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NATURAL CAPITAL

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Why natural capital now?

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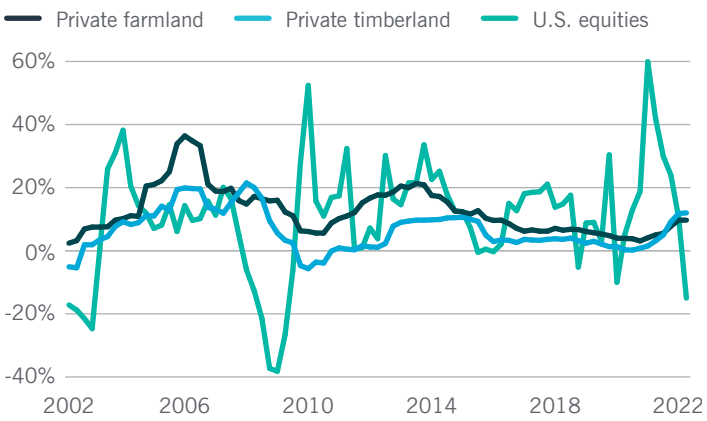
Current market turmoil alongside global commitments to transition to a low-carbon economy highlight requirements for investment portfolios that traditional asset classes alone cannot meet. Over the past year, impacts related to the COVID-19 pandemic and the war in Ukraine have produced major supply chain disruptions contributing to market volatility, historically high inflation rates, and aggressive monetary policies (Figures 1 and 2). Traditional asset classes, public equities and fixed income, have been heavily impacted by inflation-induced volatility, falling by 15% and 10% year-over-year, respectively.

Over the same period, timberland and farmland indexes were up 12% and 10%, respectively, highlighting the importance of diversified portfolios to preserve investment value. Beyond these portfolio-level benefits, natural capital investments can generate quantifiable climate benefits and contribute positively to global sustainability goals.

Figure 1: Timberland and farmland have half the volatility of U.S. equities

20-year performance of timberland, farmland and U.S. equities



Source: Bloomberg; NCREIF
Past performance is no guarantee of future returns

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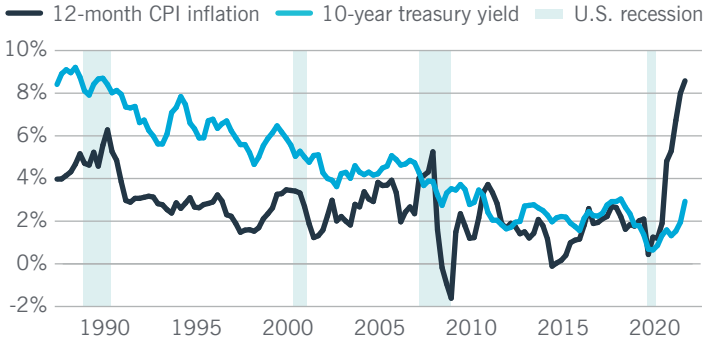
NOT FDIC INSURED | NO BANK GUARANTEE | MAY LOSE VALUE

Figure 2: U.S. annual inflation reached 8.6% in June 2022, the highest level in 40 years

Inflation and interest rates. January 1987 – June 2022



Source: Federal Reserve Bank of St. Louis; NNC Research

HOW CAN NATURAL CAPITAL INVESTMENTS ENHANCE FINANCIAL PERFORMANCE AND SUSTAINABILITY NEEDS OF INVESTMENT PORTFOLIOS?

Institutional investors are increasingly turning to natural capital investments (NCI) for *inflation protection, diversification benefits, stable returns, and solutions to global environmental challenges*. The combination of low volatility of investment returns and a competitive historical performance allows natural capital investments to offer a compelling case for capital preservation through economic cycles. Market dynamics linked to global demographic trends support long-term demand growth for food, fiber, and timber. Further, NCI, such as timberland and farmland, are well known for their superior inflation-hedging ability (See Inflation Hedging Ability of Natural Capital Investments) as rising prices lift NCI's cash yields and, over time, capital appreciation rates.

Beyond the advantageous financial characteristics, demand for investments in sustainably managed timberland and farmland is increasing due to their intrinsic ability to remove carbon from the atmosphere, potential for GHG emission reduction, and the preservation of natural capital assets as well as the ecosystem service benefits that flow from them.

The following sections review in depth the financial and environmental benefits of natural capital investments for institutional investors.

I. INVESTMENT CHARACTERISTICS OF NATURAL CAPITAL INVESTMENTS OFFER THE POTENTIAL FOR PROTECTION IN TIMES OF ECONOMIC TURMOIL

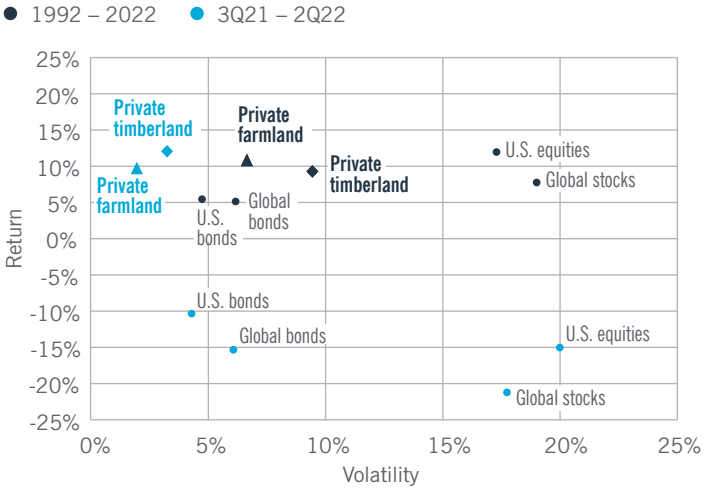
A. Low volatility of investment returns and stable cash yield

Farmland and timberland returns have been considerably less volatile and consistent through economic cycles than traditional asset classes. Yield stability comes from steady, predictable cash flows generated by long-term contractual commitments (offtake agreements, leasing and service contracts) and a relatively inelastic demand for many timber and agricultural crops.

Evidence of the consistent risk-return profile of timberland and farmland investments is their performance through the current economic market turmoil, superior to traditional asset classes. Over the last four quarters, through Q2 2022, the return volatility of U.S. equities exceeded long-term levels (1992 – 2022) by 3%, while the volatility of farmland and timberland returns moved in the opposite direction, 5% and 6% below long-term averages (Figure 3).

Figure 3: Consistent timberland and farmland risk-return profile through economic cycles

Rolling 4-quarter total returns; average and standard deviation. 2Q 1992 – 2Q 2022

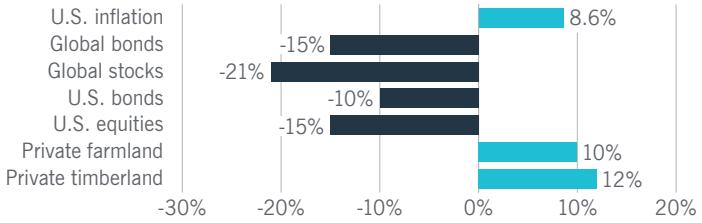


Source: Bloomberg; NCREIF; NNC Research

Past performance is no guarantee of future returns

Figure 4: Last 12 months to 2Q22, timberland and farmland returns posted 12% and 10%, respectively

Rolling 4-quarter total returns as of 2Q22



Source: Bloomberg; NCREIF; Federal Reserve Bank of St. Louis; NNC Research
Past performance is no guarantee of future returns

B. Competitive returns

Portfolios with long-term investment horizons could benefit from the preservation of capital that natural capital investments provide, as returns have been highly competitive with traditional asset classes and resilient through economic downturns. Historically strong returns are supported by long-term market fundamentals, such as demographic trends and relatively inelastic demand for forest and agricultural products. Since 1992, timberland and farmland annual returns averaged a respective 9.2% and 10.9%.

More recently, despite the increasingly volatile global market, natural capital investments have outperformed other asset classes. As U.S. inflation reached 8.6% year-over-year in June 2022 (Figure 4), the last four quarters of return data through 2Q 2022 show returns of NCREIF Timberland and Farmland indexes at 12% and 10%, respectively. In contrast, U.S. equities reported -15% and U.S. bonds -10% over the same period.

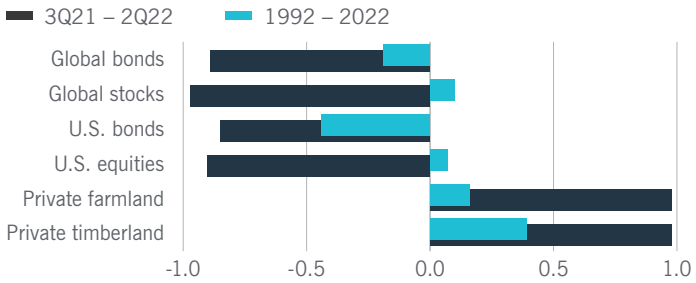
C. Inflation hedge

Timberland and farmland assets offer investors a compelling alternative to protect the purchasing power of investment portfolios supported by a positive correlation between returns and inflation and historically positive spread returns to inflation rates. The positive relationship between timberland and farmland returns and inflation is rooted in the production of raw materials for products in the CPI basket of goods (e.g., food, fiber, building materials, furniture, tissue, paper, and packaging). The transmission of higher prices to timber and agricultural crop products increases cash yields and over time leads to higher asset valuations.

As shown in Figure 5, between 1992 and June 2022, annualized returns of private-equity timberland and farmland investments show a positive correlation of 0.30 and 0.12, respectively, higher than bonds or stocks. Since 2021, returns of timberland and farmland have been near perfectly correlated to the ramping up of inflation rates. Private timberland and farmland have also outperformed inflation over rolling 10-year hold periods over the last 30 years, with an average spread of +6.9% and +8.5% over inflation rates (Figure 6).

Figure 5: Strong, positive correlation between inflation and natural capital investments

Correlation coefficient of inflation vs. rolling 4-quarter total returns. 2Q 1992 – 2Q 2022



Source: Bloomberg; NCREIF; Federal Reserve Bank of St. Louis; NNC Research

D. Diversification potential

Diversified portfolios allow institutional investors to reduce risk and improve long-term portfolio performance and efficiency. In addition to low volatility, competitive returns, and inflation hedging ability, the low and negative correlation with traditional asset classes makes NCI ideal assets for portfolio diversification strategies. Potential diversification benefits from low or negative correlations with equity and bond indices (Figure 7) are supported by:

- Reduced exposure to speculative market movements as private farmland and timberland investments do not trade in public markets
- Uncorrelated returns from payments for ecosystem services
- Low-carbon intensive, land-based asset classes can mitigate market instability as economies decarbonize

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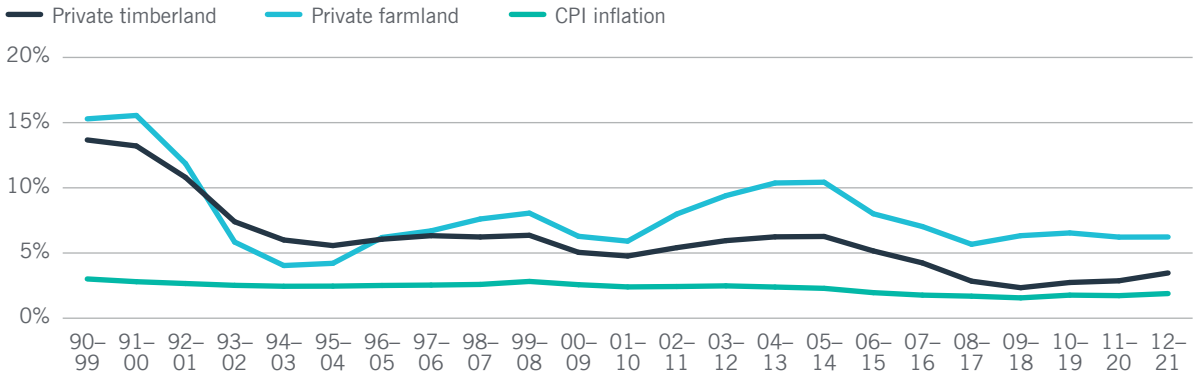
Figure 6: Private timberland and farmland have outperformed inflation over the last 30 years

Average NCREIF timberland and farmland spread over CPI, 1991 – 2021



Source: NCREIF; Federal Reserve Bank of St. Louis; NNC Research

II. GLOBAL TRENDS AND MARKET FUNDAMENTALS SUPPORT POSITIVE LONG-TERM OUTLOOK FOR NATURAL CAPITAL INVESTMENTS

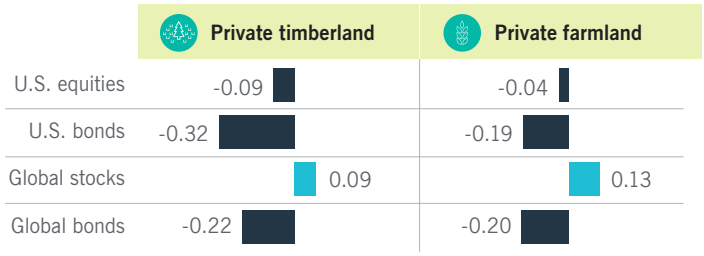
Expanding population and economic growth support the long-term demand for agriculture and forest products

Because natural capital assets play a fundamental role in providing society with essential inputs to meet the basic needs for food and shelter, the world's expanding population and economic growth support the long-term demand for agriculture and forest products. With over 83 million people added every year, food and wood systems will have to support a global population of 9.7 billion by 2050 (Figure 8).[1]

Demand for agriculture and forest products will be further bolstered by economic growth and a rising middle class, especially in some of the most populated regions of developing markets (China, India). Increases in per-capita income are expected to tilt consumption toward different and more nutritious food and fuel a growing consumption of wood and forest products in a wide range of end-use markets (e.g., housing, furniture, remodeling, tissue). As displayed in Figure 8, driven by the GDP per-capita increase, consumption of industrial roundwood is expected to grow on average by 2% annually over the next 30 years. Similarly, it is

Figure 7: Low correlation with other asset classes

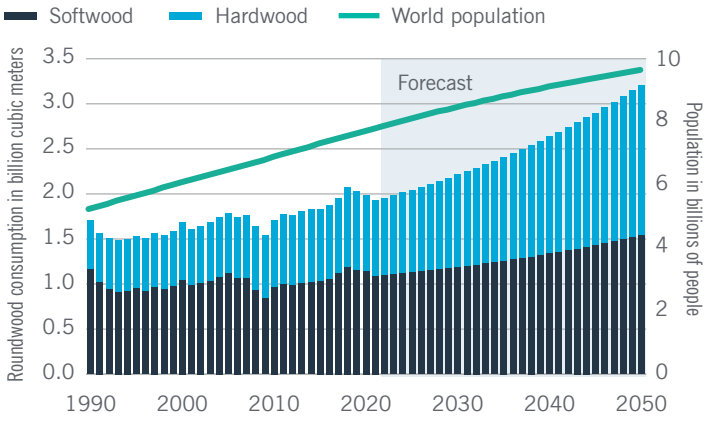
Correlation coefficient of rolling 4-quarter returns. 2Q 2002 – 2Q 2022



Source: Bloomberg; NCREIF; NNC Research

Figure 8: Consumption of industrial roundwood to grow at 2% CAGR

Apparent wood consumption estimation



Source: FAO, the World Bank, NNC Research

estimated that a 50% additional agricultural output from current levels will be required to meet food and crop product demand by 2050 (Figure 9).

Supply constraints impacting forest and agricultural land and production

High social and environmental costs of expanding farmland and timberland frontiers to meet the current demand trends pose a major supply constraint to land-based markets. These market dynamics are driving long-term institutional investments and public spending to deploy capital in natural capital investments to sustainably increase forest and agricultural output without the need for rising inputs such as land. Institutional investments in sustainably managed timberland and farmland assets allow existing productive areas to enhance efficiency, as well as the adoption of new production methods and technologies at a larger scale.

III. NATURAL CAPITAL BENEFITS MEET GROWING DEMAND FOR SCALABLE CLIMATE AND NATURE-POSITIVE SOLUTIONS

In addition to portfolio-level benefits and strong market fundamentals, investments in sustainably managed timberland and farmland offer solutions for investors to contribute positively to global sustainability goals, generate climate benefits and restore the earth's natural capital — it's air, land, water, and all their biodiversity. The benefits of NCI that can help meet the growing demand for scalable climate solutions and nature-positive investments include:

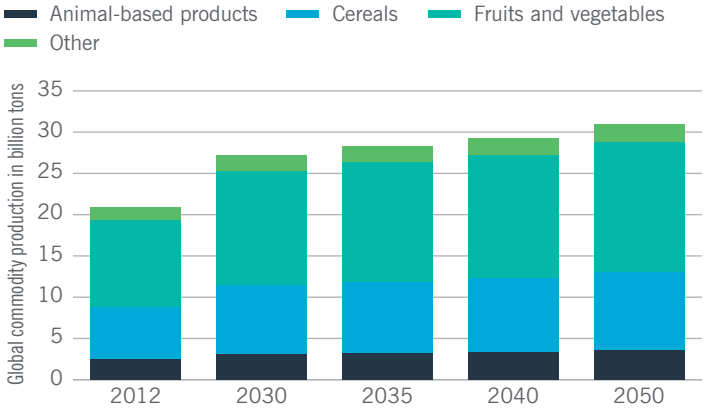
A. Sustainable land use

Investing in sustainably managed timberland and farmland directs financial flows toward climate-resilient and restorative natural capital strategies, including:

- Protecting, enhancing, and expanding conservation areas
- Committing to zero deforestation

Figure 9: 48% more agricultural output needed to meet population growth by 2050

Aggregated domestic production volume by category



Source: FAO. Data correspond to projections of aggregated volumes of domestic commodity production (food use + feed use + other use + net trade) in a business-as-usual scenario.

- Reducing chemical inputs
- Enhancing pollinator habitat
- Protecting water quality and availability
- Contributing to expanding markets for ecosystem services

B. Carbon sequestration

Contributions to fight the impacts of climate change come from the natural ability of forests and soils to sequester and store carbon in biomass and organic matter. Investments in timberland and farmland have the potential to safeguard existing carbon stocks and provide low-cost and scalable increases in long-term carbon storage by:

- Enhancing yields with fewer inputs
- Improving carbon-efficient crop, fiber, and timber production
- Reforesting degraded pasture
- Providing hazard and flood protection services
- Sequestering and storing carbon in the soil, trees, and long-lived, solid-wood products

Many of these climate-focused strategies have the potential to generate verified carbon credits.

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C. Greenhouse gas emissions reductions

Natural capital investments also have the potential to contribute to GHG emissions reductions. Global greenhouse gas emissions from agriculture, forestry, and other land use represent over 8 billion metric tons of CO_2 equivalent, about 24% of total global greenhouse gas emissions.[2] Sustainable management practices that help reduce emissions include:

- Implementing regenerative agriculture practices
- Switching to low-till or no-till systems
- Reducing chemical inputs
- Increasing the use of renewable energy
- Committing to zero deforestation

IV. WHAT DOES THIS MEAN FOR INVESTORS?

Institutional investors face a challenging investment landscape with complex macroeconomic conditions from surging inflation and rising rates. The rapid deterioration of the environment and global ecosystems have raised the demands of regulatory authorities, financial markets, and the general public for conscious investments. The financial and environmental benefits of natural capital investments, specifically timberland and farmland, make them ideal assets to meet the needs of today's institutional portfolios (Figure 10).

Figure 10: Natural capital investments help investors meet the challenges of today's market

	Priorities and long-term needs of institutional investors	Solutions provided by natural capital investments
PORTFOLIO	Inflation protection and capital preservation	• "Built-in" inflation hedge as raw materials (food, fiber timber) are components of inflation measures (CPI), and rising prices improve revenue and cash yields • Consistent positive correlation between returns and inflation, superior to other asset cases and stronger for longer holding periods and through periods of market volatility and sustained inflation
	Portfolio diversification	• Lack of correlation with capital market cycles • Low volatility of investment returns and stable cash yield, resilient through economic downturns
	Stability of long-term returns	• Positive long-term outlook supported by global demographic trends and market fundamentals. • Relatively inelastic demand for many wood products
SUSTAINABILITY	• Adoption of sustainability strategies • Voluntary and regulatory low-carbon targets • Portfolio decarbonization • Nature positive investments: Contribution to restoring and protecting earth's air, land, and water, and their biodiversity	• Direct investment in sustainable land use • Intrinsic ability to sequester and store carbon in biomass and organic matter • Greenhouse gas emissions reduction potential • Verified nature positive through third-party certifications, and local, regional and international regulations • Standard and well-established ESG reporting metrics

For more information, please visit our website, nuveen.com/naturalcapital.

Endnotes

1 United Nations. World Population Prospects 2022

2 U.S. Environmental Protection Agency (EPA), Global Greenhouse Gas Emissions Data

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A word 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.

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