Deloitte.



ESG & Climate Risk in Financial Services

Evolution, Expectations and Challenges Federal Home Loan Bank of NY – 2022 Member Education Series

August 25th, 2022

Meeting with you today



Ricardo Martinez, Principal

- US Sustainable Finance Risk Leader
- Specializes in non-financial risk management, served as the Lead Business Partner for the European Central Bank, where some of the original climate risk regulations and guidance originated
- Experience across several regulatory and compliance remediation initiatives



Corey Goldblum, Principal

- Leads Deloitte's Credit Risk Advisory practice in the US
- 23+ years of experience in financial modeling, credit analysis, valuation, ALLL/CECL, stress testing, DRR engagements
- Member of Deloitte's US Climate Risk leadership team (co-leads the Climate Risk Modeling area)



Cecilia Valverde, Senior Manager

- 12 years of experience with risk and modeling in the financial services industry
- Experience developing and validating models used for risk management at financial services companies
- Member of Deloitte's internal Climate Risk Modeling working group



Gowri Zoolagud, Managing Director

- US ESG Data & Technology Leader
- 17+ years of experience helping financial services firms operationalize regulatory, risk, and compliance requirements through business, data and technology transformations
- Experience developing enterprise data governance and data quality programs for clients and advancing through policies, processes, and implementation plans

Discussion Agenda



SEC Climate Risk Guidance & Regulatory Expectations

Climate Risk Scenario Analysis & Stress Testing

Embedding Climate Risk into Credit Models

ESG Data & Technology Landscape



Regulatory dynamics under the Biden Administration's whole-of-government approach

There is new momentum to address climate-related financial risks by coordinating the Financial Stability Oversight Council (FSOC).

Janet Yellen **US Treasury Secretary and Chair of FSOC** Selected Members of the Financial Stability Oversight Council Jerome Powell Michael Hsu Jelena McWilliams **Rostin Benham David Uejio Sandra Thompson Gary Gensler** Todd Harper **Thomas Workman** Acting Director Federal Reserve Board Acting Chair of the **Federal Deposit** Securities and Exchange Commodity Futures Acting Director of Chairman of the Independent Member of the Consumer Comptroller of the **Insurance Corporation Trading Commission** National Credit Union with Insurance **Finance Protection** Currency (OCC) (FDIC) Chair (CFTC) Acting Chair Administration (NCUA) Expertise Bureau (CFPB) **FRB** OCC **FDIC** SEC CFTC **CFPB FHFA NCUA** Independent · Risks of climate Stress testing Safety and Identification, Review of Climate-related Policies on Current and Measuring, and scenario financial and Truth in future climate soundness monitoring, climate-related monitoring, change to the analysis disclosures in market risks and natural and Lending Act and mitigating insurance • Enterprise Risk public company risks management (TILA) and disaster risks to sector Capital Management Derivatives and of risks posed filings Unfair, the housing (ERM) other Safety and charges Assess gaps in by climate Deceptive, or finance system Role of the the supervision frameworks instruments to soundness of Capital Key and to the change Abusive Acts or hedge for credit unions and regulation Board and requirements Lending Agenda **Practices** regulated Special concern climate risk and of US insurers governance and protecting standards Lending Items (UDAAP) entities of climate risks extreme customers • Net zero public Capital rules / standards to agricultural weather Mortgage commitments Risk-based Industry Model Risk lenders underwriting capital rules Market concentration Incorporate Transmission standards transparency ESG factors into and ratings and vulnerabilities actions

OCC Principles for Climate-related Financial Risk

Though applicable only to large US financial institutions in initial stages, these principles can serve as a reference for future expectations and inform short- and medium-term actions for banks of all sizes.



Management of Risk Areas
Credit Risk
Liquidity Risk
Other Financial Risk
Operational Risk
Legal and Compliance Risk
Other Nonfinancial Risk

SEC Rulemaking Update

In March 2022, the SEC began issuing proposed rulemaking that would require registrants to provide enhanced ESG disclosures with more expected in the coming months related to human capital and governance

Climate



Proposed March 21st, 2022

Enhanced and standardized climate disclosures related to Climate and Risk Strategy, Targets & Metrics, Scope 1, 2 & 3 GHG Emissions



Cybersecurity

Proposed March 9, 2022

Enhanced disclosures on cybersecurity incidents and cybersecurity risk, management, strategy, and governance

- Potential impact to quarterly 10-Qs and annual 10-K
- 60-day comment period from date of proposal was extended and now has closed
- Disclosures will be both qualitative (Reg S-K) and quantitative (Reg S-X)
- Impacts most periodic SEC filers, including domestic registrants, foreign private issuers, smaller reporting companies, BDCs, and emerging growth companies. Registered investment companies are not addressed in the rule.

SEC Proposal: Enhancement and Standardization of Climate-Related Disclosures

Today...

- Oversight of ESG is often not clearly established or defined, though governance and organizational capacity are critical to managing climate-related efforts.¹
- Timeliness for data collection and reporting typically extend beyond current 10-K filing deadlines.²
- Data processes and controls over climate-related information are generally not as mature as financial reporting processes and controls.¹
- Climate-related disclosure is voluntary.
 Companies use a variety of sustainability reporting frameworks and standards, and disclosure outlets.²
- Assurance—an avenue to quality, accurate, and reliable disclosure—is currently not required.¹

Under the proposed rule, registrants would be required to disclose³...



- 1. Governance of climate-related risks, how identified climate-related risks have or are likely to have a material impact on a company's strategy, business model, outlook over short-, medium-, or long-term, and risk management processes.
- 2. Climate-related financial statement metrics (e.g., disaggregated climate impacts on financial statement line items) and impact of climate-related physical events and transition activities on estimates and assumptions.
- **3. Greenhouse gas (GHG) emissions,** including Scope 1 and 2 (and Scope 3 phased in if material or if registrant has Scope 3 target).
- **4. Reasonable assurance,** phased in for accelerated and large accelerated filers over certain GHG emissions disclosures; limited assurance precedes.
- **5. Information about climate-related targets** and transition plans.

SEC Proposal: Enhancement and Standardization of Climate-Related Disclosures

Focus Areas of the Proposed Rules

Materiality

- Voluntary GHG reporting compared to reporting in financial filings –differences that impact materiality:
 - Users of the disclosures
 - Disclosure requirements
- Scope 3 GHG emissions disclosure is required:
 - If material
 - If registrant has set a GHG reduction target

Organizational Boundary

- GHG Protocol: Company may apply; 1) equity share or a 2) control approach (operational and financial)
- SEC proposed rule:
 - Boundary must be consistent with consolidated financial statements
 - Registrants already reporting under GHG Protocol will need to revise boundary to align with financial statements

Scope 3 GHG emissions

- GHG information to be disclosed:
 - Disaggregated by each greenhouse gas
 - In the aggregate
 - Gross, excluding offsets
 - Intensity (per \$ revenue and per economic unit)
 - Methodology (e.g., approach, assumptions)
- Safe harbor for Scope 3 GHG emissions disclosures
- No attestation requirement



Assurance

- Scope 1 and 2 GHG emissions subject to limited assurance (phase-in period), followed by reasonable assurance.
- Requirements for attestation are consistent with the standards issued by the AICPA, PCAOB, and IAASB.

SEC Proposal: Enhancement and Standardization of Climate-Related Disclosures

Proposed disclosure location and timeline

Financial Statements

Climate-Related Disclosure Section (10-K Item 6)

Disclosure Required	For climate-related events and transition activities: (1) financial impact metrics (2) expenditure metrics (3) discussion of the impact on financial estimates and assumptions	 GHG emission disclosures for Scopes 1, 2 and 3 Climate governance Climate-related risks and opportunities Climate risk management Climate targets and goals
Controls and procedures	Subject to internal control over financial reporting	Subject to disclosure controls and procedures
Attestation	Part of financial statement & ICFR audit	Phase-in to reasonable assurance over Scope 1 & 2 GHG emission disclosures for large accelerated and accelerated filers

Timeline for Proposed Climate Rule (timeline for calendar year end filers)

Registrant Type	All Disclosures Except Scope 3 GHG Emission Disclosures	Scope 3 GHG Emission Disclosures	Attestation on Scope 1 and Scope 2 GHG Emission Disclosures
Large accelerated filer	2023	2024	Limited assurance — 2024 Reasonable assurance — 2026
Accelerated filer	2024	2025	Limited assurance — 2025 Reasonable assurance — 2027
Nonaccelerated filer	2024	2025	Not required

^{*} Smaller reporting companies would be exempt from Scope 3 GHG emission disclosures and would have an additional year of transition (i.e., all other disclosures would be required in 2025).

Climate Risk Scenario Analysis & Stress Testing

Scenario Analysis Modeling Process Overview

The below scenario analysis process is easy to apply systematically across portfolios for a range of physical and transition risk factors

Identify possible climate risk factors

- Identify long-list of all possible climate risk factors, using climate taxonomies (e.g., TCFD)
- Use business views, expert opinion and company reports to shortlist factors

Scenario selection and downscaling

- Identify and define range of scenarios, inclusive of transition and physical risks
- Scenario downscaling may be required to model the impact accurately at region, sector or market level

Data sourcing

 For your selected methodologies, source the required data internally or externally (e.g., counterparty level financial data and carbon emissions)

Assessment on business impact

 Evaluate the potential effects on the bank's strategic and financial position under each of the defined scenarios

Embedding stress testing results

- Results should be embedded into:
 - Risk Appetite
 - Risk Governance
 - Disclosures









 ECL_c



(LGD)



Estimate impact on key risk

EAD

parameters







Evaluate potential impact of climate risk on material sectors

 Evaluate the current and anticipated exposure to climate risks in each sector, leveraging amongst others, company disclosures (e.g., CDP reports) and publicly available information

Methodology design and implementation

- Consider different methodologies across portfolios and how certain portfolios can be grouped under a single approach
- Assessment of data requirements for each methodology is key
- Impact on key risk parameters, for example under credit:

Impact on financial position of borrower due to business disruption and carbon prices, for example

Damage to collateral and impact on valuation of assets

Net zero strategyadjusted exposures

Framing a response to stress testing results

- Mitigation, resilience and adaptation strategies
- Business strategy impact
- Regulatory reporting

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Climate Stress Testing – Global Regulatory Perspectives

The NGFS is helping promote alignment in global regulatory practices, but significant uncertainty remains around adoption in the US. This is highlighted by comparing climate stress test (CST) practices for the three jurisdictions to date with formalized requirements.

Comparison of European Stress Testing Practices

	Bank of England	Banque de France	European Central Bank
Participation	Large banks and insurers	Large banks and insurers	All significant supervised institutions (assets of more than EUR 30 billion)
Timetable	Likely biennial; Second edition launched in June 2021; Results published in May 2022	 Latest results published in May 2021; Next CST planned for 2023/2024 	 Latest results published in July 2022; Next CST planned for 2024
Forecasting Horizon	2050 (with add on for 2050-2080 risks under "No Policy Action" scenario)	• 2050	• 2050
Balance Sheet	Static through 2050	Static through 2025, dynamic from 2025-2050	Static in the Short-TermDynamic in the Long-Term
Scenarios	Physical and Transition Risks: Early, Late, and No Policy Action based on NGFS with additional macro variables provided by BoE	 Transition Risk: Orderly, Disorderly, and Immediate 1.5 based on NGFS with additional macro various provided Physical risk: Based on "RCP 8.5" IPCC scenario 	Physical and Transition Risk: Orderly transition scenario, Disorderly transition scenario, Hot House World scenario.
Reporting Metrics	Credit Risk: Impairment chargeMarket Risk: Excluded	 Credit Risk: Expected Credit Loss (ECL) Market Risk: Revaluation of trading portfolio 	Income and exposure to CO2 intensive sectors; Bottom-up analysis for 43 banks covering credit, market and operational risks

Data Considerations for Climate Scenario Analysis

Data sourcing is a key challenge. Banks require a combination of internal and external data with processes and procedures to promote data quality and handle incomplete datasets.

		Our Point of View		
Data Requirements	Select Data Sources	Typical Pain Points	Possible Solutions	
Internal	1 Internal data	Internal data is sometimes not reliable, up to date or complete.	Extrapolate data to infer missing data points using simple proxies or linear regressions	
 Portfolio information (e.g., exposure, maturity) Internal assets (e.g., property) Model generated data (e.g., risk ratings from 	Disclosure reports for listed companies	Automating the collection of information from disclosure reports is challenging given lack of standardisation of these reports. Data is sparse or unavailable for unlisted companies.	Use AI and machine learning to extract required data from public disclosures. Deloitte has successfully used an AI solution to collect information from corporate sustainability and TCFE	
 BAU models) External Data Counterparty emissions Scenario data Physical Risk Transition Risk Macroeconomic 	3 Data vendors & External Data	Buying data from third party vendors can be expensive, data quality may not be reliable, and vendors may provide duplicative data. In addition, there is a diverse and dynamic environment of vendors, and data providers do not have a standardized taxonomy for defining data attributes.	Review your current data landscape with a standardized assessment framework before engaging vendors. Develop a plan to leverage data from multiple sources by balancing quality, cost, and coverage.	
		Illustrative data vendors		
	MCG	viœo	Bloomberg	









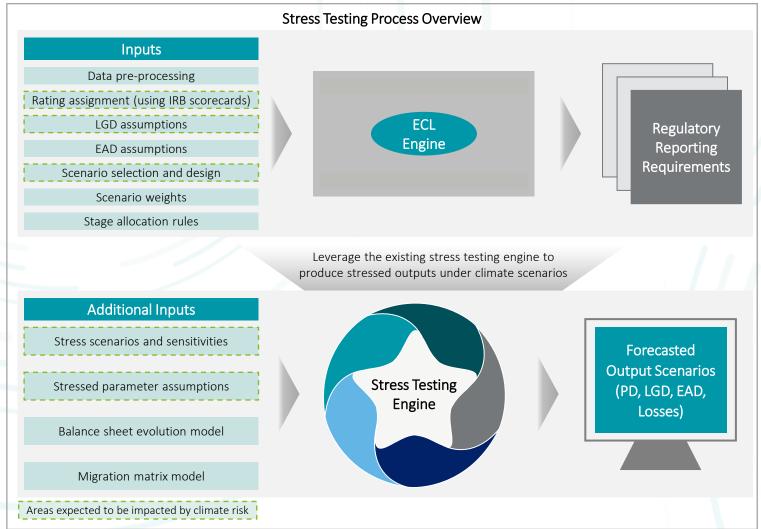






Leveraging Existing Stress Testing Infrastructure

Scenario analysis involves development of new analytical methodologies which can be incorporating into existing frameworks including technology, upstream/downstream models, and processes.



Key Considerations

- Leverage your existing model capabilities when measuring climate metrics and building stress testing capabilities to maximize efficiency and alignment with existing processes
- Existing functionality can be leveraged but new capabilities will also be required, including methodologies for:
 - The risk drivers of your existing rating systems (e.g., IRB scorecards)
 - The materiality of the climate-related risk drivers of your portfolios
 - The characteristics of the portfolios in scope (e.g., security type, purpose of lending, geography, etc.)
 - Potential new climate metrics such as Climate VaR
- The regulatory landscape around climate risk in capital is currently uncertain, but linkages to climate capital should be considered for planning.
- Increased corporate reporting requirements may also require automated data collection, processing, and reporting.

Climate Scenario Development Process

While intuitions have historically focused effort in the scenario expansion phase, we increasingly see customization at each step.



Scenario Downscaling

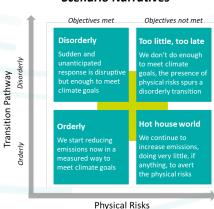
Scenario Expansion

Scenario Narratives

Perspectives

- Firms typically rely on regulatory / external narratives (e.g., NGFS)
- Regulators such as PRA and ECB also rely on NGFS narratives, foreshadowing potential future US approach
- Some organizations may customize scenarios, but typically within the context of existing overarching narratives

Scenario Narratives

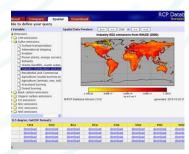


Climate Science Models

Perspectives

- Most commonly used by industry groups (NGFS) and regulators to build out climate narratives
- Typically leverages General Circulation Models (GCM) and Catastrophe models for physical risks Integrated Assessment Models (IAM) for transition risks
- Limited investment from banks in developing such models

IPCC Pathways



* Intergovernmental Panel on Climate Change (IPCC) open-source climate trajectories

Perspectives

- Many institutions directly leverage NGFS and regulatory scenario output without customization
- Increasingly, organizations are developing methodologies to generate custom scenarios
- Custom scenario builds require significant investment in data and tools, and benefits should be weighed against costs

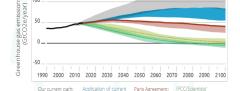
Global NGFS GHG Scenarios

Change in tropical cyclone intensity by basir

Perspectives

- Scenario downscaling is frequently used, specifically for physical risk, to help accurately model climate impact at region, sector or market level
- Statistical models (ECM, VAR) can be used by banks, but more commonly banks rely on vendors
- Granularity of regulatory scenarios in US is uncertain

US Market Scenarios

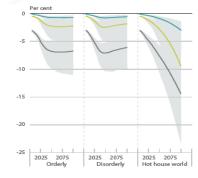


Macro Variab	les (NiGEM model)	Energy & Clim	ate-related Variables
	GDP	Downscaled to 130+ regions (countries, territories, islands, etc.)	Energy Capacity
Downscaled to	Unemployment		Emissions Data
50+ countries,	Exchange Rate		Agricultural Demand
including – UK, Singapore,	Interest Rate		Energy Use
India, China,	Carbon Price		Energy Investments
Brazil	Inflation		Land Cover
	Imports & Exports		Carbon Sequestration

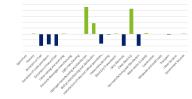
Perspectives

- Firms commonly utilize scenario expansion to obtain forecasts of additional variables under pre-existing scenarios
- Various statistical approaches are available including econometric models, NiGEM¹, and CGE²
- Additionally, we see heavy reliance on business judgment used to build out scenarios

Variable Expansion



Example: Impact of Net Zero on Green Sectors using D.CLIMATE Mode



- ¹ National institute Global Econometric Model considers short-term macroeconomic effects, used by **NGFS**
- ² Computable General Equilibrium augmented model used in our **D.Climate** methodology; see slide 45

Measuring Physical and Transition Risk

The below table provides industry perspectives on how institutions are modeling physical and transition risk across Wholesale and Retail Portfolios.

Portfolio

Physical Risk

Transition Risk

Wholesale

- Measure through geospatial location of counterparties
- Observed practices of assessment
 - Acute physical risks: assessment of potential impacts of extreme weather on the value of the bank's real estate collateral and counterparty operations
 - Chronic physical risks: translation into productivity changes, and subsequently into changes in firms' revenues

- Measure through changes in firms' revenues, in the costs of goods, and in property values
 - Assess impact of the scenarios on financials at the borrower level with sector segmentation
 - Borrow level financials can be run through existing risk rating scorecards
 - Extrapolate on a sectoral level and use the climate impact to adjust credit risk metrics

Retai

- Measure through the impact of the hazard on the collateral value for fixed assets, and usage of macroeconomic variables for uncollateralized or non-fixed assets
- Model component considerations: likelihood, severity, and damage
- Commonly used metrics: single hazards and/or the vulnerability of certain locations to these hazards, multi-hazard or aggregate risk scores, and heatmap

- **Auto:** Measure through macroeconomic variables and **assessment of collateral value on gas-powered vehicles** triggered by potential green energy vehicle policy
- Credit cards: Generally measured through consideration of macro variables factored into scenarios
- Mortgage: Measure impact on household income / expenditure from changes in macro and climate factors (e.g., energy bill, cost of water)

Measuring Physical Risk

Physical risk to fixed assets is typically measured through an assessment of the likelihood, severity and damage to understand economic impact. This analysis may be leveraged for **loan exposures** as well a firm's **own assets**.

Likelihood

- What is the risk of being affected by the hazard?
- For example, what is the risk of flooding?

The risk rating will be influenced by property characteristics. For example of flooding, elevation is one of the risk factors



Severity

- How severe is the event?
- For example, how deep is the water level?

This element is driven by the scenario and for each hazard you need to select a proxy variable. For flooding, this is typically rainfall











Damage

- What is the expected damage given the severity?
- For example, how much damage was done to the property given the level of flooding?

Damage curves need to be represented as a function of the severity e.g. damage by depth of flooding

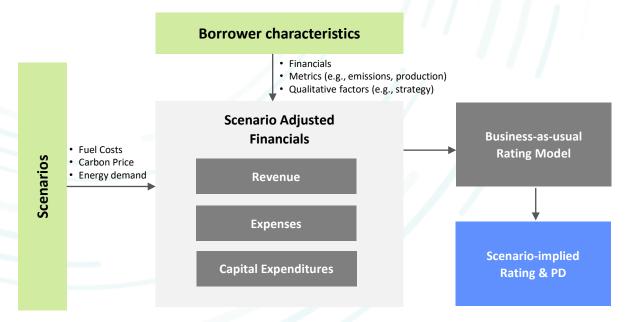


Measuring Transition Risk for Wholesale Exposures

The United Nations Environment Program Finance Initiative (UNEP FI)¹ has developed a methodology for quantifying the impact of transition risks on wholesale exposures using a combination of bottoms-up and top-down modeling approaches.

Bottom-Up Module

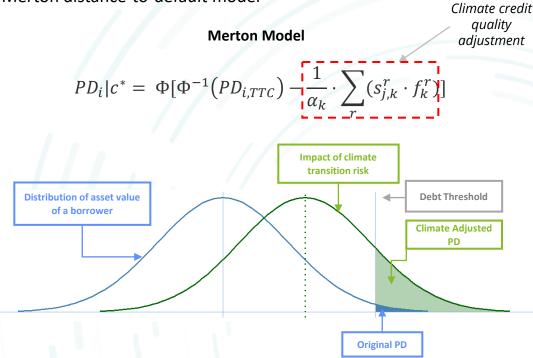
1 Develop calibration points by calculating PD impact of climate scenarios for a sample of borrowers across homogeneous segments



1. Source: https://www.unepfi.org/wordpress/wp-content/uploads/2018/04/EXTENDING-OUR-HORIZONS.pdf

Top-Down Module

Extrapolate PD impact across portfolio by calibrating a modified Merton distance-to-default model



Considering LGD Impact for Wholesale Portfolios

Many institutions focus on PD when considering transition risk of wholesale portfolios, but LGD can also have a material impact on losses.

Our Point of View

The impact of climate risk on LGD is likely to be driven by valuation impacts on the underlying collateral. Typically, there are two main types of collateral that underpin wholesale lending:

Physical assets

Examples include moveable and immoveable assets

• Typically, firms use a workout framework to estimate LGD where a physical security is held as collateral.

No loss

Restricture

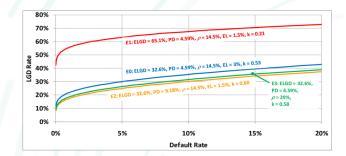
Loss given

Litigation

 The LGD can be projected forward by relating the change in the LGD to changes in the PD (using Frye-Jacobs for example).

Financial security

Examples include guarantees, debentures, corporate bonds



- The asset valuation can be impacted by physical risk events that causes damage to the asset, while transition risk is likely to drive the risk of stranded assets.
- The expected impact on asset valuation can be estimated using traditional stress testing models, which will primarily capture transition risk impact.
- For physical risk, a similar approach to the real estate sector can be used to assess valuation impacts.
- For financial securities, a workout framework (as outlined on the left) can also be used, in which case firms will need to estimate the impact of climate risk on asset values.
- For corporate bonds, changes in bond valuations can be assumed to be driven by changes in the credit rating of the issuer. Subsequently, UNEP FI methodology can be used to estimate changes in the credit rating of the borrower.
- Traditional stress testing models can be used to predict changes in LGD using macro variables provided with climate scenarios.

Methodologies

Select

Consumer Portfolio Considerations

Understanding the climate risk factors your portfolios are exposed to is the key to targeted scenarios and effective stress testing exercises.

Physical Risk Scenario Drivers

- Acute extreme weather events that property and asset collateral are sensitive to, such as flood, wildfire, etc.
- Chronic physical drivers can consider rising temperature affecting productivity and insurance risk

Transition Risk Scenario Drivers

- Direct impact: Policy mandate that bans the sale of gaspowered vehicles, regulation requirements on property energy efficiency, and changes in consumer preferences.
- **Indirect impact:** Macro-economic variables such as employment, HPI, energy price, etc.





- Vehicle lending is observed to be mainly transition risk driven. Due to the short-term nature of auto loans, only sharp and unexpected collateral value decline on gas-powered vehicles driven by government policy are likely to drive material risk to a gas-powered vehicle concentrated portfolio.
- Physical risk is less material due to movable collateral and insurance coverage. However, insurance assumptions can be leveraged to estimate impact to auto loans.



Credit Card

 Both physical and transition risks can be reflected in scenario-conditioned macroeconomic variables. For example, high energy prices, GDP reduction, lay-offs in carbon intensive industries due to transition to renewal energy, etc., would negatively impact the repayment capacity of borrowers.



Residential Mortgage

- Mortgage and home equity loans are observed to be **both physical risk and transition risk driven.**
- Physical risk is manifested through extreme weather events design causing geographical hazard impact on the property collateral value, as well as through insurance assumptions.
- Transition risk is reflected through spending on upgrading a property's energy efficiency rating in response to new regulation.

Embedding Climate Risk into Credit Models

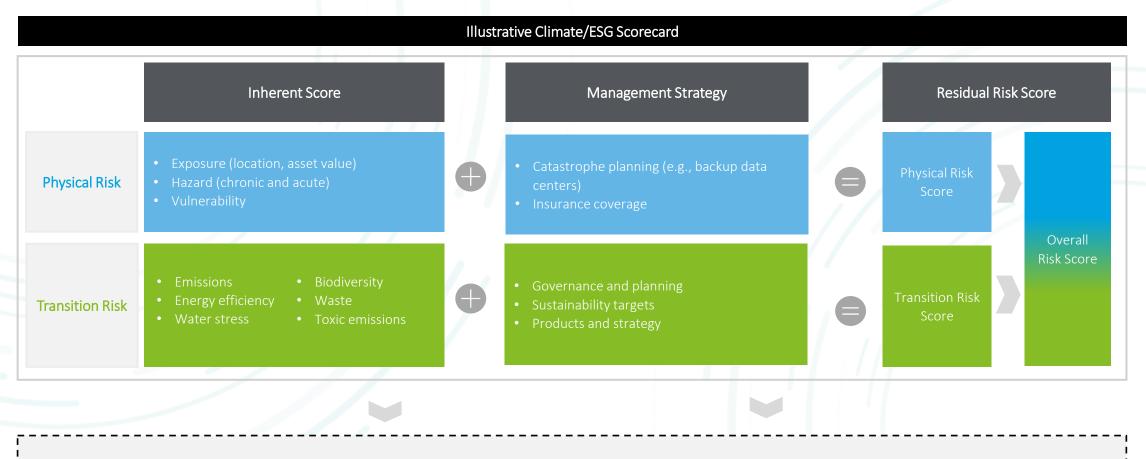
Integrating Climate into the Credit Lifecyle

The impact of climate risk should be considered at each stage in the credit life cycle, and tracking credit portfolios is key when developing reporting capabilities and KPIs.

	Credit Lifecycle		
Client Prospecting & Acceptance	On-boarding	Relationship Maintenance & Portfolio Management	
Prospect & Purpose Client Due Diligence Underwrite & Approve	Contracting & Product Onboarding	Transact Monitor	Offboarding
 Changes to client portfolio strategy Development of client Climate profile to engage clients Client Climate Classification (Sensitive industry, business activities, restricted clients) Define risk appetite and limits Full Climate screening and assessment Client outreach and engagement to obtain further data on economic activities for Green taxonomy alignment and transition plans Climate screening and assessment Assess borrower's exposure to Climate factors and mitigating strategies laid out Climate and climate risk adjusted pricing 	Embedding Climate clauses and covenants into facility letters of offer	 In-flight checks to ensure Climate adherence with Climate clauses Estimate parameters (PD/LGD) and capital/impairment Perform stress testing Assess Climate Risks across sensitive industry Review triggered by negative Climate news 	Exit Management of clients in sensitive sectors, or to align with Net Zero ambitions
	Reporting, KPIs and Analytics		
KPI for Sustainable Finance Products (to assess risk of Sustainable Finance Products Greenwashing)	Management Report to track the performance of the Climate Risk portfolio against defined targets	for different industries transition p	ress of client plans to et Zero targets

Climate Risk Ratings

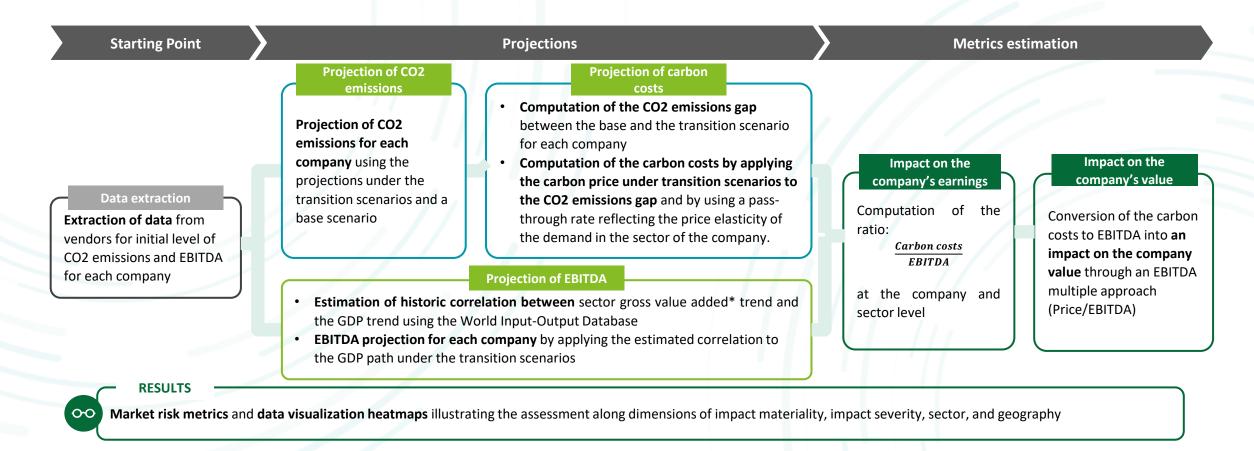
In addition to performing scenario analysis, consideration of climate risk ratings can play a key role in integrating climate into credit for loan underwriting and counterparty risk management.



Climate ratings may be use for risk management, disclosures, and incorporation into existing risk rating processes (e.g., via overrides)

Impact of Climate on Market Risk

Climate scenarios can be leverage to forecast company metrics like EBITDA which can be further translated into market risk metrics such as Climate Value at Risk (VaR).



(*) The gross value added has been chosen as the metric because:

- According to the value-added method for the GDP, the sum of all sectoral gross value added for a country corresponds to this country's GDP (GDP is available in the NGFS scenarios).
- This metric is equivalent to EBITDA as it excludes depreciation and amortizing of the capital and excludes the financing structure.

ESG Data & Technology Landscape

Perspectives on data for climate (and ESG) risk management



CLIMATE AND SUSTAINABILITY TEAMS FACE OFF TO NUMEROUS INTERNAL AND EXTERNAL STAKEHOLDERS: A bank integrating climate risk now faces off to a wide array of stakeholders – governments, regulators, shareholders, customers, employees among others.



BANKS ARE RESPONDING TO STAKEHOLDER EXPECTATIONS BY COMMITTING TO SEVERAL INITIATIVES AND SETTING DEMANDING TARGETS: Each of these is a data-hungry book of work and requires access to its own data feeds on an ongoing basis.



DEMONSTRATING PROGRESS ON MULTIPLE INTERNAL WORKSTREAMS IN TANDEM IS A KEY CHALLENGE: Stakeholders expect progress on the sustainability agenda in all directions – from governance to risk management to strategy -- on *each* of the many initiatives and *in tandem*.



DATA WILL NEED TO BE AT THE HEART OF YOUR CLIMATE AND SUSTAINABLITY STRATEGY: This puts a bank's data strategy at the heart of its climate risk success, if it wants to deliver effectively on its milestones. Most stakeholders -- be it consumers, clients or regulatory bodies -- continue to expect engagement and delivery despite the data being patchy.



ARTICULATING REQUIREMENTS FOR THE DIFFERENT USE-CASES FOR BUSINESS LINES AND FUNCTIONS ACROSS YOUR FOOTPRINT IS ESSENTIAL: We see banks working through a systematic articulation of the use-cases. Given the breadth of Sustainable Finance, there are numerous use-cases-- Scenario Analysis, Disclosures, Net Zero are just some of them.



OPERATIONALSING DATA STRATEGY MAY BE A MULTI-YEAR BOOK OF WORK: Introducing clarity about the data requirements, laying down the operationalisation principles and implementing a strategic workflow are some key recommendations. These recommendations will accelerate the climate risk integration and introduce efficiencies across your book of work on climate and ESG.



WITH PRIORITISATION, IT'S POSSIBLE TO GET SOME QUICK WINS: Despite data the wide scope, the data incompleteness and data quality issues, through smart prioritisation banks can get some quick wins.

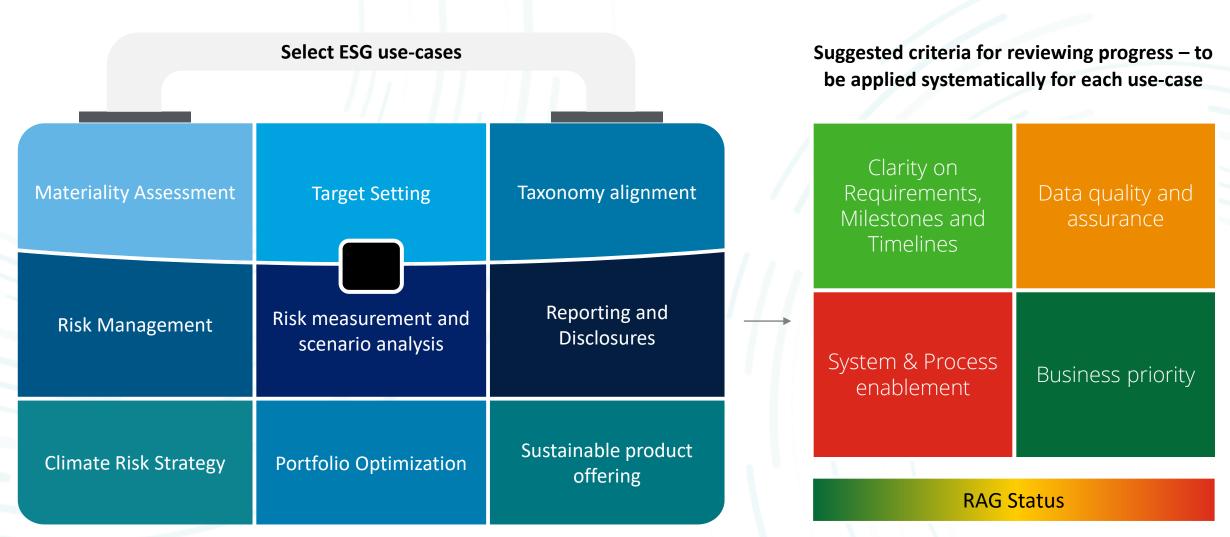
It is especially helpful to develop ESG specific data use-cases

Packaging a wide number of data requirements into a select cluster of use-cases



We recommend heat-mapping each use-case to track regular progress

As ESG data can be of varying quality, have differing business priorities and require system enablement over time, assessing a RAG status to each use-case will help with monitoring progress



Continue to make progress on the ESG data strategy and its dimensions

Operationalizing the data strategy could be a multi-year, multi-team effort

5

Data Governance

- · Delineate roles and responsibilities
- Develop policies and standards
- Clarify escalation procedures and sharing protocols

Data Sourcing Analysis

- Seek market expertise on data
- Generate data sourcing and consumption strategy – including use of analytical techniques
- Get business sign off on vendor/market data

Operationalise Capabilities

- Design and implement data assurance operating model
- Define data quality (DQ) checks (technical and rule based)
- · Ensure processes are ESG-inclusive

Business Requirements Mapping

- Articulate business benefits
- Map ESG data requirements from across the teams and conduct data gap analysis e.g. Client coverage, Regulatory reporting, Investor relations, Risk management
- Socialise potential use cases for synergies

Architectural Design & Industry Benchmarking

- Review adequacy of current data architecture
- Develop a future state architecture, including system map and identification of business process flows
- Benchmark against the industry

Planning and Implementation

- Outline milestones and deliverables
- Develop communication and stakeholder map
- Execute the plan

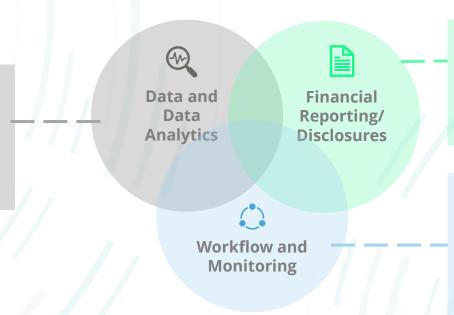


ESG Data Ecosystem and Vendor Landscape

While many data sources are internal, given ESG measurement is across supply chain and includes many estimations, data vendors may need to be assessed as needed to source information

Data vendors that are providing climate/ESG data, metrics and data analytics related services; Data can be included from publicly available sources, licensed, etc.

- ✓ Pure raw data
- ✓ Calculated metrics
- ✓ Scenario analysis



Data vendors that enable

- ✓ financial reporting or
- ✓ non-financial reporting
 /disclosures

based on the broad frameworks and regulatory guidance

Data providers that are providing workflow related services like ERM integration, automating ESG data collection/ aggregation/ analysis; Monitoring ESG and business objectives, risk and controls (GRC) to meet the targets















































Scope 1, 2 and 3 emissions

Data to be collected across Scope 1, 2, 3 emissions are broad and complex and including estimations in many areas

Upstream Activities



1. Purchased Goods & Services



3. Fuel-and-energy-related Activities



5. Waste Generated in Operations



7. Employee Commuting



2. Capital Goods



4. Upstream Transportation & Distribution



6. Business Travel



8. Upstream Leased Assets











Purchased electricity, heating, cooling, steam, etc.

Downstream Activities



9. Downstream Transportation & Distribution



11. Use of Sold Products



13. Downstream Leased Assets



15. Investments



10. Processing of Sold Products



12. End-of-life Treatment of Sold Products



14. Franchises

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