OSFI issues Standardized Climate Scenario Exercise for consultation

After the publication of B15, OSFI takes the next step with the SCSE to safeguard Canada's financial system to the impacts of climate change

- On March 7, 2023[2], OSFI published Guideline B-15: Climate Risk Management, which sets out OSFI's expectations for the management of climate-related risks.
- The Guideline will be effective fiscal year-end 2024 for Domestic Systemically Important Banks (DSIBs) and Internationally Active Insurance Groups (IAIGs) headquartered in Canada. For all other in-scope FRFIs, the Guideline will become effective at fiscal year-end 2025.
- On October 16, 2023[3], OSFI published the draft methodology documentation for a Standardized Climate Scenario Exercise (SCSE). All FRFIs will be expected to participate and submit a completed SCSE workbook and questionnaire.
- The aim of the SCSE is to increase the understanding of FRFIs potential exposures to climate-related risks, while also enhancing their capacity to conduct climate scenario analysis and risk assessments.
- On December 22, 2023, the consultation for the SCSE will close giving institutions time to go through the methodology and share feedback with OSFI.
- In March 2024, a second consultation will take place about the draft technical instructions and a draft workbook for the SCSE.

The importance of climate scenario analysis: from regulatory expectations to strategic actions

> The adoption of sound climate risk management practices at financial institutions will give OSFI confidence that those institutions have the necessary policies and procedures in place to manage financial risks.
>
> - Peter Routledge, Superintendent of Financial Institutions [1]

Introduction

On March 7, 2023, the Office of the Superintendent of Financial Institutions (OSFI) issued its first guideline on climate risk management that recognizes the need for action and constantly changing nature of climate risk management: B-15.

OSFI intends to review and amend its B-15 Guideline as practices and standards evolve. The first chapter of this article focuses on OSFI's B-15 guidelines.

As a first step to further implement the fourth principle of OSFI's B-15 Guideline, which covers climate scenario analysis, OSFI published a draft methodology for a Standardized Climate Scenario Exercise (SCSE). All Federally Regulated Financial Institutions (FRFIs) are expected to participate in the SCSE. The second chapter of this article focuses on the SCSE elements and methodology.

OSFI's main objectives are:

- To raise awareness and to increase the understanding of the potential risks to climate change;
- To encourage FRFIs to improve their capacity to assess climate events and the ability to perform climate scenario analysis;
- To establish a standardized method to quantitatively assess climate related risks, both transition and physical risks.

The SCSE establishes four different modules that capture different transmissions of transition and physical risks that may impact FRFIs.
The key elements FRFIs should consider:

- This SCSE is intended as an initial assessment which will inform future expectations and exercises;
- FRFIs are required to forecast baseline PDs and LGDs until 2050 that will be used to forecast transition risks;
- Granular data is required for real estate exposures divided in two categories:
  1) heating and power sources from buildings linked to transition risks;
  2) geolocation of properties which will be linked to physical risks.

The SCSE provides FRFIs the opportunity to assess their readiness for climate scenario analysis and to define their ESG data governance framework.

What is the purpose of this paper?

This paper highlights the key themes of OSFI's Standardized Climate Scenario Exercise that follows the implementation of OSFI's Guideline B-15: Climate Risk Management. Additionally, an overview is provided of OSFI's Climate Risk Returns data collections[4] and aims to raise awareness of the similarities of global climate risk exercises and OSFI's SCSE

01 OSFI

Insight 1: OSFI Guideline B-15 general requirements

Background and purpose

On March 7, 2023, OSFI published Guideline B-15: Climate Risk Management, which aims to provide FRFIs with guidelines on promoting preparedness and resilience to climate related risks for implementation of governance and risk management practices.

The purpose of this guideline is for FRFIs to:

- Develop a comprehensive understanding of climate-risk implications to its business model and strategy
- Implement appropriate governance and risk management practices
- Remain financially and operationally resilient against severe, yet plausible, climate scenarios and their disruptive consequences

	GOVERNANCE	SCENARIO ANALYSIS	CAPITAL AND LIQUIDITY ADEQUACY	RISK MANAGEMENT
Highlights	▸ Having a suitable governance structure and operating model that includes clear responsibilities for managing climate risk. ▸ Develop transition plans that outline their approach to managing both physical and transition risks, including monitoring processes and methods for engaging with clients to support their transition to a low-carbon economy.	▸ Consider multiple climate models and scenarios covering a range of time horizons when climate risk could materialize ▸ Consider scenarios that can capture both physical and transition risks that test different levels of severity	▸ Incorporate climate-related risks into their Internal Capital Adequacy Assessment Process (ICAAP) or Own Risk and Solvency Assessment (ORSA) process ▸ Consider the impact of climate risk drivers on their liquidity risk profiles and adequacy of the overall buffers	▸ Incorporate climate risk into the Enterprise Risk Management (ERM) framework, relevant policies and procedures, and portfolio management functions ▸ Acquire the right data to support effective and timely decision making as relevant to a FRFIs business operations. Where any data gaps exist, OSFI expects FRFIs to consider alternative data sources / proxies to mitigate ▸ Develop climate risk reporting capabilities to monitor business performance against internal limits and assess effectiveness of its climate risk frameworks.

Insight 2: OSFI Guideline B-15 disclosure requirements

Purpose of disclosure expectations

- Publicly disclosing climate-related risks will assist FRFIs in building confidence in their management, assist them in maintaining adequate access to capital and liquidity channels and improve the public's confidence in the resilience of the Canadian financial system.
- Disclosure mandates apply to all FRFIs on a consolidated basis except for subsidiaries of such FRFIs that report consolidated results to OSFI.
- OSFI acknowledges that some of the underlying disclosure principles may cause application tension due to competing priorities within an FRFI. OSFI expects the FRFI to find an appropriate balance of disclosures that highlights key elements reflecting the FRFIs' performance without overwhelming stakeholders with unnecessary information.

Principles

1. Disclose relevant information addressing current and potential future impacts of climate risks and value creation opportunities
2. Disclose specific and comprehensive data consistent with what is utilized for its internal investment and risk management decisions. Assumptions and any limitations should be explicit
3. Present clear, balanced, and understandable information, combining qualitative and quantitative data, highlighting any developments they indicate over time and/or relevant trends
4. Share reliable, verifiable, and neutral information, traceable to sources and following industry practices. Prepare for external independent assurance in the future.
5. Provide disclosure proportional to size, nature, and complexity, reflecting various business lines and geographic/sector dispersion. Exercise discretion to maintain transparency.
6. Disclose information consistently over time, allowing users to interpret the impact of climate risk over time and derive meaningful inter-period insights. Explain any restatements to maintain comparability.

B-15 Disclosure expectation summary

GOVERNANCE

Board of directors' oversight of climate risks and opportunities

Management's role in assessing/managing climate risk

STRATEGY

Identified climate risks and opportunities

Impact od climate risks and opportunities on business and strategy

Transition plan

Strategy resiliency to adverse climate scenarios

RISK MANAGEMENT

Process for identifying and assessing climate risks

Process for managing climate risks

Integration with overall risk management

METRICS AND TARGETS

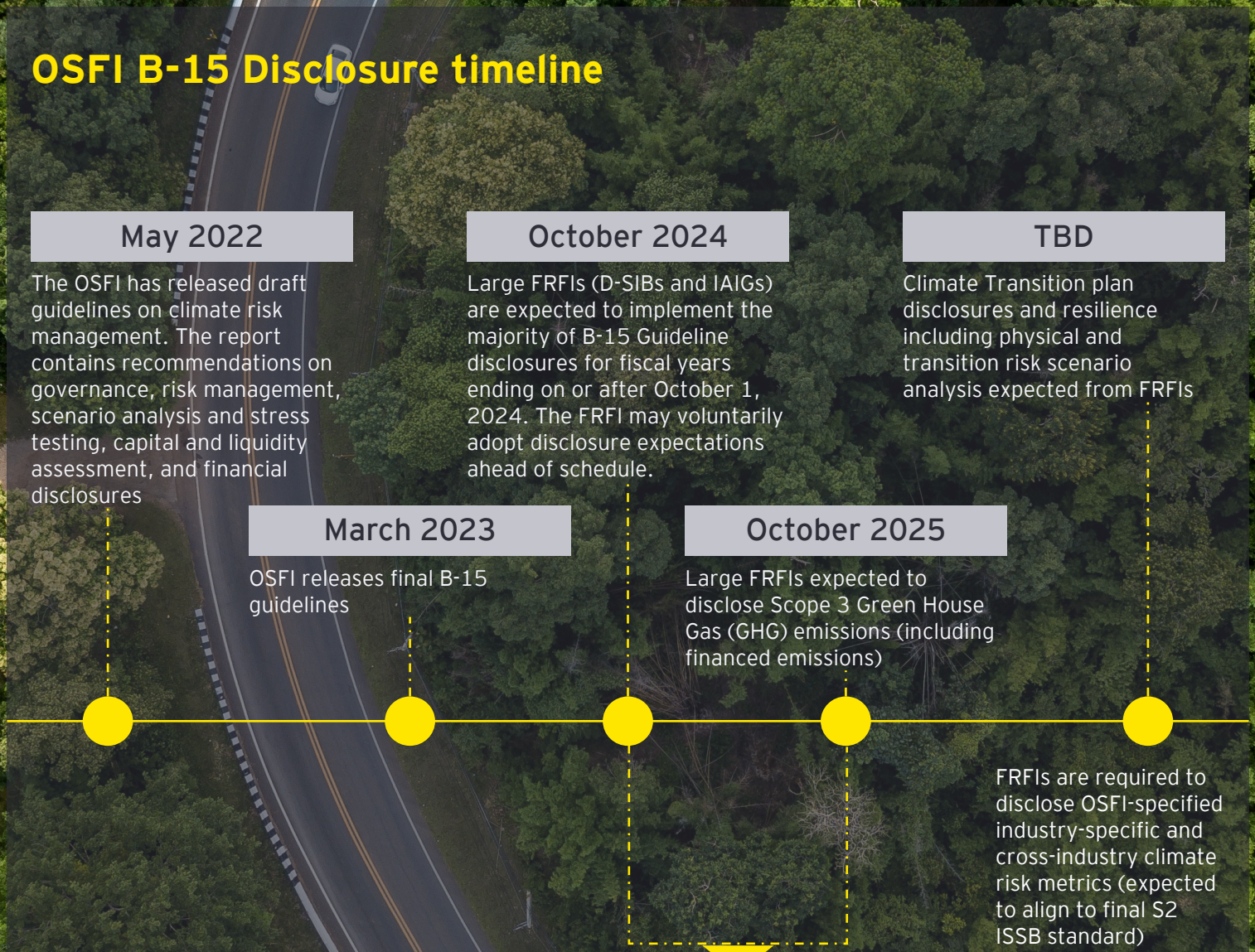
Metrics used to assess climate risk

Scope 1 & 2 GHG emissions

Scope 3 GHG emissions

Targets used to manage climate risk and performance against targets

OSFI B-15 Disclosure timeline



Insight 3: OSFI's draft standardized climate scenario exercise

Background and purpose

On October 16, 2023, OSFI published the draft methodology documentation for a Standardized Climate Scenario Exercise (SCSE). The SCSE is a follow-up of OSFI's Guideline B-15: Climate Risk Management, that was published earlier this year, focusing on OSFI's expectation with respect to climate scenario analysis. All FRFIs will be expected to participate and submit a completed SCSE workbook and questionnaire once the SCSE has been finalized.

OSFI's main objectives of this exercise are:

- To raise awareness and to increase the understanding of the potential risks to climate change;
- To encourage FRFIs to improve their capacity to assess climate events and the ability to perform climate scenario analysis;
- To establish a standardized method to quantitatively assess climate related risks, both transition and physical risks.

This is the first climate scenario analysis issued by OSFI and will provide the basis for future exercises. The SCSE is therefore set-up as a foundational first step that will continue to evolve over the years to come. It is therefore essential to go over the methodologies and materials to provide feedback that OSFI can consider. A first round of feedback is requested by the December 22, 2023, specifically about the recently published draft methodology. A second consultation will take place in early 2024 to provide feedback on the draft technical instructions and a draft workbook, which have not yet been published.

Expected timeline

OCT 2023
OSFI
Issue Draft SCSE Methodology

FRFIs
1st consultation on draft methodology

DEC 22, 2023

WINTER 2023
OSFI
Issue Draft workbook and instructions

FRFIs
2nd consultation on draft workbook and technical instructions

MARCH 2024

FALL 2024
OSFI
Issue 2024 SCSE

FRFIs
Complete SCSE and submit results

END OF 2024

2025
OSFI
Analyze FRFI submissions and publish final report

Climate scenario analysis is one of OSFI's top priorities

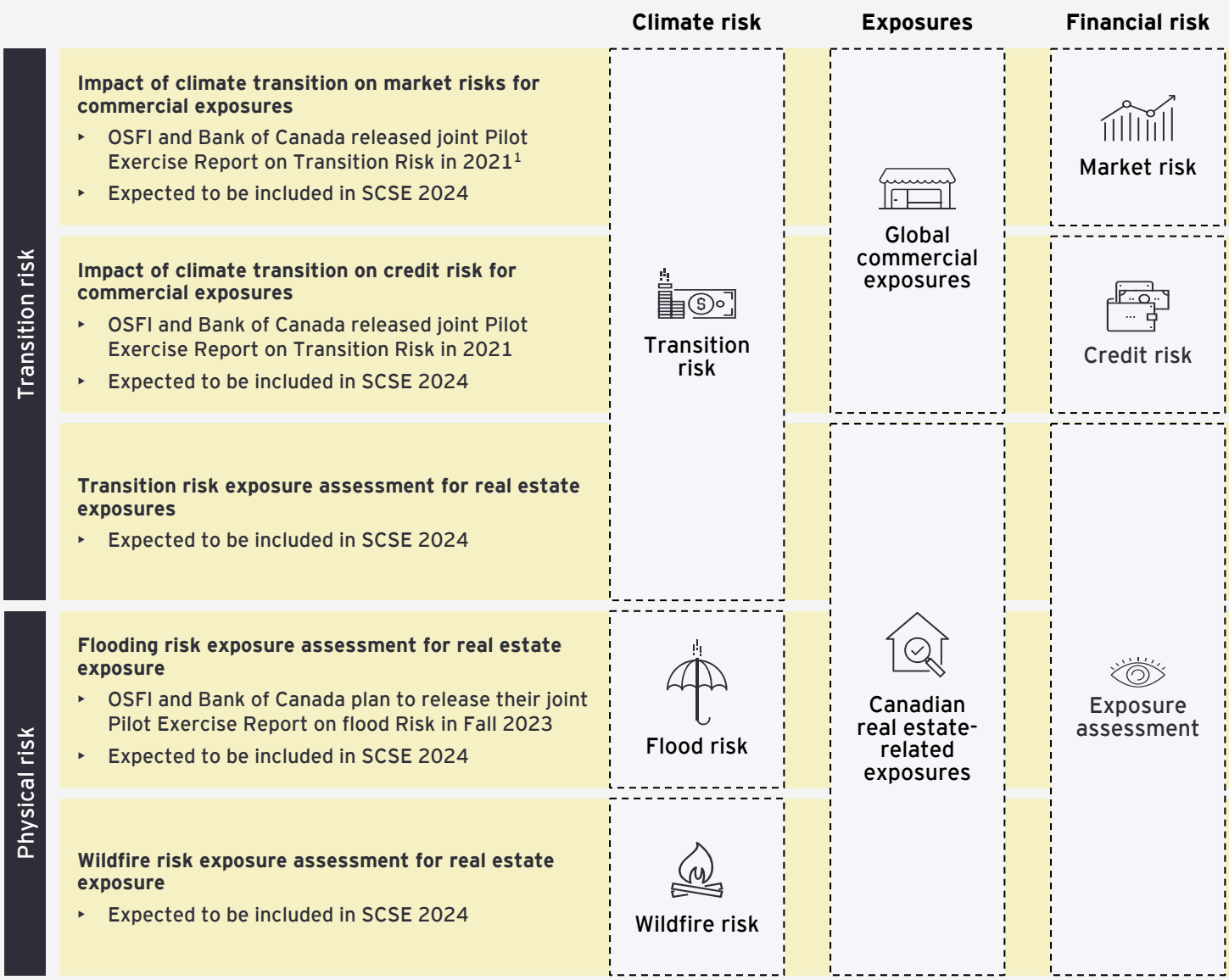
What is climate scenario analysis?

- Climate scenario analysis is a tool to understand the impact of different climate policies and scenarios on amongst others an organization's financials, supply chain and strategy. The goal is to increase the understanding impacts might have, rather than predicting what exactly will happen in the future.
- FRFIs can use this to understand possible risks and opportunities that might arise from climate change and climate-related events and allow for tracking of those risks.
- OSFI can use this to get an understanding of the impact climate change and climate-related events might have on the financial system as a whole and define actions based on that.

What are the types of scenario analysis?

- Bottom-up scenario analysis allows for a granular approach assessing the resiliency at an individual obligor level. The resiliency of FRFIs can be measured by aggregating all impacts.
- Top-down scenario analysis allows for a portfolio impact assessment at sector or macroeconomy level. This is a more simplified approach which makes it comparable amongst FRFIs.
- The SCSE uses a hybrid approach combining top-down and bottom-up elements. This focuses on risk understanding rather than "sizing the risks", by discriminating between counterparties, industries and FRFIs based on exposure characteristics.

What is in scope as part of SCSE?



Insight 4: Commercial exposures methodology expectations

Climate transition risk for commercial exposures

The first and second module of OSFI's SCSE focuses on the transition risk for commercial exposures focusing on credit risk and market risk, respectively. Both modules make use of the same underlying data, scenarios and key assumptions. Bank of Canada/OSFI's 2021 Climate Scenario Analysis Pilot is used to create these modules and the approach and methodology are generally consistent.

What scenarios will be used in the commercial exposure modules?

OSFI has identified four different scenario narratives that are included:

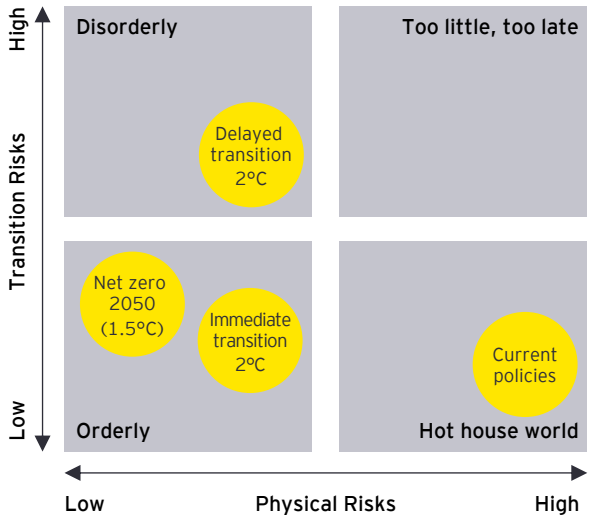
- Current policies - a baseline scenario
- Below 2°C immediate – immediate action limits warming to below 2°C
- Below 2°C delayed - delayed action limits warming to below 2°C
- Net-zero 2050 (1.5°C) - immediate action limits warming to 1.5°C

The SCSE will use different data sources to cover the uncertainty and complexity associated with climate scenario analysis.

- NGFS scenarios are used for climate scenario data
- Bank of Canada scenarios are used for sectoral impacts
- The SCSE additionally provides financial risk impacts

FRFIs are not required to directly work with the scenarios, instead OSFI has developed risk adjustments based on the impacts when comparing the **below 2°C immediate**, **below 2°C delayed** and **net-zero 2050** to the **current policies** scenario resulting in add-ons in the quantification.

NGFS transition scenarios[5]



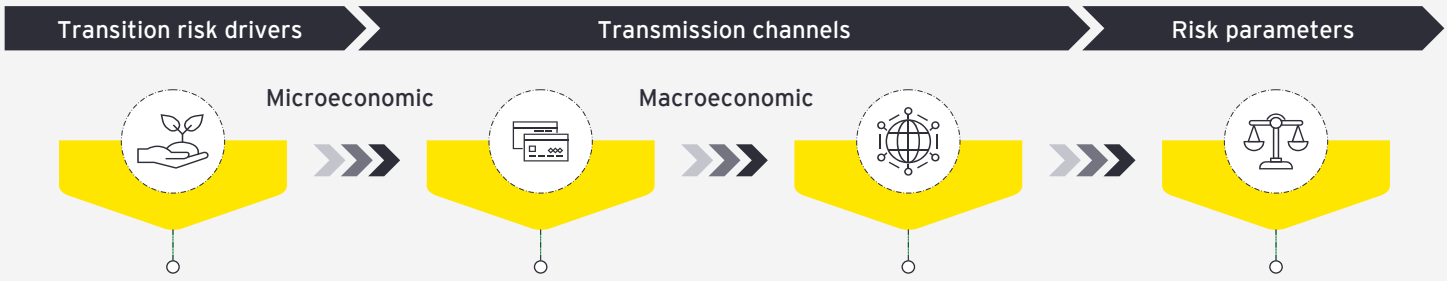
What are the key balance sheet assumptions?

For future years, balance sheet projections are required. The SCSE uses a static balance sheet approach:

- Balance sheets at 5-year intervals from 2030-2050 are identical to Q4 2023 balance sheet

OSFI recognizes the limitation of using static balance sheets, but this outweighs the significant complexity that would be added by introducing dynamic balance sheets in this SCSE.

Transition risk transmission channels



- Government climate policies
- Technological change
- Change in consumer preferences

- Households
- Corporates
- Issuer specific financial assets

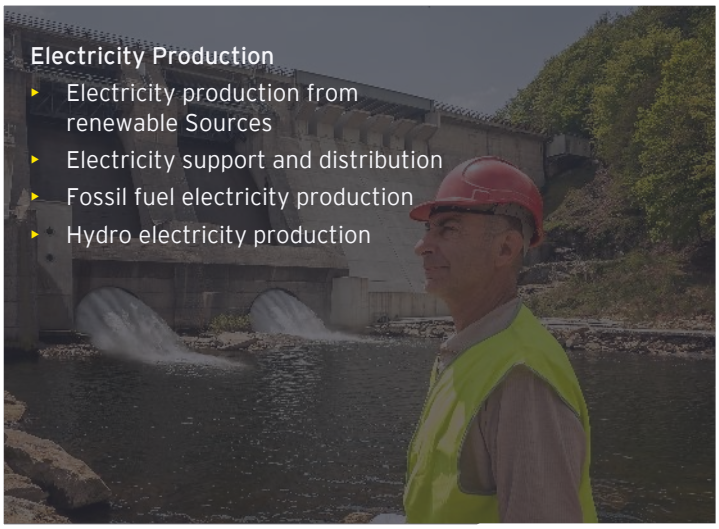
- Overall economy
- Macroeconomic variables:
  - Gross Domestic Product
  - Interest rates
  - Unemployment rate

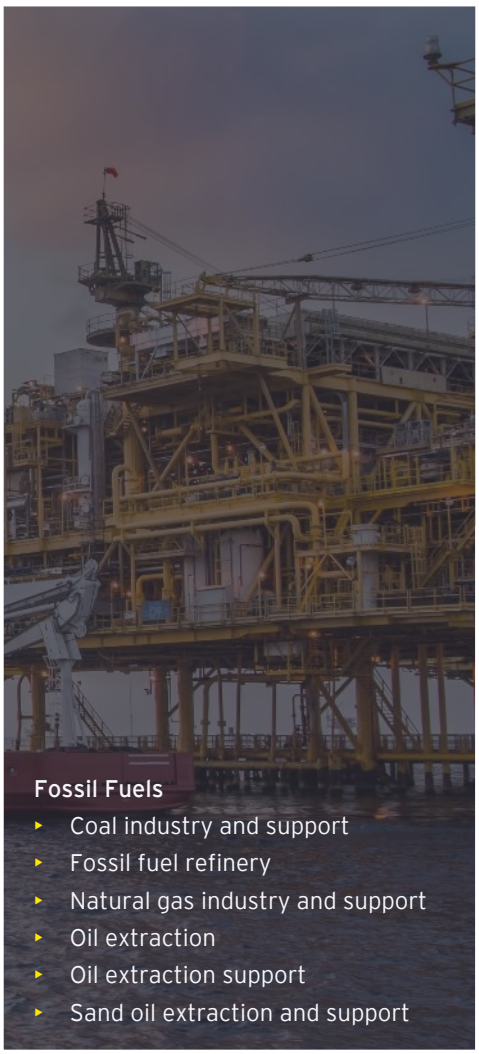
- Net Income / Earnings
- Firm asset / enterprise value
- Risk free rates
- Corporate credit spreads

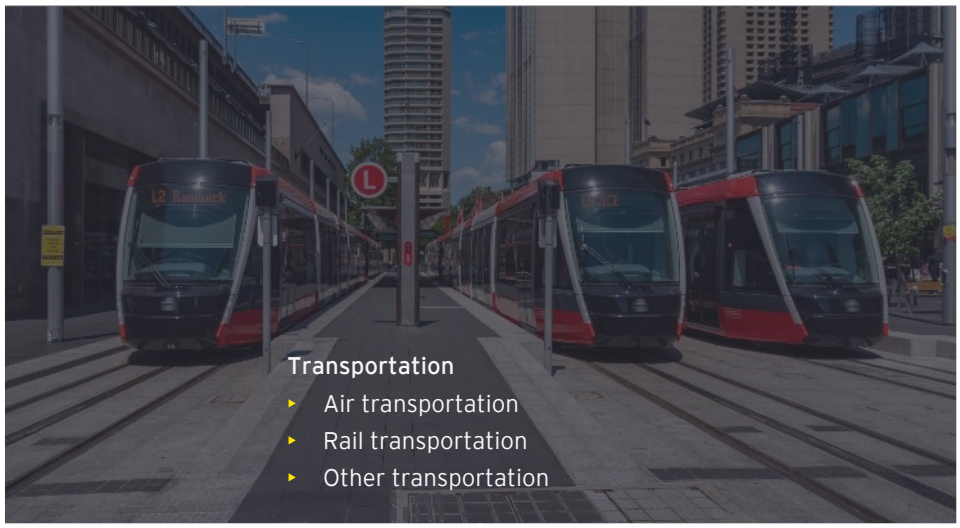
What sectors are in scope?

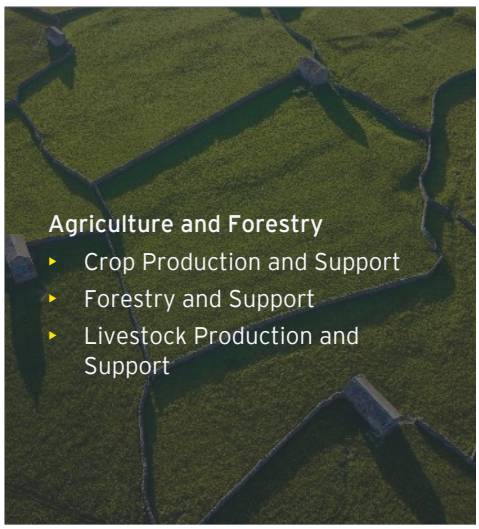
OSFI has identified 25 industry sectors divided by 6 categories for which financial risk adjustments factors and/or formulas will be provided.

OSFI will provide a mapping of the North American Industry Classification System (NAICS) codes into the 25 industry sectors. FRFIs are responsible for mapping individual counterparties to NAICS codes by a common set of principles and rules that is replicable and explainable.









Credit risk module

In this module, OSFI aims to measure the impact of different climate scenarios on credit losses. Climate policies may result in revaluation of assets, increased production costs and liquidity stress. This may impact the Probability of Default (PD) and Loss Given Default (LGD) that could affect FRFIs' Expected Credit Loss (ECL). The key principles of the credit risk module are:

- Scope is limited to corporate and commercial lending portfolios that fall under the scope of IFRS 9 ECL accounting standard
- FRFIs need to internally estimate the PD, LGD and EAD (exposure at default) on a 5-year interval from 2030 to 2050
- This module calculates Climate adjusted PDs and LGDs, Baseline ECL and Climate Adjusted ECL:
  - Climate adjusted PDs and LGDs are calculated with prescribed formulas and climate add-ons that will be provided by OSFI for each exposure type, sector and future year based on scenario narrative
  - Baseline ECL is calculated using the lifetime ECL calculated as per IFRS 9, i.e. the SCSE ignores the 'staging' mechanism
  - Climate adjusted ECL is calculated using the climate adjusted PDs and LGDs in line with Baseline ECL
- The result of this module is the delta ECL which is the difference between the Baseline ECL and the Climate adjusted ECL which can be seen as the impact of the underlying climate scenario

Example PD calculation with a simplified ECL formula:

$$\text{climateECL} = \text{climatePD} * \text{climateLGD} * \text{EAD} * \text{discount rate}$$

$$\text{climatePD}_i^k = \frac{1}{1 + \exp\left(-\text{logit}\left(\text{PD}_i^k\right) + \text{climateAdd-on}_i\right)}$$

Internal PD estimate — Prescribed Climate Add-on

HOW CAN EY HELP?

EY teams have extensive experience with credit risk parameter forecasting that is required for the SCSE. The long-term horizon of forecasts up to 2050 is a crucial element that FRFIs should already consider to be able to successfully participate in and complete the SCSE.

Market risk module

In this module, OSFI aims to measure the impact of different climate transition scenarios on asset market valuations that occur through policy change, technological shifts, and changing consumption patterns. The uncertainty around how markets include climate risks when determining the market value of a financial asset causes OSFI to include a market risk impact assessment in the SCSE. The key principles of the market risk module are:

- Scope is limited to equities and corporate bonds in both the trading and banking books
- FRFIs need to determine credit spreads for the corporate bonds using the climate-adjusted PDs and LGDs for the underlying counterparties' corporate lending exposures from the credit risk module
- This module calculates Baseline and Climate adjusted Credit Spread and Baseline and Climate adjusted Present value:
  - Baseline and Climate adjusted Credit Spread are estimated using the PDs and LGDs from the credit risk module
  - Baseline and Climate adjusted Present value (PV) are estimated using cashflows (CF) of the bond, the estimated Credit Spreads (CS) and prescribed risk-free rates (RF) that will be provided by OSFI for the baseline and climate scenarios
- The result of this module is the delta Market Value (MV) for bonds and equity:
  - Delta MV of bond, which is the change in the present value in the transition scenario relative to the baseline scenario
  - Delta MV of equity, which is the equity exposure considering the OSFI prescribed instantaneous percentage equity shocks that vary by year, industry sectors, geography, and climate scenario narrative

HOW CAN EY HELP?

The market risk module relies heavily on the credit risk module, it is therefore essential to have a combined approach for the two. EY teams have helped clients with similar exercises before like the BoE, FED and EBA climate risk stress tests.

Example PV calculation with a simplified market value formula:

$$\Delta\text{Market Value}_i = \text{climatePV}_i - \text{PV}_i$$

$$\text{climatePV}_i = \sum_{k=1}^{m} \left[\frac{\text{CF}_s}{\left(1 + \text{climateRF}_{i+s}^{10Y} + \text{climateCS}_{i+s}\right)^s}\right]$$

Prescribed risk-free rate — Calculated credit spread

Insight 5: Real estate transition risk assessment expectations

Climate transition risk for real estate exposures

The third module of OSFI's SCSE focuses on the real estate transition risk exposure assessment. This assessment is a foundational exercise that may be used to inform future climate scenario analyses. Recognizing that some FRFIs may have data gaps that prevent them from assessing real estate transition risks at an exposure level, this module is not an attempt to measure financial impacts.

What are the relevant transmission channels?

OSFI has identified possible transmission channels related to the transition away from a carbon intensive economy:

- Properties that are heated or powered by carbon-intensive sources
  - Impact on property values and need for retrofits
  - Increasing energy prices impacts borrowers' ability to pay
- Borrowers employed in high transition risk sectors may face impacts due to the shifts in the labour market

This SCSE module focuses on the first aspect, i.e. the impact of changes to properties' heating and power on borrower's PDs and LGDs.

What are the relevant transmission channels?

The assessment is segmented by:

- Province
- Asset class
- Loan-to-Value (LTV) buckets
- Credit quality buckets for individual and corporate borrowers
- Property heating and energy source bucketed high or low-GHG emitting sources

OSFI recognizes the **lack of data** in heating and energy sources for FRFIs' real estate exposures. Therefore, it is **permitted to use proxies**, e.g. Statistics Canada information.

What is the scope of exposures?

Canadian real estate exposures and mortgage insurance liabilities:

- Retail Mortgages: Canada Mortgage and Housing Corporation (CMHC) Insured / Other Insured / Not insured
- Home Equity Line of Credit (HELOC)
- Small and Medium Enterprise (SME) – Commercial Real Estate
- Corporate – Commercial Real Estate

What amounts need to be reported?

The assessment requires reporting of:

- Balances outstanding
- Authorized amounts
- Weighted average PD and LGD
- Insurance liabilities

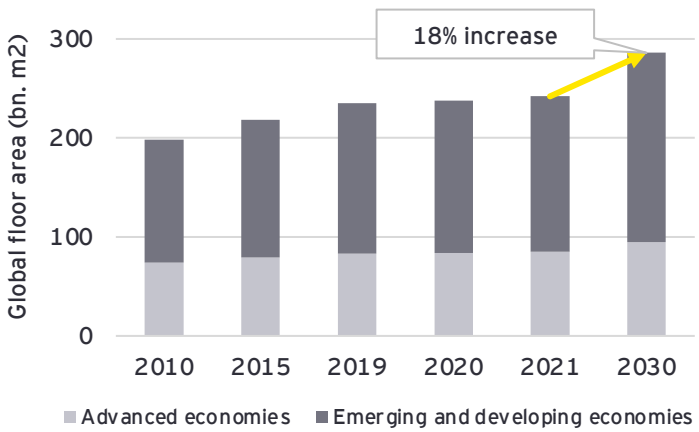
This module **creates a snapshot** of exposures for the Q4 2023 balance sheet. This offers OSFI the understanding of the **FRFIs vulnerability to the energy transition in their real estate portfolios**. It **does not require calculations** besides the aggregation of certain variables to be reported.

More detailed scenario analysis and forward-looking impact assessment are expected in the future. This exercise therefore **offers FRFIs the opportunity to understand the data requirements** and assess what steps they need to take to improve their ESG data governance and framework.

REAL ESTATE SECTOR INSIGHTS

- Energy overshoot: driven by population growth, GHG emissions have surpassed previous 2018 global forecasts
- Remaining CO2 emissions have since been reduced

Global floor area grows aggressively by ~20% to 2030 more than the whole built floor area of North America [6]



Real estate sector status	
Scope clarity	◕
Data availability	◑
Scenario availability	◕
Methodology guidance	●
# of banks disclosing emissions	◔

Insight 6: Physical risk exposure assessment expectations

Climate physical risk for real estate and collateralized commercial lending exposures

The fourth module of OSFI's SCSE focuses on the physical risk exposure assessments. This assessment is also a foundational exercise that may be used to inform future climate scenario analyses and is not an attempt to measure financial impacts.

What are the relevant transmission channels?

OSFI has identified multiple transmission channels that may translate into financial losses caused by physical risk:

- **Direct - chronic and acute physical hazards** have the potential to cause significant damages to physical assets held by FRFIs impacting property values and/or PDs
- **Indirect** - hazards may impact asset values even if damages are repaired; large acute hazards may lead to business disruptions

This SCSE module focuses on the first aspect, i.e. the direct impact of hazards to the borrower's PDs and LGDs.

What physical hazards and data are included?

The exposure assessment will consider different physical hazards impacting Canada using publicly available data that is mapped to geolocations. FRFIs are responsible for their own geocoding of real estate and commercial lending exposures.

OSFI recognizes the **complexity of geocoding for commercial lending exposures**. These exposures tend to be bigger than residential exposures which requires the need for mapping a single exposure to multiple geolocations that could result in varying degrees of different physical hazards.

What are the scope considerations?

Canadian real estate exposures and mortgage insurance liabilities:

- Retail Mortgages: CMHC Insured / other insured / not insured
- Home Equity Line of Credit (HELOC)
- SME – Commercial Real Estate
- Corporate – Commercial Real Estate

The assessment requires **segmentation** by:

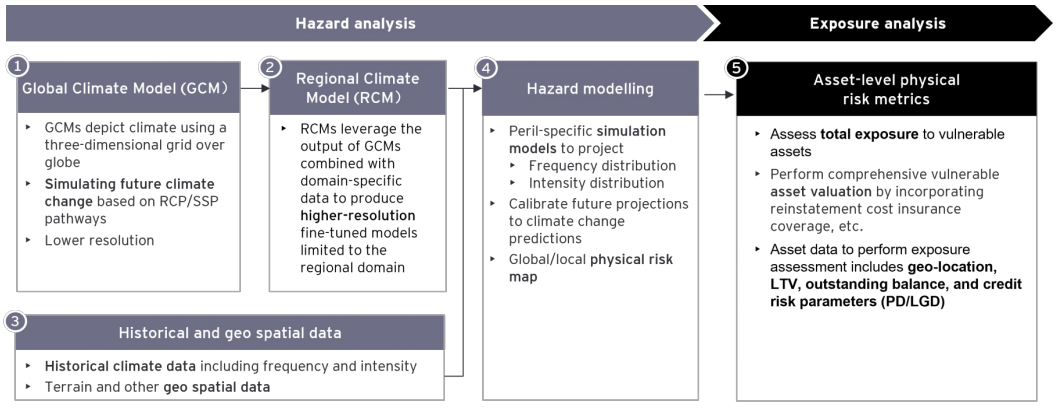
- Province
- Asset class
- LTV buckets
- Credit quality buckets for individual and corporate borrowers
- Physical Hazard buckets

What amounts need to be reported?

The assessment requires reporting of:

- Balances outstanding
- Authorized amounts
- Weighted average PD and LGD
- Insurance liabilities

Similar to the real estate transition risk assessment, this module **creates a snapshot** of exposures for the Q4 2023 balance sheet. This offers OSFI the understanding of the **FRFIs vulnerability to physical hazards in their real estate portfolios**. No calculations are required besides the aggregation of variables for reporting. Future exercises are expected to include physical risk scenario analysis with forward looking elements. This module offers FRFIs an understanding of their vulnerability to physical risks.



HOW CAN EY HELP?

EY has developed a physical risk stress testing framework, which provides a solution for physical risk quantification. Our existing hazard and exposure analysis solutions align closely with the SCSE framework to accelerate your journey.

Climate scenario analysis is one of OSFI's top priorities

> Climate change will affect the value of virtually every financial asset; the [stress test] will help ensure the core of our financial system is resilient to those changes.
>
> - BoE Governor Mark Carney[7]

How are climate risk stress tests different?

The climate risk stress tests differ from typical stress tests in several ways. Most notably, climate risk stress tests are conducted over an extended time horizon. The ACPR, HKMA and BoE first climate risk stress test exercises all aim to understand climate risk exposures over a 30-year period. Another important difference is the granularity of the exercise. Sectors, countries and geographies may all be affected differently by physical and transition risks, and therefore portfolios must be assessed at a granular level to account for wide-ranging exposures. Importantly, unlike conventional stress tests, the climate risk stress tests are pilot exercises for now and will not be used to assess the solvency of institutions nor as a basis to impose capital or other regulatory requirements.

Where do I start?

The pilot exercises that have been launched give insights into the assumptions and methodologies used to conduct the stress tests. As a starting point, the climate risk stress tests may consider physical and transition risks together (as in the BoE exercise) or separately (ACPR and HKMA). Another key assumption is for the balance sheet. While both the HKMA and BoE exercises ask participants to assume a static balance sheet, the ACPR takes a two-pronged approach with a static balance assumption for the near term and a dynamic balance sheet for long term projections. OSFI has now published the draft Standardized Climate Scenario Exercise (SCSE) methodology that shares details on the specific scenarios, methodology, assumptions and key sensitivities to be used for stress testing exercises in Canada.

	OSFI SCSE	ACPR[8]	HKMA[9]	BoE[10]
Testing approach	Quantification of the impact of transition risk on credit and market risk. Exposure assessments for transition and physical risks **separately**.	Stress tests to be conducted on physical and transition risks **separately.**	Stress tests to be conducted on physical and transition risks **separately.**	Quantification of the **combined impact** of the physical and transition risk.
Balance sheet assumptions	The SCSE pilot assumes a **static balance sheet approach** for the horizon. Balance sheets from 2030 to 2050 are assumed to be identical to Q4 of 2023. Although there are some forward looking calculations that assume balance sheet run-offs	The ACPR pilot combines two assumptions: ▸ A short term vulnerability assessment using a **static balance sheet** and a time horizon set to 2025. ▸ **A dynamic balance sheet** starting at 2025, allowing institutions to integrate management decisions.	Assume a **static balance sheet** over the stress test horizon; the only exceptions are defaulted loans, which should not be replenished; certain balance sheet items should be adjusted to reflect the macro-economic situation assumed for 2030 under the disorderly transition scenario.	BES participants would assume a **static balance sheet** (December 31, 2020) over the time horizon of the scenario (i.e. assume the nominal size and composition of their balance sheets do not change).
Time Horizon	2030, 2035, 2040, 2045 and 2050	2025, 2035, 2040 and 2050	▸ Short term impact 5yrs from 2030 to 2035 ▸ Long-term impact up to 30yrs with a 5yr interval	30-year modelling horizon (i.e. from 2020 to 2050) with projections submitted at every five-year point.
Sectors	25 separate sectors divided by 6 different categories for transition risk. Physical risk focuses on real estate	55 activity sectors defined in the WIOD, but the final list consists of 20 sectors including those which will be affected the most	11 sectors focusing on High-carbon emissions industries	59 separate sectors
Geography	Transition risk impact on credit and market risk is focused on Global commercial exposures. Real estate and physical risk exposure assessments are Canadian	France, the rest of Europe (including the UK), US and any additional geographical areas of significant exposure (e.g., rest of the world/Japan/ other)	Physical risk assessment is focused on Hong Kong (HK) (mortgages, property investment, operational losses); exposures outside of HK assessed on a best effort basis	Scenario variables are set for UK and key economies, but should be expanded to other regions, as necessary (Ref. 20 for the full list of variables)

OSFI's draft Climate Risk Returns

OSFI has issued a consultation on the draft Climate Risk Returns which has closed on 30 September 2023. The released business specifications outline the requirements for Deposit Taking Institutions (DTIs) and Insurers to provide detailed data templates covering a transition and physical risk data elements.

Expected two-year timeline

The purpose of these returns is to capture data to enable quantification of financial institutions potential and realized physical risk exposures and potential transition risk exposures at fiscal year end. GHG Emissions are expected to be calculated using the latest GHG Protocol standard.

For DTIs, the returns are intending to collect data on asset exposures that are subject to physical risk by geophysical location and absolute GHG emissions (scopes 1, 2, 3)

For insurers, the returns are intending to collect data on underwritten physical risk exposures (claims, insurance revenue and PML) for select lines of business by geographic location, and absolute GHG emissions (Scopes 1, 2, 3)

	DTIs	Insurers
Overview	▸ Transition risk: 2 spreadsheets; 12 variables ▸ Physical risk: 2 spreadsheets; 8 variables ▸ All sheets apply to all DTIs except foreign bank branches	▸ Transition risk: 3 spreadsheets; 13 variables ▸ Physical risk: 3 spreadsheets; 26 variables ▸ All sheets apply to all insurers
Transition risk	Spreadsheets: ▸ Entity-level GHG Emissions by Scope ▸ Financed GHG Emissions by Asset class	Spreadsheets: ▸ Entity-level GHG Emissions by scope ▸ Financed GHG emissions by asset class ▸ Insurance-Associated GHG emissions
	Example selection of variables: ▸ Credit quality ▸ Absolute emissions ▸ Average maturity	Example selection of variables: ▸ Credit quality ▸ Absolute emissions ▸ Average maturity
Physical risk	Spreadsheets: ▸ Exposure and Credit Risk Metrics in Canada grouped by FSA ▸ Exposure and Credit Risk Metrics in outside Canada by region	Spreadsheets: ▸ Insurance Claim and Revenue Metrics – Canada by FSA ▸ Insurance Claim and Revenue Metrics – Outside Canada by region ▸ Probably maximum loss by region
	Example selection of variables: ▸ Outstanding balance ▸ Weighted average PD & LDG ▸ Authorized balance	Example selection of variables: ▸ Claims paid by disaster type ▸ Reinsurance recoveries
Spreadsheets	Below is a draft spreadsheet for the Climate Risk Returns provided by OSFI alongside the consultation:	

return_ subtable	asset_ class	industry	region	credit_ quality	scope_1 absolute emissions	scope_2_a bsolute_e missions	scope_3_a bsolute_e missions	data_ quality_ score	asset_ balance	weighted average_ maturity	balance _5_ maturity	balance _10_ maturity
DC2-A	18		AB		3.67	5.5	13.93	4				
DC2-A	18		BC		1.67	3	19.29	3				
DC2-A	18		MB		3.67	6	7.5	5				

Key Insights from the SCSE Information Session on November 20, 2023

OSFI held an information session about the currently published SCSE methodology on November 20, 2023. The key insights from this session are listed below. Please note that these insights are EY's interpretation of the information shared during the session. The additional clarifications and explanations from OSFI are expected to be included in the updated version of the SCSE methodology that is expected to be published early next year.

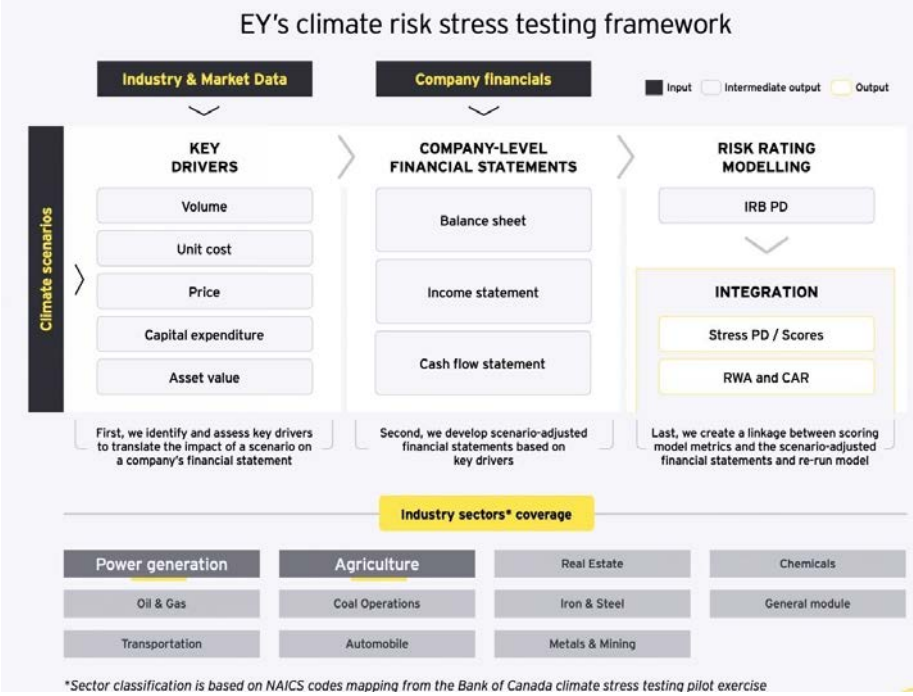
- The SCSE is expected to be completed by FRFIs in 2024 with results published in early 2025.
- FRFIs are expected to develop governance around climate risk, but the cadence for reporting has not been established yet. Any future requirements related to the SCSE post 2025 are expected to be included in updates to B-15, which will be applicable to the entire industry and not just big banks, including D-SIBs and smaller institutions.
- While FRFIs are encouraged to perform their own scenario analysis, the SCSE applies a standardized approach. The SCSE allows FRFIs to report the results of their own scenario analysis process in parallel.
- The SCSE focuses on transition rather than physical risks due to the challenges associated with building sophisticated models , establishing damage functions and gathering reliable data for physical risks.
- The physical risk exercise is limited to exposure analysis to understand the spatial distribution of hazards. The time horizon and format of data provided by OSFI are yet to be determined.
- In the context of a static balance sheet, a "5-year run-off" refers to calculating the impact of transition scenarios over 5-year intervals. It measures the effects on the balance sheet as exposures expire. The concept of "run-off" implies a gradual reduction or shrinking of the balance sheet over time.
- The Q4 2023 balance sheet snapshot (calendar or fiscal year) is intentionally left ambiguous to gather feedback from participants of the SCSE.
- FRFIs' corporate bond investment portfolios require assessment under both the market risk and the credit risk modules.

How we see it

- OSFI's prescribed SCSE provides a base for FRFIs to identify key climate risk vulnerabilities in their portfolios by capturing systemic and certain idiosyncratic risk components. It also informs their data acquisition requirements for the return templates
- This can serve to inform FRFI's priorities to then adapt a more bottom-up approach reflecting unique transmission dynamics and sensitivities that are asset, sector, and counterparty specific
- Insights obtained from such an exercise would allow FRFIs to proactively develop risk mitigation techniques and drive decarbonization efforts with priority clients to avoid significant risk of default, potential elevated losses, and depletion of capital buffers

HOW CAN EY HELP?

EY teams have developed a detailed bottom-up transition risk stress testing solution that not only aligns with the key elements required in SCSE but also integrates the transition strategy and specific transition risks of individual obligors.



What's next?

As global awareness of the potentially severe and far-reaching financial impacts of climate change increases, we expect further rapid developments. Here's how you can stay ahead of the curve:

Assess

- Identify climate-related risk in traditional risk management dimensions (i.e. credit risk, market risk etc.) to understand the impact to business
- Review existing risk management framework to assess the incorporation of climate-related and broader environmental risks
- Set climate ambition and develop a sustainable finance / climate risk roadmap

Implement

- Design climate risk governance framework to facilitate effective risk management and suggest setting up of new committees / departments including roles and responsibilities when necessary
- Identify data required for climate risk management and set up collection process and timeline
- Enhance existing modelling capabilities to estimate the earnings and financial impacts of obligors upon climate shocks and compute impairments based on stressed financials
- Update policies and procedures based on scenario analysis results and strategy
- Construct metrics for climate risk monitoring as well as board reporting

Key benefits

- Enhance capabilities, processes, and governance to integrate climate risk into the decision making process
- Analyze the universe of physical and transitional scenarios, prioritize them based on portfolio distribution and quantify potential impacts
- Develop energy-transition strategies on the most practical pathway to decarbonization
- Explore potential climate risk exposures based on the balance sheet distribution by leveraging BoC and OSFI scenarios

In the Spotlight: EY Climate Risk Stress Testing Tool

> Microsoft is dedicated to promoting sustainability in financial services through our cloud, data and AI solutions that address ESG priorities. The collaboration with EY to develop a solution for Canadian Financial Services exemplifies a commitment to supporting financial services businesses with addressing regulatory compliance needs and advancing innovation in climate technologies.
>
> - Jacqueline O'Flanagan, General Manager, Financial Services Industry Lead, Microsoft Canada

Solution overview

EY Climate Stress Testing solution helps banks evaluate the transition risk of their loan portfolio by:

- Leveraging a spectrum of NGFS scenarios, sector-specific, and obligor-specific data
- Performing sector-specific modeling of transition risk and estimating the financial impact for counterparties
- Measuring the impact on key risk metrics, e.g. Probability of Default and Capital Adequacy Ratio
- Evaluating the impact of transition risk on the portfolio and providing valuable insights to inform banks' overall decarbonization strategy, mitigation actions and balance sheet concentrations

Solution benefits

The key solution benefits are:

- Enhance capabilities, processes, and governance at speed and scale to integrate climate risk into the decision-making and portfolio management processes Identify market opportunities while minimizing downside risk from carbon intensive sectors, considering government policies and other factors
- Respond to growing external pressure from regulators, shareholders and stakeholders to meet and exceed climate risk management regulations and standards
- Facilitate clients' decarbonization, support transition plan and increase resilience to climate-related risks

Client case study

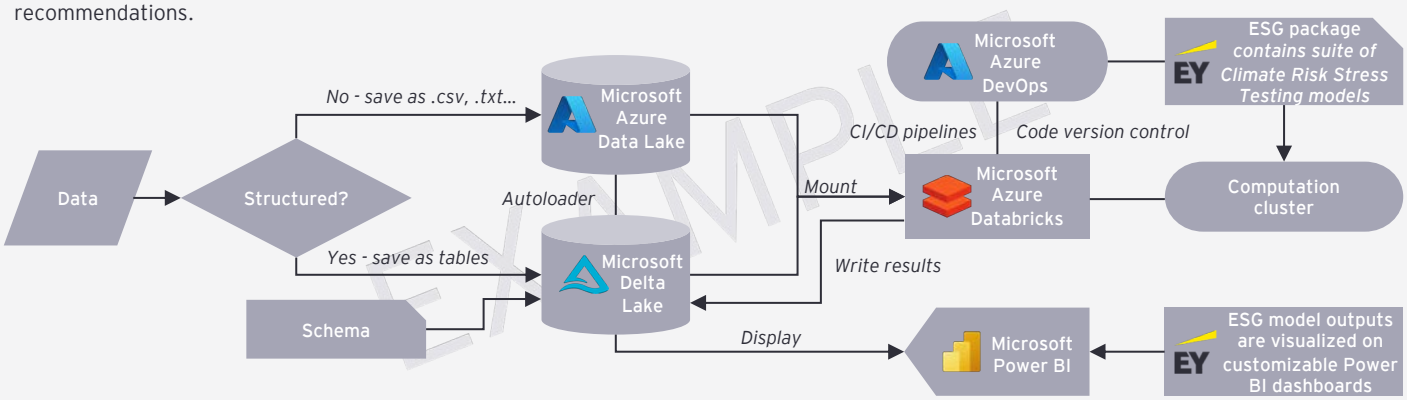
Supported a global investment bank to build climate stress testing capabilities and meet regulatory requirements

Client challenge	Engagement summary	Service Provided
▸ The client engaged EY teams to provide support in establishing a climate risk program. The engagement was driven by : ▸ The need to complete a regulatory climate-related exercise for the first time in the US. ▸ A significant surge in workload, which added to the complexity of the task.	▸ Utilizing the extensive knowledge of scenario design and generation, wholesale and retail credit stress testing, and related CCAR processes and methodologies, EY teams successfully supported the execution of regulatory climate stress tests for the FED, ECB and MAS, as well as an enterprise dry run. ▸ EY teams helped the client achieve desired outcomes and facilitate financial resilience in challenging economic conditions. ▸ EY teams' ability to work effectively in high-pressure environments helped provide high-quality results within tight deadlines. ▸ Additionally, EY teams identified opportunities to optimize efficiency and effectiveness, contributing to the continuous improvement of stress testing processes and methodologies.	▸ Provided industry leading-class practices from European banks regarding physical risk modelling and transition risk. ▸ Helped maintain a focus on the central climate risk program and overall governance workstream to establish the governance framework for the entire program ▸ Applied framework to develop industry-leading scenario design and generation that identifies potential climate scenarios and assesses their impact on financial institutions. ▸ Identified methodology to assess climate risk in wholesale markets.

Joint value proposition

The EY Climate Stress Testing solution leverages Microsoft technology, along with the climate risk and technology expertise of EY to provide joint value for clients:

- The solution is designed to be embedded within the Microsoft ecosystem, featuring multiple Microsoft Azure components such as Azure Data Lake, Azure Databricks and Azure DevOps including, dashboards to be hosted on PowerBI.
- Leveraging Microsoft cloud-based infrastructure supports integration with the Microsoft ecosystem and potential cost savings compared with alternatives.
- Project implementation led by EY climate risk experts and tech consultants delivers collaborative, technology-enabled solutions and recommendations.



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