the last 3 years (indicator #1), and the percentage of farmed area submitting a Farm Profile survey during the last reporting year (indicator #2). This dual-indicator approach allows us to understand the reach of our indicators. The indicators that follow consider only the properties that submitted a Farm Profile survey.

Survey completion rates were higher for permanent crop farms (99% CoP and 83% FP) than for row crop farms (34% CoP and 18% FP), reflecting the different degrees of influence over crop managers and tenants across geographies. We intend to seek improvements in both indicators over time with the goal to approach 100% of properties under management surveyed by 2025.

Indicator #3

Among surveyed farms, 49% of properties are covered by a third-party sustainability certification or program. Note that such certifications or programs are primarily a function of supply chain demand, and that crops going directly into the food value chain (as opposed to feed) tend to have higher supply chain requirements for certification (see country-level views on certification in the “Portfolio in focus” section).

Examples of sustainable management practices include cover-cropping, maintaining crop residue after harvest, rotating crops and limiting tillage. Potential benefits of implementing such practices include reduced erosion, increased moisture retention, and enrichment of soil organic matter, which can help to sequester carbon from the atmosphere.

As a starting point, we will monitor five practices: cover crops and crop residues maintained in the field, crop rotation and tillage systems (no till and conservation tillage).

Indicators #4 and #5

Cover crops and maintaining crop residues

Maintaining ground cover through cover crops or by leaving a previous crop’s residue protects soil from erosion and provides organic material for microorganisms to decompose and cycle nutrients. When ground cover is maintained, the roots help to anchor the soils, particularly during extreme weather events.

Among those row crops who reported, 29% adopted cover crops and 87% maintained crop residues in the field. On the permanent crop side, 29% reported implementing cover crops, and crop residues remained in the field on 20% of the area. Permanent crop numbers reflect the nature of the production system, in which cover crops are only planted between rows of trees or vines.

Indicator #6

Crop rotation

For row crops, crop rotation can break persistent disease cycles and allow for fertility to be built through leguminous crops. Among row crop farms surveyed, 76% rotate their crops by growing an alternative annual crop within the previous two consecutive growing seasons. The other 24% of such crops is majority weighted toward sugarcane fields. Annual crop rotation is not applicable because ratoon sugarcane is harvested annually over 5 years, when the fields are then planted with a rotational crop before being replanted with sugarcane. This indicator does not apply to permanent crops due to the nature of their production.



SOIL

Soil management is crucial to preserving the productivity of farmland and the health of surrounding ecosystems. Sustainable soil management practices may be more or less appropriate, depending on location. Factors including crop type, soil type, topography and climate must be considered when determining which practices to implement, and where.

Indicators #7 and #8

Conservation and no tillage

When soil quality and structure are maintained, soil aggregates (clods) promote water infiltration and root growth. By contrast, when soil is compacted, roots may struggle to reach nutrients and water to support above-ground biomass.

Among farms reporting, 38% of row crop acres practice no-tillage and 35% adopt conservation tillage systems. For permanent crops, farms reported 29% for no-tillage, and 35% for conservation tillage systems.

Indicator #9

As expressed above, certain agriculture practices can help build organic matter. Indicator #9 frames the percentage of acres supplying a sample of average organic matter content. By analyzing the content of such soil organic matter over time, Nuveen Natural Capital can promote, maintain and ensure soil resilience. 68% of the farmland acres reported soil organic matter, broken down between 65% of row crops and 84% of permanent crops.



CHEMICALS

Indicator #11

A crop protection program featuring Integrated Pest Management (IPM) addresses the most material topics related to pests, diseases and their management, which can both enhance food security and minimize the impact of noxious products on society. 98% of permanent crop farms and 89% of row crop farms reported the adoption of IPM. This aptly demonstrates how our tenants and crop managers adapt best management practices to their local environments, contributing to safer and healthier food, fiber and fuel production.

Indicator #12

Many nature-based solutions can be applied to address destructive agricultural pests. This includes developing habitats – such as cover-crops, temporary insectary strips and permanent hedgerows – to shelter beneficial organisms that maintain the population of pests. 45% of row crop farms reported the use of beneficial organisms (page 34) and 21% of permanent crop farms are adopting such a method (page 26).



WATER

Indicator #10

Water management is critical for agricultural production. Indicator #10 measures the number of wells inside managed properties that have flow meters installed. Although many other sophisticated water-conservation technologies exist across the portfolio, we chose water meterage as our preliminary indicator because it can be easily tracked and captures a fundamental practice for water use efficiency. Among survey respondents from permanent crop farms, 85% of wells have meters installed, compared with 14% of the wells inside row crop managed farms.



CLIMATE CHANGE

Indicator #13

This indicator reflects our commitment to estimate and monitor carbon emissions. We currently estimate field-to-farm-gate emissions for 100% of the tillable area we manage. The Climate section of this report (page 10) articulates how we intend to evolve beyond this method to adopt a more precise GHG emissions footprint that uses actual data from our annual ESG Framework Farm Profile survey rather than typical crop systems.

Portfolio in focus

United States

REGIONAL OVERVIEW

Viticulture

Although 2021 was abnormally dry in California, Nuveen Natural Capital’s managed properties had sufficient water resources to operate normally, due in part to earlier heavy investments in water efficiency and storage capabilities. There were several large fires in northern California, but they were far away from the growing areas we manage and generally downwind. As a result, we did not suffer major issues related to fire or smoke.

Ideal weather continued throughout harvest, with harvest results about average. Anecdotally, most other growers and wineries assessed their yields to be slightly below average. Wine and wine grape demand remained elevated throughout the fourth quarter, although the outsized growth seen in the early stage of the pandemic has subsided. Demand for grapes continued to be strong throughout the harvest with many buyers still actively contracting grapes, partially due to the below average yields experienced by some growers and wineries.

Horticulture

The recently ended 2020-2021 water year ranks among the driest on record, with surface water allocations reflecting those conditions. Summer 2021 was also one of the hottest on record, creating challenges across many crop types even though properties under management were largely spared from significant impacts.

Massive storms in December 2021 brought near-record precipitation and snowpack well above historical averages. The period January through March turned dry, however, and now, late spring 2022, precipitation and snowpack are below average for this time of year.

Almond prices experienced volatility throughout 2021. New crop expectations declined early in the season, prompting a temporary rise in prices, only to relent as shipments dropped throughout the summer and early fall.

THIRD-PARTY PROGRAMS AND CERTIFICATIONS*



● OFFICE GENDER DISTRIBUTION IN U.S.:

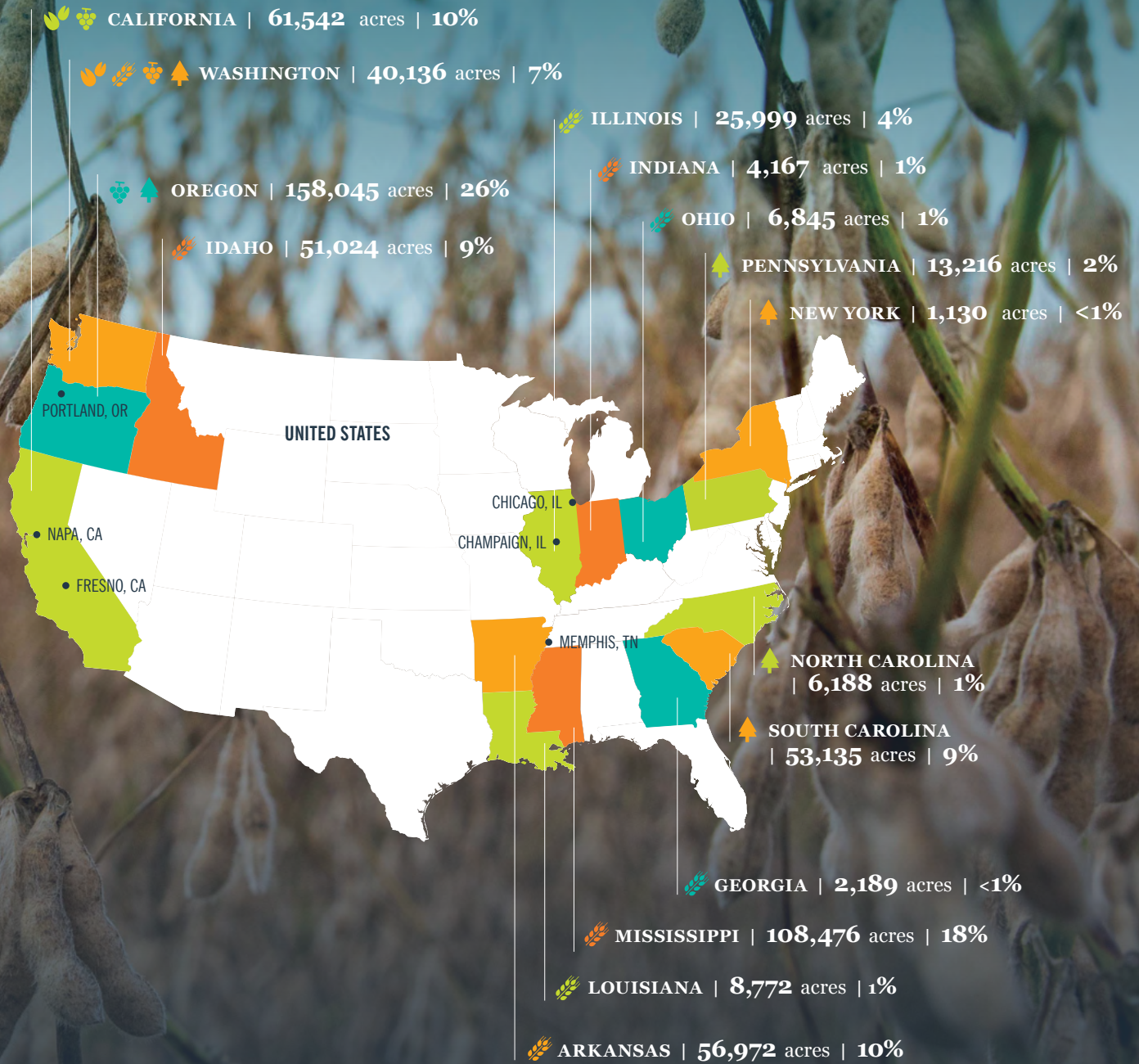


- 🌿 **HORTICULTURE** **100%** OF ALMONDS HARVESTED UNDER CALIFORNIA ALMOND SUSTAINABILITY PROGRAM
100% OF APPLES, PEARS, CHERRIES FARMED IN WASHINGTON CERTIFIED SUSTAINABLE UNDER GLOBAL G.A.P.
100% OF CITRUS AND AVOCADO CROP CERTIFIED UNDER PRIMUS
- 🌾 **ROW CROPS** **0%** UNDER THIRD-PARTY CERTIFICATION PROGRAMS
- 🍇 **WINE GRAPES** **100%** WINE GRAPES CERTIFIED UNDER ONE OR A COMBINATION OF THE FOLLOWING: LODI RULES, CALIFORNIA SUSTAINABLE WINEGROWING ALLIANCE, LIVE CERTIFIED, SUSTAINABILITY IN PRACTICE**
100% WINE GRAPES FARMLAND ACRES ENROLLED WITH LEADING HARVEST
- 🌲 **TIMBER** **100%** CERTIFIED UNDER SUSTAINABLE FORESTRY INITIATIVE (SFI)

* Percentages represent total tillable land with the same crop type that falls within the certification’s scope.

** Includes asset in New Zealand.

TOTAL U.S. PORTFOLIO



Almond exports were down approximately 23% through December. Nevertheless, 2021 prices averaged roughly 20% above those experienced at the same time during the 2020 crop year.

Meanwhile, walnuts experienced an industry-wide decline in total production in 2021, which temporarily supported prices. However, logistical issues at ports and a lack of exports have combined to temper pricing. This decline comes on the heels of 2020's record walnut season.

Row crops

In fall 2021, much of the Midwest region experienced above-average precipitation. The majority of our managed acreage evaded meaningful loss, but yields trended downward nominally from 2020.

The Mississippi River Delta experienced typical storm and hurricane threats, none of which posed widespread concern. Harvest was completed on or ahead of schedule and the crop was above average.

Drought conditions cast a shadow on grower sentiment in the western U.S. Those farmers with access to abundant or multiple water sources will continue to have an advantage.

In the Midwest and South, favorable commodity pricing continues, which has buoyed grower optimism going into 2022.

All regions are facing challenges related to crop inputs for the 2022 season. Not only have prices soared for almost all inputs, but growers may also face product availability issues due to supply chain disruptions.

Timberland

In the Northwest states of Oregon and Washington stable domestic log demand and strengthening export markets in 2021 caused an upward trend in log prices. However, production and freight costs were higher than in the prior year, partially offsetting those higher log prices.

In the Southern U.S., contraction of domestic lumber markets in 2021 did not affect timber prices, which remained stable. Lumber mills continued to add capacity to the region, but a considerable over supply of timber is expected to keep log prices stable.

In the Northeast, hardwood lumber production increased to the highest level since 2007. Price movements were variable across key species, with black cherry significantly increasing year over year. However, cherry prices remain historically low.

SUSTAINABILITY IN ACTION

SOCIAL IMPACT AND COMMUNITY ENGAGEMENT

Collaborating with stakeholders at both the State level and local community

Oregon



For our Lewis & Clark Timberlands (LCT) team, stakeholder engagement ranges from shaping Oregon's timber-related environmental policy, to bolstering a popular salmon fishery program for high school students.

On the policy front, our team in 2020 joined with 13 environmental action groups and timber companies to launch a dialogue about long-debated aspects of private timberland management. Collaborating through a mediated Private Forest Accord working group, participants began negotiating in early 2021 and by October had struck a deal to update how 10 million acres of private forestland in the state would be managed going forward. Subsequent state legislation set forth expectations for handling everything from stream buffers to forest roads, to unstable slopes and compliance monitoring, and much more. Beyond being a signatory in the Accord, the Nuveen Natural Capital team continues to work with stakeholders to draft rules that meet the intent of the legislation while protecting the forest assets' value for investors.

Building on its enduring work with local schools, our team welcomed the chance to engage with students who were cultivating salmon eggs as part of the Warrenton High School Fisheries Program. The students, who were seeking a small donation for a backup power generator, invited the LCT team over for a tour of their operation. The meeting sparked an exciting new relationship, with LCT team members helping to envision and plan a charity auction fundraiser, making direct donations, and volunteering.

In May 2022, the students' fundraiser, held at the county fairgrounds, raised \$120,000 in cash donations plus \$50,000 of in-kind donations, far exceeding expectations. The fair's board even donated the sought-after generator.

FARM MANAGEMENT

Certifications and the supply chain

California, 100% of vineyards



Our winegrape crop managers invite respected certification organizations to review our lands and processes.

Third-party assessments play a significant role in the supply chain, serving to validate conformity with applicable laws, guidelines and standards.

One example of this sustainability-driven dynamic is the relationship between certified vineyards and Constellation Brands (CBI), a leading producer of wine and spirits. We have been doing business for over 20 years, and in 2021 CBI purchased over 20,000 tons of grapes from vineyards we manage throughout California.

“The ability to provide grapes from different appellations throughout California, with a small, focused team and strong vineyard oversight, makes Nuveen Natural Capital a preferred supplier for us. Achieving sustainable certification will keep consumers buying and enjoying our wines, and ensure a long future for our businesses.”

Scott Warren,
Grape Management and Commercial Vineyards.
Constellation Brands

BIODIVERSITY AND CHEMICALS APPLICATION

Sustainable Viticulture Summit 2021/22

Napa, California

40 attendees, 10% of California vineyard acreage



In January 2022, Nuveen Natural Capital held its first Sustainable Viticulture Summit meeting in California with the goal of training vineyard crop managers in state-of-the-art techniques and sustainable practices.

The event brought together 40 professionals from our crop managers, who are responsible for day-to-day operations on California vineyard assets, to learn about critical sustainable farming practices, including integrated pest management and enhancing soil health. Experts were invited to share industry-leading views regarding viticulture practices. The training helped to enhance the effectiveness of pesticide applications, which is regulated carefully by federal, state and county agencies.

The event succeeded in bolstering crop managers' stewardship mindset as it relates to ensuring sustainable vineyard assets. Given the crop management entities' reach with farms beyond Nuveen Natural Capital, the educational training influenced approximately 10% of the California vineyard acreage. Our viticulture office, which planned and ran the event, will run a second educational summit in 2023.

AGRICULTURAL CHEMICALS

Semi-autonomous robots using UV-light to control powdery mildew

Monterey County, California

2 vineyards covering 4,586 tillable acres



In California, we are trying out a novel technique to control powdery mildew in the vineyards. Powdery mildew, a fungal pathogen, affects crop types across the globe. Mildew infections may occur in vineyards as temperatures rise during spring and summer. Fungal bodies, as they grow, penetrate tissue on grape shoots and leaves, creating scars. Mildew infections developing

on grape berries can affect the integrity of grapes skins and reduce quality.

Powdery mildew is generally controlled through cultural practices and the application of fungicides. However, labor expenses associated with cultural efforts are significant, and mildew can develop resistance to fungicides. Fortunately, a relatively new mildew control technology promises to reduce labor inputs as well as the risk of resistance build-up.

This technology exploits the mildew's weak point. Like many other organisms, mildew has adapted to tolerate sunlight during daytime periods. At night however, ultraviolet (UV) light proves disruptive to mildew's biochemical defenses. Targeting this point of susceptibility, a small fleet of UV-light generating robots is deployed into vineyards in Monterey County. These robots carry arrays of UV lights that illuminate grapevine foliage as they travel over vineyard rows. This fleet is part of an ongoing trial to evaluate the efficacy of this promising technology on powdery mildew as well as potential labor savings.

At this stage of the trial the results appear positive, and deployment of this efficient alternative to fungicides on a broad scale seems feasible.

SOIL

Commercial-scale compost tea brewing and application

Central Coast California

5 vineyards covering 2,220 tillable acres



We're brewing something special on California's Central Coast: vermicompost tea. Vermicompost is a natural, microbially diverse and nutrient-rich soil amendment created through decomposition and earthworms' digestive processes, and grape pomace, the solid residue remaining after grapes are pressed to make wine, serves as a valuable substrate to produce it.

Once the decomposition is complete, we will sift the darkly colored vermicompost (sometimes called worm castings) into various grades based on aggregate size. After grading we will steep fine

aggregates in water within a commercial "brewer" for 24 hours to extract the beneficial components. The resulting "tea" will serve as a potent soil inoculant that can be efficiently applied to vineyard soils through existing drip irrigation systems.

As part of an ongoing trial, we will be producing and applying an average of 15 gallons of vermicompost tea per acre in select vineyards in Santa Barbara and San Luis Obispo Counties. The applications will enhance soil fertility, promote vine health, and add a new dimension to the circular farming strategy.

LOCAL COMMUNITY AND STAKEHOLDER ENGAGEMENT

King City High School Internships

King City, California

Contribution to the education of 4 students with disabilities per year



In spring 2022, four students in California took part in a new, six-week paid internship program that gave them real-life work experience on Monterey County vineyards managed by a Nuveen Natural Capital crop manager. This new internship is being conducted in conjunction with Nuveen Natural Capital's long-running Fruits of Employment initiative, which gives individuals with disabilities access to competitive employment across select properties on the west coast. These 18- to 21-year-olds from King City High School in California had completed high school academic requirements and were legally entitled to post-graduation employment support.

The internship was created to build a hiring pipeline, identify new talent, and support sustainability goals for a range of stakeholders. The interns were exposed to a variety of tasks: weeding, hanging drip hose, planting, general clean up, and prepping and painting irrigation pump stations and manifolds. Interns also received support from a job coach, a school employee paid to provide them on-the-job support as well as transportation.

At the end of the internship, all four students were viewed as successful by the crop manager. Based on an assessment of each intern's performance, the firm may extend offers of employment to the newly trained individuals.

ENERGY USE, AIR QUALITY AND CLIMATE CHANGE

Photovoltaic solar installations’ updates

California

Offsetting 78% energy use



In 2021, the horticulture team continued to advance its initiative to expand solar energy production within the California portfolio. We completed construction on the first five photovoltaic solar installations, with all projects now producing energy and generating cost offsets. Four previously approved projects are in various stages of completion and an additional five new horticulture properties have been selected for solar installation projects over the next year.

Across a typical 30-year system lifespan, these 14 solar projects are projected to generate a total of 421,696 MWh and to offset 78% of energy used by the property. This clean power would offset about 298,362 MT CO₂e gas emissions, and in everyday terms would represent about:

- 751 million miles driven
- 34 million gallons of gasoline
- 330 million pounds of coal

Nuveen Natural Capital continues to explore the possibility of installing solar facilities on all farms as part of a strategy to offset emissions and reduce energy costs.

SOIL

Orchard recycling to provide long-term benefits to soil and plant health

California

Across 290.7 acres



In fall 2021, Nuveen Natural Capital commenced a Whole Orchard Recycling (WOR) process at Mustang Ranch. The Ranch is in the middle of California’s Central Valley and had been planted to almonds for over 20 years.

Historically, when almond orchards reached the end of their productive lives, they either were burned in the field or transferred to a cogeneration facility for burning. However, with increased air quality concerns and a reduction in available cogeneration capacity, growers were increasingly left with few options for orchard removal. Fortunately, the almond industry has responded with innovation by developing the WOR concept.

Under the WOR process, aging almond trees are pushed over, ground into chips, and then reincorporated into the topsoil. In the case of Mustang, 31,000+ trees were pushed over and processed across the 290.7-acre ranch.

Over time the process has revealed some interesting benefits and is increasingly regarded as a key component of permanent crop redevelopment. In addition to offering emissions reductions compared with burning, WOR provides these long-term benefits:

1. Improved water holding capacity
2. Improved root health
3. Delayed release of macro and micronutrients
4. Increased soil health through addition of total soil organic material
5. Increased soil carbon

Whole Orchard Recycling offers positive economic and environmental benefits and will be explored and prioritized for future developments.

LOCAL COMMUNITY AND STAKEHOLDER ENGAGEMENT

Land donation and partnership with the Outside Creek Elementary School

Tulare County, California

100 students



In 2021, Nuveen Natural Capital agreed to donate 0.66 acres of land from the adjoining Sundial Kaweah walnut property to Outside Creek Elementary School, at the request of its principal. The land will allow the school to expand its outdoor recreational area and construct a new classroom building.

To support the school’s expansion efforts, during 2021 we committed \$40,000 of Nuveen Natural Capital’s CSR funds to provide the school with landscaping, recreational areas or playground equipment. Providing these resources represents socially responsible action that enhances the school’s ability to serve its community in the future. The Outside Creek Elementary School educates about 100 students, from kindergarten through 8th grade. The school, which enrolls 81% economically disadvantaged students, is located within a California-identified Disadvantaged Community (DAC).

BIODIVERSITY

Bee Friendly Farming program

*California
Covering over 15,800 acres*



As part of our ongoing commitment to advance sustainable farmland management practices, the horticulture team in California has begun the process to certify its operated portfolio under the Pollinator Partnership’s Bee Friendly Farming (BFF) program. BFF establishes guidelines and helps growers preserve and protect pollinator populations by incorporating diverse nutritional sources and integrated pest-management strategies. More than 15,800 acres were certified in 2021, representing over 55% of the operated horticulture portfolio. As part of its certification efforts, our team developed expansive cover crop plantings and permanent hedgerows, using native plant species, all of which expanded forage opportunities and habitat potential for pollinators and other wildlife throughout the growing season.

Beyond supporting native pollinators and biological diversity, these efforts can enhance economic results by improving pollination conditions, fostering soil health and reducing the need for chemical and fertilizer inputs. We have targeted an additional 9,200+ acres for BFF certification in 2022, which will expand coverage across the portfolio to nearly 88%. We anticipate achieving full certification of the existing portfolio by the end of 2023.

BIODIVERSITY

Installing owl boxes for rodent control

*California
1,157 owl boxes installed across 60,985 acres*



Owl box on farm

Across most of nature, an ecosystem void allows for pernicious pest populations to develop unchecked. Such is the case with vertebrate pests, namely rodents, in tree nut orchards. In the absence of predatory controls, vertebrate pressure continues to increase in tree nut crops, which creates operational inefficiencies, raises food safety concerns, and prompts declines in plant health.

Owl boxes represent one of the many integrated pest management practices that can be used to restore ecosystem balance at scale. Barn owls are native to California and are known predators to vertebrates such as squirrels, rodents and gophers. When owl boxes are installed in or near orchards and vineyards, barn owls gain ready shelter and a secure food supply, and tend to return to the box year over year and hatch their young. In a given year, two adults and their spawn – using just one box – can capture upwards of 3,000 rodents. Unlike traps or bait, these boxes become permanent fixtures of a ranch and cohabitation typically increases each year.

Committed to seizing these advantages further, this year the horticulture team has purchased 197 new owl boxes to install across the portfolio. These will join the 960 boxes previously installed in orchards and vineyards, which will bring the total number of owl boxes to 1,157.

SOIL

Regenerative farming trials

*Mississippi Delta
Covering over 1,500 acres*



Regenerative agriculture (commonly called regen ag) is garnering increased media attention for its potential role in

improving soil health, reducing fertilizer usage, sequestering carbon and delivering other assorted benefits. Industry watchers sometimes portray regen ag as a veritable panacea for agriculture’s soil health and environmental challenges. But the reality, as with many promising innovations in farming, is more nuanced.

Variations in soil characteristics, topography, crop mix and other elements from property to property (if not field to field) make it incredibly difficult, if not impossible, to develop a single regen ag strategy that can be scaled across significant acreage.

Nuveen Natural Capital has accepted this complex challenge by establishing regen ag pilot programs that aim to identify practices that are both effective and scalable within a particular region. Following similar program launches in the Midwest, we have commenced a new pilot in the Mississippi River Delta region on a 1,500-acre rice and grain farm. Working in concert with our tenant partner on the property, we will be trialing various winter-over crop options, erosion control and drainage tools, and reduced tillage options to determine their effects on soil health, moisture retention, fertilizer usage and productivity (yield).

This multi-year pilot will provide sufficient flexibility to adjust practices from one season to the next and allow us to identify the most impactful practices. Many of the practices that will be trialed on this property are relatively simple, so they could be quickly and cost-effectively adopted on other farms in the region. As the quantitative and qualitative results are gathered, we will then know which of these “baby steps” in trial practices could drive big strides in regen ag adaption across significant acreage in the regional portfolio.

LOCAL COMMUNITY AND STAKEHOLDER ENGAGEMENT

Delta Streets Academy donation
Greenwood, Mississippi
Contribution to the education of 60 students per year



In America’s Mississippi River Delta region, there often are limited quality educational opportunities for youth in under-resourced families. The Delta Streets Academy, in Greenwood, Mississippi, seeks to fill this void by providing at-risk young men in the region with access to high-quality education and support to launch students into productive careers and community roles.

Nuveen Natural Capital is helping the Academy in its vital mission by donating \$10,000 of the CSR fund’s budget per year for three years, which will contribute to the education of 60 students per year. This is a direct investment that provides the Academy with flexibility to steward our financial support as it deems best for maximum impact.

BIODIVERSITY

Conservation Easements on timberland properties
Oregon and Washington states
2,500 acres of forestland



Nuveen Natural Capital seeks opportunities to monetize ecosystem services and develop “working forest” conservation easements. In the U.S., we manage timberland subject to easement restrictions and execute conservation easements with both environmental NGOs and public agencies.

Conservation easements consist of restrictions on land development rights to protect conservation values across an area of timberland. Depending on the conservation objective, easements also may restrict certain forest management activities in selected areas.

In 2021, Nuveen Natural Capital and Columbia Land Trust announced the conservation of more than 2,500 acres of forestland along Highway 101 between the towns of Astoria and Seaside in Clatsop County, Oregon. The project will protect the forest from future development, ensure tribal and public access, and preserve water quality through Columbia Land Trust’s purchase of a conservation easement. We will continue to own and manage the property for forestry, while the new easement ensures the land will never be subdivided or developed.

Protecting these coastal Oregon forests is critical, because in addition to providing beloved scenery and recreational opportunities, they store large quantities of carbon and provide fresh water for coastal communities. The landscape will continue to provide jobs and wood through forestry, and the easement will enlarge protected riparian areas around streams to benefit salmon populations and enrich habitat for the region’s elk herds by preserving the open areas elk rely on for forage.

Portfolio in focus

Asia Pacific

REGIONAL OVERVIEW

Seasonal conditions in Australia were favorable in 2021 with above-average rainfall across key agricultural regions. Along with one of the largest ever winter crops produced, high rainfall during the warmer months resulted in one of the largest summer crop plantings on record and has helped fill the soil moisture profile for the coming winter crop. The key irrigation water storages in the Murray Darling Basin which supply managed assets have increased from 17% in February 2020 to near full capacity in early 2022.

Australian agriculture benefited from decades of productivity growth as the value of production reached a record \$81 billion in 2021-22.

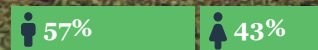
Australia's agricultural trade during 2021 was largely unhindered by the COVID-19 pandemic despite state border closures, freight and logistics disruptions, and labor access constraints. Soft commodity prices continue to be supported by tight global balance sheets and production concerns among some of Australia's key export competitors.

As we write this report, grain, oilseed and cotton prices are up to 50% higher year on year and at or near historical highs. This will help mitigate high fertilizer and fuel input costs exacerbated by the war in Ukraine, which has heightened ocean freight impacts and demand volatility. Overall, the outlook for Australian agriculture in 2022 is again favorable with expectations of both historically high commodity prices and above-average rainfall.

THIRD-PARTY PROGRAMS AND CERTIFICATIONS*



OFFICE GENDER DISTRIBUTION IN ASIA PACIFIC:



 ROW CROPS	72% IRRIGATED COTTON CERTIFIED UNDER BPM COTTON AND/OR BETTER COTTON INITIATIVE**
 SUGARCANE	80% CERTIFIED UNDER SMARTCANE***
 WINE GRAPES	100% CERTIFIED UNDER NZ SUSTAINABLE WINEGROWING
 HORTICULTURE	100% CERTIFIED UNDER FRESHCARE****

* Percentages represent total tillable land with the same crop type that falls within the certification's scope.
 ** In 2020, 23% of the world's cotton production was certified BCI, producing around 6.2 million tons
 *** 38% of the Australian's sugar production is certified Smartcane.
 **** Australia's only farm with horticulture crops is under development, and thus not eligible for third-party sustainability certification.

TOTAL ASIA PACIFIC PORTFOLIO



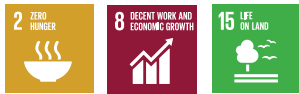
SUSTAINABILITY IN ACTION

FARM MANAGEMENT

Huddersfield farm

Australia

Reduction of 637 MT CO₂e emissions per year



Huddersfield solar installation

Nuveen Natural Capital partners with a local crop manager to operate Huddersfield, an almond orchard property in Southern New South Wales, Australia

We are undertaking several initiatives to improve the environmental position of the asset, reduce emissions, increase biodiversity and enhance the local community:

- **Solar project on irrigation bores.** We have converted three irrigation wells from diesel power to electrical power by using solar systems. This project is reducing carbon emissions by decreasing diesel consumption and reliance on coal-fired electricity. Each year, the project is estimated to cut diesel consumption by 106,000 liters while avoiding the use of 424,000 kwh of grid energy – resulting in a reduction of 637 MT CO₂e emissions per year.
- **Regenerative project on a sand-hill.** In August 2021, we planted native trees and shrubs on a 28-acre area of non-arable land. The plantings involved a mix of 800 native species seedlings. To encourage greater biodiversity within the almond orchard, the manager planted a mixture of grasses and legume as cover crops between tree blocks. These planting projects have the benefit of attracting native bees and desirable insects which helps with the pollination of the orchard.

- **Disability work-placement program.** The crop manager partnered with a local agency to make available a voluntary work placement for students with disabilities, who attended work for a full day each Tuesday. This program aims to provide skills, training and an introduction to the work environment to help transition these students to the next phase of their lives.
- **Work health and safety audits.** Since 2019 the farm manager has undergone annual health and safety audits. Post-audit improvements include additional safe operating procedures, first aid training for all staff, improvement of a risk register, and implementation of a site traffic management plan.
- **Third-party certification.** Nuveen Natural Capital partnered with a global inspection and certification company to achieve certification of the Freshcare Food Safety Quality Standard (FSQ) 4.2, in line with the Global Food Safety Initiative (GSFI). This certification will ensure that we comply with World Best Practice in Food Safety and Quality.

ENERGY, AIR QUALITY AND CLIMATE CHANGE

Solar Project at Yeovil Farm

Australia

Potentially avoid 114 MT CO₂e emissions per year



Yeovil partners with a local crop manager to operate an irrigated cotton and grain (row crop) property near the regional city Tamworth in New South Wales. The local managers have recognized the environmental and economic benefits that solar photovoltaic (PV) arrays can bring to irrigation farms such as this one, by powering electric bore pumps in certain locations.

When considering the suitability of a PV system for Yeovil, security of pumping capability was a critical factor. In essence, when water demand is at its peak, the team must be able to maximize water extraction, and not be restricted only to pumping during daylight hours.

Guided by an external consultant, we decided to install a 100kW PV solar array at the main ground-well, which has the highest water extraction capacity. This approach is both economically viable and brings environmental benefits, including avoiding 114 MT CO₂e emissions and 137,000 kWh of grid energy use per year. Additionally, our team adjusted its operational practice to use the pump as much as possible during daylight hours.

FARM MANAGEMENT

Social impact and community engagement Australia

\$100,000 AUD in donations to local regional and rural communities' projects



Nuveen Natural Capital in Australia received a cash-boost of \$100,000 AUD in 2021 as part of a government stimulus package to address COVID-19 impacts. Since the pandemic has not impacted our business as much as others, our team decided to donate the stimulus money to local regional and rural community projects.

Our donation was aimed at initiatives that address vital community themes, such as education, health, inclusion, diversity, environmental impact and risk management. One unique initiative we supported was The Blue Tree Project, which seeks to spark conversations and encourage people to speak up when battling mental health concerns. By coloring trees with blue (lead-free) paint and spreading the message that “it’s okay to not be okay”, the project can help break down the stigma that’s still often associated with mental health problems. To engage with communities in regional and rural locations, Blue Tree hosts a range of events, such as painting days, sporting activities and music festivals. As a business in Australia, we identified one tree to paint blue on our managed properties in each investment entity.

“ We have had several years of drought, and now COVID-19 – all of which impact people’s mental health. We want to assure our staff and the general community that we are supportive – that even though we have blue days, there will always be someone to talk to, someone who will listen.”

Rob Ditchfield

Nuveen Natural Capital General Manager

Portfolio in focus

South America

REGIONAL OVERVIEW

In Brazil, as the growing season progressed, dryness continued in the south of the country due to La Niña, while rain and lack of sunshine prevailed in Mato Grosso state and northeastern states. These two weather patterns lowered soybean production estimates as well as product available for export. As a result, initial Brazilian soybean crop estimates of 144 million tons have been lowered to 122 million tons. Looking ahead to the next season, the focus will be on producer profitability, which will be impacted negatively by an estimated annual input cost increase of 31% for soybeans (33% for corn).

By the end of 2021, Brazil’s sugarcane harvest was nearly completed. Adverse weather (drought and frost) in the Center-South region reduced production estimates from 585 million tons to 524 million tons. While there are estimates of a global deficit of 3 to 5 million tons of sugar for 2021-2022, the nation’s crop is expected to recover in 2022-2023.

In Chile, despite benign weather in 2021, early spring temperatures were below the average, which delayed the normal phenological states of some crops. For example, cherry harvest took place one week later than usual, on average, and table grape harvest is expected to follow suit.

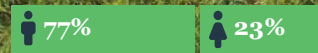
Despite these factors, the 2021 market conditions for main crops in the portfolio were generally favorable, although logistics remained challenging in international markets, with shipping rates more than twice those of 2020. We expect this cost surge to impact in the net return to grower of all crops in the portfolio.





Hazelnuts were a bright spot for the year. Chilean hazelnut acreage increased from 74,000 acres in 2020 to about 86,000 acres in 2021. Chile represented 4% of global production in the 2020-21 season, with approximately 20,200 tons. According to projections, Chile will produce more than 80,000 tons by 2025, representing 8% to 10% of global production.

THIRD-PARTY PROGRAMS AND CERTIFICATIONS*



OFFICE GENDER DISTRIBUTION IN SOUTH AMERICA:

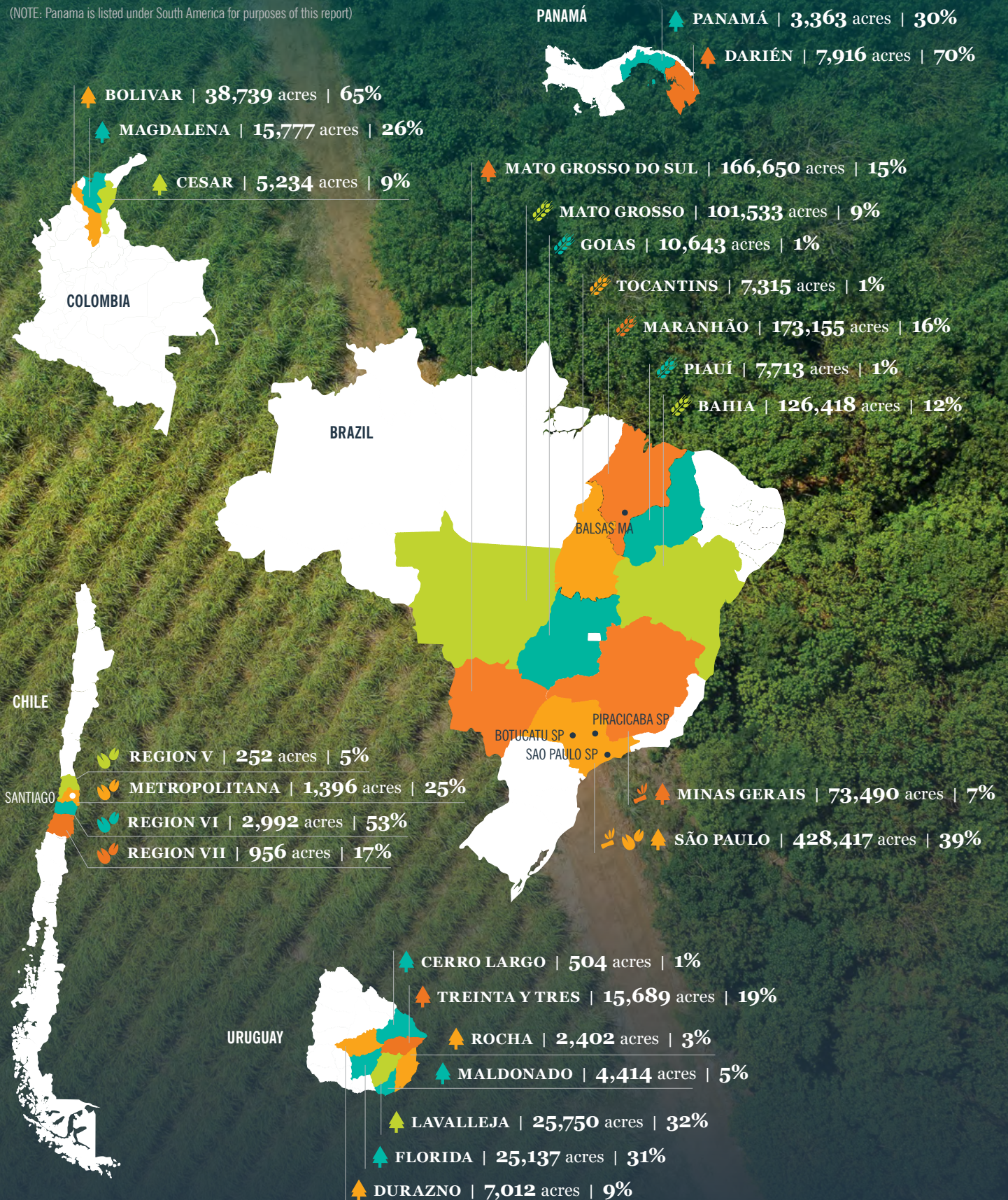


 ROW CROPS	80% (COTTON) CERTIFIED UNDER BETTER COTTON INITIATIVE**
	57% (SOYBEANS) CERTIFIED UNDER ROUNDTABLE ON RESPONSIBLE SOY***
 SUGARCANE	82% CERTIFIED UNDER BONSUCRO****
	88% CERTIFIED UNDER RENOVABIO
	8% CERTIFIED UNDER EPA
 HORTICULTURE	100% CITRUS CERTIFIED UNDER RAIN FOREST ALLIANCE
	88% AVOCADOS CERTIFIED UNDER GLOBALG.A.P.
 TIMBER	41% CERTIFIED UNDER FOREST STEWARDSHIP COUNCIL® (FSC®) IN BRAZIL (FSC-C146739 AND FSC-C122762)
	83% CERTIFIED UNDER FSC® IN COLOMBIA (FSC-C008896)
	97% CERTIFIED UNDER FSC® IN URUGUAY (FSC-C014182)
	98% CERTIFIED UNDER FSC® IN PANAMA (FSC-A000531)

* Percentages represent total tillable land with the same crop type that falls within the certification’s scope.
 ** In 2019, 22% of the world’s cotton production is certified BCI, around 5.6 million tons.
 *** In 2019, just over 1% of the world’s soy is certified RTRS, around 3.99m tons.
 **** In 2021, 5.8% of the world’s sugarcane land is certified Bonsucro, around 72 million tons.

TOTAL SOUTH AMERICA PORTFOLIO

(NOTE: Panama is listed under South America for purposes of this report)



Timberland

In Mato Grosso do Sul, Brazil, 2021 was another year of dry weather compared to historical precipitation levels, continuing a pattern that has affected the region since 2019. Global pulp markets continued to be supported by strong consumer demand for tissue paper products. Hardwood markets, which remained resilient throughout the pandemic, benefited from loosened pandemic-related restrictions, improved shipments and strong demand in various end-use industries such as packaging and paper products. Brazilian pine sawlog prices trended upward in 2021, reflecting the growing strength of industrial solid wood markets.

Uruguay experienced an extended dry season in early 2021, causing some foliage damage to trees and delaying our planting work. The building of a new mill in the region, expected to be completed in early 2023, will substantially increase demand for pulpwood in the region.

Meanwhile, in Panama, thinning of teak plantations continued in 2021 with better-than-expected export prices. Major export markets include India and Vietnam. Despite shipping container shortages, production was maintained at planned levels and operating costs were stable.

SUSTAINABILITY IN ACTION

FARM MANAGEMENT AND SOIL

Crop Livestock Integration System

*Mato Grosso state, Brazil
Covering 3,274 acres*



Since 2020, SLC Agrícola, our largest grain-producing tenant in Brazil, has been applying the innovative Crop-Livestock Integration (CLI) system in Mato Grosso state. The system involves integrating agricultural and livestock activities, so that they use the same land area at different times in rotation or succession, which results in more efficient employment of natural resources and lower environmental impact. The CLI approach contributes significantly to improving soil quality, increasing carbon sequestration, and diversifying income alternatives on properties.

The operation currently encompasses 1,300 animals being raised in a 3,274-acre land area. Of this area, 988 acres are fixed established pasture with a capacity of 10 animals per hectare. This represents a significant improvement of efficiency where the national average is 1.7/acre. On the remaining 2,286 acres, animals are raised using an integrated approach that includes crop rotation between soy and corn during parts of the year.

This integration starts when soybeans are planted at the beginning of the rainy season. After the soybean harvest is complete, corn is planted. Thirty days later, as the corn is growing, teams sow brachiaria, a plant that serves as vital animal forage. After the corn harvest, between June and July, the animals are released to graze on the corn straw and the developed brachiaria. This part of the integration cycle lasts about 120 days, until it's time for the next soybean planting.

Additionally, a 2019 study by Embrapa Cerrados, a Brazilian agricultural research agency, noted an increase in carbon sequestration provided by soil linked to CLI implementation. The study also points to a reduction in nitrous oxide (N₂O) emissions to just one-tenth of what is usually emitted in a conventional planting system using crop rotation. A significant greenhouse gas, N₂O has 300 times greater potential to retain heat than carbon and can remain in the atmosphere for up to 100 years.

All of these results indicate that the CLI system represents an efficient and sustainable agricultural practice. By 2022, SLC plans to nearly triple the number of animals in the farm's CLI system. At the same time, Nuveen Natural Capital will partner with third-party specialists Imaflora and ESALQ to measure the soil quality across various land uses on the farm to gather data to validate the positive impacts of the CLI approach.

AGRICULTURAL CHEMICALS

Biological Control of the Sugarcane Stalk Borer

*Brazil
Sugarcane farms in Brazil, covering over 429,938 acres*



The sugarcane stalk borer is the primary biological threat to sugarcane fields in Brazil. In early life stages, this caterpillar feeds on the plant's leaves and enters the softer parts of the stalk, boring the cane and opening tunnels. These tunnels serve as an entrance for other microorganisms (bacteria, fungi, etc.) that cause rot (red rot), affecting the quality of sugar, triggering alcoholic fermentation and causing agricultural and industrial losses.

Biological Control, a technique for reducing pest populations by using their natural enemies, offers one of the best methods to manage the sugarcane stalk borer. In this case, the helpful biological agent is a certain type of wasp that attacks the borer in its caterpillar stage. The wasp feeds on the borer’s fat reserves, which causes the caterpillar to weaken and die.

Currently, almost all our tenants who cultivate sugarcane use wasps to manage stalk borers on their plantations, whether the wasps come from their own production or specific laboratories. This method is practiced in nearly 90% of 10.8 million acres of sugarcane cultivation in São Paulo state. Looking nationally and across all crops, producers that adopt biological control-integrated practices represent 20% of agricultural production today, and adoption rises each year.

BIODIVERSITY

Ecological Restoration through Muvuca

*São Paulo, Brazil
Covering over 33 acres*



Preparing seed and sand mix

More than 3 billion people globally are dealing with the consequences of land degradation and climate change. Damaged forests, farms, pastures, and mangroves carry less water and food, decreasing biodiversity and making it harder for farmers to earn a living. In 2015, Brazil pledged to address these challenges at the UN Climate Change Conference (COP 21). Brazil committed to revitalizing 29 million acres of forests by 2030. But, what technologies could enable rapid restoration?

One promising restoration method is the Muvuca de Sementes (mix of seeds and sand), a methodology Nuveen Natural Capital has been applying to regenerate native vegetation covering 33 acres of a farm in the State of São Paulo, Brazil (Atlantic Forest biome). Muvuca involves mixing seeds of various species to achieve specific goals. A mixture of sand and of 58 species of plants replicates the composition of natural forest, allowing for a robust restoration. The technique echoes that of the ancestral peoples of Central

America who planted a mix of seeds directly into the ground. ISA (Instituto Socioambiental) provides technical support and a local network of seed collectors small farmers, local communities, researchers, and indigenous people provide the seeds.

We plan to assess the effectiveness of this sowing methodology and, if results are favorable, expand it to other farms in the portfolio, including those in other regions and biomes.

WATER

Efficient water usage

*Chile
Covering over 1,423 acres*



Across all managed farms in Chile, the Nuveen Natural Capital team implements best practices and technology for crop irrigation, a practice fundamental to the productivity of such crops as avocado. Hydrometers and precision software, combined with insights from specialized agronomic consultants, ensure that the Chilean operations are exemplary in their water-use practices, respecting the water requirements of each crop, considering climate factors, and meeting government standards for use of ground and surface water resources. One sign of these practices’ effectiveness is the certification – for three consecutive years – of all irrigated avocado areas in Chile have been certified by the Spring standard (Sustainable Program for Irrigation and Groundwater), which is granted along with the GLOBALG.A.P. seal.

The avocado orchards also help to conserve soil moisture, serving as a positive ecosystem for native animals and an ecological corridor between areas of native vegetation. By irrigating orchards located on hillsides, we also help to recover native vegetation in streams, which offers shelter to foxes, birds and other animals.

At La Rinconada Farm, for example, 1,423 acres of productive area are irrigated using best practices. The farm areas intended for conservation of native vegetation extend beyond what the law requires, so ecological corridors can be formed and maintained in a sustainable way. About 25% of the property (642 acres) is dedicated to conservation, of which 198 acres of native vegetation are positively impacted.

Portfolio in focus

Europe

REGIONAL OVERVIEW

In Poland last year, spring weather was cooler than usual, which resulted in slower crop growth than in previous years. Potatoes and maize were planted very late in 2021, with some tenants still planting in early June. In northern Poland, rainfall was sufficient for most crops. Southern Poland, however, experienced some drought periods in June and July. In general, crops weathered the season in good condition: yields for maize were surprisingly high but yields of cereals and oilseed crops were below average.

In Romania, a mild winter combined with above-average rainfall across most parts of the country delivered greater moisture to the soil profile for the 2021 crop. Thanks to this favorable weather, tenants were able to establish autumn crops in the optimal period. The crops of wheat, barley, and oilseed rape looked strong going into autumn. Farmers are confident that they will get good yields and a good price at harvest 2022. However, a key concern for farmers in Romania and across Europe is the price of fertilizers, which may impact farmer profitability.

Timberland



Our managed assets in Poland and Romania are primarily focused on supplying biomass for manufacturing wood pellets for local markets. The continued rise of crude oil prices is expected to boost heating oil prices further and extend wood pellets' competitive advantage over fossil fuel in residential heating markets.

THIRD-PARTY PROGRAMS AND CERTIFICATIONS*



● OFFICE GENDER DISTRIBUTION IN EUROPE:



 ROW CROPS	44% CERTIFIED IN POLAND UNDER GLOBALG.A.P., REDCERT OR TÜV RHEINLAND
	8% CERTIFIED IN ROMANIA UNDER EU BIOS
 TIMBER	71% CERTIFIED IN POLAND UNDER PROGRAMME FOR THE ENDORSEMENT OF FOREST CERTIFICATION (PEFC)

* Percentages represent total tillable land with the same crop type that falls within the certification's scope.

TOTAL EUROPE PORTFOLIO

EUROPE



LUBUSKIE | 12,934 acres | 11%

ZACHODNIOPOMORSKIE | 30,901 acres | 26%

POMORSKIE | 26,269 acres | 22%

WARMINSKO-MAZURSKIE | 38,876 acres | 33%



POLAND

OPOLSKIE | 3,116 acres | 3%

DOLNOSLASKIE | 5,203 acres | 4%

ARAD | 12,486 acres | 16%

TIMIS | 3,968 acres | 5%

MEHEDINTI | 6,874 acres | 9%



ROMANIA

BUZĂU | 1,426 acres | 2%

VRANCEA | 1,490 acres | 2%

BRAILA | 7,729 acres | 10%

GALATI | 4,414 acres | 6%

TULCEA | 3,891 acres | 5%

CONSTANTA | 21,090 acres | 27%

TELEORMAN | 1,888 acres | 2%

DOLJ | 14,078 acres | 18%

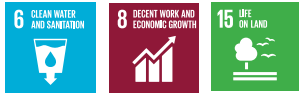
SUSTAINABILITY IN ACTION

FARMLAND MANAGEMENT

Fostering third-party sustainability certification

Poland and Romania

Covering over 48,900 acres



In Poland, Nuveen Natural Capital continues to roll out GLOBALG.A.P. certification, with about 26,800 acres certified in 2021 after having experienced pandemic-related process delays. As a result, by the end of 2021, the total GLOBALG.A.P. certification covered about 42,400 acres in Poland. In addition, one Polish 1,990-acre farm was certified organic, after already receiving its GLOBALG.A.P. certificate. Two other tenants, representing more than 1,970 acres, hold REDcert-EU certificates and intend to become GLOBALG.A.P. - certified in coming years too. GLOBALG.A.P. will be required on all properties in Poland, with new tenants having 12 months to obtain the certification.

In Romania, the GLOBALG.A.P. certificate is still uncommon. The primary reason is that there are only a few local consultants or auditors in the country who can support the certification process. Those few farms that do have GLOBALG.A.P. often must pay relatively high costs to engage foreign consultants, hence the certification is currently only viable for the vegetable and fruit sector.

Despite these challenges, Nuveen Natural Capital is seeking ways to encourage GLOBALG.A.P. certification in Romania and plans to roll out the certification process across 7,400 acres of our portfolio in 2023.

Importantly, the organic certifications have been achieved by two properties, covering about 4,500 acres (6% of the Romanian Portfolio). It is expected that a further 3,200 acres will be certified by 2024.

ENERGY, AIR QUALITY AND CLIMATE CHANGE

Embracing renewable energy: wind and solar

Poland and Romania

PV installations estimated to cover 8,000 lower-quality acres in Europe



In both Poland and Romania, Nuveen Natural Capital has seen increased third-party interest in advancing renewable energy projects (photovoltaic and wind) on portfolio farms.

From 2019 to 2021, we signed approximately 100 contracts in Poland, where lower-quality land would be dedicated to photovoltaic and windfarm infrastructure to promote the use of clean energy and generate an additional income source. Due to the nature of renewable energy (RE) projects and the need to acquire various permits and licenses (including environmental, construction and connection permits/licenses) some 20% of the contracts were terminated (mainly due to unfavorable grid connection conditions) and the rest of the RE projects are in the review and approval process in Poland. It is expected that the first photovoltaic on-ground installations may be in place during 2022. At the same time, on selected farms in Poland, we continue to install solar panels to partially replace traditional energy sources, with one installation completed in 2021 and three more in early 2022.

In Romania, we have received investor approval to increase the renewable energy projects from 2,000 to 5,500 acres. The first renewable energy contracts, covering 1,000 acres, were signed in 2021 and we plan to expand to an additional 2,600 acres in 2022.

BIODIVERSITY

Flowering crops create pollinator habitat

Poland

More than 6% of the Polish portfolio, with 250 beehives placed on properties



Beehives near crops in Poland

In landscapes dominated by cropland, insects often lack adequate habitat for food and nesting. One way to mitigate this impact is to plant flower strips on areas of the farms that otherwise would not be cultivated due to lower soil quality or awkward field shapes. Flower strips sown adjacent to crops help to increase food availability for pollinating insects, and thus increase pollination. Such flower strips are particularly vital following major crops' late-spring flowering when bees need an alternative habitat to thrive.

In spring 2021, Nuveen Natural Capital collaborated with local beekeepers' associations in Poland to put their hives in the vicinity of oilseed rape fields and other flowering crops. More than 6% of the Polish farmland portfolio (6,207 acres) were in the pilot's scope, with 250 beehives placed on properties.

Environmental and social benefits flowed to participants and beyond. Beekeepers gained access to large areas of bee forage in one place, which maximized honey production. Tenants had the potential to increase crop quality and yield of crops due to proper pollination. More broadly, the increased number of pollinators on the farms generated a positive effect on biodiversity, because bees pollinate other plant species in the surrounding area. Additionally, at our request, beekeepers agreed to set aside a portion of the produced honey to a local institution that runs six orphanages in the city of Gdańsk.

We hope to expand this initiative. Our managers are meeting with local beekeepers associations to promote the project and prepare the beehive location plans for 2022 and beyond.

WATER

Priming the pump for efficient water use

Romania

Covering over 5,105 acres



In Romania, Nuveen Natural Capital is advancing various projects in Braila and Constanta Counties to upgrade the irrigation pumping stations with the capacity to irrigate about 5,105 acres of portfolio farms in the region.

The projects in Braila are planned for two communes (small communities), Salcia Tudor and Dudesti, by the Salcia Tudor and Dudesti Organisations of Water Users for Irrigation (in Romanian: OUAI). In total, Nuveen Natural Capital intends to participate in eight irrigation associations. In Constanta, in Vulturuc commune, two OUAIs are being formed with the goal of irrigating 808 acres of land managed by Nuveen Natural Capital.

Our local team may support an association for a range of initiatives, such as: contracting with an irrigation project specialist to organize the project; submitting the project plan to the EU to request funding; and monitoring progress against the project plan. Once irrigation is initiated, the pumping system can collect water from canals and send it through underground pipes to hydrants. At that point, meters will be used to gauge soil moisture deficits to optimize water usage. Eventually, the planned irrigation installation will use water from the river. The water is pumped from the rivers into the main channels controlled by the state agency. The irrigation association will request the amount of water to be pumped into the secondary channel. Depending on river's water level, the state agency will decide whether to release water for irrigation purposes.

Conclusion

Nuveen Natural Capital achieved several milestones in 2021.

These included:

- Articulating our sustainability strategy around Nature, Climate, People. This approach underscores the value we place on broader natural capital – including soil health, water and biodiversity – to provide sustenance to a growing population while contributing to climate solutions. This holistic triumvirate of objectives means that we avoid unintended negative consequences that may result from the single-minded pursuit of one strategy.
- Piloting natural capital balance sheets to inventory, measure and value the broader natural capital on our managed properties, including the ecosystem services in place.
- Launching our ESG Framework, with a first cut of farmland data collection and indicators.
- Announcing several NGO partnerships, and including external stakeholders' contributions to this report.
- Making a step-change in transparency as manifested in our recent innovations.
- Pursuing a range of Nature, Climate, People sustainability initiatives on the ground in each of the regions, tailored to the operational realities of their diverse geographies.
- Sustaining our commitment to certification and third-party programs across timberland and farmland.
- Publishing this inaugural Nuveen Natural Capital sustainability report, which combines timberland and farmland for the first time.



Looking ahead

The next few years will be exciting for Nuveen Natural Capital and its sustainability strategy. We hope to further expand our pilot of natural capital balance sheets, with the ultimate goal of mapping and monitoring natural capital improvements. Our team will be refining our ESG Framework and broadening the scope of our data capture to include timberland and additional farmland properties. We will also be upgrading our greenhouse gas emissions accounting to reflect renewed and improved metrics.

These activities will be complemented by the ongoing innovations and implementation of projects on the ground, often in partnership with external NGOs or supply chain partners.

Nuveen Natural Capital will pursue these goals with a spirit of collaboration, humility and pragmatism, as we strive to continuously improve the long-term stewardship of our investments in support of Nature, Climate and People.

For more information, please visit nuveen.com.

Endnotes

- 1 World Resources Institute. Creating A Sustainable Food Future: Final Report, July 2019
- 2 Costanza, et al, Changes in the Global Value of Ecosystem Services 2014
- 3 These include Natural Capital Balance Sheet and Natural Capital Income Statement which are designed to be aligned to Natural Capital Protocol and the British Standards Institution's Standard for Natural Capital Accounting for Organizations (BS18632:2021).
- 4 BS 8632 Natural capital accounting for organizations | BSI (bsigroup.com)
- 5 Ecosystem Accounting | System of Environmental Economic Accounting. <https://seea.un.org/ecosystem-accounting>
- 6 The TNFD framework landing page – TNFD The Executive Summary makes explicit reference to the location of business assets and their interface with nature.
- 7 Moore, M. A., et al (2020) 'Social Discount Rates for Seventeen Latin American Countries: Theory and Parameter Estimation', Public Finance Review, 48(1), pp. 43–71. doi: 10.1177/1091142119890369.
- 8 Strassburg B., et al (2016) The role of natural regeneration to ecosystem services provision and habitat availability: a case study in the Brazilian Atlantic Forest.
- 9 Simioni, et al (2016). Environmental valuation of an artificial lake in Brazil: an application of the contingent valuation method. Revista Brasileira de Ciências Ambientais (Online). 121-132.
- 10 Adams, et al (2007) The use of contingent valuation for evaluating protected areas in the developing world: economic valuation of Morro do Diabo State Park. Atlantic Rainforest, São Paulo State. Ecological Economics 66: 359-370)
- 11 World Resources Institute. Creating A Sustainable Food Future: Final Report July 2019
- 12 Research by The Nature Conservancy and 15 other institutions, published in the Proceedings of the National Academy of Sciences. Available here: <https://www.pnas.org/doi/pdf/10.1073/pnas.1710465114>
- 13 World Resources Institute. July 2019

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Nuveen provides investment advisory solutions through its investment specialists.

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OPINION PIECE: PLEASE SEE IMPORTANT DISCLOSURES IN THE ENDNOTES.