

GREEN FINANCING COMES IN MANY SHADES, EACH CARRYING DIFFERING RISK PROFILES - BANKS BE WARNED!

UNDERSTANDING TAXONOMIES, AS WELL AS DIFFERENCES BETWEEN ESG AND GREEN BONDS, IS VITAL FOR BANKS TO BUILD SUSTAINABLE BALANCE SHEETS.

Climate Risk Perspectives

EMERALD PATHWAYS

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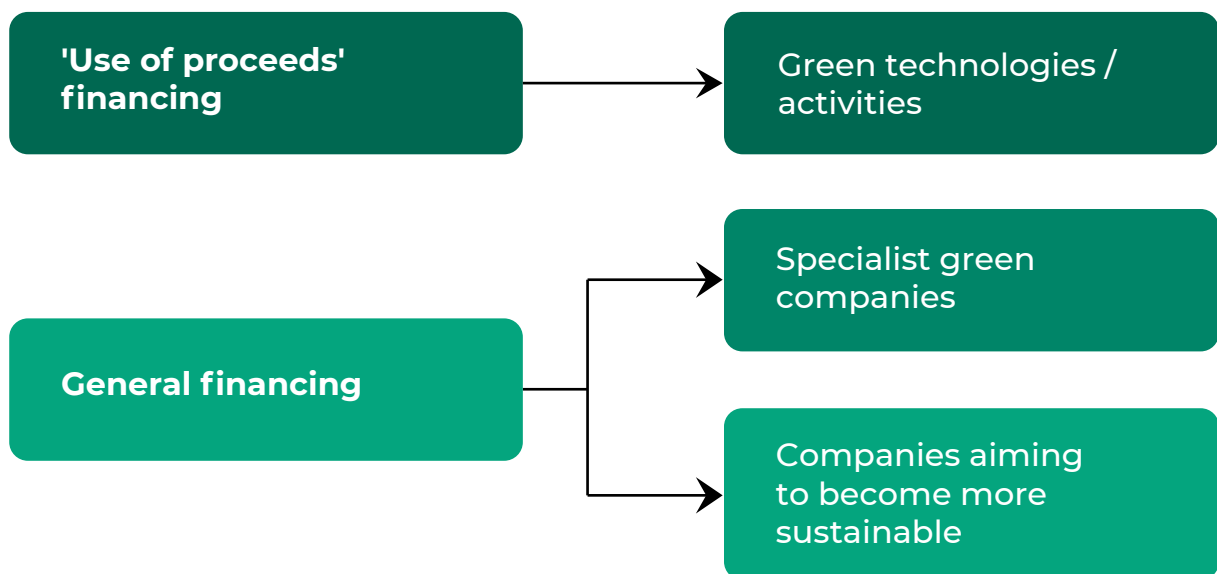
Green funding must meet specific criteria...

Along with the rise in awareness about climate change, comes an increasing desire from private finance to fund solutions to the adaptation and mitigation problems. There is no exact definition of what constitutes 'green' in terms of finance, but providers typically divide their funding recipients into distinct areas of interest:

- Technology/specific projects that target climate change mitigation or adaptation.
- Organizations that specialize in climate change prevention.
- Non-specialist organizations that are seeking to make their operations more sustainable.

These result in the need for credit facilities that are either:

- Targeted and defined with strict parameters about the precise use of funds.
- General financing with less stringent requirements on the use of funds.



In the context of a global economy that is shifting towards a greener future, the definition of green and how it fits into that envisioned future state becomes important for risk management purposes. Sustainable projects within organizations that strengthen their business model in the upcoming normal ought to be incentivized as they directly lower the credit risk profile of the borrower. One way to establish such a definition is to first explore various definitions of green bonds.

There are existing principles around green bonds...

The International Capital Markets Association (ICMA) publishes its [Green Bond Principles](#) (GBP). These establish four core alignment requirements as follows:

- Use of Proceeds
- Process for Project Evaluation and Selection
- Management of Proceeds
- Reporting

Use of proceeds refers to the inclusion of legal language into the framework to ensure that funds provided are used for sustainable projects. The association provides examples of such projects within the GBP.

- Renewable energy, including production, transmission, appliances, and products.
- Energy efficiency, new and refurbished buildings, energy storage, district heating, smart grids, appliances, and products.
- Pollution prevention and control, including reduction of air emissions, greenhouse gas control, soil remediation, waste prevention, waste reduction, waste recycling, and emission-efficient waste to energy.
- Environmentally sustainable management of living natural resources and land use, including environmentally sustainable agriculture, environmentally sustainable animal husbandry, climate-smart farm inputs such as biological crop protection or drip-irrigation, environmentally sustainable fishery and aquaculture, environmentally sustainable forestry, including afforestation or reforestation, and preservation or restoration of natural landscapes.
- Terrestrial and aquatic biodiversity conservation, including the protection of coastal, marine, and watershed environments.
- Clean transportation, such as electric, hybrid, public, rail, non-motorized, multi-modal transportation, infrastructure for clean energy vehicles, and reduction of harmful emissions.
- Sustainable water and wastewater management, including sustainable infrastructure for clean and/or drinking water, wastewater treatment, sustainable urban drainage systems and river training, and other forms of flooding mitigation.
- Climate change adaptation, including efforts to make infrastructure more resilient to impacts of climate change, as well as information support systems, such as climate observation, and early warning systems.
- Circular economy adapted products, production technologies and processes, such as the design of an introduction of reusable, recyclable, and refurbished materials, components and products, circular tools and services, and/or certified eco-efficient products.
- Green buildings that meet regional, national, or internationally recognized standards, or certifications for environmental performance.

Process for Project Evaluation and Selection means that an issuer of a Green Bond should clearly communicate:

- The environmental sustainability objectives of eligible Green Projects.
- The process by which the issuer determines how projects fit within eligible Green Projects categories (examples are identified above).
- Complementary information on processes by which the issuer identifies and manages perceived social and environmental risks associated with relevant project(s).

Management of Proceeds refers to the accounting of the project and usage of funds provided. Projects should be accounted for in a specific sub-portfolio and tracked by a formal internal process.

Reporting on the projects should be provided by the funding issuer, kept up to date, and be readily available to management. Annually, projects where funds have been used should be reported on, and where facility rollover is required, held to scrutiny against the original covenant.

The GBP is an excellent place to start when thinking about the exact definition of a green bond, but it does not always follow that the changing economic environment will mirror the sustainable ambitions of the bond issuers. From a credit risk perspective, green bonds defined against these principles may, but are not guaranteed to, achieve a lower credit risk profile as climate-related policies are announced and brought into law.

For bond definitions that are explicitly aligned to government objectives, we can explore the following taxonomies:

- Green Bond Endorsed Catalogue (People's Bank of China)
- Sustainable Finance Taxonomy (European Union)

Both are intended to provide working definitions of green bonds that are in line with the climate policy objectives of the publishing governments. Given that these same governments are signatories at the annual Conference of the Parties (COPs), there should be alignment between scientifically endorsed mitigation projects, policies, and green bond definitions. It is this alignment that makes these beneficial when linking green loan pricing, risk management and use of loan proceeds.

Before looking at that explicit link, though, it is important to recognize that there are some differences between these taxonomies.

	EU Sustainable Finance Taxonomy	NDRC Green Industry Guiding Catalogue	PBC Green Bond Endorsed Project Catalogue
Guiding Principles	<ul style="list-style-type: none"> • Climate and environment policies and the Paris Agreement • 6 environmental objectives and the principles of 'Substantial Contribution' and 'Do No Significant Harm' 	<ul style="list-style-type: none"> • Pollution prevention and control • Promoting green industry development 	<ul style="list-style-type: none"> • Ensure the robustness of the green bond market • 6 environmental objectives without specifying the relationship in between
Screening Criteria	<ul style="list-style-type: none"> • Principles to define economic activities with substantial contribution to environmental objectives, in particular climate change • Specific and quantitative carbon emission thresholds • Excludes fossil fuel activities without carbon capture 	<ul style="list-style-type: none"> • No principle to define eligibility of the industries • No carbon emission threshold • Does not exclude fossil fuels 	<ul style="list-style-type: none"> • No principle to define projects aligned with environmental objectives • No carbon emission threshold • Does not exclude fossil fuels

The six environmental objectives of the EU taxonomy are defined as:

- Climate change mitigation
- Climate change adaptation
- Sustainable use and protection of water and marine resources
- Transition to a circular economy
- Waste prevention and recycling
- Pollution prevention and control
- Protection of healthy ecosystems

These are completely aligned with that bloc's 'Green Deal' high level aims.

To compare the Chinese and European classification schemes, the following list of environmental screening criteria is used.

Sector	Screening Principles under the Taxonomy for Climate Change Mitigation
Agriculture	<ul style="list-style-type: none"> • Reduced emissions from ongoing land and animal management • Increased removals of carbon from the atmosphere and storage in above- and below-ground biomass through ongoing land and animal management, up to the limit of saturation levels • The agricultural activity is not being carried out on land that was previously deemed to be 'of high carbon stock'
Forestry	<ul style="list-style-type: none"> • Compliance with Sustainable Forest Management (SFM) requirements; the establishment of a GHG balance baseline for above-ground carbon pools, based on growth-yield curves
Manufacturing	<ul style="list-style-type: none"> • Activities that contribute to a transition to a net-zero emissions economy in 2050: no metric • Activities that enable low carbon performance or enable substantial emissions reductions: carbon emission performance that reduces carbon emissions to best practice standards
Electricity, gas, steam and air conditioning supply	<ul style="list-style-type: none"> • The threshold for life cycle of emissions (LCEs) is 100gCO₂e/kWh, which will be reduced every 5 years till net-zero CO₂e by 2050 • New energies such as solar, wind and existing hydropower in the EU currently meet the threshold, thus are exempt from LCEs analysis • Coal-fired power: projects without carbon capture will not meet the required threshold. Coal-fired power with carbon capture and sequestration may qualify in the short-term, but new coal plants generally have lifetime of 40 years or longer and they need to demonstrate that it will be able to reach net-zero emissions in 2050 • Natural gas-fired power: projects without carbon capture will not meet the required threshold. Gas-fired power with carbon capture and sequestration may qualify. However, this will be subject to the requirement that fugitive emissions across the gas supply chain need to be measured • Electricity generation from other gaseous fuels (such as hydrogen or renewable gases): would be eligible subject to meeting the emissions threshold
Water, sewerage, waste and remediation	<ul style="list-style-type: none"> • Water collection, treatment and supply: quantitative energy efficiency (such as water supply of an average energy consumption lower than 0.5kWh/m³) or reduce energy consumption by 20% or more • Other activities, such as the energetic utilisation of bio-gas gained through the anaerobic digestion of sewage sludge and bio-waste, or the recovery from waste: qualitative emission reduction metrics should be met
Transportation	<ul style="list-style-type: none"> • Efficient, low- or zero emissions fleets; emission metrics need to be followed in terms of per vehicle km, per passenger km or per tonne km • Fuel substitution to net-zero carbon fuels: net-zero carbon fuels such as advanced bio- and synthetic fuels should be used for a dedicated purpose without being mixed with other fuels

Sector	Screening Principles under the Taxonomy for Climate Change Mitigation
ICT	<ul style="list-style-type: none"> • Data centres: follow the Best Practice Guidelines for the EU Code of Conduct on Data Centre Energy Efficiency¹¹ • Data-driven solutions for GHG reductions. no metric need to be followed

With these definitions in mind, the following table shows how the two schemas differ.

Sector	Scope	Environmental Objectives	
		Taxonomy	Project Catalogue
Agriculture and forestry	The Taxonomy has a broader scope and is more detailed	All six environmental objectives	Resource conservation and recycling, ecological protection and climate change adaption
Manufacturing	The Project Catalogue has a broader scope and is more detailed. The Project Catalogue includes "clean coal" while the Taxonomy excludes fossil fuels	All six environmental objectives	Energy saving, pollution prevention and control, resource conservation and recycling, clean transportation
Electricity, gas, steam and air conditioning supply	The Taxonomy excludes co-fired power without carbon capture, natural gas-fired power without carbon capture, and nuclear energy; while the Project Catalogue includes these projects	All six environmental objectives	Pollution prevention and control, resource conservation and recycling, clean energy
Water, sewerage, waste and remediation	Mostly the same	All six environmental objectives	Pollution prevention and control, resource conservation and recycling, ecological protection and climate change adaption
Transportation	Mostly the same	All six environmental objectives	Clean transportation
ICT	The Project Catalogue is specifically about energy and transportation while the Taxonomy is more general	Climate change mitigation	Energy saving, clean transportation, clean energy, ecological protection and climate change adaption
Construction and real estate activities	Mostly the same but the Taxonomy excludes buildings related to fossil fuels	All six environmental objectives	Energy saving, resource conservation and recycling

Although there are substantial differences, the point remains that projects that meet these definitions, within the regions they are applicable, will correspond to policies created to meet the ambitions of that government. Therefore, they will benefit from an increasingly benign economic climate.

ESG bonds may be green, but they are not green bonds...

It should be noted that there is a wider world of ESG bonds in the modern market. To align with climate-change mitigation policy, it is only specifically 'green' loans and bonds that are considered in this article.

Greenness of the bond is definitively linked to its forward credit profile...

As mentioned in the previous sections, aligning credit facilities with policies, aimed at mitigating climate change, will have a knock-on effect of reducing the credit risk profile of the borrower.

The reverse is also true. Financing projects and firms that will find themselves targeted by expensive regulation, or their business models made redundant by environmental laws, can only see credit risk across the balance sheet rise exponentially.

Green principles must be adopted for general loan governance...

Banks are faced with risks and opportunities in the emerging green economy.

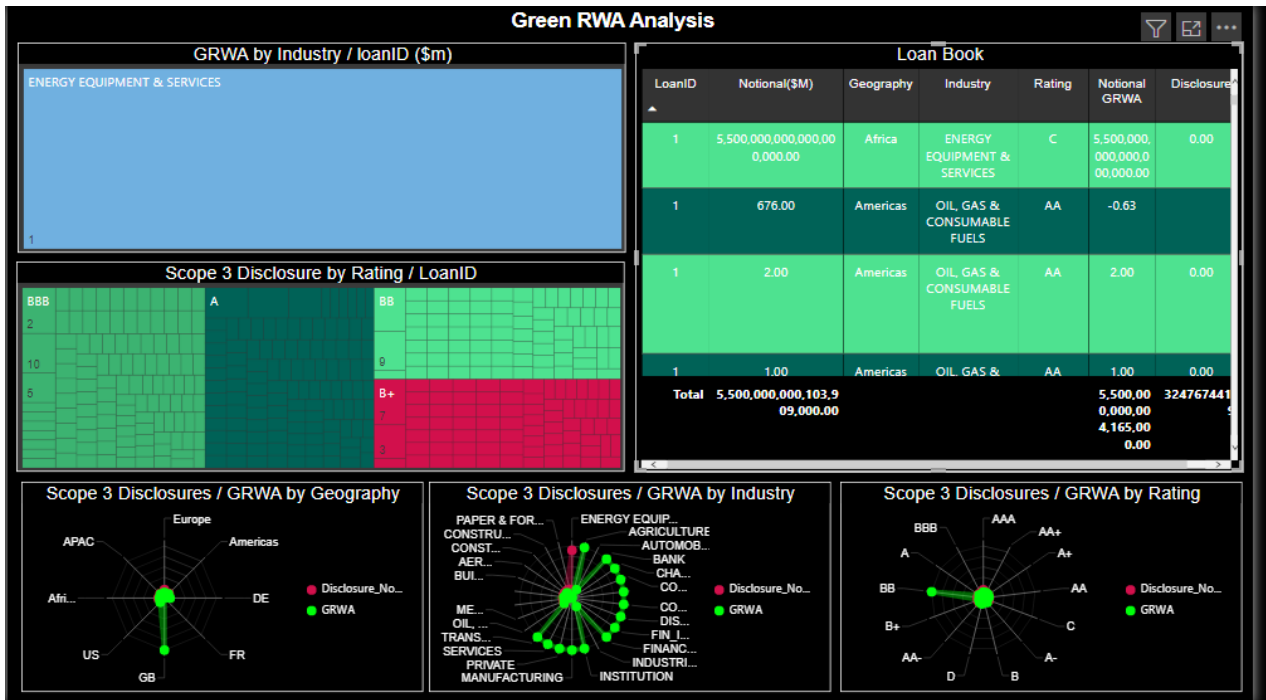
The main risk is that their loan books incur increasing credit risk charges due to the Risk Weighted Asset (RWA) calculation causing more capital to be held in low return, safe assets, or High Quality Liquid Assets (HQLA). Holding a higher percentage of capital in these assets directly decreases profitability, as less capital is 'working' in the market.

Related to the RWA increase is the pricing of loans. Higher credit risk is typically accompanied by a higher spread on the loan itself. The problem with climate change risk is that loans and credit facilities are often long-term, with the rate set in the current 'brown' economic environment. Offsetting spreads need to be set for the future, against the most predictable climate-impacted economic environment.

Banks have to create frameworks and protocols now, to ensure that they remain liquid as the coming decade of climate policy initiatives unfolds.

GreenCap can help...

GreenCap is a 'Risk As A Service' system that empowers banks with the capacity to include climate change into their loan pricing and credit risk analytics.



GreenCap:

- Builds specific Intergovernmental Panel on Climate Change (IPCC) climate pathways into pricing and risk analytics.
- Allows banks to price adaptation and mitigation into current and future credit pricing.
- Enables climate-related strategies to be developed by the bank.
- Deals with transition (policy-based) and physical climate risks.
- Provides sustainability reporting at the CFO level.

Visit GreenCap.live for more details, and for resources to assist in creating and maintaining a climate strategy for a decade of change.



ABOUT GREENCAP

- › GREENCAP is a turnkey 'Risk as a Service' (RaaS) solution, designed for banks to include climate change as a category in their risk management frameworks.
- › The solution allows banks to replicate climate pathways within their scenarios for economic impact and risk analysis.
- › Using GreenCap, banks can modify pathways and scenarios to include the timing effects of delayed sustainability transition measures.
- › Loans and credit facilities are measured and monitored against risks arising from both 'physical' and 'transition' impacts.
- › GreenCap provides support for risk reporting and governance in the areas of 'Responsible Banking' and climate change.
- › With GreenCap, banks can ensure that their climate strategies are financially grounded, and loan pricing is optimized throughout the transition to a green global economy.



ABOUT GREENPOINT FINANCIAL

- › GreenPoint Financial is a division of GreenPoint Global, which provides software-enabled services, content, process and technology services, to financial institutions and related industry segments.
- › GreenPoint is partnering with Finastra across multiple technology and services platforms.
- › Founded in 2006, GreenPoint has grown to over 400 employees with a global footprint. Our production and management teams are in the U.S, India and Israel with access to subject matter experts.
- › GreenPoint has a stable client base that ranges from small and medium-sized organizations to Fortune 1000 companies worldwide. We serve our clients through our deep resource pool of subject matter experts and process specialists across several domains.
- › As an ISO certified by TÜV SÜD South Asia, GreenPoint rigorously complies with ISO 9001:2015 and ISO 27001:2013 standards.
- › GreenPoint is owned by its founders and principals and is debt free.



Marcus Cree

MANAGING DIRECTOR AND
CO-HEAD OF FINANCIAL TECHNOLOGY AND SERVICES

Marcus has spent 25 years in financial risk management, working on both the buy and sell side of the industry. He has also worked on risk management projects in over 50 countries, gaining a unique perspective on the nuances and differences across regulatory regimes around the world.

As Managing Director, Marcus co-heads GreenPoint Financial Technology and Services and has been central in the initial design of GreenPoint products in the loan book risk area, including CECL and sustainability risk. This follows his extensive experience in the Finastra Risk Practice and as US Head of Risk Solutions for FIS. Marcus has also been a prolific conference speaker and writer on risk management, principally market, credit and liquidity risk. More recently, he has written and published papers on sustainability and green finance.

Marcus graduated from Leicester University in the UK, after studying Pure Mathematics, Psychology and Astronomy. Since graduation, Marcus has continually gained risk specific qualifications including the FRM (GARP's Financial Risk Manager) and the SCR(GARP's Sustainability and Climate Risk). Marcus's latest academic initiative is creating and teaching a course on Green Finance and Risk Management at NYU Tandon School of Engineering.



Sanjay Sharma, PhD

FOUNDER AND CHAIRMAN

Sanjay is the Founder and Chairman of GreenPoint Global - a risk advisory, education, and technology services firm headquartered in New York. Founded in 2006, GreenPoint has grown to over 380 employees with a global footprint and production and management teams located here in the U.S, India and Israel.

During 2007-16 Sanjay was the Chief Risk Officer of Global Arbitrage and Trading Group and Managing Director in Fixed Income and Currencies Risk Management at RBC Capital Markets in New York. His career in the financial services industry spans over two decades during which he has held investment banking and risk management positions at Goldman Sachs, Merrill Lynch, Citigroup, Moody's and Natixis. Sanjay is the author of "Risk Transparency" (Risk Books, 2013), Data Privacy and GDPR Handbook (Wiley, 2019) and co-author of "The Fundamental Review of Trading Book (or FRTB)- Impact and Implementation" (RiskBooks, 2018).

Sanjay was the Founding Director of the RBC/Hass Fellowship Program at the University of California at Berkeley and is an Adjunct Professor at EDHEC, Nice in France. Sanjay is also Adjunct Professor at Fordham University where he teaches a similar master's capstone course and at Columbia University. He has served as an advisor and a member of the Board of Directors of UPS Capital (a Division of UPS) and is a frequent speaker at industry conferences and at universities. He served on the Global Board of Directors for Professional Risk International Association (PRMIA).

He holds a PhD in Finance and International Business from New York University and an MBA from the Wharton School of Business and has undergraduate degrees in Physics and Marine Engineering. Sanjay acquired his appreciation for risk firsthand as a merchant marine officer at sea where he served for seven years and received the Chief Engineer's certificate of competency for ocean-going merchant ships. Sanjay lives in Rye, NY with his wife and two teenage sons.