Resilience in face of evolving risks

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Enterprise Risk Management Framework

Step 1: Integrate the Risks

Step 2: Define Risk Appetite

Step 3: Manage the risk. Set the Polices and Governance.

Step 4: Estimate impact on capital requirements in base and stress scenarios

ICAAP - Internal Capital Adequacy Assessment Process

Pillar 1: Credit risk , Operational risk , Marketing risk

Pillar 2:

- Credit : Concentration, Residual, Refinancing, monitoring
- Traded: Market risk in Trading book, CCR
- Treasury: Liquidity, Capital, IRBB, Pension
- Operational: Technology, People, Resilience, Safety
- Compliance
- FCC

- Information and Cyber Security
- Model
- Third Party Risk Management
- ESGR – Climate

Information and Cyber Security

Definition	Risks due to unauthorized access, use, disruption of information assets or Systems
Risk Sub Type	Attack leading to loss by External or trusted internal
	Leakage of information
	Disruption of operations
Manage the Risk	Define crown jewels (high impact systems / regulatory risk)
	Information classification
	Risk assessment (Red / Amber / Green)
	Design and implement defense strategy - Monitoring
Scenario examples	Hardware failure – network disruption – bank wide
	Compromise of critical information - Ransome
	Systems failure impair ability to meet payment obligations (regulator, customer).
Pillar 2	Estimate add on capital based on replacement cost, expected regulatory fine, compensation needs, remediation cost

Operational Resilience – managing the risk

Business Continuity Management

The purpose of BCM is to minimize the impact of likely operational disruption to the Group's businesses and clients.

This purpose is realized through a Business Impact Analysis (BIA) which establishes the priority of Operational Assets as well as determining their Continuity Requirements

Operational Continuity in Resolution (OCIR)

Aims to ensure that in resolution scenario, bank is able to run in an orderly fashion unit key decisions are made.

Plans to safely wound-down without negatively impacting the wider economy and protect the interests of taxpayers and investors.

Governance through well-established Resilience policies and supporting standards

Crisis Management

The overall coordination of an organization's response to a crisis, in an effective, timely manner, with the goal of avoiding or minimizing damage to the organization's profitability, reputation, or ability to operate.

Contingency plans and trained crisis management Groups to manage the response to an event.

Operational Resilience Program

Defined as the ability of firms to prevent, adapt, respond to, recover and learn from operational disruptions to ensure the financial sector is operationally resilient for clients, firms and financial markets.

Ops Res focusses on the end-to-end resilience of a prioritized list of business services delivered to clients.

Third Party Risk Management - TPRM

Life Cycle stages of Third-Party Risk Management

All Third-Party arrangements must be managed proportionately in accordance with the underlying risk throughout the lifecycle.

All Third Party selection must be appropriately carried out to ensure that the Third Party meets the required business outcomes.

Arrangements risk assessed and any identified risks must be mitigated (or accepted) before contract signing and on an ongoing basis.

Climate Risk

Definition

Climate Risk is identified as a material risk for the Bank, which is integrated across all Risk Types and is managed via ESGR Risk Type framework. The Bank is exposed to climate risk through our clients, own operations, vendors, suppliers and from the industries and markets we operate in.

Climate Risks to Clients

Physical Risks				Transition Risks				
Business disruption	Asset destruction / devaluation	Population migration	Increased Insurance cost	Reconstruction / Replacement	Carbon tax	Change customer behaviour	Increase in Energy Prices	Product substitution	Ban high emitting operations

Clients Financial Losses

- Lower property and corporate asset value
- Increased risk and costs
- Lower corporate profits, more litigation
- Lower demand, lower growth, increased cost, absolute technology and assets -> affecting financial conditions

Impact on banks

Physical Risks	Transition Risks
▪ Increased non-performing loans and credit losses ▪ Increased capital re-directed to credit provisioning ▪ Increased regulatory and shareholder pressure ▪ Increased operational risk (including liability risk)	▪ Increased non-performing loans and credit losses ▪ Increased capital re-directed to credit provisioning ▪ Increased regulatory and shareholder pressure ▪ Increased operational risk (including liability risk)

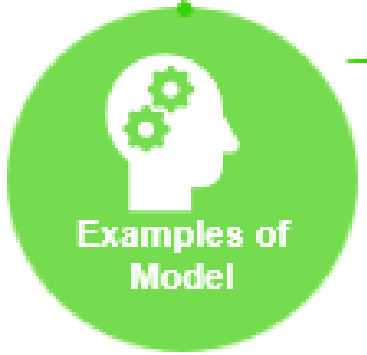
Scenarios examples

- Delayed transition
- Disorderly transition
- Physical risk events

Model Risk

What are models?

Models are simplified representation of real-world relationships



- **Valuations:** A calculation engine that helps a portfolio manager in valuing his/her bond portfolio based on market parameter changes; e.g., interest rate changes
- **Treasury:** A forecasting tool that helps Treasury in understanding the impact of currency fluctuations on foreign currency receivables/payables and devise hedging strategies
- **Financial Markets:** A mechanism that helps a trader to discover an arbitrage opportunity in between security price changes or forecast margin requirements based on market risk sensitivities

- **Credit Risk:** A score to calculate the probability of default ("PD") of the loans in a portfolio using logistic regression technique
- **Market Risk:** An algorithm for the calculation of value-at-risk ("VaR") in Market Risk using either a Monte-Carlo or historical simulation
- **Operational Risk:** Bank wants to estimate the quantum of operational risk losses arising from people, processes and systems through a set of pre-defined scenarios built on expert judgements
- **Stress testing models**

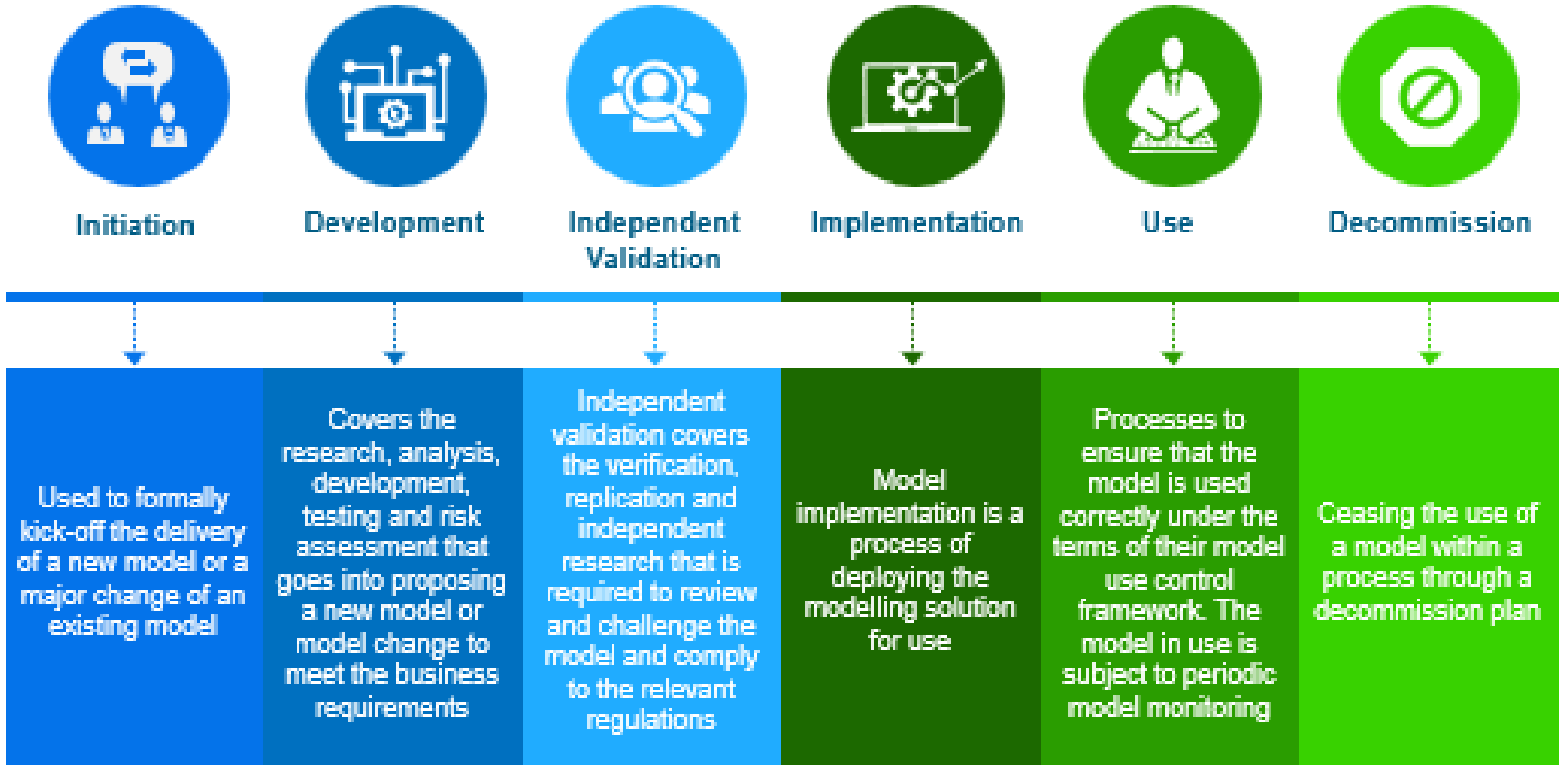
- **Financial Crime Compliance:** A pattern-based monitoring system for AML or financial crime by combining static customer profiling data (KYC), transaction monitoring rules and blacklists
- **Fraud Detection:** A fraud detection mechanism allowing monitoring through pre-defined fraud patterns and evolving behavioral schema using AI and ML techniques

Model Risk

Definition

Potential loss as a consequence of decisions or the risk of mis-estimation that could be based on the output of models due to errors in the development, implementation, or use of such models

Life cycle / Risk management



Stress testing

1- agree and document the scenarios for the relevant risk
2- Have clear methodology to Quantify financial impact, bottom up or top down
3- Quantify the impact under stress
4- Apply management Actions
5- Quantify impact after MAs

Cyber risk

Scenarios: Hardware failure / network disruption – Ransome – System failure
Financial impact: Replacement – Compensation

Geopolitical

- **Scenarios (always consider country, regional and global GDP impact):**
  - Trade war
  - Supply chain disruption
  - High Oil / energy price → inflation in oil importing markets
- **Impact:**
  - Top Down: Sector level severity assumption
  - Top down: Portfolio, sector and segment level shift in credit grades
  - Tall tree bottom up stress analysis for high impact exposures / industries

Stress testing models can be outsourced from reliable vendors or developed inhouse, either way follow prudent model validation and monitoring.

Climate

- **Scenarios:**
  - Delayed transition
  - Disorderly transition
  - Extreme weather events .. Impact on stranded assets for retail and corporate books and supply chain disruption
- **Impact:**
  - Top Down: Sector level severity assumption
  - Top down: Portfolio, sector and segment level shift in credit grades
  - Tall tree bottom up stress analysis for high impact exposures / industries

Thank you