Climate-Aligned Real Estate in the Transition Economy

Climate-Aligned Real Estate in the Transition Economy: Identifying Risk and Opportunity

Climate Pricing Risk

The Challenge:

- A financing gap of approximately $20bn exists for at least 50,000 buildings in the NYC metro area, alone, that have significant and unidentified risks due to forthcoming regulations and climate objectives of market participants.
- Regulation risks including NYC Local Laws 92, 94, 95, 96, increasing flood insurance premiums, and market demand are creating future stranded assets.
- Significant losses within portfolios will occur over the next 5-10 years due to future stranded assets that have yet to be identified.
- Future forecast of 5%-30% of existing real estate holdings within a portfolio can be unprofitable within 5 years due to regulations already in place.

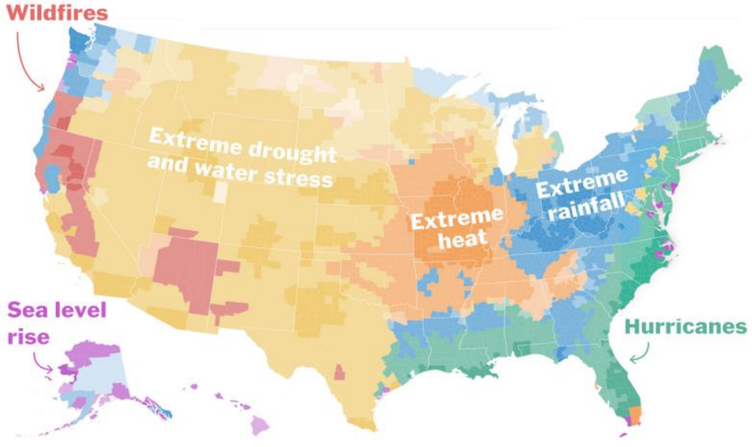
Available Solutions:

- Act Now: Recalculate the Net Present Value and Future FCF of your holdings with Climate, Regulatory, and Demand risk factors. Identify riskier assets and target them for sale or retrofit to comply with regulatory and market demand risks.

or

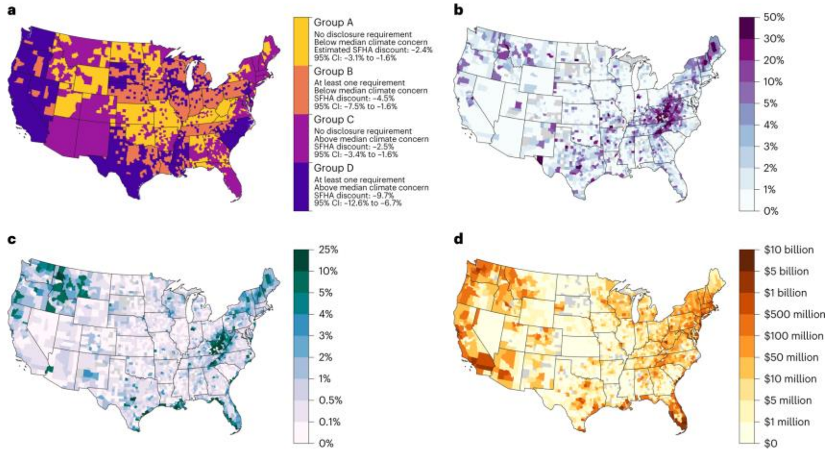
- Do Nothing: Face stranded assets through obsolete real estate properties that face increasing fines, energy costs, and market demand costs that will undoubtedly decrease earnings, asset quality, and refinancing capital available.

Dominant Local Environmental Risks



Source: The Learning Network, October 2020

Flood Risk by Region



Source: Nature Climate Change, February 2023

Introduction to ProCapital

ProCapital has 70 years of combined industry experience in quantifying Environmental, Social, and corporate Governance (ESG) risk factors as a source of Alpha. For over 30 years, the founders have been at the leading edge of Sustainable Project Finance and Quantitative Financial Engineering using ESG, Fundamental, and Sentiment data.

ProCapital has spent years developing proprietary quantitative financial models to identify and mitigate risks associated with ESG and climate change risk. With a unique skill set and work history, ProCapital's principals have proven to produce Alpha from nonstandard datasets and pricing algorithms within real estate and capital markets.

Quantifying risk in the transition economy

- Translating cross-risk impact of climate risk reduction
- Climate scenario methodologies
- Addressing unpriced climate-risk
- Scaling climate-aligned finance in green sectors
- Addressing hard-to-abate sectors
- Design of climate-aligned instruments

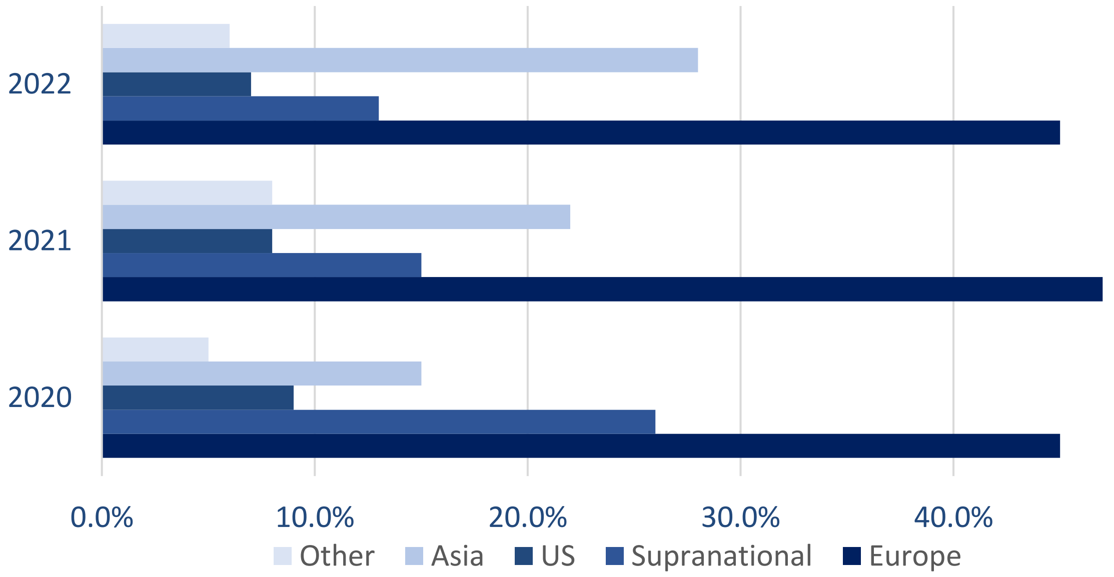
Source: United Nations Environment Programme Finance Initiative ('UNEP FI'). (24 March 2023). Sectoral Risk Briefings: Insights for Financial Institutions: Climate Risks in the Real Estate Sector.

Green Real Estate Capital Markets Conditions

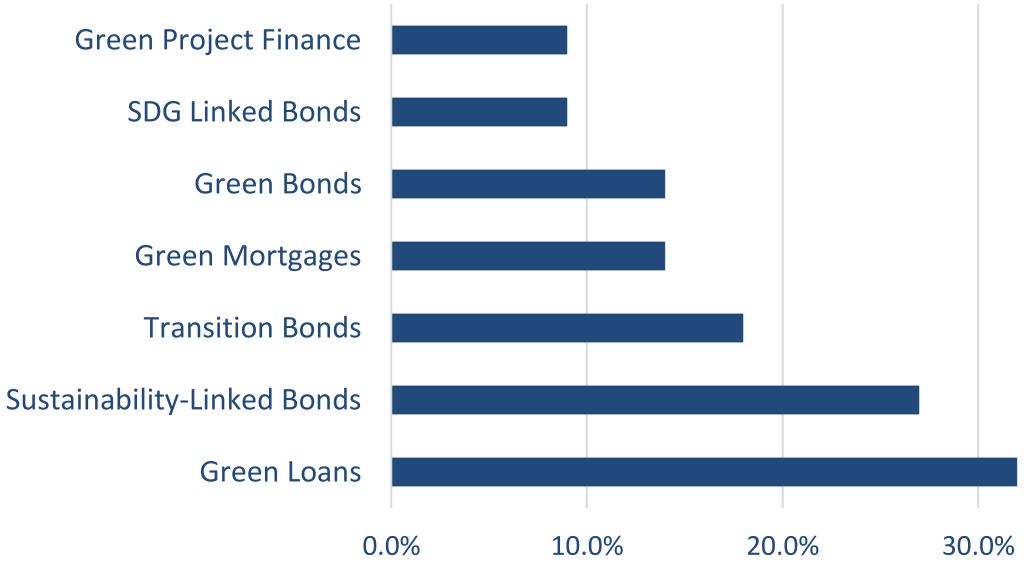
The European Commission ('EC') cites increasingly higher premium in both primary and secondary debt and equity markets for environmentally sustainable bonds certified at the issue and issuer level.

Along with growth in Green Bonds, Sustainability-Linked Bonds, and Sustainability-Loans; the European Commission ('EC') sees a growing range of ESG-related financial instruments developed for the capital markets; including: ESG Asset-Backed Securities ('ABS'), ESG Collateralized Loan Obligations ('CLOs'), ESG Capital Relief Trades ('CRTs'), ESG-Linked Derivatives and ESG Futures and Options linked to ESG Indices.

Sustainable Bond Issuance Over Time by Region: 2020-2022



Rising Business Opportunities for ESG



Source: International Capital Markets Association. (12 October 2021). Quarterly Report: Fourth Quarter 2021.

Climate-Aligned Real Estate

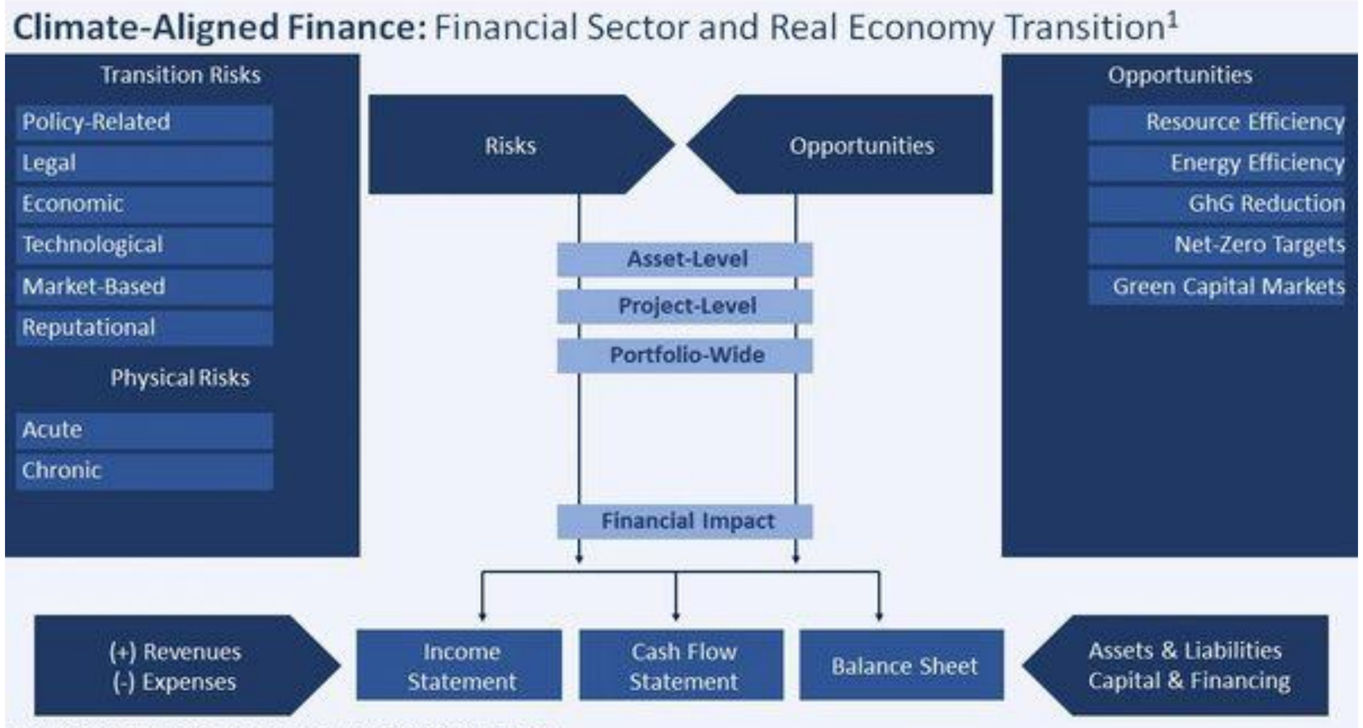
Real Estate Climate Risk Solutions

- Climate Value-at-Risk Analytics
- Climate Risk Impact on Performance and Valuation
- Climate-Aligned Risk and Reporting Frameworks
- Climate Scenario Analytics
- Physical and Transition Risk Assessment

Climate-Aligned Capital Markets

- Green Multi-Family CMBS, RMBS, REMICS, Covered Bonds, Pfanbriefs and Sukuks
- C-PACE: New Construction, Renovation, Recapitalization
- Green REITs, REMICs ETFs and Indexes
- Green Real estate funds, REITs, and property companies

Climate Risk Reduction



MSCI. (2023). ESG and Climate Trends to Watch for 2023. Available here.

ProCapital helps clients capture risk-adjusted performance and navigate the climate transition within the built environment.

Redefining Green Real Estate Finance

ProCapital

α

Cost of Equity = $[R_f + \beta \times (R_m - R_f)]$

- **Standard CAPM ignores green premium but if you include sustainability in the risk premium you have the ability to calculate a green premium**

Alpha ('α'): refers to excess returns against a suitable benchmark, relevant index, applicable property sector and appropriate market. Alpha considers risk-adjusted returns. An alpha of 150bps means an investment's Return on Investment ('ROI') surpasses typical market return by 150bps.

α is a coefficient in the Capital Asset Pricing Model ('CAPM') along with Beta ('β'). β measures how an asset moves when an overall market shifts in response to systemic risk. α and β are used along with measures such as Standard Deviation, R and the Sharpe Ratio.

$\alpha = R_i - [R_f + \beta \times (R_m - R_f)]$

R_i = Realized Rate of Return

R_m = Sustainable Commercial Real Estate Return

R_f = Risk-Free Rate of Return

B_m = Conventional Commercial Real Estate Return

- **$\alpha > 0$:** an environmentally sustainable property, project or portfolio has generated earnings which surpass its risk. The quantum of α is a direct function of the degree of environmental sustainability.
- **$\alpha = 0$:** a conventional property, project or portfolio is considered conventional and earns typical returns, i.e. β-adjusted returns of the relevant property market.
- **$\alpha < 0$:** a property, project or portfolio is conventional or requires retrofit, renovation or refurbishment to meet environmental policy standards as well as investor and tenant sustainability expectations. The risk of the property, project or portfolio becoming a stranded asset make economics unfeasible.

ProCapital Climate Capabilities

- Capturing Cross-Risk Impact of Climate-Aligned Real Estate

Environmental Performance and Cross–Risk Reduction

Climate Risk	
• Climate Change Mitigation • Climate Change Adaptation	• Lower carbon and environmental impact with shifting demand towards sustainability
Physical Risk	
• Change in frequency and/or severity of natural-catastrophe events	• Reduced impact and increased resilience to climate-related extremes
Transition Risk	
• Transition towards a more sustainable global economy • Future policy actions, legal environment, and technological advances • Market and credit risks for investment portfolios	• Consistency with evolving low carbon policy norms • Reduced risk of stranded assets due to obsolescence • Reduced liability from failure to mitigate
Performance Risk	
• Risk of actual environmental performance falls short of actual performance	• Reduced performance risk as actual environmental performance aligns with expected performance

Credit Risk	Market Risk	Underwriting Risk	Liquidity Risk	Operational Risk
• Default Risk Reduction • Loss Severity Reduction	• Pricing of Green Factors • Pricing Differential • Market Value of Green Revenue Stream	• Greater alignment of loan-level features and transaction level mechanics	• Lower funding risk through broader funding channels and access to ESG, Climate, and other green funds	• Robust data provides granular, consistent, comparable and reportable results

ProCapital Climate Capabilities

- Capturing Climate Risk Impact on Real Estate Operating Performance and Valuation

Climate Risk: Impact on Real Estate Operating Performance and Valuation

Green Impact on Financial Viability	Effects on Cash Flow	Income	Increased rent from rise in demand
			Increased occupancy rate from rise in demand
			Shorter to re-let space / higher credit quality tenants
			Changes to feasible uses impacting on income
		Expenses	Decreased operating costs (energy demand)
			Decreased capital costs
			Lower insurance premiums to reflect lower risks
			Lower property taxes (rebates, credits)
	Effects on Capitalization Rate	Risk Premium	Greater cash flow stability
			Increased liquidity / saleability of asset
			Increased insurability of asset
			Lower site and location risks
		Expected Growth	Inreased rental prospects for location
			Decreased depreciation for resilient buildings
			Increased future occupancy rates
			Decreased operating and capital costs, taxes, etc.
	Effects on Financing	Cost of Finance	Lower cost of capital from cross-risk reduction
			Favorable pricing differential and stability
		Availability of Finance	Increased willingness to lend in location
			Higher amounts lent / more security sought
			More potential equity partners

Who we are:

Peter Lusk

Peter has over 30 years of experience in investment banking, trading and venture startups. He has worked for institutions as large as an $8bn hedge fund to some of the largest broker-dealer/clearing firms in the country and helped launch several startup companies funded both within the US and the UK. Peter launched ProCapital to help companies succeed at raising growth capital because he saw that so many companies did not have compelling material to get buy-in from key decision-makers and investors. Mr. Lusk's two main areas of professional focus have been Clean Tech and Renewable Energy since 1989, and Quantitative Trading since 1994. In 2002 Peter Launched Eco-Vest Advisors, an ESG-focused Long Short hedge fund that quantitatively screened second derivative growth of FCF, ROE, EVA, and other factors, while eliminating "waste of breed" ESG-ranked companies from multiple data providers.

Peter holds an MBA from Columbia University, and a Master of Architecture from Tulane University and has been awarded the Chartered Market Technician certification. Peter holds series 7, 63, 65, and 3 licenses. Peter is a mentor for the New England Clean Tech Open, NYSERDA, and Columbia Ventures nonprofit organizations where he helps coach entrepreneurs in presenting their companies to potential investors. Peter has raised millions of dollars in grants, private placements, PIPE offerings, and IPOs of cleantech companies since 2004

Ted Kronmiller

Ted has over 20 years of experience in capital markets and climate finance innovation, focusing on debt, credit, and the green bond market. He is a transaction and deal structure specialist with experience pricing sustainability factors into portfolio strategies across sectors including real estate, renewable energy, transportation, banks, and private equity funds. Ted focuses on the nexus between international climate policy, financial markets, and the cross-risk implications of physical and transition risk reduction. Ted develops and manages strategies to drive value creation with high green impact in developed and emerging markets spanning the United States, Asia, and the EU.

Ted recently implemented climate-aligned real estate finance programs for over 25 banks, spanning 17 countries, and 20 real estate finance products for environmentally sustainable commercial and residential mortgages; sustainability-linked loans, bonds, credit facilities;, and sustainable RMBS and CMBS.

Ted holds a BS in Finance from the University of Arkansas and advises the members of the Glasgow Financial Alliance for Net Zero.

Objectives of Consultation

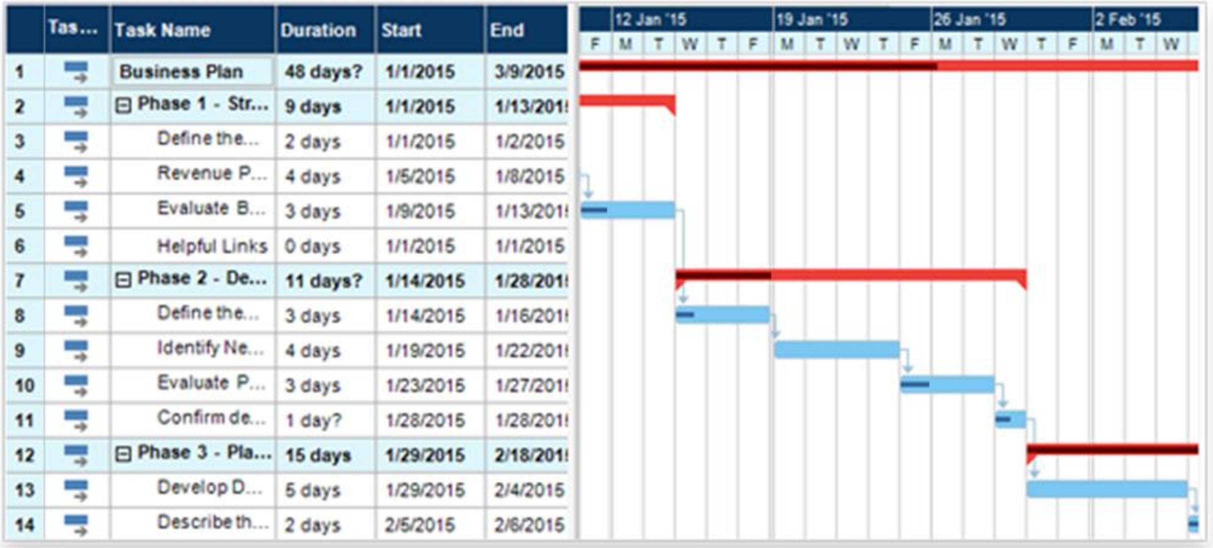
- Phase 0: Project discovery and due diligence
- Phase 1: Define deliverables
- Phase 2: Implement first deliverable
- Phase 3: Evaluate second deliverable scope
- Phase 4: Implement following deliverables
- Phase 5: Execute final implementation and handoff

Contact Us:

Phone: (914) 714-0735

Email: pluskjr@procapitalllc.com | tkronmiller@procapitalllc.com

Project Gantt Chart



	Tas...	Task Name	Duration	Start	End
1		Business Plan	48 days?	1/1/2015	3/9/2015
2		⊟ Phase 1 - Str...	9 days	1/1/2015	1/13/201
3		Define the...	2 days	1/1/2015	1/2/2015
4		Revenue P...	4 days	1/5/2015	1/8/2015
5		Evaluate B...	3 days	1/9/2015	1/13/201
6		Helpful Links	0 days	1/1/2015	1/1/2015
7		⊟ Phase 2 - De...	11 days?	1/14/2015	1/28/201
8		Define the...	3 days	1/14/2015	1/16/201
9		Identify Ne...	4 days	1/19/2015	1/22/201
10		Evaluate P...	3 days	1/23/2015	1/27/201
11		Confirm de...	1 day?	1/28/2015	1/28/201
12		⊟ Phase 3 - Pla...	15 days	1/29/2015	2/18/201
13		Develop D...	5 days	1/29/2015	2/4/2015
14		Describe th...	2 days	2/5/2015	2/6/2015

Project Correlogram

		Public									
		Integration management	Scope management	Schedule management	Cost management	Quality management	Resource management	Communication management	Risk management	Stakeholder management	Procurement management
Private	Integration management	1.000	0.613								
	Scope management		1.000	0.737	0.737	0.574		0.602			
	Schedule management	0.456	0.565	1.000	0.567						
	Cost management		0.564		1.000	0.690					
	Quality management					1.000					
	Resource management		0.570	0.402	0.692		1.000	0.712			
	Communication management	0.715		0.562				1.000			
	Risk management	0.408	0.532	0.385	0.598	0.383	0.600	0.400	1.000		
	Stakeholder management	0.581	0.423	0.554				0.556	0.470	1.000	
	Procurement management	0.531	0.373	0.399	0.439		0.410	0.476	0.528	0.497	1.000

Source: https://www.productplan.com/glossary/gantt-chart/ and www.mdpi.com

Appendix

Recent market developments

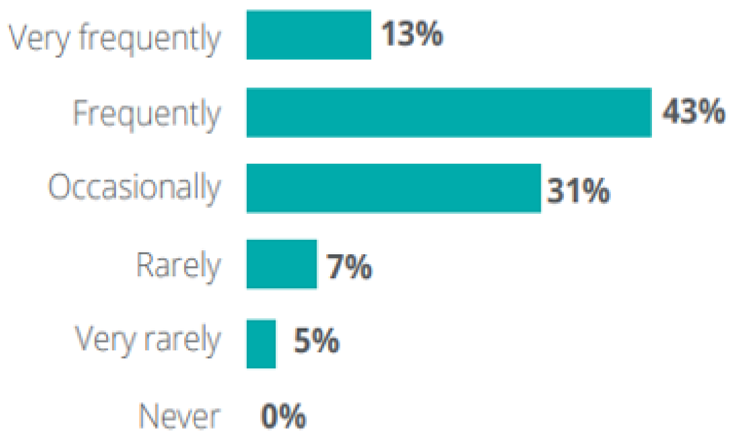
ProCapital

- Commentary from **Lazard Asset Management** indicate the definition of a green building along with individual components of green criteria (space and water heating; air conditioning; insulation and ventilation; and lighting and appliances) are getting exceedingly careful consideration by institutional investors.
- **The Network for Greening the Financial System** increases membership to encompass all of the world's systemically important banks with 83 Central Banks and 13 observers working together to develop further understanding of environmental and climate-related risks and their impact on the financial system. The US Federal Reserve System, the European Securities and Markets Authority, Central Bank of Paraguay, Financial Regulatory Authority of Egypt, Financial Services Authority of Indonesia, Central Bank of Iceland, Polish Financial Supervision Authority and the Central Bank of Uruguay have recently become members.
- According to **Fitch Ratings**, Climate change will be an increasingly important consideration for Banks, NBFIs, Insurance Companies as well as Funds. Climate related initiatives such as The Paris Agreement and the EU's European Green Deal are likely to impact the sector from a credit perspective.
- Commentary from **S&P Global Ratings** cites growing interest seen in using green and sustainability-linked structures to access the hybrid capital market where banks and insurers are frequent issuers of deferrable subordinated instruments that qualify as regulatory capital. The growing importance of ESG factors for investors is reflected in the green and sustainability-linked hybrid capital market for banks and insurers. Banks and insurers may be more able to access the growing demand for green and sustainability assets based on broader business model commitments and progress.
- The **Task Force on Climate-Related Disclosure (TFCD)** indicates climate-related reporting by Asset Managers and Asset Owners has recently increased yet believes that both Asset Managers and Asset Owners must make progress to improve their reporting for clients and beneficiaries to have decision-useful information.

More than half of firms have canceled M&A deals because of ESG

- 53% of investors have canceled M&A deals because of material findings in environmental, social, and governance (ESG) due diligence.
- Due diligence in the EMEA region found ESG vetting was gaining ground, with four out of five dealmakers saying that ESG considerations are now firmly on their M&A agenda.
- ESG considerations are increasingly scuttling deals as investors respond to stakeholder, investor, and regulatory demands.
- Four in ten US respondents said ESG due diligence find Stellar ESG performance can boost prices.
- Over 60% of investors said they were willing to pay a premium for companies with a high degree of ESG maturity and alignment with their priorities.
- The top reasons for completing ESG due diligence are identification of risks and opportunities, requirements by investors and preparation for regulatory requirements.
- The key challenges investors said they faced in conducting ESG due diligence was a lack of robust data.

How often is ESG a topic of discussion and consideration in ongoing M&A transactions?



(N=250)

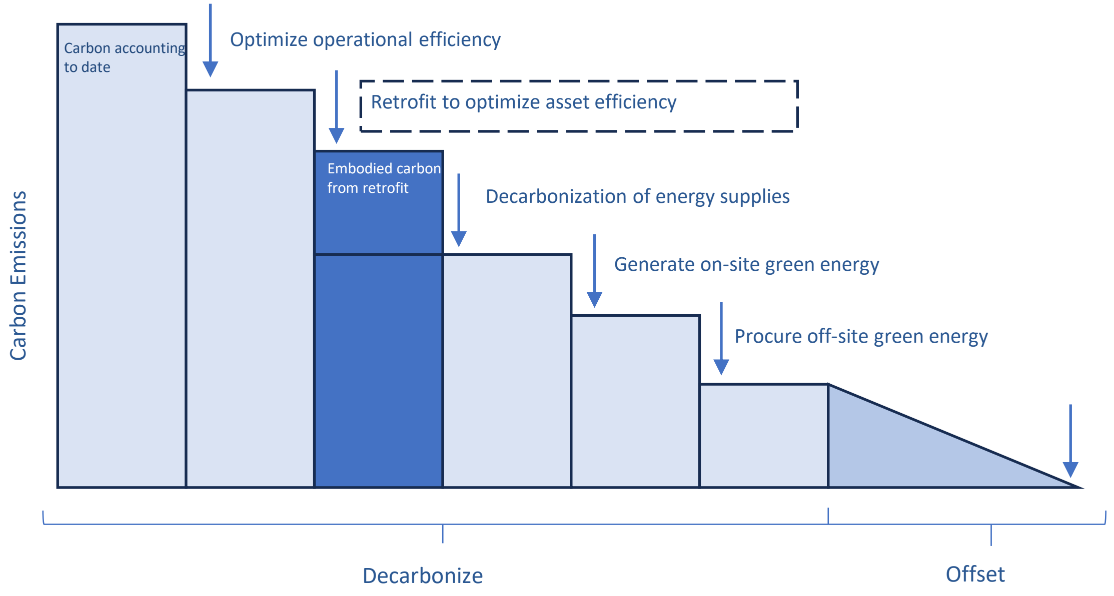
Source: Deloitte, "ESG in M&A pulse survey: ESG's evolving role in corporate M&A decision-making," June 2022

Source: KPMG., August 2023 https://www.consulting.us/news/9509/kpmg-more-than-half-of-firms-have-cancelled-ma-deals-because-of-esg-findings

Mitigation Pathways

- Real estate markets are increasingly pricing in the risks from extreme weather and climate change on a forward-looking basis.
    - Standardized Reporting
    - Continuous Monitoring
    - Large Scale Retrofitting
    - Engagement
- Europe, North America and Asia account for 95% of total certified floor area and 97% of financial flows across certified residential, commercial, and industrial property sectors.
- Banks are assessing real estate collateral valuations by considering energy certifications of buildings and institutional investors are assessing their physical and transition risk exposure.
- Banks are at a critical intersection of the built environment and capital markets where they can enable flows of capital towards environmentally performant buildings.
- The enhanced understanding of current emerging sustainability practices in the construction and real estate arena will be instrumental in identifying high performing properties, projects and portfolios.
- Climate risk facing the real estate sector can be split into broad categories including physical and transition risk.

Net Zero Carbon = Decarbonize + Offset



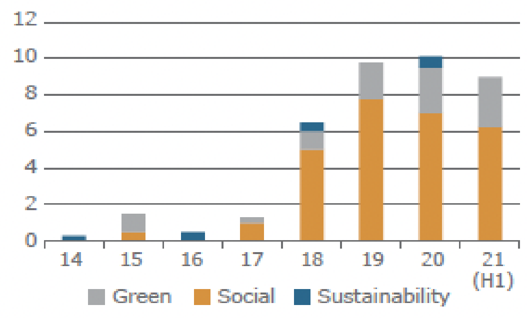
Source: JLL Research, October 2022

Covered Bonds, Green RMBS, Green Renovation Loans

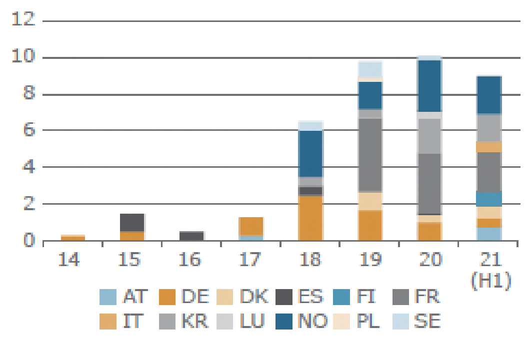
Green Renovation Loan Dynamics

- **Intesa Sanpaolo, Nordea and Nationwide Building Society** have all made efforts to provide new green mortgage financing that is specifically designed to fund home improvements to enhance the energy efficiency of buildings and reduce their carbon footprints.
- **Green Renovation Loans:** could become eligible for inclusion in green cover pools with sufficient improvement in the energy performance of a home demonstrated through, for example, an upgraded energy performance certification.

> FIGURE 3: NEW ISSUANCE OF SUSTAINABLE COVERED BONDS, EUR BN



> FIGURE 4: NEW ISSUANCE OF SUSTAINABLE COVERED BONDS BY COUNTRY, EUR BN



Source: ECBC, ABN AMRO, Bloomberg

Green Mortgage Covered Bond Dynamics

- Lower cost of funding relative to senior unsecured, creation of marketable instruments with lower volatility and more reliability, creation of liquidity, diversified funding options and diversified investor base which include central banks as well as investment grade covered bond investors.
  - **Pricing versus senior unsecured and sovereign curve beneficial as Mortgage Covered Bond deals have priced at a spread of about 10bps back of the Sovereign Curve, according to Global Capital.**
  - **Currency swap, asset quality and ratings make a lower beta and lower volatility provide investors with greater ability to participate during periods of volatility.**
- Covered bond investors have indicated a high level of interest in sustainability. Covered bond investors appreciate the margins relative to the ratings and the ability to put the bonds into maturity portfolios which may not be easy with simple Euro bonds, according to Batuhan Tufan, Garanti Bank.
- Covered bond funding can be useful for riding out volatility and periods where senior unsecured spreads are under pressure. Issuance can be possible during times when senior unsecured issuance is difficult.

Sustainable Finance Product Sets

ProCapital

- Green Securitized Product-Sets
  - Single-Family Residential Mortgage-Backed Securities
  - Multi-Family Commercial Mortgage-Backed Securities
  - Covered Bonds
  - Pfandbriefs
  - Sukuks
- Green Real Estate Investment Products
  - REITs
  - ETFs
- Green Indexes Covering Green Real Estate
  - **Bloomberg Morgan Stanley Capital International ‘MSCI’ Barclays Green Bond Index:** The index includes Pan-European green real estate projects. The use of proceeds must first fall within at least one of six MSCI-defined eligible environmental categories which includes green buildings. Eligible green building activity includes construction, redevelopment, retrofitting, and acquisition of ‘green’ certified properties. New construction properties must be within the top 15% of energy efficiency performance while renovation projects must achieve a minimum 30% improvement in energy compared to baseline performance prior to the renovation.
  - **Bank of America Merrill Lynch ‘BAML’ Green Bond Index:** The index maintains an approximate 50% weighting towards European green finance. Qualifying bonds must have a clearly designated use of proceeds solely applied toward projects or activities that promote climate change mitigation or adaptation or other environmental sustainability purposes.
  - **S&P Green Bond Index:** Includes only those bonds whose proceeds are used to finance environmentally friendly projects. For a bond to be eligible, the issuer must clearly indicate the bond’s ‘green’ label, the rationale and the intended use of proceeds. The green criteria must align with the Climate Bonds Initiative criteria.
  - **Solactive Green Bond Index:** A rules-based, market value-weighted index engineered to mirror the green bond market with exposure to European sustainable real estate finance. The index is calculated as a Total Return Index denominated in USD. For bonds to be eligible they must follow the Climate Bonds Initiative criteria.
  - **Bloomberg:** Provides curated portfolios to allow clients to select bonds with alignment to the ICMA Green Bond Principles. The portfolios are available for download on the Terminal and include Labelled Asset or Mortgage-Backed Green Securities and Labelled Project Bonds.