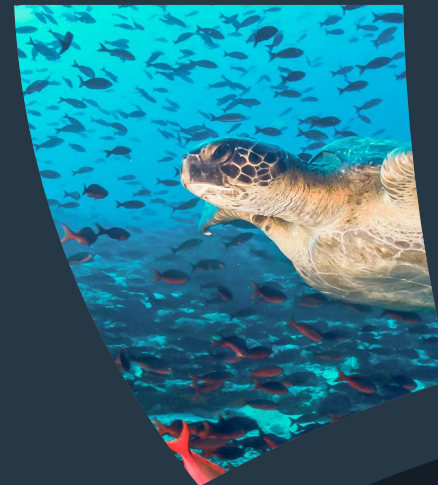
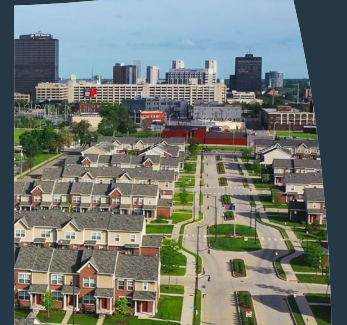


nuveen

A TIAA Company

Global fixed income impact report 2024

Intentional, direct and
measurable outcomes



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A message from Amy O'Brien



Amy O'Brien
Global Head of Responsible Investing

With over 125 years¹ of investment experience, Nuveen has navigated many years like 2024 — marked by economic difficulties, global turmoil and catastrophic climate events that disproportionately affected some of the world's least-developed countries, where land and livelihoods face severe or even existential risks.

Fortunately, 2024 was also a year in which innovative investment solutions and technological advancements were introduced to address these generational challenges. New investment opportunities are driven by change — in climate, institutions, demographics, societal priorities and economic systems — and by human behavior in reaction to those changes. As middle class populations grow and the demand for energy and real assets rises to new heights, stakeholders in public and private markets are faced with meeting this demand against a global backdrop of various NGO (nongovernmental organization) initiatives, government regulations, and companies competing for capital. These structural trends are driving capital into new investment opportunities around the globe, with asset managers positioning themselves as partners for today and the future. We expect this multi-trillion-dollar movement of capital will span decades, and that impact investing will continue directing it where it's needed most.

Ambitious goals for actualizing impact

Intergovernmental organizations (IGOs) have set ambitious goals to drive progress on a wide range of global challenges. Most notable are the far-reaching Sustainable Development Goals (SDGs) created by the United Nations, which have been widely embraced by global stakeholders, including Nuveen. Across the firm, we have deployed more than \$31.4 billion (as of 30 Sep 2024) in impact investment strategies² with over one-third in public fixed income.

To support the SDGs comes immense capital needs — needs that can be addressed only through a public/private relationship that pushes capital to the appropriate projects. Impact investing allows asset owners to participate in this powerful, interdependent process, seeking to earn competitive risk-adjusted returns while financing positive social and environmental outcomes in a direct and measurable way.

Two key areas in which impact investing plays a vital role, and where we see deepening client interest, are the energy transition and nature-positive investing.

Energy transition

The shift from traditional fossil fuels to low-carbon energy sources is well underway. Capital spending on the energy transition is forecast to grow to \$3-5 trillion annually by 2030 — two to four times current outlays³. The demand for additional investment opportunities exists today, as do pricing needs and the technological know-how. In fact, 88% of respondents to our 2024 EQuilibrium Institutional Investor Survey are focused on the clean energy transition.

Despite this extraordinarily high level of interest, global political and regulatory disparities create headwinds to developing these opportunities.

Our support in the energy transition is reflected in our Renewable Energy & Climate Change impact theme, with \$3.6 billion in assets under management (AUM) (as of 31 Dec 2023), financing projects encompassing wind, solar, run-of-river hydropower, battery storage and more.

Nature-positive investing

According to PwC, an estimated \$44 trillion annually, or over half of global output, depends on stability within nature⁴, meaning biodiversity loss poses significant systemic threats and merits the attention of investors. The 2022 ratification of the Kunming-Montreal Global Biodiversity Framework (which aims to halt and reverse global biodiversity loss) and the release of the Taskforce on Nature-Related Financial Disclosures (a set of recommendations to help with corporate

reporting of nature-related issues) provide a solid starting point and a much-needed boost for meaningful action.

As the anchor/lead investor in bonds focused on wildlife conservation, sustainable marine and fisheries projects, conservation of forests and endangered species, and sustainable agriculture, among other impact objectives, we are delivering investment opportunities across the nature-positive spectrum.

Nuveen's role as an asset manager

For over 15 years, we've served as a trusted partner for investors seeking an impact-focused fixed income manager. As interest has grown, our fixed income impact assets under management have risen, exceeding \$8 billion for the first time in 2023. In 2024, our global fixed income colleagues were recognized with the Environmental Finance Impact Awards ESG Fixed Income Fund of the Year, Americas and included in BlueMark's Practice Leaderboard highlighting our best-in-class impact measurement and management processes.⁵

The ambitious goals set by the UN SDGs cannot be achieved in silos. Public/private partnerships — also known as blended finance — offer unique opportunities for investors to realize attractive risk-adjusted returns on their capital while helping drive positive social and environmental impact. I am confident that impact investing in public fixed income markets will remain a durable and highly effective solution for mobilizing the trillions in capital required to finance not only the energy transition and nature-positive investing — but also new generational challenges that will inevitably arise in the future.

Introduction



Stephen M. Liberatore, CFA
Head of ESG/Impact — Global Fixed Income

*“In 2024, **impact investing** issued a clarion call to disciplined, intentional, outcomes-oriented investors.”*

*“**ESG investing** is deeply politicized in the United States.”*

*“**Sustainability and green investing** are being regulated into a corner throughout Europe.”*

Does this type of language sound familiar? Each statement is true, in some cases unfortunately so. Beyond that, they all include terms that the global asset management industry uses to define or “brand” a litany of different investment philosophies and approaches, confusing clients of all sizes and sophistication levels. Yet hope springs eternal. In spite of political and regulatory headwinds and an inconsistent and overwrought lexicon, investor opportunities to steer capital to specific environmental, social and sustainable outcomes, while seeking to

generate excess returns, have never been as vast or accessible as they are today.

Over the past 15 years or so, the public debt market has seen a quantum leap in environmentally and socially aligned issuance from sources other than the largest, global multilateral development banks and corporations seeking funding via labeled bonds. Issuance now spans all corners of the globe, in most key sectors of the bond market, including: sovereigns, agencies, regional supranationals, asset-backed securities (ABS), commercial mortgage-backed securities (CMBS), residential mortgage-backed securities (MBS), municipals, covered bonds, broadly syndicated loans and preferred securities.

I believe the surging growth in these fixed income opportunities is attributable to their accessibility and ease of use. They represent impact investing in its purest form, enabling investors to direct capital to specific projects and programs, driving outcomes of their

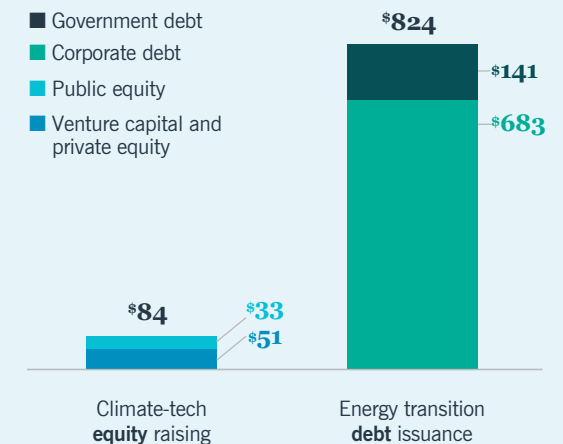
My team is committed to engaging with issuers, banks, industry groups, asset owners and other asset managers on how to strengthen the “direct and measurable” concept and to further its use and adoption as new deals come to market.

choosing. This is unlike equity investments that fund an entire enterprise, or general obligation bonds that finance an issuer’s overall operations. And because these are public securities, capital can be scaled more quickly than in private markets, with superior transparency and liquidity.

Use of proceeds bonds, designated for specific, clearly defined purposes, are key to the rapid deployment of capital. For example, public utilities often seek funding to apply proven technologies at a large scale, rather than chase and test new technologies. In contrast, private equity and venture capital firms operate on different timelines, and their impact investments are often early-stage, ambitious founder-led businesses, with more operational risk and volatility. Such R&D efforts are essential, as no proven, scalable technology can be created without experimentation and failure. But the opportunity to finance “shovel-ready” capital expenditures (capex) is the domain of debt markets, as illustrated in Figure 1.

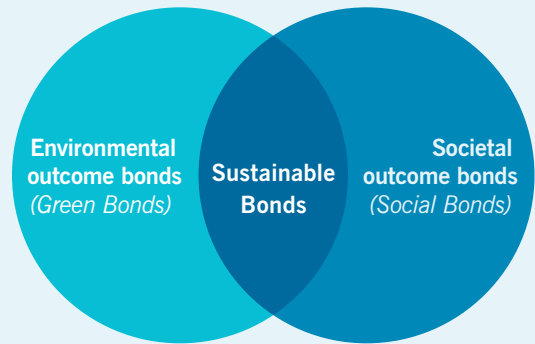
Figure 1: Capital raised for climate-aligned and energy transition purposes; calendar year 2023

(Billions)



Source: BloombergNEF. Data shown represents historical data and does not predict or guarantee future results. As of 31 Dec 2023. Regions represented include U.S., Europe, Asia and Rest of World.

The story is similar when it comes to supporting localized educational and health care initiatives, improving the quality of life in emerging economies or addressing the needs of underserved rural communities in developed nations. Targeted use of proceeds bonds direct capital to specific populations or outcomes, rather than broadly fund a government entity. And because these are credit investments, not charitable donations, employing a rigorous relative value framework and active, fundamental risk analysis is critical to achieving market or better returns for investors.



Use of proceeds bonds are the centerpiece of the Green Bond Principles established by the International Capital Market Association (ICMA), and the related ICMA principles that followed. I was an enthusiastic member of ICMA's inaugural Executive Committee that set out to codify these standards nearly 10 years ago. The principles aligned with the investment approach my team pioneered in 2007 within the

fixed income sleeve of a large 60/40 balanced portfolio – which has grown and expanded across an investment platform with roughly \$22 billion² in AUM as of 30 September 2024.

At Nuveen, impact investing in public fixed income markets remains centered on use of proceeds and the reporting that issuers are able to deliver. We seek robust impact reporting that is relevant to the projects funded by each bond, encompassing outcomes-based key performance indicators (KPIs) that are the foundation of the impact report before you now. We believe issuers committed to outcomes-based reporting or comprehensive collateral pool data for securitizations provide a level of transparency not available from allocation reporting alone. In our view, it is far more meaningful to know how much energy is produced and consumed by a new renewable-generation asset, for example, than to know only that capital was allocated (spent) for construction of that asset. It is through this reporting that we are able to further evaluate the long-term impact on free cash flow generation created by the underlying investment, which is a critical factor in the outperformance potential of the transaction. Additionally, outcomes-based reporting provides evidence of technological or programmatic success that other issuers can review in pursuit of their own impact objectives as they develop capex plans and optimize operating models.

Our name for the combination of use of proceeds and robust reporting is “direct and

measurable” – a pairing even better than chocolate and peanut butter. My team is committed to engaging with issuers, banks, industry groups, asset owners and other asset managers on how to strengthen the “direct and measurable” concept and to further its use and adoption as new deals come to market. Such collaboration could be the antidote to the mix of terminology, acronyms and jargon that currently inhibits understanding and undermines consensus.



In the pages that follow, I invite you to learn about the primary impact outcomes that were funded by our client portfolios in calendar year 2023. These results are conveyed by the most widely used metrics, and therefore don't capture the full scope of outcomes across all holdings, large and small. They are, however, representative of the impact opportunities that investors can consistently support in global public fixed income markets. Against an external backdrop of increased skepticism and regulation, we are more committed than ever to continue investing this way.

This report would not be possible without the exceptional effort and dedication of my investment colleagues, and the support from so many colleagues across Nuveen. Thank you!

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*Maximilian Hass
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Editorial

*Pete Moore
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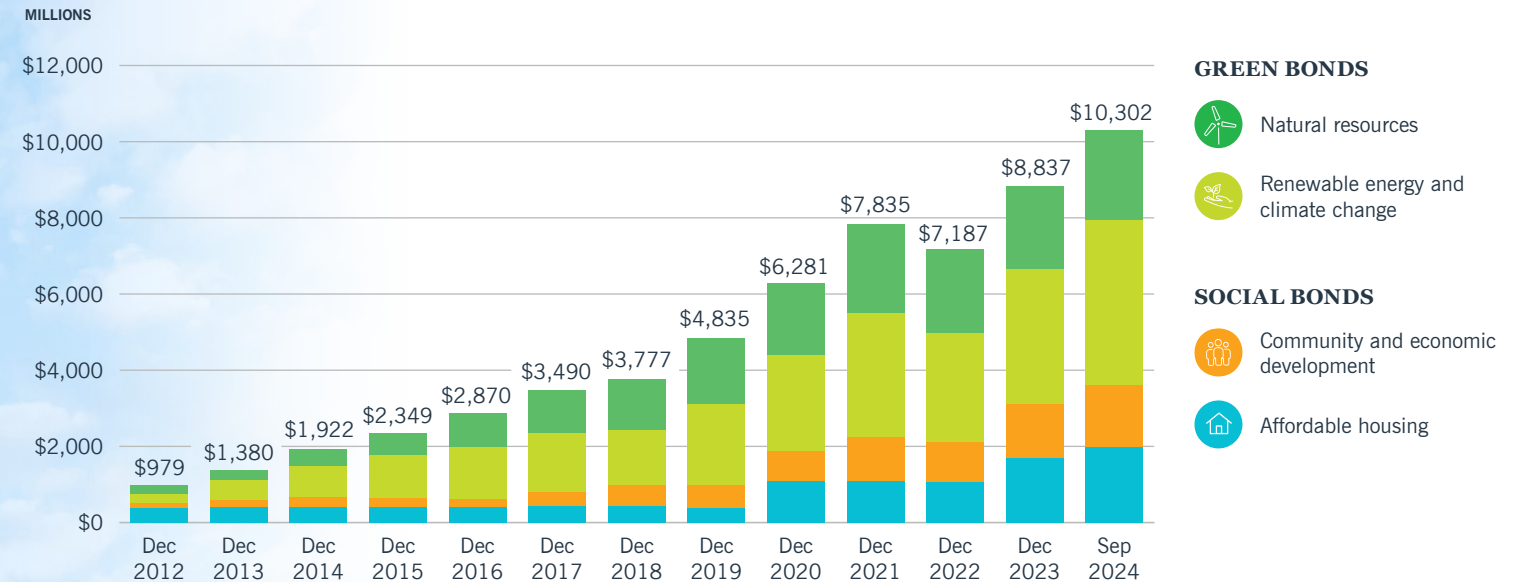
*Cayla Bott
Yolanda Rivera*



Impact assets under management by theme

The growth of Nuveen’s impact assets under management comes from several avenues: the impact allocations in Core Impact Bond, Short Duration Impact Bond and Global Core Impact Bond portfolios; impact-only portfolios spanning all four impact themes; and dedicated green bond or social bond mandates. The dip from year-end 2021 to year-end 2022 was driven by rising interest rates and falling bond prices throughout that calendar year. And despite a still-higher interest rate environment throughout the majority of 2023, consistent client demand and inflows, along with several newly funded impact-only and green bond mandates, pushed our team’s impact AUM just short of \$9 billion as of 30 December 2023.

As of 30 Sep 2024



Source: Nuveen.

How Nuveen contributes to impact in public markets

Public markets drive change Tapping the potential of public fixed income markets is a highly effective way to drive positive outcomes in our communities and around the world. Our goal is to lower the cost of capital for borrowers financing impact projects and initiatives. Relative to private investments, public securities offer daily pricing and liquidity, as well as exposure to impact opportunities with a far lower minimum investment. The perception that impact objectives can be pursued only through private strategies is inherently false. Public markets offer vast opportunities to finance positive outcomes, whether it's clean energy alternatives like wind and solar power, protecting oceans and marine wildlife while promoting a more sustainable economy or directing capital to increase the supply of affordable housing.

Nuveen at the center of impact innovation Nuveen is one of the world's largest fixed income managers and a recognized leader and innovator in impact investing. As such, we have far-reaching access to management teams, lenders, policymakers and elected officials seeking to finance environmental and social projects in public markets. We also maintain strong relationships with underwriters to ensure healthy allocations to new issues and gather ongoing intelligence in secondary markets. Our team meets frequently with prospective issuers to discuss how to structure bonds, what characteristics are needed to satisfy investor demand and the appropriate level and quality of impact disclosure and reporting.

Engagement is an essential feedback loop in our modern approach to responsible investing. It transcends purely exclusionary processes that eliminate bad actors but provide no incentive for issuers to modify their actions. In contrast, consultative engagement between issuers and

experienced impact investors — like Nuveen — encourages issuers to finance projects with meaningful outcomes using public markets. Through our approach, Nuveen's fixed income impact investment team contributes to positive social and environmental impact on a global scale. These efforts encompass driving capital towards a wide range of initiatives including gender equality, marine preservation, affordable housing, small business development, clean energy investments, and more.

Understanding our framework ESG strategies focused on positive ESG rating trends, net zero pledges, or conceptual SDG alignment are often insufficient to hold issuers accountable. Management strategies premised on equity raises and general corporate debt instruments enable management to retain control of capital expenditures. If management turns over, or simply changes strategy due to shareholder or other stakeholder pressure, impact outcomes may not be funded in the end. Net zero pledges — without shovel ready projects and committed cap ex — are not worth much, in our analysis.

Our approach to impact is an investment framework that spans bond market segments, sectors, and credit ratings. Our focus is on financing projects and programs via the public fixed income market with clear, positive societal and/or environmental outcomes. We do not participate in deals unless the use of proceeds is well-specified in the offering documents, the outcomes are observable, and reporting will be available with sufficient frequency and transparency to measure the results and hold issuers accountable. In the typical year, up to one-third of labeled GSS (Green, Social, Sustainable) issuance falls short of our standards.

Our team applies the **“direct and measurable” framework** such that we control the proceeds on behalf of our clients. The team pursues a non-concessionary approach to impact, with all investments assessed on a relative value basis. We apply two criteria to qualify a bond as an impact investment: use of proceeds and measurable outcomes.

This assessment is conducted on team, based on review of offering documents, and in many cases, direct discussion with the issuer. The team's assessments are conducted on a case-by-case basis. This is idiosyncratic evaluation and requires a heavy commitment to up front due diligence. Depending on the level of clarity of the offering documents and similarity to previously issued bonds by that issuer or other issuers, our conversations with the issuer and their underwriter can range from light touch to exhaustive. We will speak with project leads and managers, engineers, scientists, CEOs, CFOs, and other senior leaders of the issuer to fully understand how proceeds from the deal will be deployed and the processes and resources the issuer has in place to track and measure project- and outcome-specific KPIs. In some cases, issuers have a robust green/social/or sustainable bond framework that details eligible project types. This can supersede highly specific project or cap ex plans assigned to individual deals. In all cases, the use of proceeds must be clearly aligned with one or more of our four impact themes, as shown below.

GREEN BONDS



Natural resources



Renewable energy and climate change

SOCIAL BONDS



Community and economic development



Affordable housing

2023 Outcomes

Our global fixed income impact framework intentionally invests in securities across four themes: affordable housing, community and economic development, renewable energy and climate change, and natural resources.

Within these four themes, Nuveen targets clearly defined impact outcomes and eligible project types. Through the framework, we are able to articulate how the investments in the strategy directly lead to positive outcomes for stakeholders.



Affordable housing ▶

Community and economic development ▶

Renewable energy and climate change ▶

Natural resources ▶



Affordable housing



\$1,695.2
AUM \$million

As of 31 Dec 2023

ALIGNED SDGs



Objectives

Increase the availability and access to affordable, sustainable and high-quality housing, and reduce the rent burden for low- to moderate-income populations, globally.

Eligible projects

- Low- to moderate-income housing loans
- Transit-oriented development
- Walkable communities
- Mixed-use development projects

Measurable outcomes

Impact metric	Impact for 2023	Equivalent to:
Number of affordable mortgages guaranteed or provided	1.3 million	Roughly the total housing units in Nevada ⁶
Access to housing including displacement, workforce, and affordability	703,152 units	
Housing units built or supported at or below 80% AMI	81,365 units	
Housing units built or supported at or below 60% AMI	67,369 units	
Housing units built or supported at or below 30% AMI	16,071 units	



Community and economic development



\$1,399.0
AUM \$million

As of 31 Dec 2023

ALIGNED SDGs



Objectives

Create more inclusive and sustainable communities and increase availability of basic services for communities. Includes health care, education and financial services for small businesses; improving rural livelihoods; reducing food insecurity; and supporting recovery from disaster, conflict and crisis.

Eligible projects

- Benefits underserved and/or economically disadvantaged communities
- Services: financial, hospital/medical and educational
- Urban revitalization: community centers, reconstruction activities
- International development and humanitarian activities: disaster relief, economic aid and agricultural support

Measurable outcomes

Impact metric	Impact for 2023	Equivalent to:
Full-time jobs created	98,777 FTE	
Farmers trained	233,659	
Farmers trained (women)	At least 14,889 ⁷	
People who benefited from access to basic products and services	113.7 million	About twice the population of California ⁸
People who benefited from access to basic products and services (women)	At least 770,334 ⁷	
People benefited from broadband access	139,855	
People reached through community programs	24.7 million	About twice the population of Illinois ⁸
People reached through community programs (women)	At least 143,450	

Renewable energy and climate change



\$3,570.4
AUM \$million

As of 31 Dec 2023

ALIGNED SDGs



Objectives

Increase the share and efficiency of renewable energy in the global energy mix, improve the availability of sustainable transportation and reduce greenhouse gas emissions.

Eligible projects

- New, expanding or existing renewable energy projects (including solar, wind and small-scale hydroelectric)
- Smart grid and other projects designed to make power generation and transmission systems more efficient
- Energy efficiency projects resulting in the reduction of greenhouse gas emissions

Measurable outcomes

Impact metric	Impact for 2023	Equivalent to:
CO ₂ equivalent emissions avoided	165.0 million metric tons	39.3 million gasoline-powered passenger vehicles driven for one year ⁹
Daily riders on public transit	4.4 million	
Energy saved	11.8 billion kilowatt hours(kWh)	21.9 natural gas-fired power plants in one year ⁹
Total renewable energy capacity	214,809 MW	
New renewable energy capacity added	18,772 MW	Approximately twice the installed solar capacity of North Carolina ¹⁰
Renewable energy generated	499.5 million MWh annualized	70 million homes' electricity use for one year ⁹
Battery capacity	1,217 MW	

Natural resources



\$2,172.5
AUM \$million

As of 31 Dec 2023

ALIGNED SDGs



Objectives

Conserve natural resources and habitats; reduce deforestation; sequester carbon and reduce emissions; reduce waste, water usage and pollution; improve sanitation and access to clean water; support sustainable food production; sustain rural livelihoods.

Eligible projects

- Land conservation and sustainable forestry, fishing and agriculture
- Certified green buildings
- Remediation and redevelopment of polluted or contaminated sites
- Improvement of clean drinking water supplies and/or sewer systems infrastructure, waste management projects

Measurable outcomes

Impact metric	Impact for 2023	Equivalent to:
Conserved marine area	95,753 sq mi.	
Land conserved	507,487 acres	Similar to the area of North Cascades National Park, WA ¹¹
Land restored or sustainably managed	649,622 acres	Roughly twice the size of San Antonio, TX ¹²
BREEAM certified Good, Very Good, Excellent, or Outstanding	16 buildings ¹³	
LEED gold and platinum certified buildings	117 buildings ¹⁴	
People who benefited from clean water and wastewater projects	66.5 million	About twice the population of Texas ⁸
Waste diverted from landfills	27.3 million metric tons	
Water delivered	1,155 million gallons/day	
Water saved	47.2 billion gallons	Average household water use in one year for 430,759 homes ¹⁵
Wastewater treated	2,392 million gallons/day	
Carbon sequestered	109.9 million metric tons	

Case studies

Non-agency
multifamily CMBS ▶

Urban
revitalization ▶

Arab Petroleum
Investment Corporation ▶

Galapagos ▶

“ *The environment impacts society,
which impacts the economy.*

*As society and the economy thrive,
communities are uplifted.*

”

— Stephen M. Liberatore, CFA



Affordable housing

STWD TRUST 2021-LIH
COMMERCIAL MORTGAGE BACKED SECURITY (CMBS)



UN SDG
ALIGNMENT

Measurable impact 2023

- Housing units built or supported at or below 60% AMI: 2,983

Nuveen helps overcome housing headwinds

Over the past several years, the affordability of residential housing has declined. When COVID first disrupted supply chains and slowed the movement of construction materials, building costs jumped. And although these increases were initially and partly offset by the Federal Reserve's aggressive rate cuts, which kept borrowing costs low amid the economy's downturn, interest rates began to climb as economic conditions improved. This pushed mortgage rates to their highest levels in a generation and the dream of home ownership out of reach for many Americans.

Elevated mortgage rates have also contributed to a lack of supply of homes for sale, as many homeowners with locked-in, lower rates have chosen to stay put.

Against this backdrop, constructing affordable housing where land is cheapest is one way to boost the inventory of homes. Doing so, however, diminishes the socioeconomic dividends for communities and their residents. We believe affordable housing is more desirable and impactful when it is located where jobs and educational opportunities are available.



AFFORDABLE HOUSING

For Adam Guerino, Associate Portfolio Manager on Nuveen’s ESG/Impact Fixed Income team, the disparity between wage growth and housing expenses over the past several decades has increased the need for affordable housing solutions. Segments of communities have been displaced as they move further and further away from the economic core to afford shelter. This creates income-stratified communities and can lead to fewer economic opportunities for those forced out to underdeveloped areas, or overlong and expensive commutes that sap health, savings, and quality of life. The availability of affordable housing can partially offset this disparity, by allowing people to live where they work, live where the best cultural, educational, and medical services are located, and reside in a place that recognizes their contribution to the community.

Keys to unlocking affordable housing

The opportunities to finance affordable housing in the U.S. have historically been concentrated in government programs, within the reach of federally chartered agencies. Meanwhile, Nuveen’s affordable housing impact investments have centered on Ginnie Mae mortgage-backed securities (MBS), which reduce mortgage costs for borrowers in various federal programs, and in Fannie Mae and Freddie Mac agency

commercial mortgage-backed securities (CMBS), which pool multifamily developments.

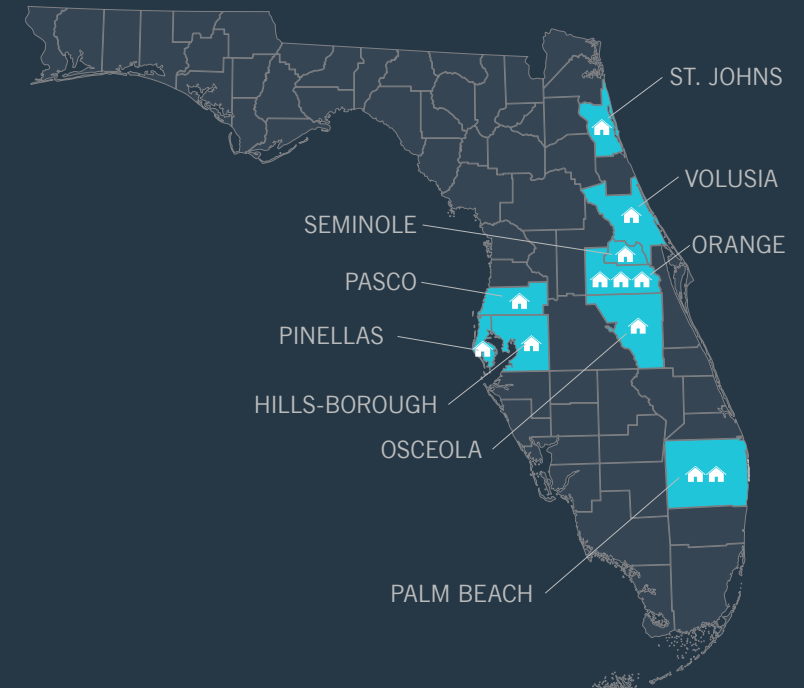
At the same time, the public fixed income market is providing more opportunities to direct capital to diverse issuers at increasing scale, enabling the nimble, efficient private development of affordable units. Some multifamily CMBS deals are issued by banks like Citibank, Wells Fargo or Barclays based on loans from their respective commercial loan books. Pooling mortgages moves the loans off their balance sheets and into investor portfolios, freeing up more capital for banks to make additional loans.

Establishing family ties in Florida

Other non-agency CMBS deals represent a pool of properties from a single developer or property owner, so the loans are not carried on the originator’s balance sheet.

In the case of STWD Trust 2021-LIH, Nuveen invested in a pool of 12 affordable housing multifamily properties located throughout Florida, including the Orlando, Tampa, Daytona Beach, West Palm Beach, and Jacksonville metropolitan areas. With 2,983 affordable units out of a total of 3,082, nearly 97% of the portfolio represents affordable housing.

MAPPING STWD TRUST 2021-LIH PROPERTIES ACROSS FLORIDA COUNTIES





AFFORDABLE HOUSING

The U.S. Department of Housing and Urban Development (HUD) collects data at the property and tenant level, and also maintains a database of Area Median Income (AMI). For calendar year 2023, all 2,983 affordable units in the STWD CMBS pool were built or supported at 60% of AMI and below (see the summary table on [page 10](#)).

AMI is a metric used by the HUD to determine eligibility for certain federal housing programs. It represents the midpoint of the income distribution of a specific geographical area.

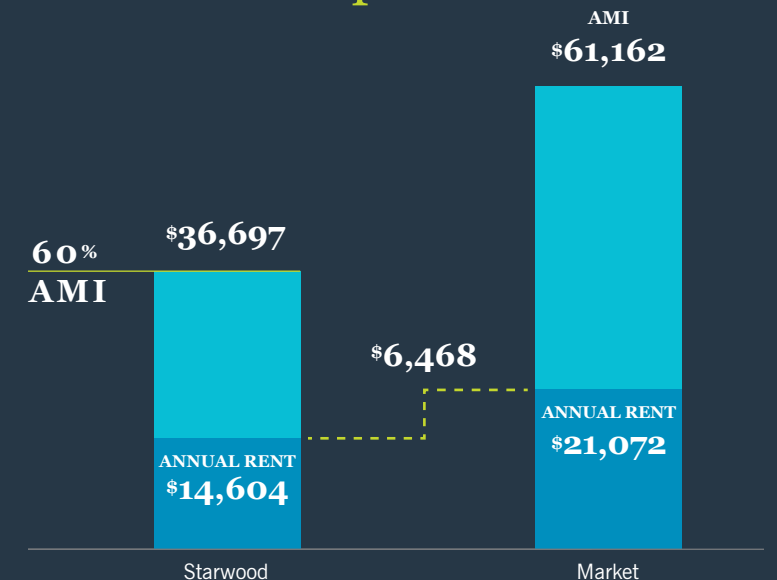
The Walden Park development in Kissimmee, Florida, helps illustrate the importance of affordable rental apartments. Residents at Walden Park are only eligible to rent based on household income limits set by HUD. According to U.S. Census data, the city has a total population of 79,226, total housing units of 30,370, and a median household income of \$89,142.¹⁶ The average property rent at the development was \$1,211 per month — more than 30% lower than the average market rent of \$1,756. Meanwhile, the desirability and demand for affordable housing pushed the property-level vacancy rate to 0.40%, versus the market vacancy rate of 15.5%.

SIMILAR TRENDS ARE OBSERVED ACROSS THE 12 PROPERTIES IN THE COLLATERAL POOL

Average Starwood property rent	\$1,217
Average market rent	\$1,756
Average affordable housing savings	\$539 per month \$6,468 per year
Range of Starwood property vacancies	0-4.8%
Range of market vacancies	6.8-21.7%

Source: CoStar Analytics. As of November 2024

Local property markets have 15X higher vacancy rates than the Starwood properties in the CMBS pool



Starwood properties' average rent saves ~18% of household income at 60% AMI, increasing disposable income



Community and economic development

CITY OF DETROIT HOUSING REVITALIZATION



UN SDG
ALIGNMENT

Measurable impact in 2023

- Homes demolished: 5,270
- Homes stabilized: 1,971

LOS ANGELES, CALIFORNIA SOCIAL BOND PROGRAM “HHH HOMELESS REDUCTION”



UN SDG
ALIGNMENT

Measurable impact in 2023

- Access to housing including displacement, workforce, and affordability: 4,251
All units are at or below 80% AMI
- 70 supportive housing apartment developments were ready for occupancy, with the majority (58) designated as transit-oriented development, or TOD



COMMUNITY AND ECONOMIC DEVELOPMENT

A tale of two (big) cities

Outcomes attributable to affordable housing programs may be easier to quantify, but the stability and desirability of housing helps define a community’s health and vibrancy – in short, its quality of life. Moreover, what at first glance appear to be hyperlocal, community-specific problems related to housing costs and quality may ultimately prove to be challenges for regional economies. There is a strong connection between stable housing and lower crime rates. Thriving urban communities depend on residents who want to live and businesses that want to operate within them, which generates both financial and social capital.

Any number of factors might attract people and companies to a community. But crime, homelessness and falling property values are often the leading cause of flight. Nuveen’s investment in social bonds from two large U.S. cities illustrate the wide range of programs and projects that can help reduce crime, assist the long-term unhoused, and rehabilitate housing stock — all of which contribute to stable or increasing property values, a stronger tax base and a higher quality of life for community residents.

Reducing blight and strengthening property tax rolls in the Motor City

The concept of land banking isn’t unique to Detroit, Michigan, but raising private capital via the debt market to finance the effort is. Cities and states typically finance these types of programs via general budgets and grants to address properties that have ended up in tax foreclosure and therefore no longer produce revenue for the taxing authority. Abandoned and dilapidated housing is transferred to the land

bank, where the lots can be cleared or improved, enticing developers or residents to occupy the properties and return them to the tax rolls, ultimately making residential areas more appealing.

Historically, combining individual lots into larger parcels has tended to work better in commercial districts, as residential land banking can be a complex undertaking. Abandoned homes represent arson risk and can be hubs for crime and drug use. Owners and occupants are important in minimizing these social costs. Detroit’s program includes opportunities for buyers to purchase properties cheaply without having to pay back taxes, and then to rehabilitate them. Alternatively, the program may demolish houses to make the lots more attractive to developers.

In November 2020, Detroit voters approved a \$250 million bond program to fund the city’s Neighborhood Improvement Plan (NIP) by a margin of 70% to 30%. As described on its website,¹⁷ NIP addresses vacant houses in Detroit neighborhoods through property demolition and stabilization to enhance property value, stimulate economic activity and create value for residents. Stabilization consists of rehabilitation and remediation activities that prepare vacant homes for sale, including but not limited to trash removal, boarding up windows, securing entryways, tree removal and basement pump-outs.

Nuveen originally purchased the Detroit Proposal N (Neighborhoods) bond in February 2021, when the city issued \$175 million of voter-approved debt. At the time, the city carried below-investment grade credit ratings of BB- from S&P and Ba3 from Moody’s.

In many ways, the city’s vision for NIP — that blight reduction pays dividends to both residents and municipal finances — has helped improve Detroit’s credit ratings. By the time the remaining \$75 million of approved bonds were issued in July 2023, S&P and Moody’s had both upgraded the city two notches, to BB+ and Ba1, respectively. And since that time, the city has re-entered the ranks of investment grade issuers, with Moody’s upgrading Detroit’s rating to Baa2 in March 2024 and S&P following with a BBB issuer rating in April 2024.

MOODY’S RATING SCALE – DETROIT

Aaa		
	Aa1	
	Aa2	
Aa	Aa3	
	A1	
	A2	
A	A3	
	Baa1	
	Baa2	◀ March 2024
Baa	Baa3	
	Ba1	◀ April 2023
	Ba2	◀ March 2022
Ba	Ba3	◀ January 2021
	B1	
	B2	
B	B3	
	Caa1	
	Caa2	
Caa	Caa3	



COMMUNITY AND ECONOMIC DEVELOPMENT

Urban revitalization

The success of the NIP program and the city’s improving fortunes are part of a virtuous cycle that enables Detroit to sustain the program at a lower cost of capital, which means it can be expanded or implemented more efficiently. The 2023 issue was thirty times (30x) oversubscribed, enabling the issuer and its underwriters to reduce the interest expense by 25 to 50 basis points.

As of 31 December 2023, the bonds had funded 5,270 demolitions and 1,971 stabilizations, using slightly more than \$150 million of the debt proceeds.

Reducing crime and improving quality of life in the City of Angels

Whereas urban blight such as Detroit experienced may be the biggest obstacle discouraging residents and businesses from locating or staying in a given community, a homeless presence and increased crime may be a larger cause of displacement in other urban locations. By reducing homeless presence outside of storefronts and commercial districts and reducing the incidence of violent crime and theft within the unhoused population, a community can become more desirable, and its property values more stable. Permanent supportive housing seeks to address needs beyond basic shelter, including mental and physical health services, education and job training, and drug and alcohol treatment. Additionally, supportive housing programs with a humanistic drive can help reduce tenant turnover (thereby limiting increased program costs), sustain permanent housing versus temporary placements, and ultimately deliver positive economic outcomes via increased labor market participation and lower crime rates.

In 2016, voters in Los Angeles, California, approved Proposition HHH to create new supportive housing for individuals and families in the city. Passage required “a two-thirds vote of the qualified voters of the City of Los Angeles,”¹⁸ as the plan authorized a \$1.2 billion social bond to reduce the homeless population via supportive housing. The bond’s proceeds are directed to the Supportive Housing (SH) Loan Program, which funds brick-and-mortar construction projects by subsidizing roughly 30% of development costs. Proceeds do not finance building operations or supportive services for eventual tenants; these costs are funded separately.

The need for permanent supportive housing that provides shelter, safety, and stability is acute, and access for low- and extremely low-income populations is especially important. Many individuals and households in these income categories experience highly unstable housing situations immediately prior to becoming homeless, so providing necessary resources beyond just physical shelter is key to avoiding their quick return to unstable environments and to ending a perpetual cycle between housed and unhoused status. According to a 2023 statewide study of homelessness conducted by the University of California at San Francisco: “In the six months prior to homelessness, the median monthly household income was \$960. A high proportion had been rent burdened. Approximately one in five participants (19%) entered homelessness from an institution (such as a prison or prolonged jail stay); 49% from a housing situation in which participants didn’t have their name on a lease or mortgage (non-leaseholder), and 32% from a housing situation where they had their name on a lease or mortgage (leaseholder)”¹⁹

MEDIAN VALUE OF OWNER-OCCUPIED HOUSING UNITS

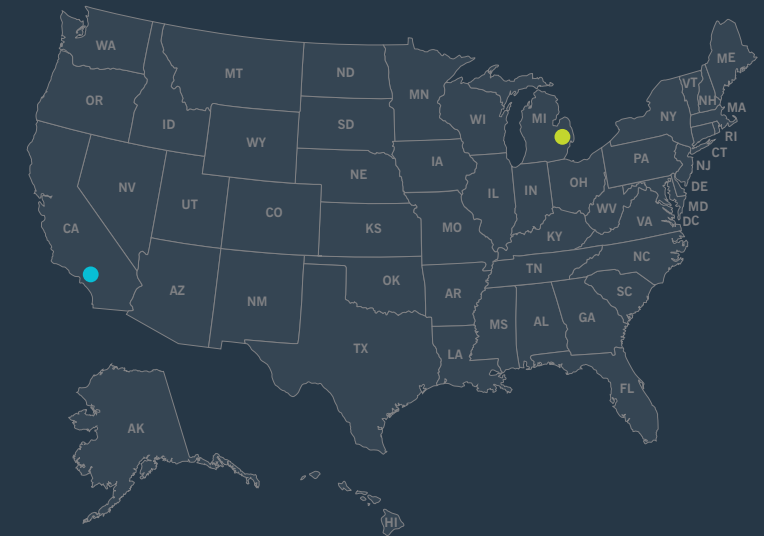
2018-2022

LOS ANGELES, CALIFORNIA

Median value: **\$822,600**

DETROIT, MICHIGAN

Median value: ***\$66,700**



Population size

3.8 million residents

0.6 million residents



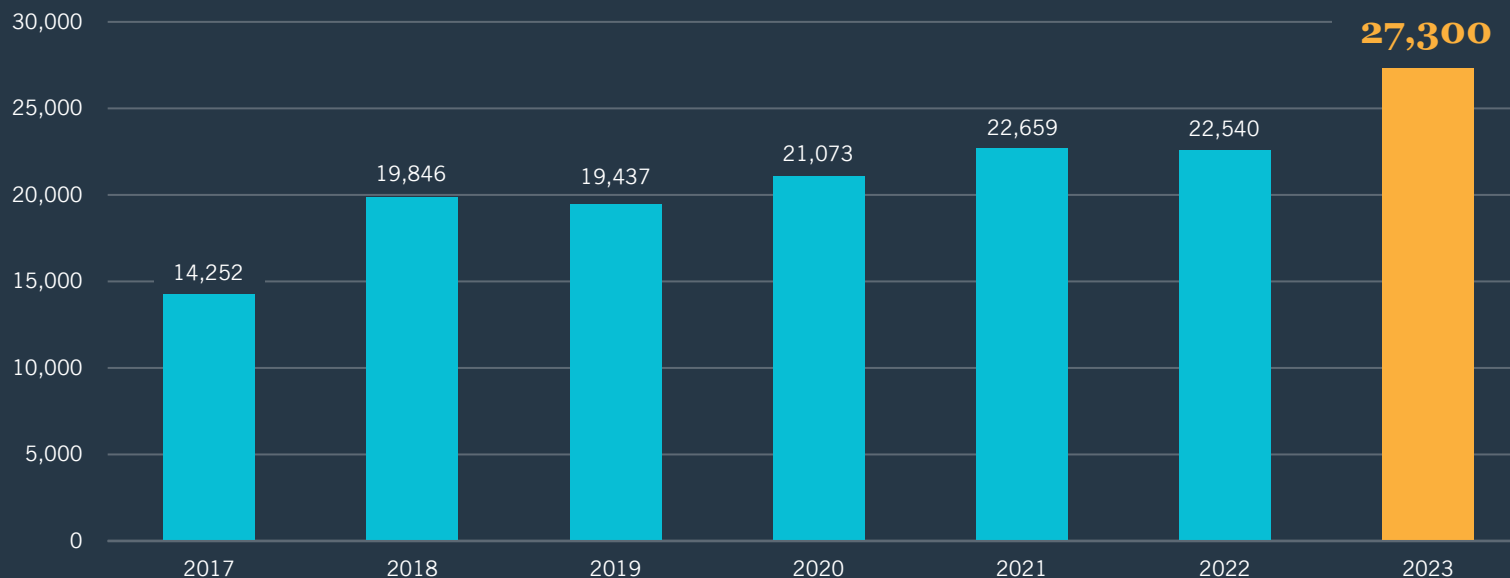
COMMUNITY AND ECONOMIC DEVELOPMENT

Urban revitalization

Against this backdrop of critical need, the Prop HHH SH Loan Program requires projects to commit a minimum of 50% of the units to SH for homeless individuals and families, with at least 50% of the SH units designated for the chronically homeless. Alternatively, a minimum of 20 units must be reserved for SH, and then only the eligible SH units can be funded with HHH proceeds. The SH tenants must be either in the “extremely low income” (up to 30% of the area median income, or AMI) or “very low income” (up to 50% of AMI) category, as defined by the U.S. Department of Housing and Urban Development (HUD).

Through the SH Loan Program, by year-end 2023, 70 supportive housing apartment developments were ready for occupancy, with the majority (58) designated as transit-oriented development, or TOD). TOD focuses on locating residential and commercial space within walking distance of public transportation. Overall, the developments funded by the program introduced 4,251 new housing units in the city for residents who are at or below 80% AMI. [Learn more about AMI, page 30](#)

Permanent housing placements in Los Angeles county



Source: Greater Los Angeles Homeless Count 2024

2023 had a **record number** of permanent housing placements



Renewable energy and climate change

ARAB PETROLEUM INVESTMENTS CORPORATION (APICORP)



UN SDG
ALIGNMENT

Measurable impacts in 2023

- CO₂ avoided: 1,646,098
- Total renewable energy capacity: 8,490 MW
- Renewable energy generated: 891,847 MWh
- People who benefited from clean water and wastewater projects: 166,071
- Waste diverted from landfills: 68,505 metric tons
- Wastewater treated: 53 million gallons/day

Green bonds bring clean energy to the Middle East and Northern Africa

The Arab Petroleum Investments Corporation (APICORP), a development finance institution focused primarily on the Middle East and Northern Africa (MENA) region, unveiled a new identity and new strategic vision at the 2023 United Nations Climate Change Conference (also known as COP 28).

In its 2023-2028 strategy, APICORP — now known as The Arab Energy Fund (TAEF) — pledged up to \$1 billion for energy transition, decarbonization and related technologies to support the shifting energy landscape toward a net-zero world.



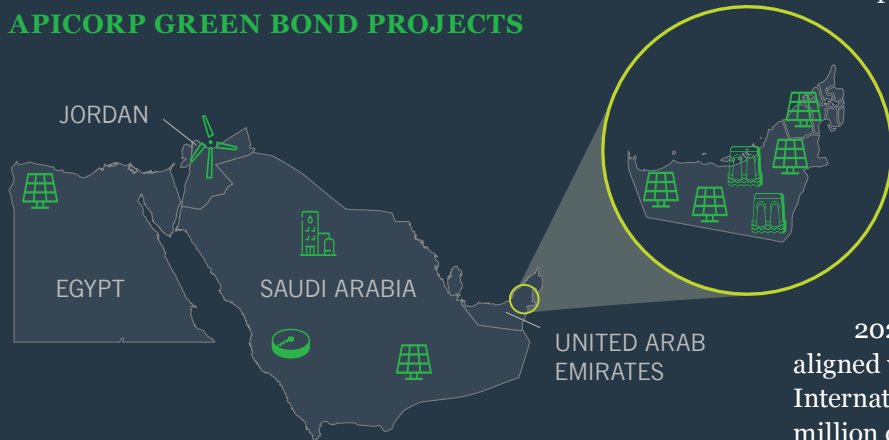
RENEWABLE ENERGY AND CLIMATE CHANGE








Broadly, TAEF’s mission is to (1) serve as the energy transition’s core financier within the MENA region; (2) support the sustainable economic development of its 10 oil-exporting member nations* through a range of green financing solutions and (3) diversify energy sources. Achieving these goals helps export renewable generation technology throughout the region.

TAEF provides funding for renewable projects like solar power plants — usually at more favorable rates than those available through commercial lending — with capital derived from fossil fuel-based sales. Bond proceeds may not be used to support activities related to fossil fuels.

APICORP GREEN BOND PROJECTS



-  Green hydrogen facility
-  Water treatment facility
-  Solar power
-  Wind power
-  Waste processing and energy facility

Development finance in the global south

Until recently, development funding has flowed primarily from the developed northern hemisphere to developing countries, mainly in the global south. TAEF, and other development finance institutions like the OPEC Fund for International Development, help upend the traditional north-to-south flow of capital, building wealth and technical expertise within the MENA region.

TAEF is uniquely positioned as all ten members are former colonies/protectorates with varied traditions of government. This holds appeal to recipient nations in the global south, as the sources of capital can be viewed as inspiration, or aspirational examples of how economic growth can promote economic independence.

In our view, the energy transition requires massive inflows of capital, and, for various reasons, the global south can struggle to attract such capital. TAEF plays an important role by providing funding where it’s most needed.

To help achieve its objectives, in September 2021 APICORP (as it was known then) issued bonds aligned with the Green Bond Principles established by the International Capital Market Association (ICMA). The \$750 million deal matures in October 2026 and is highly rated. Moody’s assigns a Aa2 rating, while Fitch upgraded the security from AA to AA+ in June 2024, both of which land solidly within investment grade territory.

Nuveen’s engagement

Our ESG/Impact investment team met with APICORP three times prior to issuance to assist in the development of its green bond framework and to verify that the offering met our impact criteria. Before we invest in an impact bond, we ensure its proceeds will fund projects or initiatives that deliver a clearly defined environmental or social benefit. In this case, proceeds from the 2021 APICORP issuance are eligible for projects in the following categories:

- Renewable energy, such as wind and solar, along with the development of transmission infrastructure
- Pollution prevention, including waste collection and treatment
- Green buildings that qualify for LEED gold standard or equivalent. LEED (Leadership in Energy and Environmental Design) is the world’s most widely used green building rating system, recognized in 186 countries and territories.

Critically, which is why we’re repeating it: activities related to fossil fuel extraction or energy production are not eligible projects.

** Algeria, Bahrain, Egypt, Iraq, Kuwait, Libya, Qatar, Saudi Arabia, Syria and the United Arab Emirates.*



RENEWABLE ENERGY AND CLIMATE CHANGE



The APICORP bonds funded the following outcomes across 11 projects in the MENA region, as shown below:

Country	People who benefited from access to basic products & services	CO2-equivalent emissions avoided	Total renewable energy capacity (MW)	Renewable energy generated (MWh)	People who benefited from clean water and wastewater projects	Waste diverted from landfills (metric tons)	Wastewater treated (million gallons/day)
UAE		1,092,310	2,823	352,242		68,505	
Saudia Arabia		434,564	5,350	411,356	166,071		53
Jordan	17,000	51,122	117	35,087			
Egypt		68,102	200	93,162			
TOTAL	17,000	1,646,098	8,490	891,847	166,071	68,505	53

“The Arab Petroleum Investments Corporation (APICORP) mandate includes a focus on financing a balanced approach to energy transition within the MENA region. Through issuing in green, APICORP has taken upon itself to cement its commitment towards supporting sustainable energy sources. We firmly believe that as corporations adopt more sustainable funding solutions, our economies achieve greater strides towards a greener future.”

— APICORP Impact Report 2023

Wastewater management can have a substantial impact on the sustainability of water supplies, human health, the economy and the environment. In the Arab world:

- about half the population lives under extreme water scarcity (less than 500 cubic meters per capita annually)
- 18 of the 22 Arab countries fall below the water poverty line (less than 1000 cubic meters per capita annually).²⁰



Natural resources

GPS BLUE FINANCING: GALAPAGOS BLUE BOND



UN SDG
ALIGNMENT

Measurable impact in 2023

- Marine area conserved (sq mi): 76,448

Galapagos blue bond supports sustainable fishing while protecting ecosystems

One of the most ecologically diverse areas on Earth and a designated UNESCO World Heritage Site, the Galapagos archipelago of 19 Pacific islands off the coast of Ecuador is home to at least 2,000 species found nowhere else on Earth. But despite previous efforts dating back to 1959 to protect and conserve this unique ecosystem, it continues to face substantial threats from illegal fishing, plastic pollution and climate change.

According to the Galapagos Conservation Trust, Galapagos National Park rangers removed 80,000 kilograms (~176,000 pounds) of plastic waste from the Archipelago's beaches between 2018-2023. Meanwhile, due to illegal, unreported and unregulated (IUU) fishing, Ecuador received a warning from European regulators in 2019 for not meeting EU tracking and certification standards. Fish (along with other aquatic species) is Ecuador's second-largest export (\$8.5 billion as of 2022), with half of that output typically made up of tuna exports to Europe.²¹ Illegal fishing would put this revenue — a source of hard currency reserves for the country — at risk.



Deal specifics

In 2023, Ecuadorian sovereign debt yields surged from about 14% to 22% amid the country’s mounting deficits and political turmoil. Fitch downgraded Ecuador’s sovereign credit rating from B- to CCC+ in August 2023 (Moody’s already had the rating at Caa3, per exhibit at right). Bondholders sold about \$1.6 billion of outstanding Ecuador bonds to Credit Suisse at roughly 40 cents on the dollar, as follows:

- **Notes due in 2030:** \$202 million face value
- **Notes due in 2035:** \$1 billion face value
- **Notes due in 2040:** \$420 million face value

Credit Suisse funded the purchase by creating a new legal entity that issued the \$656 million Galapagos Marine Bond, making it the largest-ever debt-for-nature swap. The bond offers a 5.645% coupon, matures in 2040 and is rated Aa2, Moody’s third-highest credit rating. The newly created special purpose vehicle (SPV) attained a solid investment grade credit rating due to structural support that helps to derisk the transaction, including a partial coupon guarantee from the Inter-American Development Bank and political risk insurance from the U.S. International Development Finance Corporation.

This debt-for-nature swap reduced Ecuador’s outstanding debt by nearly \$1 billion and reduced debt service cost to the new lower coupon. Ecuador’s lifetime savings will exceed \$1.126 billion, improving the country’s sovereign credit profile. With the savings from lower coupon payments to bondholders, Ecuador committed to funding new nature-based programs, alongside coordination and support from the influential fisheries industry within the country.

MOODY’S RATING SCALE

Aaa	Aa	A	Baa	Ba	B	Caa	Ca	C
	Aa1	A1	Baa1	Ba1	B1	Caa1		
	Aa2	A2	Baa2	Ba2	B2	Caa2		
	Aa3	A3	Baa3	Ba3	B3	Caa3		
<i>Galapagos Blue Bond</i>						<i>Ecuador</i>		

Sustaining positive outcomes

Before investing in an impact security such as the Galapagos BlueBond, we assess the use of proceeds for alignment with our impact framework, as well as the issuer’s willingness and ability to deliver relevant outcome-based impact reporting. In this case, the government established funding for conservation and sustainable fishing projects that align with our Natural Resources impact theme.

From a reporting standpoint, Nuveen’s investment team has access to the same impact data as the Galapagos Life Fund (GLF, a nonprofit organization) and various government ministries in Ecuador that oversee sustainability and conservation. We also participate in periodic meetings with representatives of the GLF and these ministries.

Conservation funds provided: \$12 million per year, managed by the GLF and used to implement 18 separate sustainability commitments between 2023-2037. Importantly, the sustainability agreements embedded in this deal were developed with fishing industry and regulator buy-in, helping to ensure a mutually agreed-upon balance between ecological conservation outcomes and sustainable fishing practices for Ecuador’s economically vital commercial tuna fleet.

Implementation of vessel monitoring systems for Ecuador’s commercial tuna fleet to combat IUU fishing.

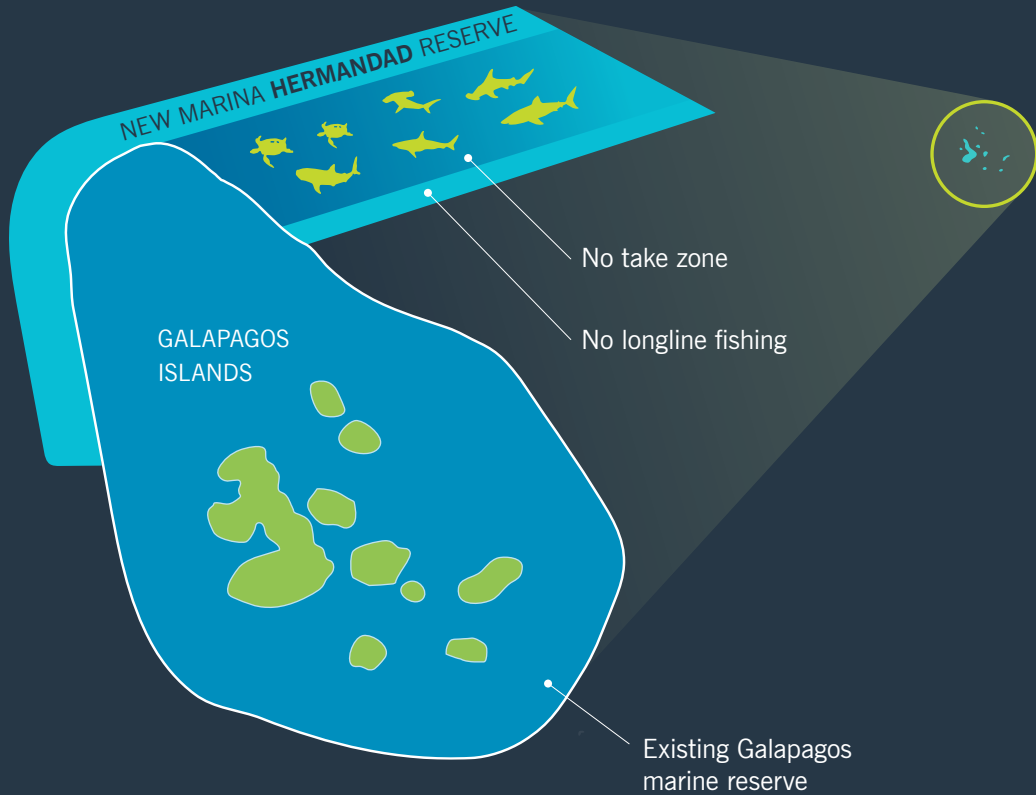
New marine area conserved: 60,000 square kilometers (twice as large as Belgium) between the Galapagos and Costa Rica, including a 30,000 square kilometer “no fishing” zone to protect migrating species such as whales and sharks, and a second zone that prohibits longline fishing (a harmful practice resulting in the unintended bycatch of endangered species).

Total marine area conserved: 198,000 square kilometers (twice as large as Portugal); a combination of new expansion and the existing marine reserve.

Endowment seeding capital raised: \$5.4 million per year to finance conservation activities. According to the Pew Research Center, when the bond matures, the endowment’s assets will have reached approximately \$227 million from the accumulated payments and investment earnings — enough to continue conservation financing in perpetuity.



GALAPAGOS MARINE PROTECTED AREAS



“The complexity of managing an open ocean area such as Hermandad Marine Reserve (HMR) requires sustained institutional strengthening, financing, and management mechanisms that foster coordination and cooperation among all the actors responsible for its conservation and commercial use. The GLF will play a crucial role in providing financial support for the effective implementation of the HMR Management Plan.”

— Galapagos Life Fund Impact Report 2024

Data deep dive

Area median
income ▶

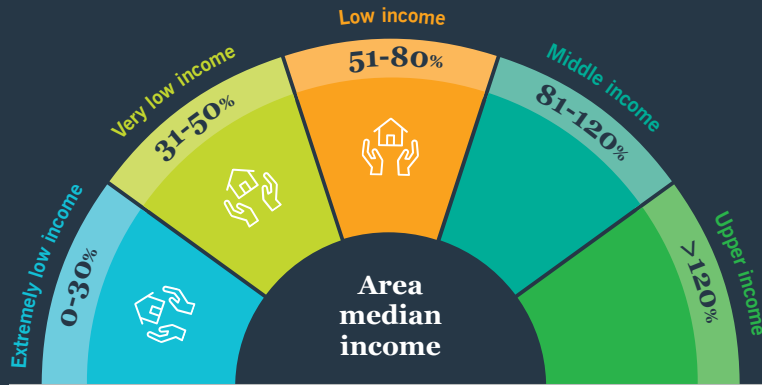
Gender
inequality ▶

Biodiversity ▶

Energy costs ▶

LEED map ▶

Area median income (AMI)



Area median income (AMI) is a metric the U.S. Department of Housing and Urban Development (HUD) uses to determine eligibility for certain federal housing programs. For housing under HUD’s Section 8 program, eligibility is determined by tiers of renters by income outlined in the graphic above. In addition to HUD, many local housing programs use AMI levels to govern eligibility for affordable housing programs.

Identifying differences in income characteristics among rural and urban areas as well as across different geographic regions is vital to understanding housing inequality to create policy and finance investments that meet area-specific needs.

 *Aligned with Nuveen’s Affordable Housing impact theme*

Affordable housing eligibility identified above is in accordance with the HUD’s Section 8 housing income limitations. We do not set formal AMI income limits for affordable housing project eligibility.

City	Income band	Persons in family			
		1	2	3	4
Chicago, IL	<ul style="list-style-type: none"> Low income Very low income Extremely low income 	\$ 61,800	\$ 70,600	\$ 79,450	\$ 88,250
Miami, FL	<ul style="list-style-type: none"> Low income Very low income Extremely low income 	\$ 57,800	\$ 66,050	\$ 74,300	\$ 82,550
San Antonio, TX	<ul style="list-style-type: none"> Low income Very low income Extremely low income 	\$ 49,150	\$ 56,200	\$ 63,200	\$ 70,200
Los Angeles, CA	<ul style="list-style-type: none"> Low income Very low income Extremely low income 	\$ 70,650	\$ 80,750	\$ 90,850	\$ 100,900
New York City, NY	<ul style="list-style-type: none"> Low income Very low income Extremely low income 	\$ 79,200	\$ 90,500	\$ 101,800	\$ 113,100

Source: Housing and Urban Development Section 8 Income Limits 2023²⁵

Gender inequality

Women’s economic empowerment has been shown to increase national incomes, lower overall rates of income inequality, and bolster financial sector resiliency. For economies to grow and function to their potential, it’s imperative that the public and private sectors come together to create opportunities for women in areas that lack resources while providing pathways to economic stability and labor participation.

The World Economic Forum’s Global Gender Gap Report benchmarks the current state of gender parity between men and women across four key dimensions:

- Economic participation and opportunity
- Educational attainment
- Health and survival
- Political empowerment

Figure 2: Economic participation and opportunity and political empowerment have significant gender disparity²⁶

	Overall index (%)	Economic participation and opportunity (%)	Educational attainment (%)	Health and survival (%)	Political empowerment (%)
Eurasia and Central Asia	69.0	68.8	98.9	97.4	10.9
East Asia and the Pacific	68.8	71.0	95.5	94.9	14.0
Europe	76.3	69.7	99.6	97.0	39.1
Latin America and the Caribbean	74.3	65.2	99.2	97.6	35.0
Middle East and North Africa	62.6	44.0	95.9	96.4	14.0
North America	75.0	77.6	99.5	96.9	26.1
Southern Asia	63.4	37.2	96.0	95.3	25.1
Sub-Saharan Africa	68.2	67.2	86.0	97.2	22.6



Figure 2 breaks down those four dimensions, or subindexes, to reveal regional differences. Darker colors represent higher levels of parity. Economic Participation and Opportunity and Political Empowerment have large gender gaps in most regions, significantly trailing behind near-parity in the other two subindexes. A prominent driver of gender inequality within the Economic Participation subindex is the overall underrepresentation of women in the labor market.²⁶

According to IFC estimates, more than 70% of women-owned small and medium-sized enterprises (SMEs) have inadequate or no access to financial services²⁷. By supporting investments that direct capital to women, investors can play a crucial role in closing the gender gap and fostering sustainable economic growth.

At right, we describe three impact investments to which Nuveen directed client capital as of year-end 2023.

EXAMPLES

Georgia Power Company | Location: United States

These bonds were designed to advance racial equality, economic opportunity, and environmental sustainability. At least 50% of net proceeds are to be allocated to social spend to primarily benefit minority- and/or female-owned suppliers. As of May 2023, \$608 million, or 77% of the proceeds, had been allocated to eligible social spend, including 119 minority-owned suppliers, 278 women-owned suppliers, 14 veteran-owned suppliers, and 434 small business enterprises.

Women’s Livelihood Bond (WLB) | Locations: India, Cambodia, Indonesia, Sri Lanka, Philippines, Kenya

The WLB series consists of multi-country, gender-focused debt securities managed by Impact Investment Exchange (IIX). Nuveen has been the lead investor in Bonds 2 through 6. Proceeds help transition women from subsistence to sustainable livelihoods through the provision of capital, access to credit, market linkages, and affordable goods and services. The bonds provide capital to lenders in each country who then provide low-cost capital and financing to local women entrepreneurs. In addition to capital, women are offered resources to improve financial literacy and implement sustainable agricultural practices.

U.S. International Development Finance Corporation

Location: United States

The U.S. International Development Finance Corporation’s 2X Women’s Initiative is built on the premise that the world’s largest emerging market isn’t a country or region, but the world’s women. 2X seeks to invest in projects that are owned by, led by, or empower women in developing regions. The bonds’ proceeds support projects to economically empower women who are disproportionately impacted by poor access to water and sanitation in the developing world.

Biodiversity

Biological diversity, or biodiversity, is the variety and variability of life on Earth. Biodiversity enables ecosystems to be productive, resilient, and adaptable to change, providing food and raw materials, air and water filtration, pollination, carbon storage and climate regulation.

Biodiversity loss presents significant risks for agricultural businesses, residential and commercial landowners, health and safety at home and at work, and the wider economy.

Living things on our planet have been declining at an alarming rate in recent years, mainly due to human activities, such as land use changes, pollution and climate change.

Declines in various biodiversity indicators over the past fifty years have negatively impacted the ability of nature to contribute to people. Nature-based solutions offer a cost effective way to restore and maintain vital ecosystems, address climate change, and reverse biodiversity loss.

Recent per-decade rate of change (%) – 1968-2018



Source: IPBES Global Assessment Report on Biodiversity and Ecosystem Services 2019²⁸

EXAMPLES

Klabin Finance | Location: Brazil

Klabin is Brazil's largest paper producer and exporter. Klabin's long-term business strategies are based on operational and energy efficiency, responsible management of resources and commitments to the environment and its stakeholders. It was the first company in the pulp and paper industry in the Southern Hemisphere to receive FSC® certification (Forest Stewardship Council®) for its forest areas in 1998 and the first in the world to have non-timber forest products certified. Proceeds from this bond finance sustainable forest management and conservation practices.

Family Forest Impact Foundation (FFIF)

Location: United States

The FFIF seeks to support the adoption of woodland management practices for 500 landowners, who collectively own 92,000 acres in the Central Appalachians. Its overarching goal is increasing carbon sequestration — the process by which trees reduce CO₂ in the atmosphere by storing the gas in their trunk, leaves and roots. Engaging landowners should sequester more CO₂ than if they persist in not managing the woodlands, since a “hands off” approach to foresting can lead to diseased trees infecting large, healthy ones — which store the most CO₂ — or falling and damaging them.

Observed trends in ecosystem services and biodiversity indicators, 1968-2018

Biodiversity sustains essential natural processes that human livelihoods rely on, including food production, water availability, and natural coastal protections. We believe the health of the planet's ecosystems and the quality of human life are deeply linked. Nuveen's investment in innovative debt for nature swaps, wildlife conservation bonds, reforestation and sustainable forest programs, and other nature positive outcomes helps support these essential natural processes.

— Jessica Zarzycki, ESG/Impact Portfolio Manager

Major decrease



Pollinator diversity

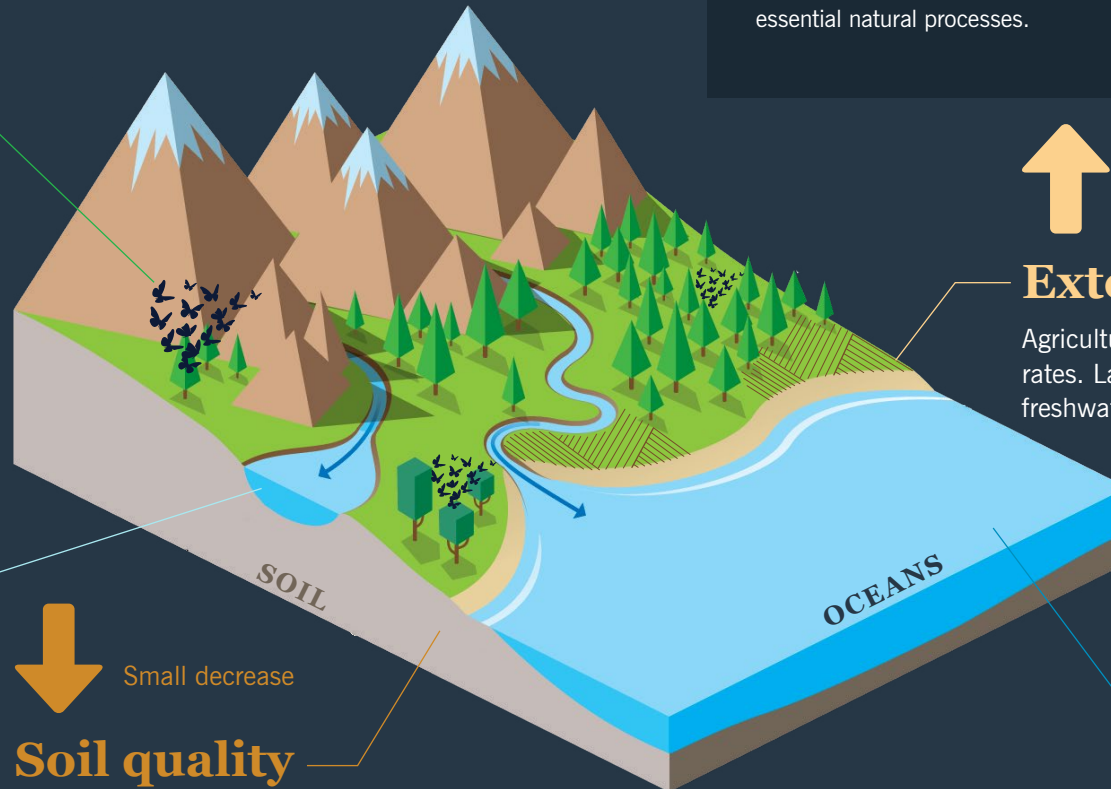
Declines in animal pollinators has significant negative consequences for the stability of pollination of crop and wild plants. More than 3/4ths of the leading types of global food crops rely to some extent on animal pollination.²⁸

Major decrease



Water available relative to demand

Changes in water availability are largely a result of changes in climate, evapotranspiration, and human water extraction and river regulation.²⁸



Small increase



Extent of agricultural land

Agricultural land is associated with the highest erosion rates. Land degradation is also the main stressor affecting freshwater ecosystems.²⁸

Small decrease



Soil quality

A decline in soil organic carbon has resulted in lower crop yields due to soil degradation.²⁸

Major increase



Ocean acidification

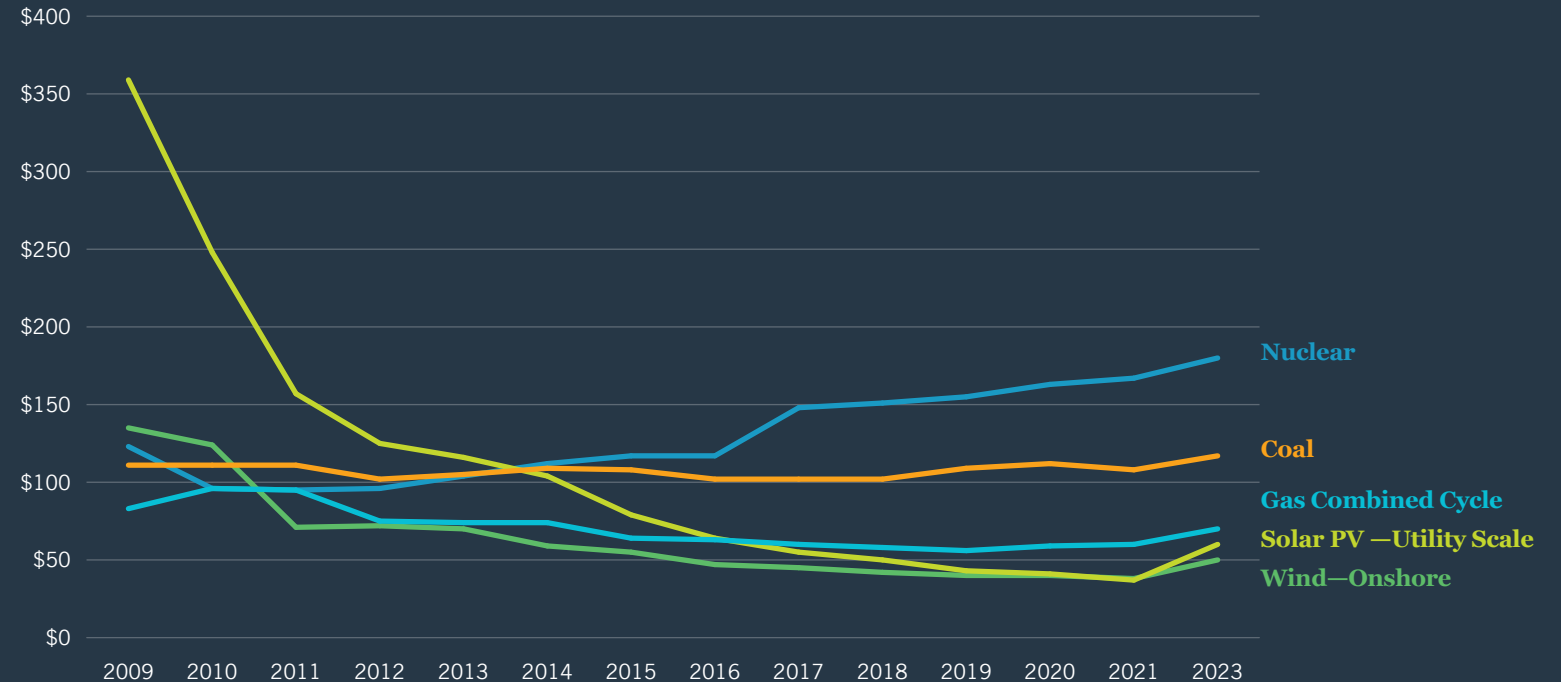
Ocean acidification has decreased the availability of corals and shellfish, as it prevents them from properly developing. This is especially problematic as coral ecosystems provide coastal protection.²⁸

Energy costs

Renewable energy is increasingly undercutting fossil-fuel fired plants as its costs decline. The cost of solar photovoltaic (PV), commonly known as solar panels, has declined exponentially over the decade and a half shown on the chart. Wind generation costs have also dropped materially. These costs curves resemble technological revolutions of the past, as increased production drives economies of scale. Several factors have contributed, but the following trends stand out:

- 1. Policy changes:** Driven by ambitious net zero goals and political appetite for energy security, policy reform, tax credits, subsidies and energy targets have propelled investments into renewables. Examples include the Inflation Reduction Act (IRA) in the U.S. and the Renewable Energy Sources Act in Germany.
- 2. Technological advancements:** Improvements in capacity and efficiency have driven costs down. Materials continue to get cheaper and lighter as R&D improves. For example, the price of polysilicon per kilowatt (kW) of solar keeps falling.²⁹ Polysilicon is a key component in PV cells.
- 3. Commodity pricing:** While still connected to global trade from a manufacturing perspective, renewable generation is less susceptible to drastic changes in commodity pricing. The spike in fuel prices in Europe spurred by the Russia-Ukraine war is a recent example of geopolitical risk causing commodity price volatility, and cost burdens for residential and commercial consumers. Renewable energy benefits from localized generation, which reduces dependency on international markets and strengthens energy security.

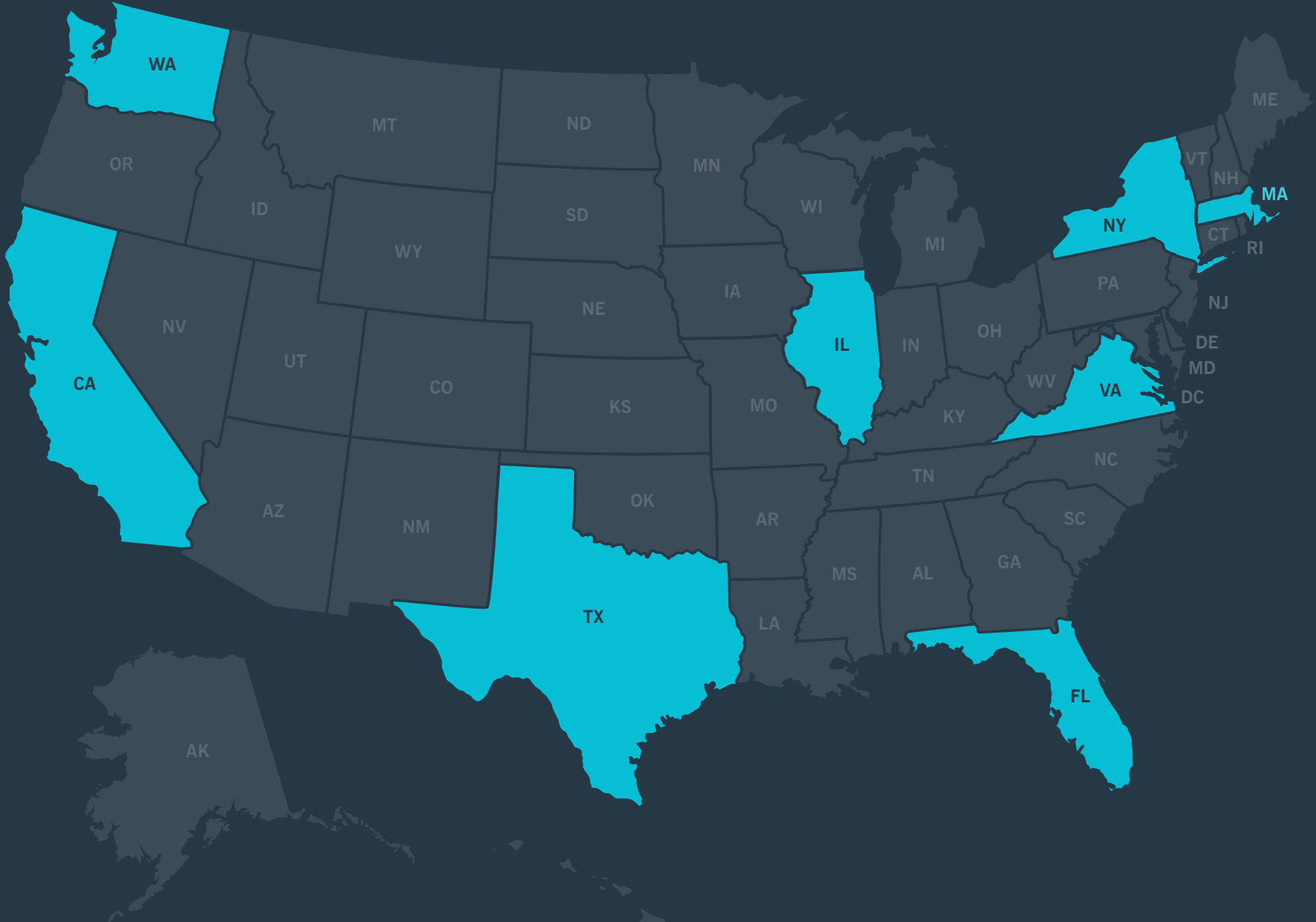
*Levelized cost of energy (\$/MWh)
A power plant's lifetime costs divided by its energy production*



Source: Lazard Levelized Cost of Energy Analysis, Version 16.0³⁰
LCOE 2022 data is not available.

LEED buildings map

LEED rating scale [here](#)



Regional results

United States ▶

Americas
(ex-US) ▶

Europe ▶

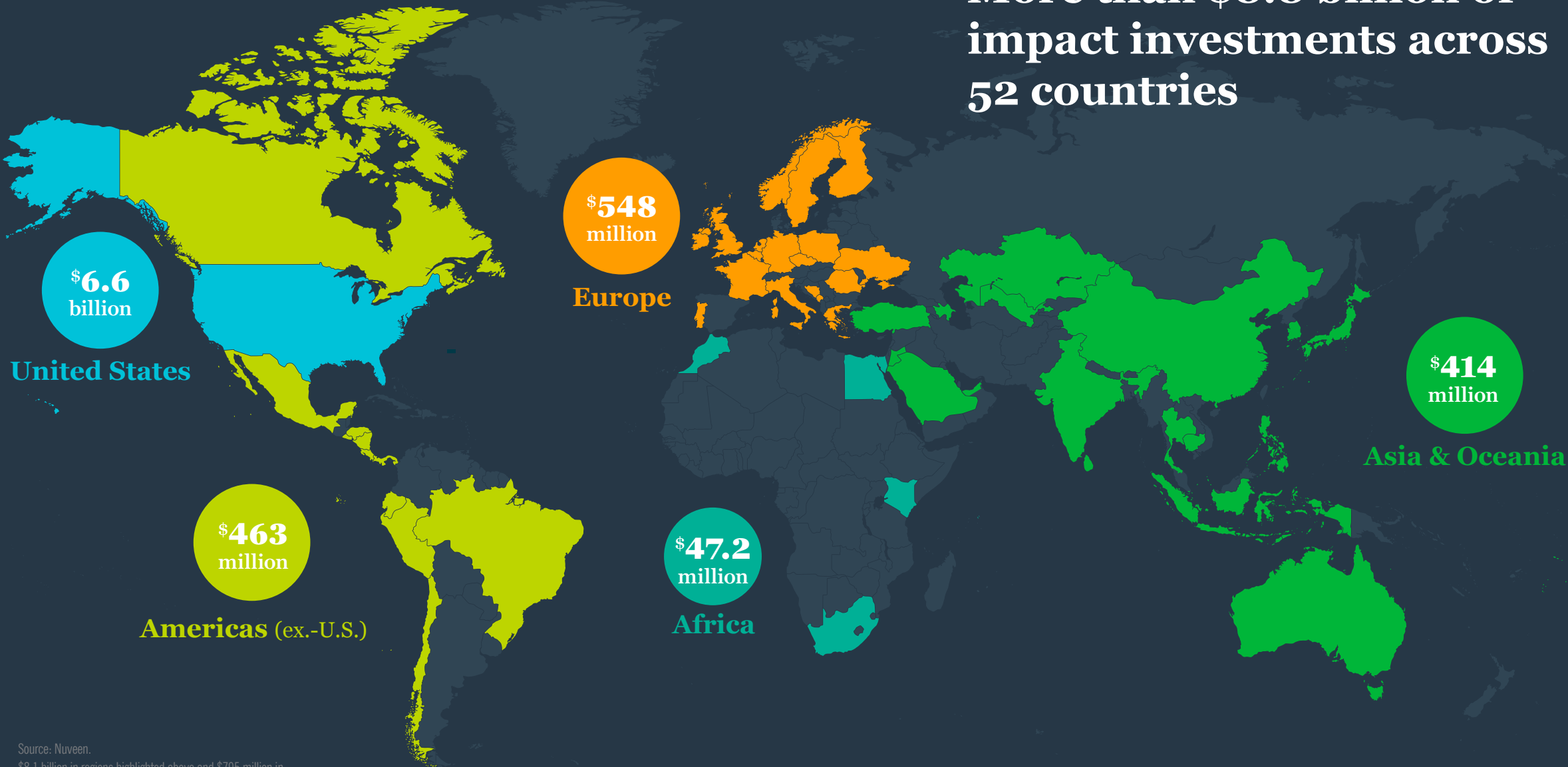
Asia and
Oceania ▶

Africa ▶



Making a global impact

More than \$8.8 billion of impact investments across 52 countries

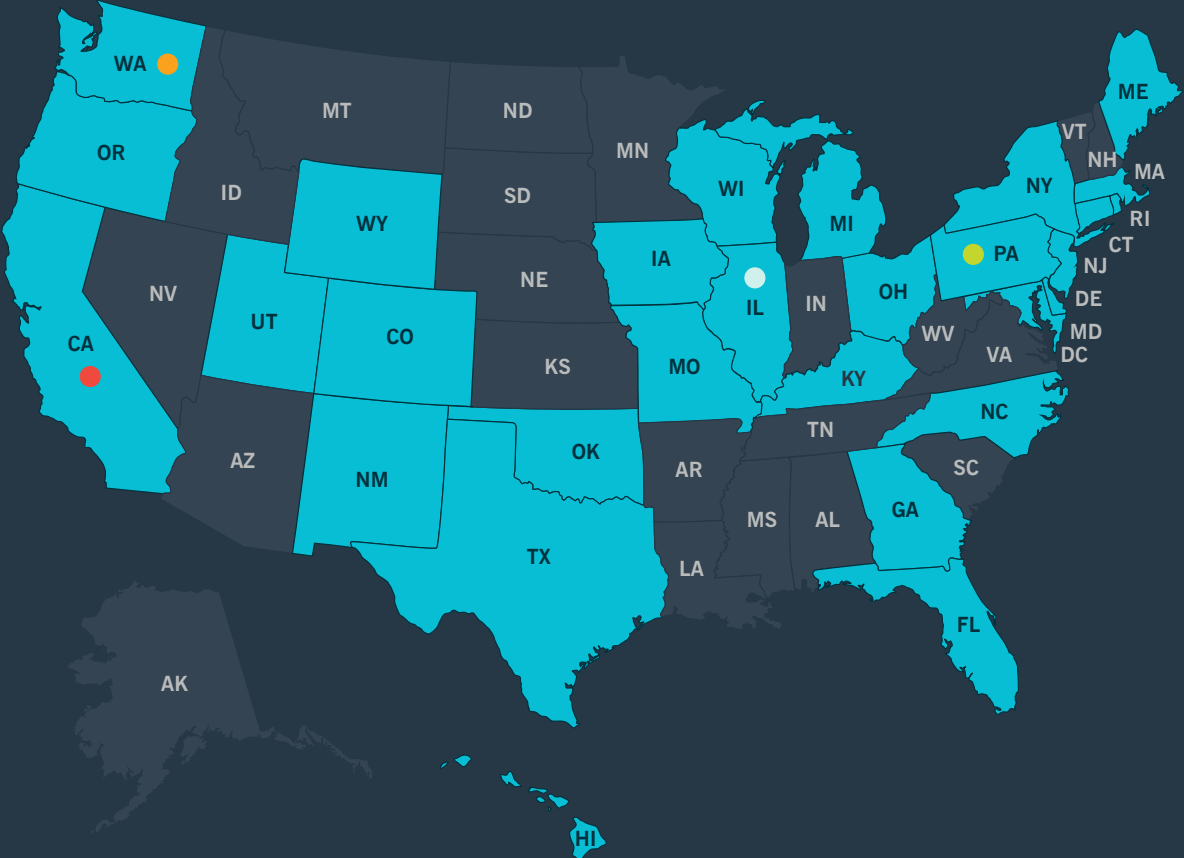


Source: Nuveen.
\$8.1 billion in regions highlighted above and \$795 million in multiple regions or where exact locations are unknown. As of 31 Dec 2023.

United States: \$6.6 billion in impact investments financing projects in 29 states and the District of Columbia

EXAMPLES

Issuer	California Health Facilities Financing Authority	Redevelopment Authority of the City of Philadelphia	Tuolumne Wind Projects	Metro Water Reclamation District of Greater Chicago
Locations	California	Pennsylvania	Washington	Illinois
Theme	Affordable housing	Community and economic development	Renewable energy and climate change	Natural resources
Use of proceeds	Permanent supportive housing	Neighborhood preservation programs	Finance wind energy projects	Environmental upgrades to water/sewer systems
Impact	Housing units built or supported: 1,634	People who benefited from access to basic products and services: 5,882	Total renewable energy capacity: 136 MW	Wastewater treated: 1,190 million gallons/day
SDG alignment				



Projects are financed in highlighted states.

2023 results from U.S.-based impact projects financed by the global fixed income team include the following:



Affordable housing

Affordable mortgages guaranteed	1.3 million
Access to housing including displacement, workforce, and affordability	428,167 units
Housing units built or supported at or below 80% AMI	81,365 units
Housing units built or supported at or below 60% AMI	67,369 units
Housing units built or supported at or below 30% AMI	16,071 units



Community and economic development

Full-time jobs created	20,012 FTE
People who benefited from access to basic products and services	26 million
People reached through community programs	20.8 million
People reached through community programs (women)	At least 347,000
People benefited from broadband access	4,000



Renewable energy and climate change

CO ₂ equivalent emissions avoided	91.5 million metric tons
Energy saved	4 billion kWh
Total renewable energy capacity	52,382 MW
New renewable energy capacity	3,036 MW
Renewable energy generation	88 million MWh annualized
Daily riders on public transit	4.3 million
Battery capacity	1,217 MW



Natural resources

Land conserved	507,487 acres
Land restored or sustainably managed	211,658 acres
Waste recycled	1.6 million metric tons
Waste diverted from landfills	22.7 million metric tons
People who benefited from clean water and wastewater projects	39 million
Water delivered	1.2 billion gallons/day
Water saved	7.3 billion gallons
Wastewater treated	2.3 billion gallons/day
LEED Gold certified buildings	86 buildings
LEED Platinum certified buildings	20 buildings
Carbon sequestered	109.6 million metric tons

Americas (ex-U.S.): \$463 million in impact investments financing projects in 11 countries³¹

EXAMPLES

Issuer	Fondo Mivivienda S.A.	Banco Nacional de Comercio Exterior	Royal Bank of Canada	GPS Blue Financing
Locations	Peru	Mexico	Canada	Ecuador
Theme	Affordable housing	Community and economic development	Renewable energy and climate change	Natural resources
Use of Proceeds	Sustainable affordable housing	Finance employment generation	Finance renewable energy and green building projects	Marine conservation of the Galapagos
Impact	Housing units built or supported: 9,863	Full time jobs created: 15,312 FTE	Energy saved: 11 million kWh Total renewable capacity: 230 MW	Marine area conserved: 76,448 sq miles
SDG alignment				

Projects are financed in highlighted countries.



2023 results from Americas (ex-U.S.)-based impact projects financed by the global fixed income team include the following:



Affordable housing

Access to housing including displacement, workforce, and affordability 9,863 units



Community and economic development

Full-time jobs created	15,312 FTE
People who benefited from access to basic products and services	7.2 million
People reached through community programs	12,595
People who benefited from broadband access	104,260



Renewable energy and climate change

CO ₂ equivalent emissions avoided	795,795 metric tons
Total renewable energy capacity	40,784 MW
Renewable energy generation	163 million MWh annualized
Energy saved	815.5 million kWh
Daily riders on public transit	113,973
















Natural resources

Marine area conserved	76,448 square miles
Waste diverted from landfills	67,108 metric tons
People who benefited from clean water and wastewater projects	21 million

Europe: \$548 million in impact investments financing projects in 18 countries³¹

EXAMPLES

Issuer	BNG Bank N.V.	BPCE	Kreditanstalt Fuer Wiederaufbau (KfW)	Bank of Ireland Group
Locations	 Netherlands	 France	 Germany	 Ireland
Theme	Affordable housing	Community and economic development	Renewable energy and climate change	Natural resources
Use of proceeds	Affordable housing	Finance loans to small and midsize enterprises (SMEs) and non-profit organizations	Renewable energy projects	Finance green buildings and energy efficiency
Impact	Housing units built or supported: 5,818	People who benefited from access to basic products and services: 42,197	Total renewable energy capacity: 309 MW Renewable energy generated: 530,862 MWh	CO ₂ equivalent emissions avoided: 180,196 metric tons
SDG alignment	 	 	 	  



Projects are financed in highlighted countries.

2023 results from Europe-based impact projects financed by the global fixed income team include the following:



Affordable housing

Access to housing including displacement, workforce, and affordability	5,818 units
------------------------------------------------------------------------	-------------



Community and economic development

People who benefited from access to basic products and services	68 million
-----------------------------------------------------------------	------------



Renewable energy and climate change

CO ₂ equivalent emissions avoided (metric tons)	36.9 million metric tons
Energy saved	1.2 billion kWh
Total renewable energy capacity	82,878 MW
New renewable energy capacity	9,260 MW
Renewable energy generation	225.8 million MWh annualized












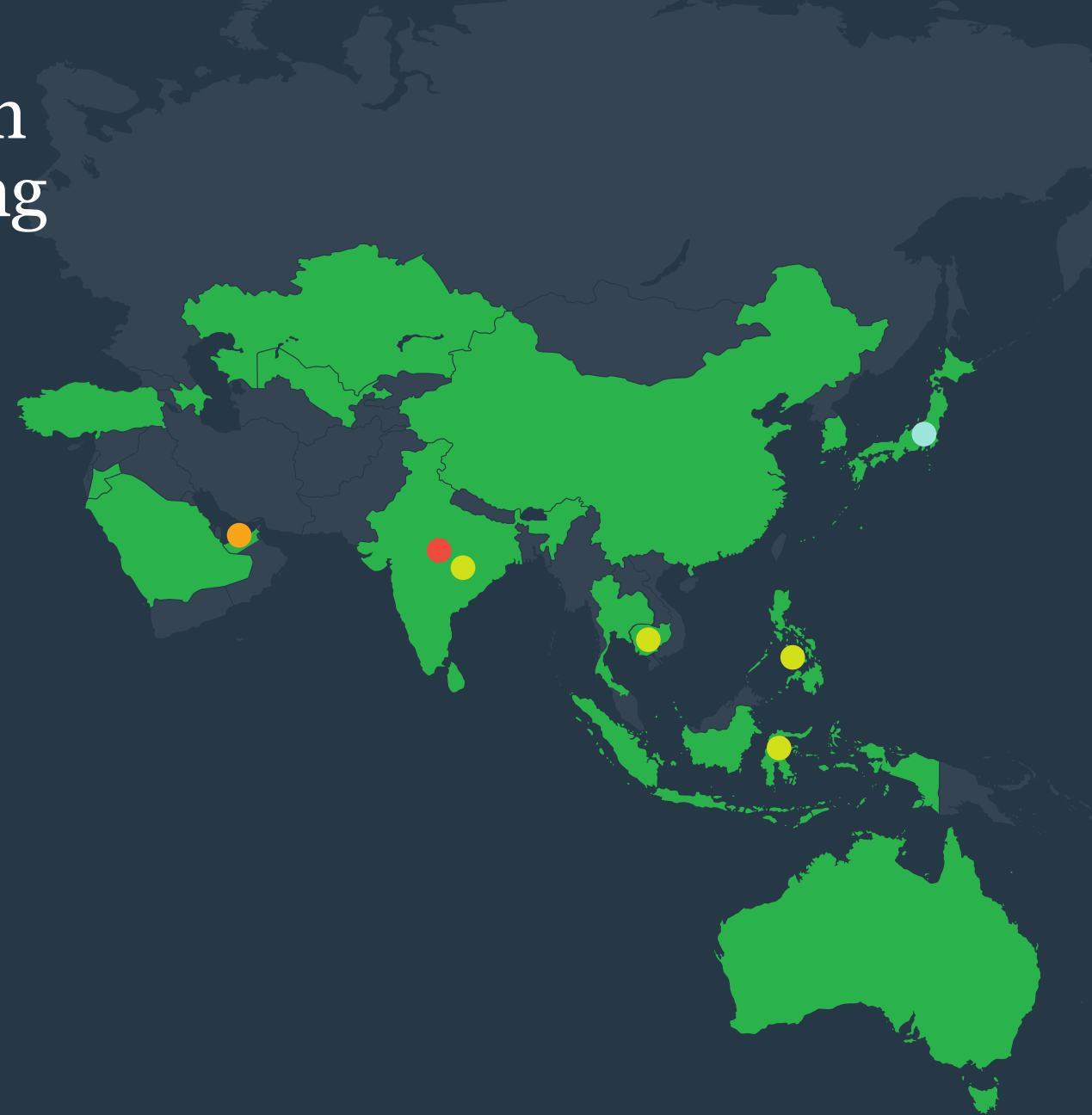
Natural resources

People who benefited from clean water and wastewater projects	117,286
Water saved	2.5 billion gallons
Wastewater treated	19 million gallons/day
LEED Platinum certified buildings	1
LEED Gold certified buildings	8
BREEAM certified Good, Very Good, Excellent, or Outstanding	15
Carbon sequestered	356,099 metric tons

Asia and Oceania: \$414 million in impact investments financing projects in 17 countries³¹

EXAMPLES

Issuer	AID-India	WLB 4	Sweihan PV Power Co	Development Bank of Japan Inc.
Locations	India	Cambodia, Indonesia, India, Philippines	United Arab Emirates	Japan
Theme	Affordable housing	Community and economic development	Renewable energy and climate change	Natural resources
Use of proceeds	Affordable housing projects	Finance loans to support women-focused enterprises	Finance solar photovoltaic array facility	Finance renewable energy, energy efficiency, green building projects
Impact	Housing units built or supported: 116,542 units	People who benefited from access to basic products and services: 24,130	Total renewable energy capacity: 1,177 MW	CO ₂ equivalent emissions avoided: 8,749 metric tons
SDG alignment	 	  	 	 



Projects are financed in highlighted countries.

2023 results from Asia- and Oceania-based impact projects financed by the global fixed income team include the following:



Affordable housing

Access to housing including displacement, workforce, and affordability	116,542 units
------------------------------------------------------------------------	---------------



Community and economic development

People who benefited from access to basic products and services	145,979
People who benefited from access to basic products and services (women)	At least 128,979
Farmers trained	13,303
Farmers trained (women)	At least 13,303
People reached through community programs	143,450
People reached through community programs (women)	At least 143,450



Renewable energy and climate change

CO ₂ equivalent emissions avoided	9.4 million metric tons
Energy saved	390,000 kWh
Total renewable energy capacity	30,469 MW
Renewable energy generation	18.3 million MWh annualized














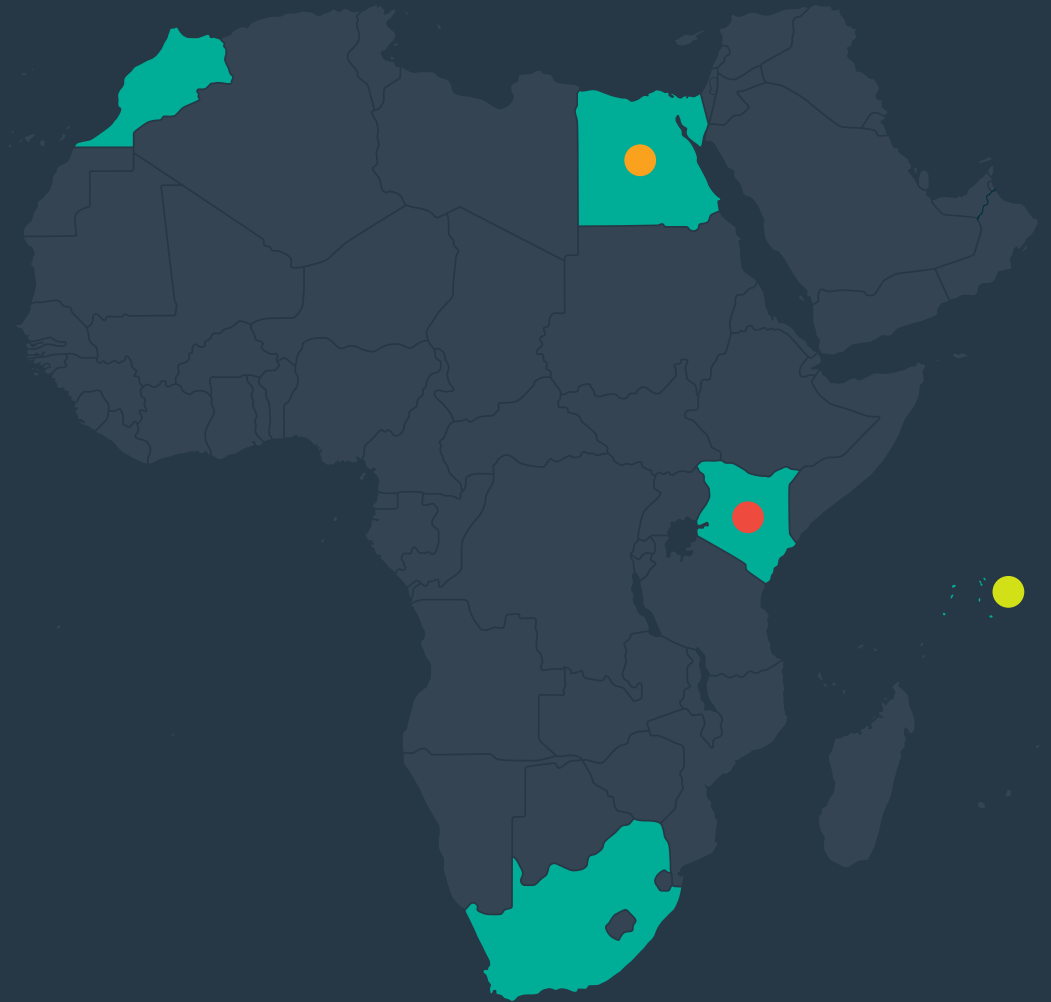
Natural resources

People who benefited from clean water and wastewater projects	203,056
Wastewater treated	53 million gallons/day
Water saved	31.9 billion gallons
Waste diverted from landfills	69,305 metric tons
Land restored or sustainably managed	59,893 acres

Africa: \$47.2 million in impact investments financing projects in 5 countries³¹

EXAMPLES

Issuer	WLB 5	Arab Petroleum Investment Corporation	Republic of Seychelles
Locations	 Kenya	 Egypt	 Seychelles
Theme	Community and economic development	Renewable energy and climate change	Natural Resources
Use of proceeds	Finance loans to support women-focused enterprises	Renewable energy projects	Marine conservation projects
Impact	Farmers trained (women): 1,586	Total renewable energy capacity: 200 MW	Marine area conserved: 19,305 sq miles
SDG alignment	  	  	 



Projects are financed in highlighted countries.

2023 results from Africa-based impact projects financed by the global fixed income team include the following:



Community and economic development

Farmers trained	1,586
Farmers trained (women)	At least 1,586



Renewable energy and climate change

CO ₂ equivalent emissions avoided	902,342 metric tons
Total renewable capacity	300 MW
Renewable energy generation	93,162 MWh annualized



Natural resources

Marine area conserved	19,305 sq mi.
Land restored or sustainably managed	378,071 acres

How we invest in a changing world

Measuring outcomes ▶

BlueMark ▶

Engagement ▶

Data sources ▶

SDG alignment ▶

Measuring direct, real-world outcomes

Our impact investments finance positive social and environmental outcomes on six continents, help address critical global challenges, and transition economies and communities to a more sustainable future.

“

Our rigorous approach — from engaging with issuers during due diligence to improving data quality to filling in gaps using third-party providers — enables us to produce clear and transparent impact reporting.”

— Maximilian Hass
Impact Analyst, Nuveen

Evaluating impact investing through the measurement and analysis of Key Performance Indicators (KPIs) — quantifiable measures of performance over time for a specific objective — is integral to our investment process. However, a lack of industry standardization and agreed-upon KPIs can make it challenging to measure and analyze impact data at the portfolio, strategy and platform levels. In light of these challenges, we continuously enhance our comprehensive approach to data capture and analysis in order to provide high-conviction impact reporting to our clients.

Each year, the Portfolio Management and Responsible Investing teams review our list of impact KPIs, adjusting for improved granularity and including additional indicators if necessary. For this reporting cycle, we added battery storage capacity and carbon sequestration as KPIs to reflect new investments in projects supporting these outcomes. In the case of affordable housing, metrics allow us to analyze and report on affordability at a more granular level. We now capture and report data on affordable housing bonds based on occupants that earn 80%, 60% and 30% of Area Median Income (AMI).

The next step after finalizing impact KPIs involves sourcing issuer impact reports. Annually, we source impact reports from the second quarter and early third quarter to align with issuers' impact reporting timelines.

We also flag and share reports we deem best-in-class with issuers as examples of the quality of reporting we expect. When an issuer's reporting is unclear or does not meet our expectations, we engage with them to improve it.

Once impact reports have been collected, we begin to extract data, which involves capturing impact KPIs, standardizing data, tracking geographic information, and recording issuer disclosure types (security, project, program or issuer). In certain instances, we look to third-party data providers to fill gaps in impact data. Examples of outside data sources include the U.S. Energy Information Administration (EIA) to measure the energy generation of renewable energy investments, and the U.S. Environmental Protection Agency (EPA), whose widely accepted “AVoided Emissions and geneRation Tool” (AVERT) helps calculate an investment's reduction in carbon dioxide emissions.

Grappling with disparate sources of impact data presents challenges in assessing and quantifying how effectively investments are delivering on their intended impact objectives. Nevertheless, our rigorous approach — from engaging with issuers during due diligence to improving data quality to filling in gaps using third-party providers — enables us to produce clear, transparent annual impact reports for our clients.

We are a founding signatory of the Operating Principles for Impact Management, with verified top-decile practices

BlueMark, an independent provider of impact verification services, verifies our impact practices bi-annually. In 2024, we received top scores for seven of eight operating principles, earning us the designation of practice leaders in the top 10% of verified managers.⁵

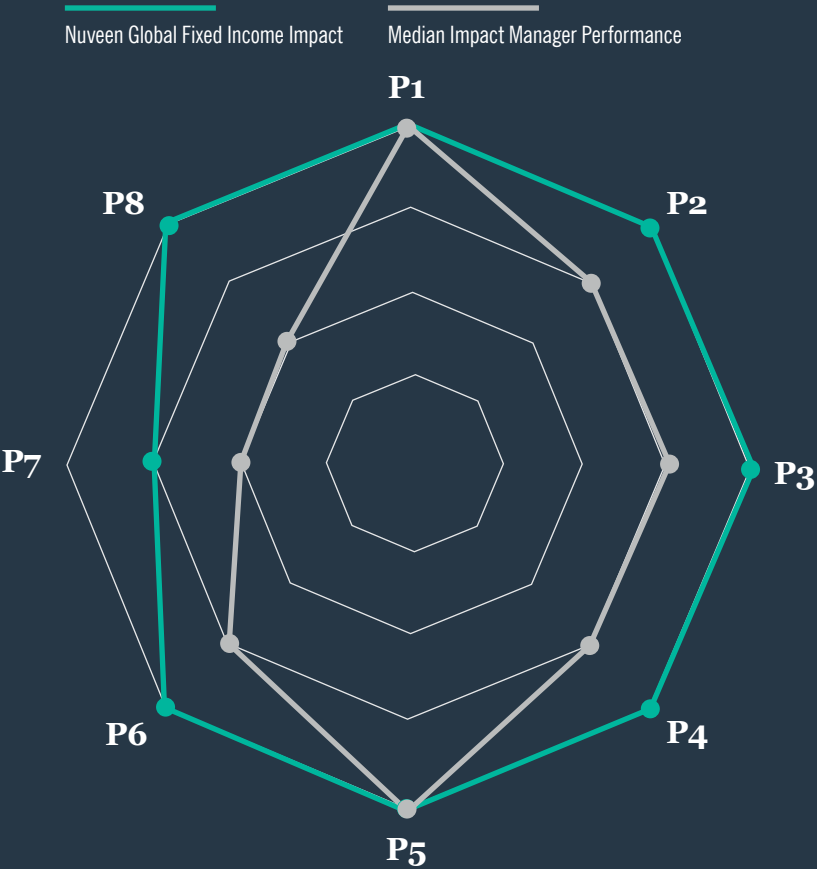
NUVEEN'S 2024 PERFORMANCE RATING

Advanced ●●●● High ●●● Moderate ●● Low ●

Operating principle	Nuveen's score
Set and manage a strategic impact intent in line with investment objectives.	P1 ●●●●● P2 ●●●●●
Assess the expected impacts of each investment, monitor those impacts, and contribute to growing those impacts over time.	P3 ●●●●● P4 ●●●●● P5 ●●●●●
Monitor the performance of each investment, adjust appropriately.	P6 ●●●●●
Ensure impact post-exit; review, document, and improve impact processes.	P7 ●●●● P8 ●●●●●

Source: Nuveen 2024 Results

NUVEEN'S PERFORMANCE COMPARED TO BLUEMARK DATASET

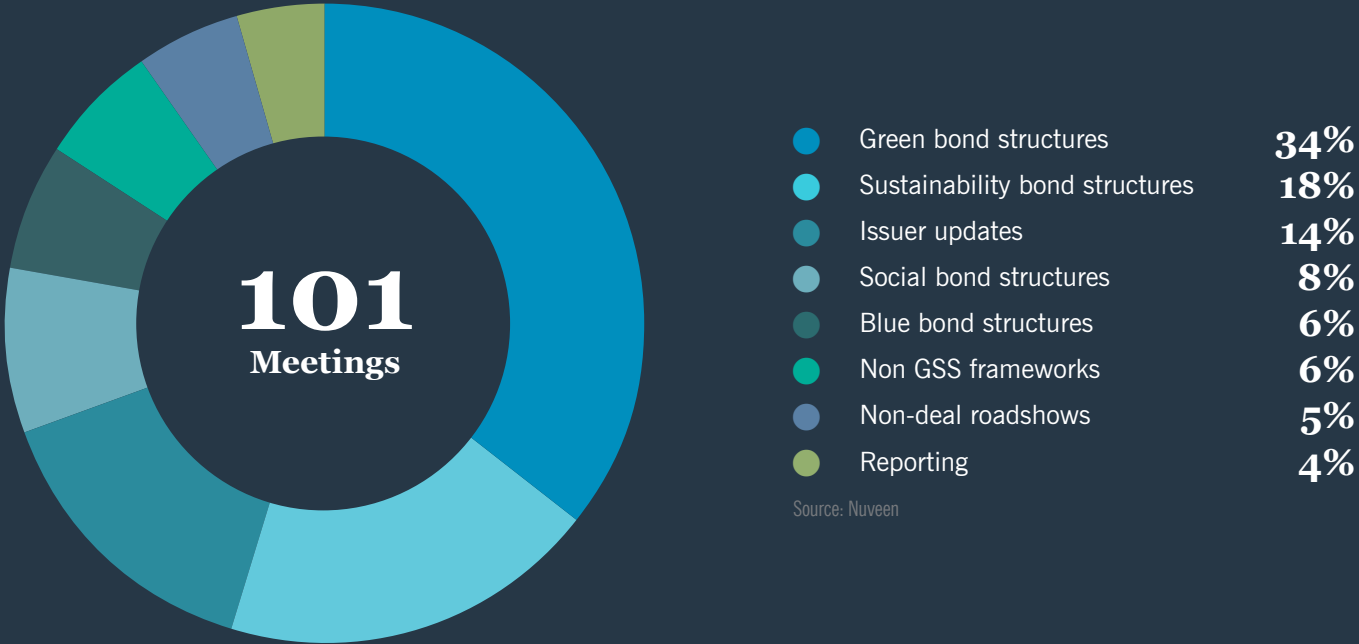


Engagement by the numbers: 2023

Regulatory standards for whether a security is “green,” “blue,” or “impact” aligned are proliferating and sowing confusion. Stakeholder-focused investment solutions also lack consistency and standardization.

That’s why Nuveen engages with issuers and financial intermediaries. We seek to ensure our investments provide the appropriate incentives and accountability mechanisms to deliver on impact objectives and also show proof of concept to potential issuers and large institutional investors that accessing public fixed income markets can be a powerful way to finance innovative impact opportunities.

- On-going dialogue with issuers, rating agencies, and industry experts empowers our portfolio managers and analysts to collaborate and influence use of proceeds, impact reporting standards, deal structures, and help shape what we believe to be best-in-class ESG-related business practices.
- Our relationship with issuers and underwriters paved the way for first-of-their-kind environmental and social transactions in public markets, helping to enable subsequent deals to come to market.
- Nuveen’s fixed income impact team conducted 101 engagement meetings in 2023, covering the key topics and issues detailed at right.



Measuring impact: methodology and data collection

We collect social and environmental impact data annually directly from issuer disclosures. Our goal is to collect the most relevant and specific impact data related to the activities financed directly or indirectly by the investments. To that end, we use four types of issuer disclosures (listed in order from most preferred to least):

- 1. **Security-level data**
sourced from bond-level impact reports for specific securities; most preferred
- 2. **Project-level data**
sourced from project factsheets or other reports tied to a single project
- 3. **Program-level data**
sourced from annual reports for specific programs run by the issuer
- 4. **Issuer-level data**
sourced from annual reports covering all activities of the issuer; least preferred

From these disclosures, we extract and aggregate the most commonly reported metrics related to each impact theme for activities in the prior year.

It is important to note that we collect and report on impact for the entirety of the investments and/or the related project, not just the impact associated with Nuveen clients' capital alone. The reason we take this approach is because we do not consistently have access to total project costs relative to each bond issue. We know the percentage of each issuance we hold, but that may not reflect the total capital required to fund a specific project or program.

SOURCES OF 2023 IMPACT DATA BY DISCLOSURE TYPE



● Security level	41%
● Project level	37%
● Program level	1%
● Issuer level	21%

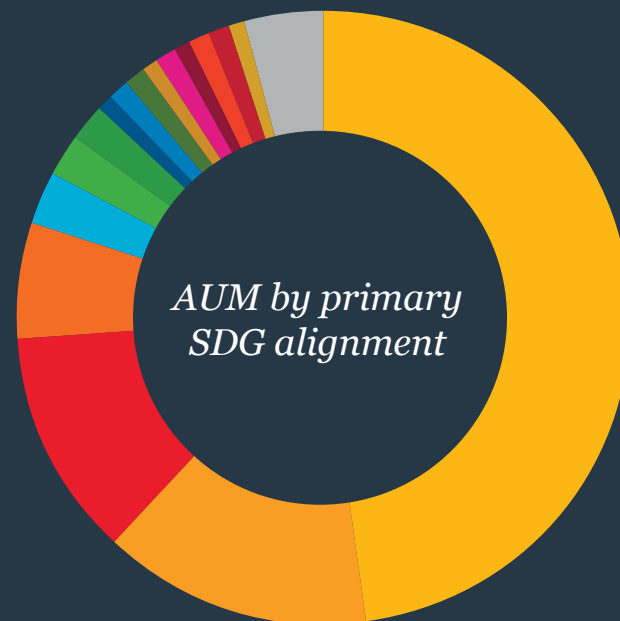
Source: Nuveen

Aligning closely with the Sustainable Development Goals (SDGs)

In 2015, the Sustainable Development Goals were developed and agreed to by all 193 member states of the United Nations. The 17 goals outline a collective vision of what is needed for sustainable growth and development globally by 2030.

The impact objectives and four impact themes of our global fixed income strategies predate the development and adoption of the SDGs. However, given the global relevance and increasing stakeholder interest in understanding investors' contribution and alignment to these global goals, we expanded our impact framework in 2016 to clearly communicate and demonstrate how our approach aligns to the SDGs.

To do this, we developed a set of evidence-based logic models for the four impact objectives, expected outputs and outcomes — and how they map to specific SDG targets underlying the 17 goals. The logic models focus on the most direct impacts of the investments. For example, we hold bonds that expand access to financial services for underserved people. SDG targets 8.3 and 9.3 explicitly address access to finance, so in our reporting we identify those bonds as contributing to SDGs 8 and 9. While there may be additional, indirect outcomes that result from an individual or community having increased access to high-quality financial services, we do not claim contribution to additional SDGs for those bonds.



SDG alignment

	<i>AUM by primary SDG alignment³²</i>	<i>Number of impact holdings³³</i>
7 Affordable & Clean Energy	48%	544
11 Sustainable Cities & Communities	14%	248
1 No Poverty	12%	225
9 Industry, Innovation, & Infrastructure	6%	68
6 Clean Water & Sanitation	3%	59
15 Life On Land	2%	30
3 Good Health & Well-being	2%	32
16 Peace, Justice, & Strong Institutions	1%	5
14 Life Below Water	1%	13
13 Climate Action	1%	412
12 Responsible Consumption & Production	1%	219
10 Reduced Inequalities	1%	8
8 Decent Work & Economic Growth	1%	46
5 Gender Equality	1%	15
4 Quality Education	1%	18
2 Zero Hunger	1%	10
SDG Not Yet Assigned*	4%	28

Source: Nuveen.
As of 31 Dec 2023. Holdings are subject to change.

For more information, please visit us at nuveen.com

Endnotes

- 1 Nuveen traces its history to 1898 when the company began underwriting municipal bonds. Nuveen's responsible investing team activities date back to 1990 at TIAA prior to TIAA acquisition of Nuveen in 2014. TIAA and CREF board began responsible investing initiatives in 1970 with proxy voting to deal with shareholder proposals on social issues. Statement regarding Nuveen's history include TIAA's history.
- 2 30 Sept 2024; Impact strategies may have a varying mix of impact, ESG leaders, and traditional securities. Assets under management is inclusive of underlying investment specialists and any sleeves managed on behalf of TIAA's General Account with specific responsible investing criteria or characteristics inherent to the investment thesis/asset class. Capabilities can be reflected in strategies/vehicles across fund families, including affiliates and sub-advised agreements.
- 3 The International Energy Agency forecasts capital spending on the energy transition will grow to \$3 trillion to \$5 trillion annually by 2030—two to four times current outlays. Energy Transition: Delivering Capital Projects On Time and On Budget | Bain & Company
- 4 Half of world's GDP moderately or highly dependent on nature: <https://www.pwc.com/th/en/press-room/press-release/2020/press-release-28-02-20-en.html>
- 5 Environmental Finance's annual Sustainable Investment awards seek to recognize and reward the work of impact investors everywhere and highlight emerging pockets of best practice, across all asset classes and all geographies. The awards were announced on 13 Dec 2023 and are based on information relevant from the period 01 Apr 2022 to 30 Sep 2023. An advisory panel consisting of industry experts chosen for their knowledge, objectivity, and credibility along with the Environmental Finance editorial team, review the submitted entry material. Judges score each entry individually, any conflict of interest is removed, and the judge's score is confidential. Score averages and average ranking position are used to identify the winner of each category. Judging criteria include but are not limited to sustainability reporting, leadership, contribution to industry best practices and policy advances, case studies, and alignment with relevant industry groups and taskforces. For more information, visit <https://www.environmental-finance.com/content/awards/sustainable-investment-awards-2024/winners/>. Used with permission. BlueMark's Practice leaderboard was created to highlight impact investors with best-in-class impact management practices. To earn a spot on the leaderboard, verified investors must have received an Advanced score on four practice areas (Impact Objectives, Impact Due Diligence, ESG Risk Management, and Impact Monitoring) and a rating of High or Above on the remaining four (Portfolio-level Impact Management, Investor Contribution, Impact at Exit, and Impact Review). This reflects the top quartile scores in the 2024 version of the Practice Benchmark. For more information, visit: <https://bluemark.co/practice-leaderboard/>.
- 6 Housing units in Nevada in 2023 was 1,348,211 units: <https://www.census.gov/data/tables/time-series/demo/popest/2020s-total-housing-units.html>
- 7 Sum of women beneficiaries explicitly indicated in impact reporting. Not all impact reporting details demographic data.
- 8 U.S. Populations in 2023: State Populations: <https://www.census.gov/data/tables/time-series/demo/popest/2020s-state-total.html> City & Town Populations: <https://www.census.gov/data/tables/time-series/demo/popest/2020s-total-cities-and-towns.html>
- 9 CO₂ and Energy Equivalencies: <https://www.epa.gov/energy/greenhouse-gas-equivalencies-calculator>
- 10 Total installed solar capacity for U.S. States as of Q2, 2024: <https://seia.org/solar-state-by-state/>
- 11 U.S. National Park Service; Park Acreage Reports – 12/31/23: <https://www.nps.gov/subjects/lwcf/acreagereports.html>
- 12 U.S. City Land Area – Source: World Population Review: <https://worldpopulationreview.com/us-cities>
- 13 BREEAM certified buildings by level: 1 good, 5 very good, 7 excellent, 3 outstanding
- 14 LEED certified buildings by level: 95 gold, 22 platinum
- 15 Average US households use approximately 300 gallons of water per day (109,500 gallons per year). <https://www.epa.gov/watersense/how-we-use-water>

- 16 Kissimmee, Florida Population and Median Household Income https://data.census.gov/profile/Kissimmee_city_Florida?g=160XX00US1236950
- 17 City of Detroit Neighborhood Improvement Plan: <https://www.cityofdetroitbonds.com/detroit-mi-investor-relations-mi/about/esg-program/i1383>
- 18 Proposition HHH Resolution: <http://clkrep.lacity.org/election/final%20homelessness%20hh%20for%20web.pdf>
- 19 University of California at San Francisco Statewide Study of Homelessness Survey 2023: https://homelessness.ucsf.edu/sites/default/files/2023-06/CASPEH_Report_62023.pdf
Within the study, households paying more than 30% of their income in rent are considered rent burdened; households paying more than 50% of their household income in rent are considered severely rent burdened.
- 20 APICORP Green Bond Report, October 2023: https://www.apicorp.org/wp-content/uploads/APICORP_GreenBond_Report_2023_PT_Oct23-V8_Final.pdf
- 21 Trading Economics (general export data); seafoodsource.com, 25 January 2024 (tuna exports to Europe)
- 22 Bloomberg
- 23 Credit Suisse press release, 4 May 2023 (Credit Suisse International Announces the Final Results of its Offer to Purchase for Cash Notes of the Republic of Ecuador)
- 24 Inter-American Development Bank, 09 May 2023. <https://www.iadb.org/en/news/ecuador-completes-worlds-largest-debt-nature-conversion-idb-and-dfc-support>.
- 25 Housing and Urban Development (HUD) Section 8 income limits 2023: Section8-IncomeLimits-FY23.pdf
- 26 World Economic Forum, Global Gender Gap Report: Global Gender Gap Report 2023 | World Economic Forum
- 27 World Economic Forum, June 2023: These entrepreneurs are an overlooked trillion-dollar opportunity | World Economic Forum
- 28 Global assessment report on biodiversity and ecosystem services of the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services 2019: <https://zenodo.org/records/6417333>. The study analyzed trends in ecosystem services and biodiversity indicators over the span of fifty years, from 1968-2018. Significant shifts in ecosystem services were considered major if they had widespread or severe impacts on human or the ecosystem. In contrast minor changes were those that were more localized or had less impactful shifts over the period analyzed. For more on the methodology please reference section 2.3 in the report which covers Nature's Contribution to People (NCP) in more depth.
- 29 Polysilicon costs have slid by 96% per watt over past two decades: Polysilicon costs have slid by 96% per watt over past two decades – pv magazine International
- 30 Lazard Levelized Cost of Energy Analysis Version 16.0 2023: <https://www.lazard.com/media/20zoovvg/lazards-lcoeplus-april-2023.pdf>
- 31 Highlighted country information was determined by issuer reporting or country of risk information.
- 32 Based on the market value of impact holdings by their primary SDG alignment. Each holding has one "primary" SDG.
- 33 Total count of SDG alignment across all impact holdings. An individual impact holding could be aligned with up to three SDGs: primary SDG, secondary SDG and tertiary SDG based on our proprietary impact framework. Therefore, the total count of SDGs is greater than the number of impact holdings.

For term definitions and index descriptions, please access the glossary on nuveen.com

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Past performance is no guarantee of future results. All investments carry a certain degree of risk, including the possible loss of principal, and there is no assurance that an investment will provide positive performance over any period of time. Certain products and services may not be available to all entities or persons. There is no guarantee that investment objectives will be achieved. Portfolios within each strategy are subject to certain risks, such as market and investment style risk. Please consider all risks carefully prior to investing. While risks are associated with investing in any strategy, some of the risks include, but are not limited to the following: Because its social screens exclude some investments, the strategy may not be able to take advantage of the same opportunities or market trends as strategies that do not use such criteria.

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.

Nuveen considers ESG integration to be the consideration of financially material ESG factors within the investment decision making process. Financial materiality and applicability of ESG factors varies by asset class and investment strategy. ESG factors may be among many factors considered in evaluating an investment decision, and unless otherwise stated in the relevant offering memorandum or prospectus, do not alter the investment guidelines, strategy or objectives. Select investment strategies do not integrate such ESG factors in the investment decision making process.

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OVERVIEW 2023 OUTCOMES CASE STUDIES DATA DEEP DIVE REGIONAL RESULTS HOW WE INVEST