nuveen
NATURAL CAPITAL

Natural Capital: Linking climate, biodiversity and returns?

April 2025

Marketing communication

Important information on risk

As an asset class, agricultural investments are less developed, more illiquid, and less transparent compared to traditional asset classes. Agricultural investments will be subject to risks generally associated with the ownership of real estate-related assets, including changes in economic conditions, environmental risks, the cost of and ability to obtain insurance, and risks related to leasing of properties.

As an asset class, timberland investments are less developed, more illiquid, and less transparent compared to traditional asset classes. Timberland investments will be subject to risks generally associated with the ownership of real estate-related assets, including changes in economic conditions, environmental risks, and the cost of and ability to obtain insurance. Market forecasts are subject to uncertainty and may change based on varying market condition, political, and economic developments.

Market forecasts are subject to uncertainty and may change based on varying market condition, political, and economic developments.

Responsible investing incorporates Environmental Social Governance (ESG) factors that may affect exposure to issuers, sectors, industries, limiting the type and number of investment opportunities available, which could result in excluding investments that perform well.

Past performance is no guarantee of future results.

Securities offered through Nuveen Securities, LLC, Member FINRA and SIPC.

Nuveen provides investment solutions through its investment specialists. Nuveen Natural Capital is an investment specialist of Nuveen LLC.

Natural Capital: Linking climate, biodiversity and returns? Polling questions

Question 1

1. How much of global economic output is dependent on natural capital? Is it:

a. More than 300 billion
b. Or more than 50 trillion

Question 2

2. How much of the worlds emissions from fossil fuels do forests absorb every year? Is it:

a. 15%
b. 30%

Question 3

3. What is the current estimate of biodiversity conservation funding needed by 2030…or put a different way, what is the finance gap between current financial flows and future needs to restore and maintain biodiversity? Is it:

a. 940 billion
b. Or 2 trillion

Natural Capital: Linking climate, biodiversity and returns? Polling questions

Question 1

1. How much of global economic output is dependent on natural capital? Is it:

a. More than 300 billion
b. Or more than 50 trillion

Answer: *An estimated $58 trillion of global GDP is moderately or highly dependent on nature, according to PwC analysis released in April 2023. This is equivalent to 55% of global GDP.*
Source: PWC publication- Managing nature risks: From understanding to action, 4th April 2023.

Question 2

2. How much of the worlds emissions from fossil fuels do forests absorb every year? Is it:

a. 15%
b. 30%

Answer*:* Forests are estimated to absorb up to 1/3 of emissions from burning of fossil fuels…they also contain 80 percent of amphibian species, 75 percent of bird species, and 68 percent of the world's mammal species.
Source: Re Soil Foundation, July 2024

Question 3

3. What is the current estimate of biodiversity conservation funding needed by 2030…or put a different way, what is the finance gap between current financial flows and future needs to restore and maintain biodiversity? Is it:

a. 940 billion
b. Or 2 trillion

Answer*: The biodiversity finance gap between current and future needs has widened to $942 billion, from $830 billion at our last assessment.*
Current biodiversity financial flows amount to $208 billion per year, up from $166 billion in 2021. The public sector contributes 83% of this finance ($173 billion). The private sector provides $35 billion. Over $1.15 trillion per year is needed by 2030 to restore and maintain biodiversity,
Source: BloombergNEF, 22nd October 2024

Nuveen Natural Capital

We are a **recognized leader** in natural capital.

Nuveen is the **#1 farmland manager** in the world.[4]

#1 in farmland assets[4]

Top 10 in timberland[4]

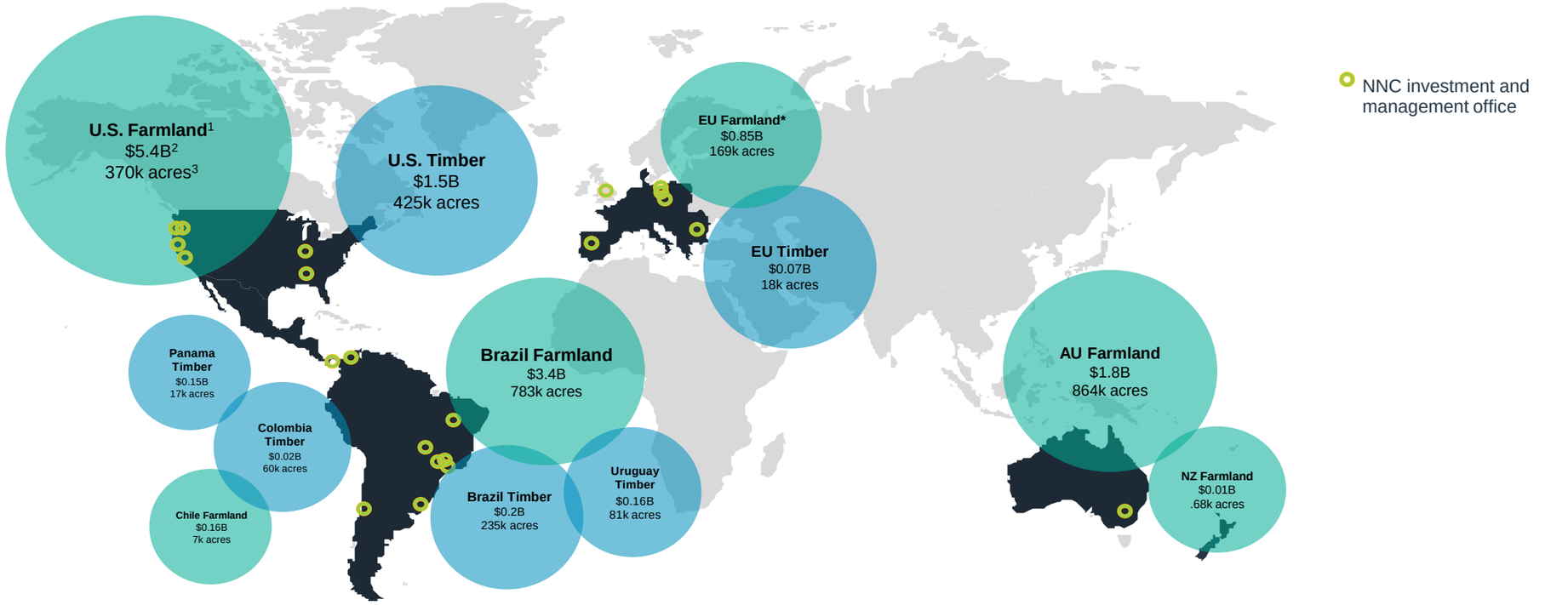
$13.7B AUM[2]

175+ employees

26 local offices

600+ properties

Investing in natural capital since 1986



Office Locations: N America: Farmland - Champaign, IL; Chicago, IL; Memphis, TN; Fresno, CA; Napa, CA; Charlotte, NC (shared farmland/timberland office); Mississippi; Florida; Idaho. Timberland - Portland, OR; Gearhart, OR; Charlotte, NC. Central & S. America: Santiago, Chile. Timberland - Panama City, Panama; Barranquilla, Colombia; Montevideo, Uruguay. EMEA: Farmland - London, England; Warsaw, Poland; Gdansk, Poland; Bucharest, Romania; Madrid, Spain; Zurich, CH. Timberland – Kwidzyn, Poland. APAC: Farmland – Sydney, NSW, Australia; Wagga Wagga, NSW, Australia; Perth, WA.
1 Combined permanent and row crops. 2 AUM is reflective of Fair Market Value for farmland and for timberland as of 31 Dec 2024. Sums may vary slightly due to rounding. 3 Gross acres shown. 4 Pensions & Investments, 07 Oct 2024. Rankings based on total worldwide farmland and timberland assets under management as of 30 Jun 2024 as reported by each responding asset manager; updated annually. 5 46 NNC employees sit within the Brazil Radar JV and are not included in these figures.

What I plan to cover today

1. What is natural capital
2. The investment case for natural capital
3. The portfolio benefits of natural capital
4. Case studies

Why does natural capital matter?

Ecosystem services drive the **global economy**.

Natural capital assets and services are worth **1.5x global GDP**[1].

Global ecosystem services

Provisioning

Food | Water | Timber

Cultural

Recreation | Aesthetics/spirituality/healing | Ecotourism

Regulating

Climate regulation | Soil health | Disease control
Flood control | Erosion control | Water quality

Supporting

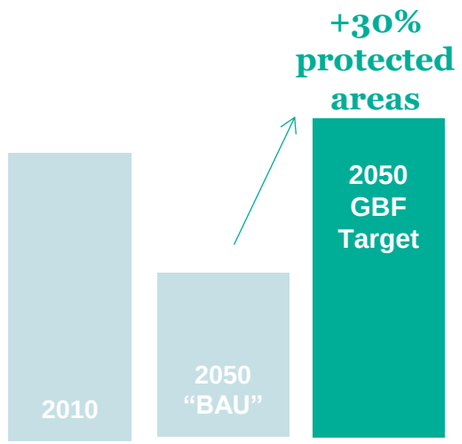
Soil formation | Primary production | Nutrient and water cycling

1 World Economic Forum, 2020
*Source: Constanza et al, 2014.

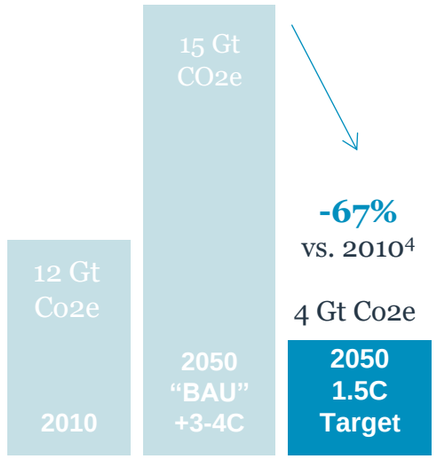
Addressing global challenges

We must rectify the decline in natural resources, reduce GHG emissions, whilst also increasing the production of food and fibre across the globe

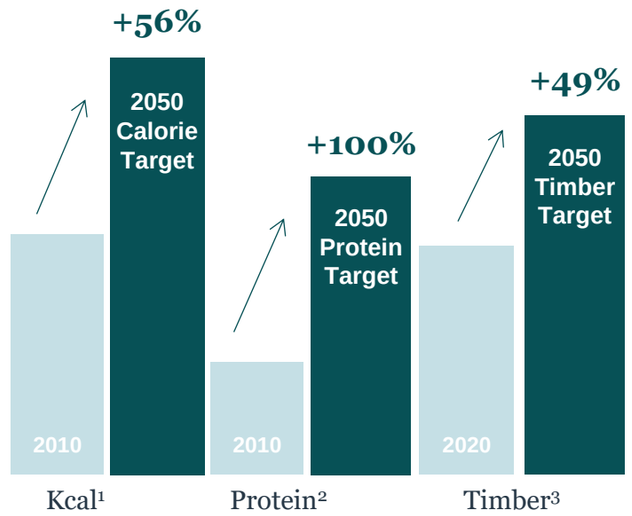
Protection of nature



Climate change mitigation



Food and fibre gap



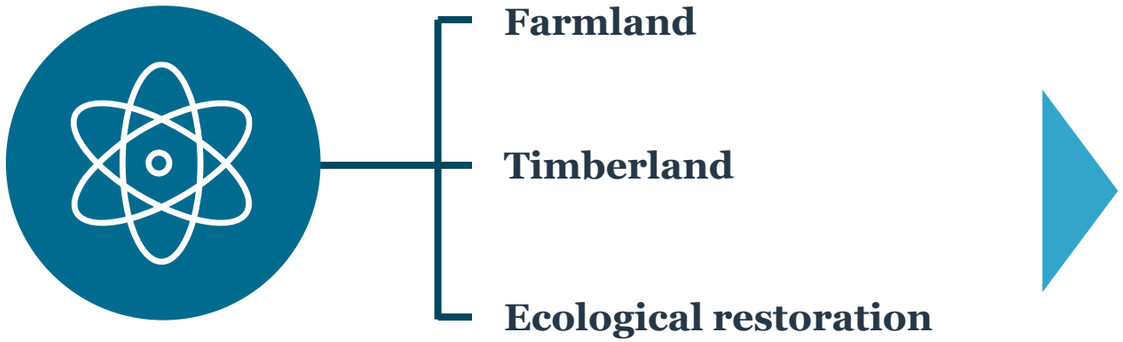
1 Source: WRI Creating a sustainable food future; scenario result between 2010 and requirements by 2050, July 2019.
2 Source: The Soneva Dialogue: The Global Protein Challenge; scenario result between 2010 and requirements by 2050, November 2016.
3 Source: WWF Living Forests Report, 2012; scenario result between 2010 and requirements by 2050.
4 Source: Visconti, P., et al. (2015) Projecting Global Biodiversity Indicators under Future Development Scenarios.

What are natural capital investments?

Natural capital investments have **dual objectives**: strong financial returns and positive natural capital impact.

These investments offer exposure to **natural assets** and their **related services.**

Investable strategies



Exposure to natural capital assets

- Fresh water
- Oceans/coasts
- Air
- Land
- Soil
- Forest
- Plants
- Species

Contribution to ecosystem services

- Climate regulation
- Air quality regulation
- Soil quality regulation
- Flood risk management
- Pollination services
- Water quality

How does natural capital deliver solutions?

Nature based solutions can efficiently **protect, improve,** and/or **restore** natural capital

Nature-based solutions can offer up to 30% of emission reductions needed by 2030 to limit global temperature increases to 1.5°C.[1]

Potential investment activities

Protect

- Forests and native vegetation
- Ecosystems (incl. wetlands)
- Biodiversity (incl. species)

Improve

- Agricultural and forest practices
- Ecosystem services (incl. water quality)

Restore

- Forests and vegetation
- Wetlands/peat
- Pasturelands and grasslands

1 The Lancet, September 2024

Why invest in natural capital?

Natural capital is benefitting from powerful **industry tailwinds.**

Natural capital is a **timely investment** on several fronts.

Population and income growth

- Greater agricultural production requirements
- Increased demand for sustainable, low-carbon production inputs (e.g., building materials)
- Demand-pull from dietary trends (e.g., protein-rich foods)

Industry evolution

- Technological advances
- Consumer preferences
- Carbon capture
- Renewable energy
- Sustainable building materials

Market evolution

- Regulatory requirements, including SFDR and EU taxonomy
- Voluntary disclosure commitments, including TCFD and TNFD
- Low-carbon asset demand driven by net-zero commitments
- Carbon and environmental market growth

What are the portfolio benefits of natural capital?

Natural capital offers meaningful **portfolio benefits**.

Natural capital can improve the **risk-return profile** of an overall portfolio.

Portfolio diversification

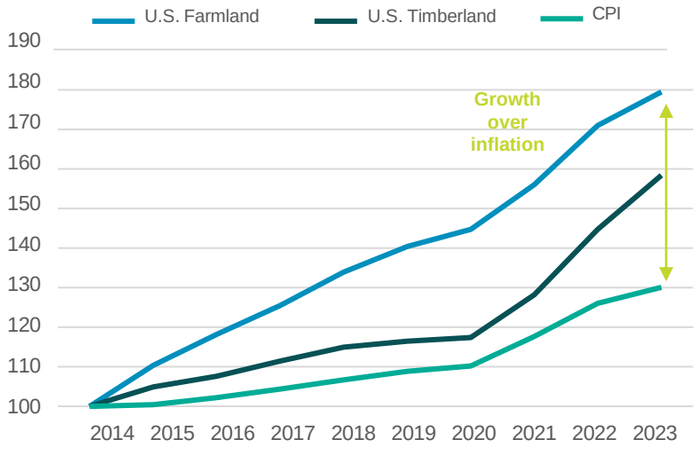
Correlations: natural capital vs. traditional asset classes (Annual returns, 2002-2023)[1]

Negative or low correlation = diversification benefit

	FARMLAND	TIMBERLAND
U.S. Equities	-0.03	-0.10
U.S. Fixed Income	-0.10	-0.36
Global Fixed Income	-0.12	-0.26
Global Equities	0.14	0.06

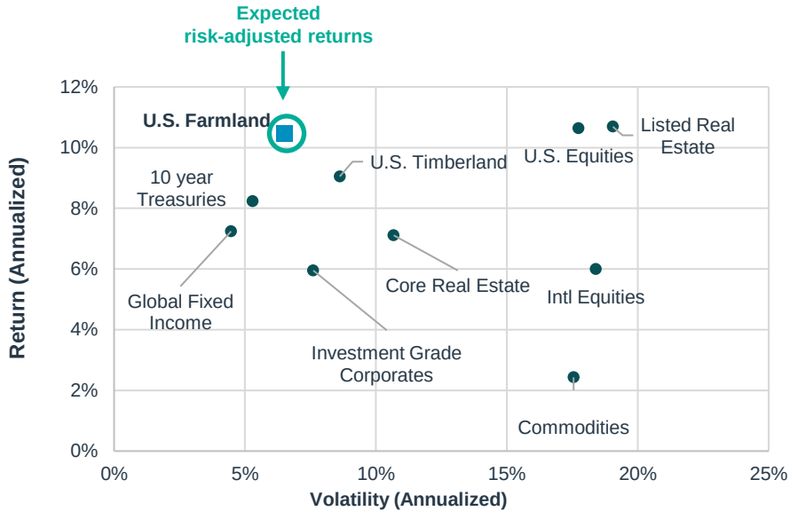
Inflation hedge

Growth of natural capital indexes vs. CPI[1] for the ten-year period 2014 – 2023 (2014 = 100)[1]



Attractive total returns

Annual return vs. volatility (1990-2023)[1]



Performance data shown represents past performance and does not predict or guarantee future results. Data are based on rolling one-year total returns, calculated on a quarterly basis for periods ended 31 Dec 1991 through 31 Dec 2023 unless otherwise stated.

1 Sources:S tandard & Poors, MSCI, Factset, NCREIF, Federal Reserve, Commodity Research Bureau, Consumer Price Index. The inception date of the NCREIF Farmland Index is 4Q 1990. The CPI-U produces monthly data on changes in the prices paid by urban consumers for a representative basket of goods and services since 1913. NCREIF Farmland and Timberland Indexes are used for the time frame above to demonstrate income and capital appreciation components of total return. It is not possible to invest in an index. Performance for indices does not reflect investment fees or transactions costs. All returns in USD. There is no guarantee that the returns illustrated will be achieved. Asset classes reflect the following indexes: U.S. stocks – Russell 3000 Index; non-U.S. stocks – MSCI ACWI ex USA Index; U.S. Fixed Income – Bloomberg U.S. Aggregate Index; global fixed income – Bloomberg Global Aggregate Index; privately held U.S. commercial real estate – NCREIF Real Estate Index; privately held U.S. farmland – NCREIF Farmland Index; privately held U.S. timberland – NCREIF Timberland Index; publicly traded U.S. listed real estate – FTSE Nareit U.S. Real Estate Index; public agricultural commodities – S&P GSCI Agriculture Index; developed Infrastructure – Cambridge Developed Markets Infrastructure Index (data from 30 June 2003). Sources: NCREIF, FactSet, Nuveen, LLC.

The importance of natural capital in the SDGs

Natural capital offers **real-life solutions** for Nature, Climate, and People.

USD $300-350 bn p.a. must be invested to achieve sustainable systems by 2030[1].

SUSTAINABLE DEVELOPMENT GOALS

Nature

Land based nature conservation and restoration

Climate

Pathways to reduced emissions

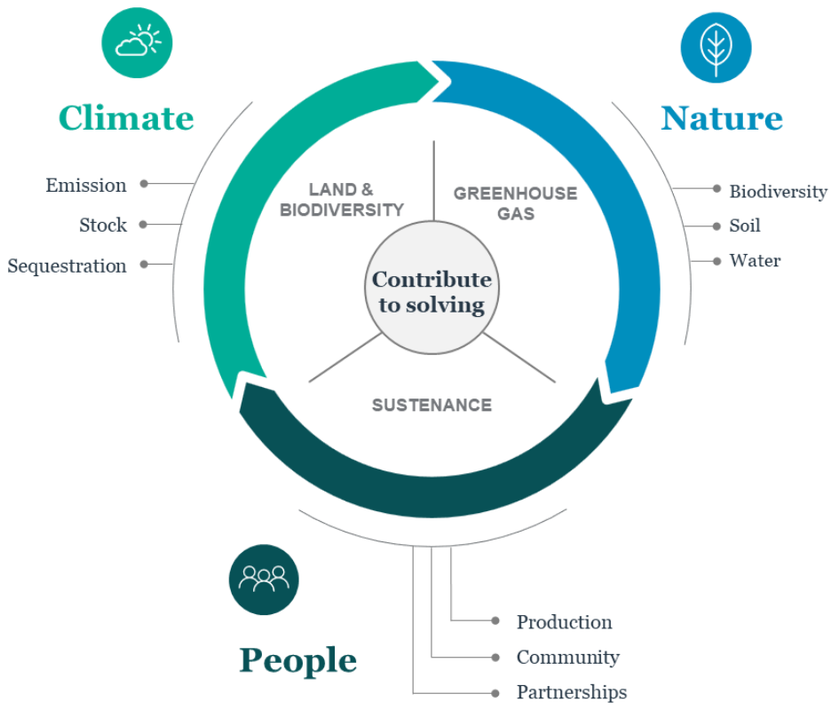
People

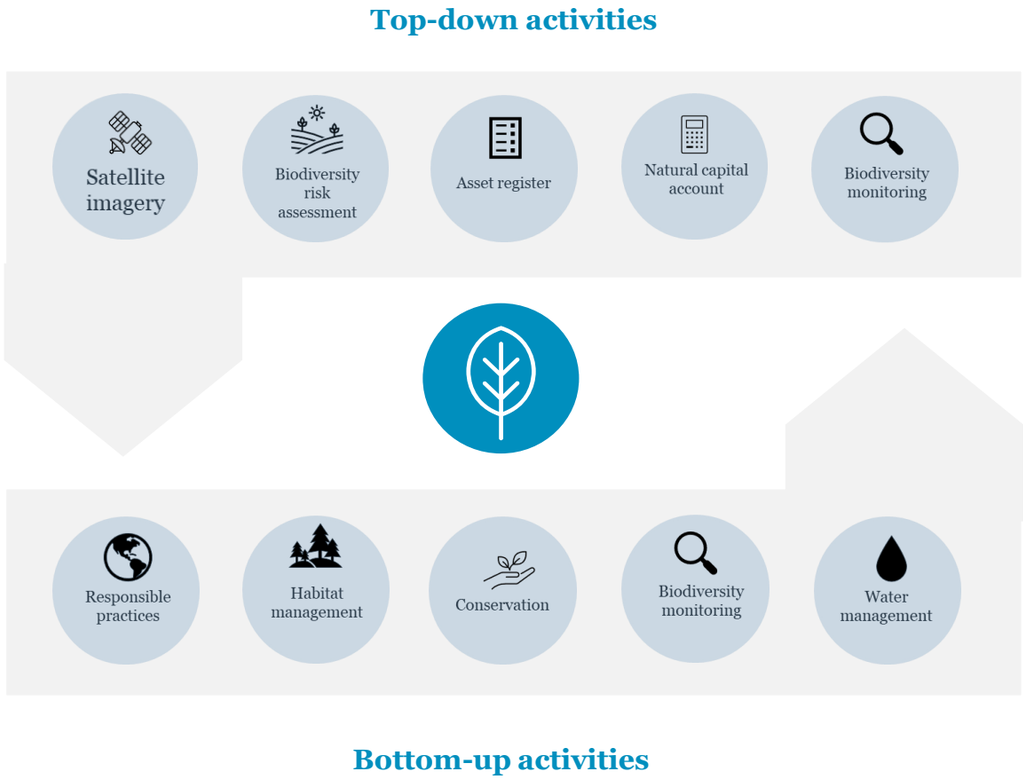
Production to provide sustenance

1. Source: United Nations Environment Programme (2023). State of Finance for Nature

Managing, measuring and reporting on biodiversity

We take a top down and bottom-up approach to managing and measuring biodiversity





Measuring the benefits of natural capital

We can measure the value of the flows of ecosystem services through NCAs

What are NCAs?

- NCAs measure the flows *ecosystem service*s provided by natural capital
- Measures both *value provided to the business* as well as to the rest of *society*

What are the benefits?

- Extends the scope of traditional financial accounting
- Captures estimates on the physical flow of ecosystem services
- Supports better management to ensure *resilient long-term management*

Present Value ($US millions) calculated over 25 years. *Produced at: June 2024E*			Value to Business	Value to the rest of society	Total
Asset values (monetised)	Timber		55.7		55.7
	Carbon		9.6	300.7	310.3
	Conservation credits		11.8		11.8
	Air quality regulation			8.0	8.0
	Recreation		9.3	15.5	24.8
	Total gross asset value		**86.4**	**324.2**	**410.6**
Material (non-monetised) asset values	Biodiversity	*Proportion of native vegetation assessed as in 'high or good' condition*			64%
		Total protected areas within site, acres			317
		Number of tree species present within productive area			16
		% of productive area covered by dominant tree species			71%
		Number of Key Biodiversity Areas within 20km buffer of site			6
		Number of threatened species potentially found <50km of site			65
	Soil quality				
	Water supply	*Riparian buffer % of total property size*			5%
	Flood risk management				
	Carbon stocks	*MTCO2e stored in woodland assets on site as at 2023 (million)*			4.8
	Carbon embedded in harvested timber	*TCO2e leaving the ACT boundary through timber harvests over the 25-year accounting period (million)*			3.0
Liabilities	Natural capital maintenance costs		18.5		18.5
	Buffer maintenance costs		8.6		8.6
	Natural capital production costs		1.4		1.4
	Total gross asset maintenance costs		**28.5**		28.5
Total net asset value (monetised)			**57.9**	**324.2**	**382.1**

For illustrative purposes only.

Real-life solutions: Examples from our portfolio

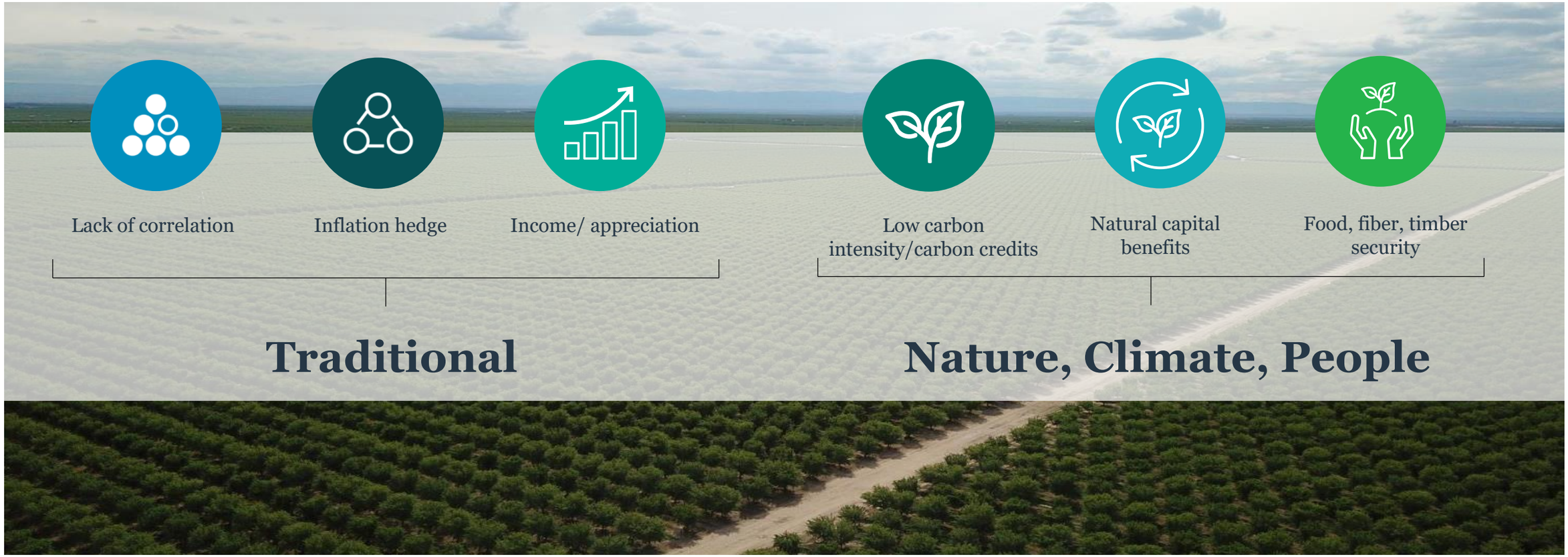
Nature

Enhancing soil and biodiversity

Climate

Mitigating climate change

Portfolio-level and natural capital benefits of investing in land-based assets



Thank you.

***Scan to subscribe** and turn insights into action*

Natural Capital Balance sheet: US Timberland example

Key takeaways

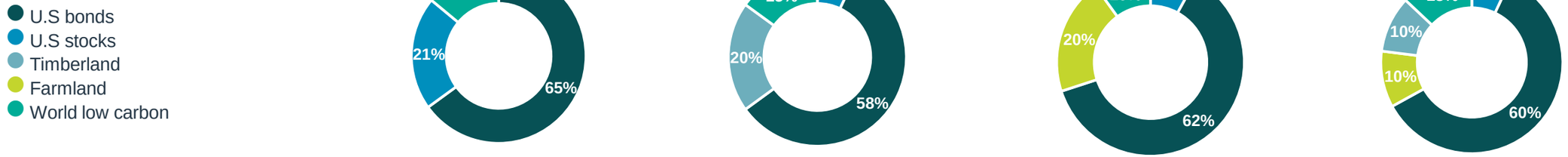
- NCA shows the **aggregated value of benefits our natural assets** provide over time and into the future.
- Splits values for **ecosystem services into those flowing to the business vs. those benefiting broader society** (e.g. $86m vs. $324m).
- Accounts for a **wider range of ecosystem benefits** delivered by our natural capital assets, than is captured in standard financial accounts (e.g. air quality, welfare).
- Presents a range of **physical metrics** to measure changes in the health and functionality of natural capital assets and the ecosystems they contain (e.g. biodiversity condition).
- **Projected costs** of activities to sustain/ enhance natural capital assets.

Present Value ($US millions) calculated over 25 years. *Produced at: June 2024E*			Value to Business	Value to the rest of society	Total
Asset values (monetised)	Timber		55.7		55.7
	Carbon		9.6	300.7	310.3
	Conservation credits		11.8		11.8
	Air quality regulation			8.0	8.0
	Recreation		9.3	15.5	24.8
	Total gross asset value		**86.4**	**324.2**	**410.6**
Material (non-monetised) asset values	Biodiversity	*Proportion of native vegetation assessed as in 'high or good' condition*			64%
		Total protected areas within site, acres			317
		Number of tree species present within productive area			16
		% of productive area covered by dominant tree species			71%
		Number of Key Biodiversity Areas within 20km buffer of site			6
		Number of threatened species potentially found <50km of site			65
	Soil quality Water supply Flood risk management	*Riparian buffer % of total property size*			5%
	Carbon stocks	*MTCO2e stored in woodland assets on site as at 2023 (million)*			4.8
	Carbon embedded in harvested timber	*TCO2e leaving the ACT boundary through timber harvests over the 25-year accounting period (million)*			3.0
Liabilities	Natural capital maintenance costs		18.5		18.5
	Buffer maintenance costs		8.6		8.6
	Natural capital production costs		1.4		1.4
	Total gross asset maintenance costs		**28.5**		28.5
Total net asset value (monetised)			**57.9**	**324.2**	**382.1**

For illustrative purposes only.

Natural capital assets portfolio fit

Comparing returns, standard deviations and Sharpe ratios (1991-2022)



	100% traditional portfolio	Adding only timberland	Adding only farmland	Adding timberland and farmland at 10% each
Expected return (%)	7.8	7.7	7.9	7.8
Standard deviation (%)	8.4	6.5	6.0	6.1
Sharpe ratio	0.61	0.78	0.88	0.84
Carbon Intensity (tCO2 e/M USD)	48.1	37.7	46.5	42.2

Performance data shown represents past performance and does not predict or guarantee future results.

Sources: NCREIF, FactSet, Nuveen, LLC. Data are based on rolling one-year total returns, calculated on a quarterly basis for periods ended 31 Dec 1991 through 31 Dec 2022. Asset classes represent the following indexes: stocks: Russell 3000 Index and MSCI ACWI ex USA Index; bonds: Aggregate Index and Bloomberg Barclays Global Aggregate Index; privately held U.S commercial real estate: NCREIF Real Estate Index; privately held U.S. farmland – NCREIF Farmland Index; privately held U.S. timberland: NCREIF Timberland Index.. Allocations may not sum to 100% due to rounding. Mean-variance optimization based on historical returns is intended for illustration purposes only and should not be considered investment recommendations. Hypothetical examples are shown for illustrative purposes only and do not represent the performance of a specific portfolio or investment. Exposure to natural capital is limited to 20% allocation. Past performance does not guarantee future results. It is not possible to invest directly in an index.

Disclosures

This material is provided for informational or educational purposes only and does not constitute a solicitation of any securities in any jurisdiction in which such solicitation is unlawful or to any person to whom it is unlawful. Moreover, it neither constitutes an offer to enter into an investment agreement with the recipient of this document nor an invitation to respond to it by making an offer to enter into an investment agreement.

This material may contain "forward-looking" information that is not purely historical in nature. Such information may include projections, forecasts, estimates of yields or returns, and proposed or expected portfolio composition. Moreover, certain historical performance information of other investment vehicles or composite accounts managed by Nuveen may be included in this material and such performance information is presented by way of example only. No representation is made that the performance presented will be achieved, or that every assumption made in achieving, calculating or presenting either the forward-looking information or the historical performance information herein has been considered or stated in preparing this material. Any changes to assumptions that may have been made in preparing this material could have a material impact on the investment returns that are presented herein by way of example.

This material is not intended to be relied upon as a forecast, research or investment advice, and is not a recommendation, offer or solicitation to buy or sell any securities or to adopt any investment strategy. The information and opinions contained in this material are derived from proprietary and non-proprietary sources deemed by Nuveen to be reliable, and not necessarily all-inclusive and are not guaranteed as to accuracy. There is no guarantee that any forecasts made will come to pass. Company name is only for explanatory purposes and does not constitute as investment advice and is subject to change. Any investments named within this material may not necessarily be held in any funds/accounts managed by Nuveen. Reliance upon information in this material is at the sole discretion of the reader. Views of the author may not necessarily reflect the views of Nuveen as a whole or any part thereof.

Past performance is not a guide to future performance. Investment involves risk, including loss of principal. The value of investments and the income from them can fall as well as rise and is not guaranteed. Changes in the rates of exchange between currencies may cause the value of investments to fluctuate.

Nuveen provides investment solutions through Nuveen Alternatives Advisor, LLC, a registered investment advisor and investment management solutions through its investment specialists, including Nuveen Natural Capital LLC. Nuveen Natural Capital, LLC is a global agricultural and timberland asset manager; the RIA for the agriculture and timberland investment vehicles is Nuveen Alternatives Advisors LLC.

This information does not constitute investment research as defined under MiFID.

4385220