

# ESG&Climate Risk stress testing in Banking sector

Webinar:

Thursday, 17 November 2022, 3:30pm to 4:30pm

**KPMG** in Thailand



# **Speakers**



Ganesan Kolandevelu Partner, Climate Change and Sustainability **KPMG** in Thailand



**Dr. Clemens Wieck** Senior Manager, Financial Services, ESG Specialist **KPMG** in Germany



**Martin Klaas** Specialist, ESG Risk **KPMG** in Germany



Management Advisory **KPMG** in Thailand



# **Table of Contents**

**Overview of ESG in Banking Sector** 

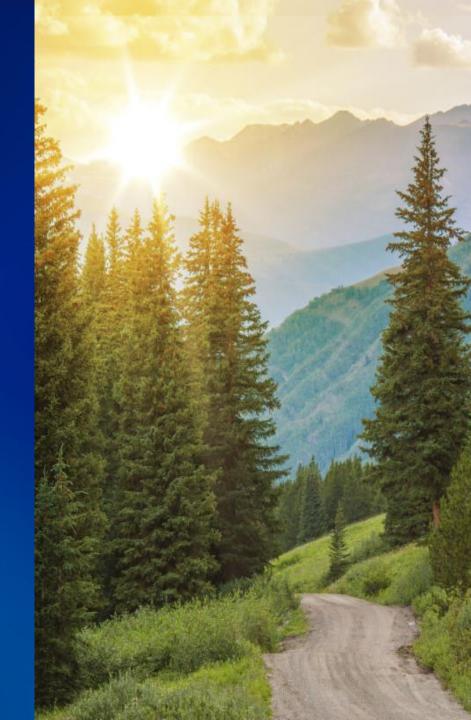
Directional on Climate Risk in Thailand

**Insights into Climate Risk Stress Testing Model** 

ABQ



# Overview of ESG in Banking Sector



# Overview of ESG in Banking Sector

Banks are increasingly recognizing the breadth and depth of ESG within their own businesses and the impact they can have on society. Banks will be measured across all ESG metrics, but will have to prioritize different elements of ESG depending on their appetite and focus. Responsibility will be not just for their direct impact, but also for every part of their lending portfolio.



- Air and water pollution
- Sea level rise and drought
- Resource depletion
- Deforestation
- Land degradation
- Energy efficiency
- Reactions of legislator/regulator to promote sustainability or bans on unsustainable activities (e.g. CO2 tax)
- Structural changes in demand and supply for products, services and commodities



- Noncompliance with labour standards
- Inadequate payment of labour
- Human capital management (employee attraction, retention, training, education)
- Lack of assurance of industry safety standards and health protection for employees
- Product safety and liability
- Data protection and privacy
- Human rights

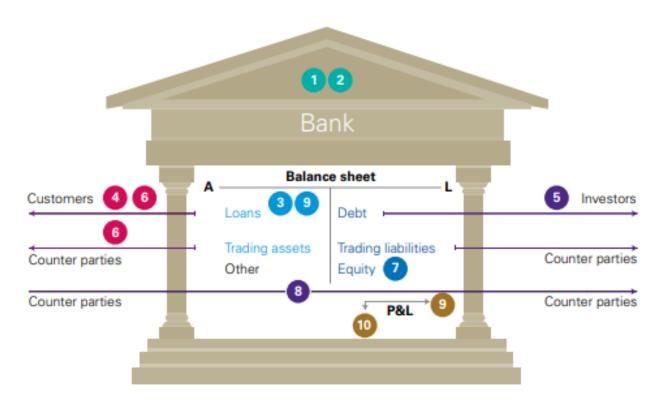


- Board composition
- Compliance with regulatory standards
- Corruption or attempted bribery
- Executive remuneration
- Business ethics
- Risk management
- Lack of proper assurance of data protection
- Greenwashing risks



# Key areas of the bank prone to ESG risks

ESG risks can affect the banks' P&L and liquidity issue where ESG risks can affect the bank directly (e.g. storm damage to bank buildings), but also affect customers (change in sales opportunities, production disruptions, etc.) leading to, for example, higher loan defaults.



- Consideration of sustainability in the business strategy and the organizational setup/governance
- 2 Adjustment of product and customer portfolio
- 3 Identification/classification of sustainable assets
- Offering of sustainable financing to customers
- Refinancing with sustainable instruments
- Consideration of ESG (risk) in pricing & risk management
- Consideration of ESG risks within the capital charge
- Inclusion of ESG criteria in the distribution process
- Reporting of own ESG risks and their impact to supervising authorities and stakeholders
- 10 ESG Data Management

Source: ESG risk in Banks, KPMG International



# The challenges of the Banks to deal with ESG

Despite several challenges for the banks to deal with ESG, there are a wide range of opportunities associated with ESG such as new financing markets in the process, new products, sustainable investments and better risk management.

Issues	Summary observations	Opportunities
Lack of understanding of what ESG means	<ul> <li>Multiple ESG taxonomy, definitions and reporting criteria complicate understanding and priority of ESG matters.</li> <li>ESG responsibilities are becoming clearer and they require funders/lenders to consider material non-financial i.e. ESG factors; however, there is still a lack of understanding of what these non-financial factors are and how to define materiality.</li> </ul>	<ul> <li>More regulatory bodies and standard setters are working towards the common global definitions, corporate reporting standards and metrics.</li> <li>On November 3rd 2021 the IFRS Foundation announced that it would form a new International Sustainability Standards Board (ISSB), as well as the consolidation of the Climate Disclosure Standards Board into IFRS Foundation.</li> </ul>
Concerned ESG will lower returns / portfolio performance	<ul> <li>Many firms believe that their lending opportunities will be reduced if they follow an ESG strategy as exposure to non-ESG companies is reduced and new non-ESG opportunities are screened out.</li> </ul>	<ul> <li>There is a huge new lending opportunities and products to finance the ESG transition when traditional business lines have limited room for expansion and fierce competition.</li> </ul>
Uncertain how to implement ESG practices	<ul> <li>There are many challenges from the ESG data required to measure the current state and progress towards a firms goals through to the practical implementation of ESG policies throughout the lending process.</li> </ul>	<ul> <li>Numerous ESG standards, framework and principles can help you get started to implement ESG practices and roadmap aligned with Bank's long term strategy and goals.</li> </ul>
Lack of risk management/ oversight capabilities	Uncertainty exists as to how to identify long term ESG risks and how to measure and monitor them.	<ul> <li>Financials institutions can prevent themselves from ESG risk by embedding ESG assessment in every stage of risk management framework.</li> </ul>
Assurance and reporting	<ul> <li>Stakeholders will look for assurance over ESG reporting to provide certainty and to mitigate the risk of greenwashing</li> </ul>	Public reporting and disclosure on ESG practices will increasingly be defined and aligned to global norms.
	<ul> <li>Increasing regulatory to disclose the ESG information as material non- financial, coupled with financial information.</li> </ul>	<ul> <li>Transparent and accurate reporting of ESG data/metrics will help the investor make informed decision to invest in sustainable and responsible business.</li> </ul>

Source: Transitioning to a Green Economy, KPMG playbook April 2022



# TCFD recommendations on more effective climate-related disclosures



# Governance

Disclose governance around climate-related risks and opportunities



### **Recommended Disclosures:**

- a. Board's oversight of climaterelated risks and opportunities
- b. Management's role in assessing and managing risks and opportunities



# Strategy

Disclose the actual and potential impacts of climate risks and opportunities on your business



### **Recommended Disclosures:**

- a. Risks and opportunities identified in the short, medium, and long term
- b. Actual and potential impacts on the business, strategy, and financial planning
- c. Scenario analysis of impacts including a 2°C scenario



# Risk management

Disclose how you identify, assess, and manage climate-related risks



# Metrics and targets

Disclose the metrics and targets used to assess and manage climate risks and opportunities



### **Recommended Disclosures:**

- a. Processes for identifying, assessing and managing climaterelated risks
- b. Integration of climate-related risk into overall risk management



### **Recommended Disclosures:**

- a. Metrics used to assess climaterelated risks and opportunities
- b. All GHG emissions (Scopes 1,2 and 3) and related risks
- c. Targets and performance against those targets

Source: Climate disclosure of the Bank in 2020 – KPMG Global Banking Forum (Jun 2021)



# The TCFD supplemental recommendations for banks



Governance

The organization's governance around climate-related risks and opportunities

No supplemental guidance for banks

Besides these 4 themes, TCFD also

recommends the approach for scenario

analysis to assess impact of climate-related

risks, which the entities should use a 2°C or

lower scenario in addition to two or three

other ones that most relevant.



**Strategy** 

The actual and potential impacts of climate-related risks and opportunities on the business, strategy and financial planning.

- 1. Significant concentrations of credit exposures to carbon-related assets;
- Disclosing climate-related risks (transition and physical) in lending and other financial intermediary business activities



**Risk Management** 

How to identify, assess, and manage climate-related risks.

- 1. Charactering climate-related risks in the context of traditional banking industry risks (i.e. credit, market, liquidity and operational risks)
- 2. Describing any risk classification framework used.



**Metrics and Targets** 

The metrics and targets used to assess and manage relevant climate-related risks and opportunities.

- Provide the metrics used to assess impact of climate-related risks on lending and other financial business activities (credit exposure, equity and debt holdings, or trading positions) broken down by:
  - Industry;
  - Geography;
  - Credit quality (e.g. investments or non-investment grade, internal rating system)
  - Average tenor.
- 2. Provide amount and percentage of carbon-related assets relative to total assets,

Provide amount of lending and other financing connected with climate-related opportunities



# Climate risk is financial risk – For banks it's a board-level issue

Today's bank boards are addressing climate change right at the top of their organizations, with more empowering their CEOs to take direct responsibility and including climate strategy targets in reward structures.

KPMG conducted the survey on 25 major global banks' disclosures on climate risk in the most recent financial reports show how climate change is becoming embedded in their business strategies. Of the banks that KPMG reviewed.

### Financial risk

72% of banks disclosing climate risk as financial risk which will impact their business in the longer term

**72%** 

# **Material or principle risk**

68% of banks disclosing climate risk as material or principle risk

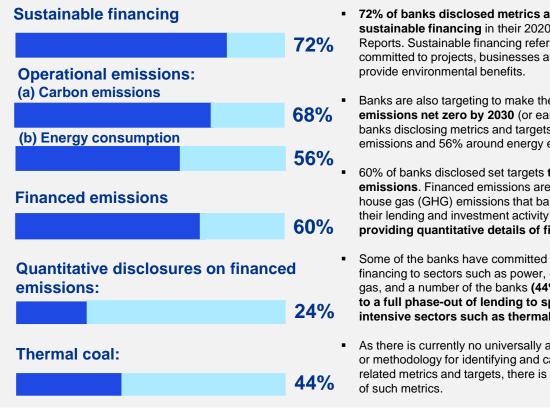
68%

# Changes to risk assessment

20% of banks disclosing an increase in their risk assessment for climate risk

20%

Of the 25 banks reviewed, 80% of the banks identified and disclosed metrics and targets which are directly linked to achieving their climate strategy. Common metrics and targets disclosed by banks are as follow:



- 72% of banks disclosed metrics and targets related to sustainable financing in their 2020 Annual Financial Reports. Sustainable financing refers to funding committed to projects, businesses and products that
- Banks are also targeting to make their operational emissions net zero by 2030 (or earlier) with 68% of banks disclosing metrics and targets around carbon emissions and 56% around energy emissions.
- 60% of banks disclosed set targets to reduce financed emissions. Financed emissions are absolute green house gas (GHG) emissions that banks finance through their lending and investment activity with 24% of banks providing quantitative details of financed emissions.
- Some of the banks have committed to reducing their financing to sectors such as power, energy and oil and gas, and a number of the banks (44%) have committed to a full phase-out of lending to specific carbon intensive sectors such as thermal coal.
- As there is currently no universally accepted framework or methodology for identifying and calculating climaterelated metrics and targets, there is diversity in the scope

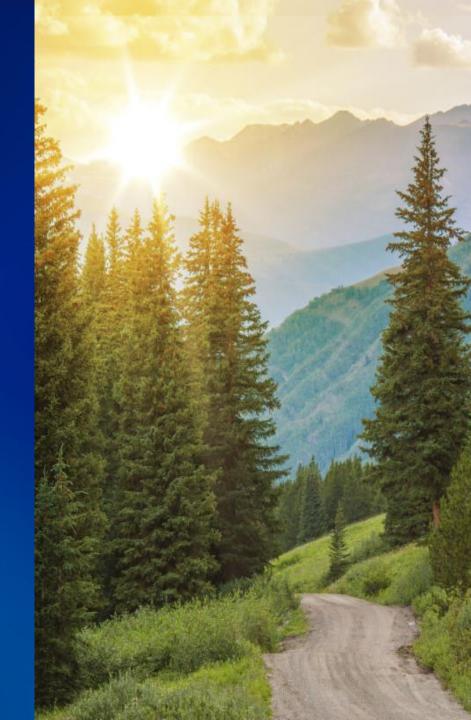
Source: Climate disclosures within the Annual Financial Reports of Banks (Phase 1) by KPMG, April 2021.

Note: 1 The 25 banks selected for KPMG's benchmarking analysis consist of 5 major banks in the UK, 5 banks in Europe, 4 banks in Australia, 5 banks in Canada and 6 banks in the US through 2020 Annual Financial Reports to shareholders (online glossy version).





# Directional on Climate Risk in Thailand



# **Climate Risks**





Climate change is deemed as the gravest threat to humanity and as the risk with potential to inflict the most damage at a global scale over the next decades.

Companies face climate-related financial risks

due to the effects of climate change (physical risks) and transition towards a net-zero economy (transition risks).



Challenges exist to traditional risk management

owing to distinct nature of climate risks such as long time horizons, high uncertainty about policy and socio-economic factors, and heterogeneity.



Scenario analysis (stress testing) along with climate-risk disclosures under TCFD

are key to overcome these challenges and to effective climate risk measurement and management. 1.4 TB
in damage of Thailand's

in damage of Thailand's worst ever flooding in 2011

5%

of global GDP impact can be realised if temperature were to be limited at 2°C

100%

of 50+ major banks in 2020 across EU, UK, US follow TCFD's recommendations

121

supervisors & central banks across the world have joined NGFS in 2021



# **Global Initiatives around Climate Risks**

2018 - 2019

Mar 18 EC Sustainable Finance Action Plan

Sept 18

TCFD status report published

Oct 18

Energy transition risk stress test for the financial system of the Netherlands - results published Mar 19

CFRF established

Apr 19

NGFS Call for Action on climate risk

Apr 19

PRA supervisory statement on climaterelated financial risks

Sep 19

UN Principles for Responsible Banking

Dec 19

EBA Action Plan on Sustainable Finance

Dec 19

considerations mandatory.

BaFin guidance Notice on dealing with sustainability

BCBS establishes TFCR

Major regulators around the globe are starting to make ESG

It's only a matter of time for Thai regulators to follow suit.

Apr 20 BCBS/TFCR stocktake report

Jun 20

Feb 20

CFRF industry guide

Jul 20 Taxonomy Regulation

into force

Jul 20

ACPR climate pilot exercise starts

Oct 20

Bank of Spain - Stress Testing of climate-related risks announcement Oct 20

2020

Bank of Spain - Climate related risks expectations

Nov 20

EBA launches consultation to incorporate ESG risks

Nov 20

ECB publishes final guide on climate-related and environmental risks

Dec 20

The Federal Reserve joins NGFS

Jan 21

ECB launches climate risk centre

Feb 21

Banks required to report their alignement with ECB supervisory expectations

Mar 21

EBA consultation on draft technical standards on Pillar 3 disclosures of ESG risks

Mar 21

Sustainable Finance Disclosures Regulation in

Mar 21

EBA Opinion on the disclosure requirement on environmentally sustainable activities in accordance with the Taxonomy Regulation

May 21-22

EBA Action Plan - develop dedicated climate risk stress tests for banks

May 21

Banks required to send to the ECB their roadmap to implement supervisory expectations

Jun 21

Application date of the guidelines on loan origination and monitoring \(\forall Sep 21

CBES first submissions

2021

Oct 21

CBES first submissions due

Oct 21

Publication of CFRF Series 2 guides

Oct 21

UK gov. published Greening Finance - Roadmap to Sustainable Investing includes new Sustainability

Oct 21

Methodology published on the 2022 climate risk stress test

Disclosure Requirements

Oct 21

FS-TCFD Guidance on Metrics, Targets, and Transition Plans

Oct 21 - Nov 21 COP26

Dec 21

PRA SS3/19 firms to embed approach to climate risk

End of 21

SDR discussion papers on sustainable investment labelling and product level Green Taxonomy alignment End of 21 – 22

FS-TCFD Guidance on Metrics, Targets, and Transition Plans

22 onwards

PRA assessment of alignment with SS3/19 as part of supervisory cycle

Jan 22

Taxonomy disclosures required

Mar 22

2022 ECB climate risk stress test starts

During 22

ECB to assess banks integration of climate risks

> 1st Half - 22 CBES results

1st Half - 22

First on-site inspections related to environmental

Q1 22

Consultation on first 2 environmental objectives under UK Green Taxonomy 🔻

1st Half - 22

2022 - 2025

Deadline for all listed issuers and large asset owners to disclose in line with TCFD

By end of 22

Primary legislation for SDR

22 & 23

Additional disclosures under SDR for asset managers and owners, investment firms, banks, insurers and certain listed issuers

Jan 23

Taxonomy disclosure of remaining four environmental objectives

Q1 23

Consultation on remaining 4 objectives under UK Green Taxonomy

By Jun 25

EBA Discussion Paper and Report on classification and prudential treatment of assets (sustainability criteria)

UK

Global



# Risk Management Is Key Part of ECB's "13 Expectations"

### **Strategy & Organization Internal and External Reporting** 6 Reflect their exposures to climate-related and Understand the impact of climate-related and environmental Business environmental risks in the internal reporting to risks on the business environment to make informed environment strategic and business decisions. management **Business** Disclosure policies & procedures: Publish Integrate climate-related and environmental risks into the Risk Strategy meaningful information and key metrics on business strategy **Appetite** 13 climate-related and environmental risks Responsibility of the management body for the integration **Disclosure** Management policies & and oversight of climate-related and environmental risks Body procedures **Risk Type Specific Expectations** Explicitly include climate-related and environmental risks in 8 Credit risk: Consider climate-related and **Organizational** their **risk appetite** framework Reporting Structure environmental risks at all stages of the credit-Assign responsibility for the management of climate-related (3LoD) granting process and in monitoring portfolios Risk and environmental risks within the organizational structure Management Operational risk: Consider the adverse in line with the 3LoD **Framework** impact of climate-related events on business 11 Scenario Operational continuity and on reputational and/or liability **Overarching Risk Management & Framework Analysis &** Risk risks. Stress Testing Management Incorporate climate-related and environmental risks as Market risk: Monitor the effect of climate-**Credit Risk** Liquidity Risk related and environmental factors and develop drivers of established risk categories into their existing Management Management related stress testing scenarios risk management framework 10 Liquidity risk: Incorporate climate-related Scenario analysis & stress testing: Evaluate **Market Risk** and environmental risk factors into liquidity Management appropriateness and incorporate climate-related and risk management and liquidity buffer environmental risks into baseline and adverse scenarios calibration.



The ECB expects banks to consider climate-and environment-related risks in their risk management. Climate stress test can address this expectation.

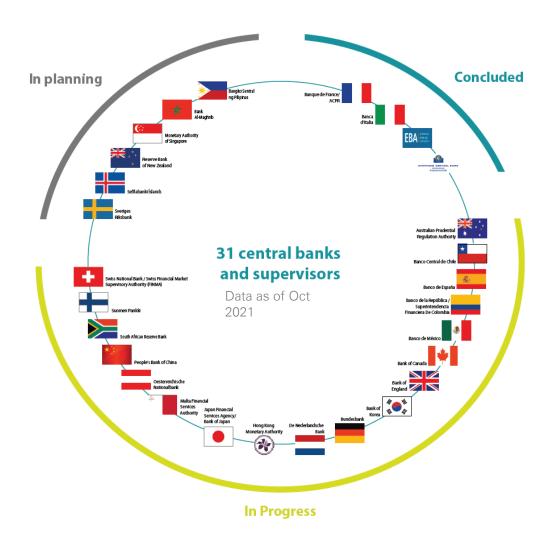
Source: Guide on climate-related and environmental risks: Supervisory expectations relating to risk management and disclosure, ECB, Nov 2020.



# **Global Practices of Climate Stress Testing**







# **Details of Climate Stress Test Exercises**

Member	Expected End Date	Approach	Risk Coverage	Time Horizon
Banque de France	Concluded	Bottom-up	Physical, Transition	30 years
Australian Prudential Regulation Authority	Early 2022 Now finished	Bottom-up, Top-down	Counterparty, Macroeconomic	30 years
Banca d'Italia	Concluded	Micro-founded	Transition	0 years
Bank of England	May 2022 Now finished	Bottom-up	Physical, Transition	30, 60 years
De Nederlandsche Bank (Netherlands)	Q4 2021 Now finished	Top-down	Counterparty	1, 10 years
European Banking Authority	Concluded	Top-down	Physical, Transition	30 years
European Central Bank	Concluded	Top-down	Physical, Transition	30 years
Hong Kong Monetary Authority	Dec 2021 Now finished	Bottom-up	Physical, Transition	5-30 years
Bank of Japan	Jun 2022 Now finished	Bottom-up	Physical, Transition	30, 80 years
Monetary Authority of Singapore	H2 2022 Dec-22	Bottom-up	Physical, Transition	30 years



# Commitments from the Bank of Thailand

In response to the COP26, Bank of Thailand is committed to:



The Bank of Thailand's sustainability commitment in support of the NGFS Glasgow Declaration

1. Set common policy direction for the financial sector



Sustainable Finance Initiatives for Thailand, Aug-2021

(1) Develop a practical taxonomy

Green Taxonomy
ASEAN Taxonomy

- (2) Improve the data environment
- (3) Implement effective incentives
- (4) Create D-led products & services
- (5) Build human capital

2. Incorporating environmental factors into our supervisory framework

The BOT will issue good practices for sustainable banking in 2022 to set a supervisory expectation on sustainability performances especially climate-related and environmental issues for the banking industry.

3. Integrate environmental impacts into financial stability and macro assessment

The BOT has included ESG risks as part of the revised Guideline on Application of the Supervisory Review Process under Pillar 2 of the Basel capital framework, which will come into effect in 2022. Going forward, the BOT will enhance the evaluation of banks' exposure to climate-related risks through scenario analysis and stress testing and will incorporate environmental factors into our macroeconomic models and analysis to assess the impact of such risks .

4. Strengthen collaboration with international stakeholders

The BOT will further leverage on recommended best practices from The Network for Greening the Financial System (NGFS) and Task Force on Climate-Related Financial Disclosures (TCFD) to strengthen our role in promoting green financing as well as environment and climate risk management.

"Banks will need to increasingly incorporate sustainability considerations into their lending decisions and increasingly need to improve disclosure on climate-related information and their risk assessment tools."

Sethaput Suthiwartnarueput, Governor of the Bank of Thailand (Sep 2021)



# **BOT's Determination to Addressing Climate Risks**

Socio-economic and Environmental sustainability

Financial Stability Investment Opportunity

Inclusivity

Products & Services

Taxonomy

Data & Disclosure

Incentive

Capacity Building



BOT Directional Paper on "Transitioning towards Environmental Sustainability under the New Thai Financial Landscape" Aug 2022 The BOT has laid out **5 building blocks** to prepare FIs for the imminent impacts from climate change.

Under the 1<sup>st</sup> block (product & services), the BOT expects FIs to be able to assess the impacts from climate risks via **scenario analysis and stress testing** and incorporate climate risks into every day-to-day business process and ICAAP.

The climate scenario analysis and stress testing will be a **pilot exercise** for the **large Fls within end of 2023** and for **all commercial banks within 2024**.



# **Product & Services**

- BOT will launch industry handbook in 2023.
- Conduct climate stress testing and incorporate climate risks into end-to-end business



# Data & Disclosure

- BOT expects FIs to align their report with TCFD/BCBS/ISSB and mandate D-SIB FIs in 2024 and other FIs in 2025.
- Co-op with MNRE/ME/MOT and private org. to build Big Data (Green Data Ecosystem).



# FIs about climate disclosure and scenario analysis.

- BOT expects FIs to have sufficient personnel to effectively assess climate risks.

**Capacity** 

**Building** 

BOT will develop

workshops to train



# **Taxonomy**

- Establish principle-based taxonomy around climate change in line with ASEAN Taxonomy.
- Co-op with TGO and SEC staff to respond to identify transparent indicators under Thailand Taxonomy.



# IncentiveDuring the transition, BOT

- support SMEs to transit to sustainable economy.
- In long term, BOT will impose stricter regulation to enforce companies to address climate risks.



© 2022 KPMG Phoomchai Business Advisory Ltd., a Thai limited liability company and a member firm of the KPMG global organization of independent member firms affiliated with KPMG International Limited a private English company limited by guarantee. All rights reserved.



# Insights into Climate Risk Stress Testing Model



# ESG risks have potentially severe impacts on banks

### **Examples:**

Focus today

 Supply chain collapse, sea level rise, droughts (Physical risks)

Loss of basis for business model due to pricing of fossil fuels or electric vehicles (Transitional Risks)

Climate Risk is only one form of ESG risk. Although currently considered as the most urgent, EBA and most national banking supervisors (e.g. Germany's BaFin) deliberately speak of "sustainability", thereby including all ESG risk types.



### Social risks

### **Examples:**

- Noncompliance with labour standards
  - Inadequate payment of labour
  - Lack of industrial safety standards and health protection for employees
    - Lack of product safety

### **Governance risks**

### **Examples:**

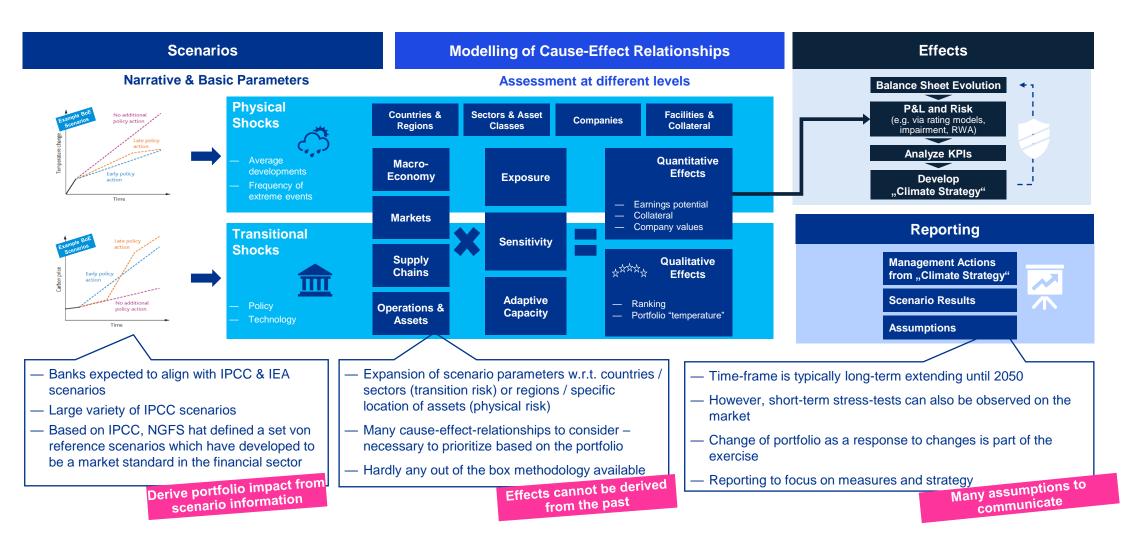
- Noncompliance with tax law
- Corruption or attempted bribery
- Inappropriate senior management compensation
- Lack of proper data protection



ESG risks drivers can have negative impacts on assets, the financial and earnings situation, or reputation of businesses and therefore have to be considered material. It is therefore crucial for banks to fully understand the impact of ESG risks and fully integrate them into their risk management system using dedicated methodologies and tools.



# Challenges in all element of Climate Risk Stress Testing





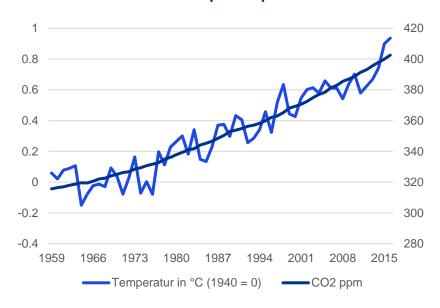
# Physical Risks Become Increasingly Relevant

Natural disasters especially severe nowadays



As climate conditions change, severity and frequency of physical risk events will further increase

### **Historical Relationship: Temperature and CO2**





Effective management of physical risks becomes crucial for financial institutions – especially if climate conditions follow an adverse path



# Natural Hazards have significant financial impacts on businesses and properties – even if insured

After a natural disaster, property values instantly decrease.



66

[In the immediate aftermath of Buffalo Creek wildfire in 2004,] the house price drop in the unburned [nearby] community was about 15%.

(Loomis, 2004)



After a severe natural disaster, regional housing markets often break down. Property prices fall significantly, even for insured properties.

Natural hazard insurance premia are expected to rise.



66

Climate risks to add \$183bn to property insurance costs by 2040, Swiss Re predicts.

(Financial Times, September 6th, 2021)



Climate change has a significant effect on the severity and frequency of natural disasters like flooding, wildfires, cyclones etc. This means, many property owners will face rising insurance costs if they are exposed to those hazards.

Natural disasters will impact more and more supply chains.



66

The probability of a hurricane of sufficient intensity to disrupt semiconductor supply chains may grow two to four times by 2040.

(McKinsey, August 6th, 2020)



Even if the business itself is insured against natural hazards, a natural disaster impacting its supply chain is still a viable risk.



# European perspective: Regulators' views on Physical Risks

EBA BANKING

EBA BANKIN





 This means, physical risks need to be addresses in a variety of risk-management processes throughout the 3LoD setup



Regulatory Requirements on Physical Risks



Management and supervision of ESG risks for credit institutions and investment firms

- Provides institutions with common definitions of ESG risks and their transmission channels
- Identifies assessment methodologies required for effective risk management
- Excludes specific suggestions for management of physical risks: Geographic concentration may be matched with physical risk metrics [...]

### **EBA-Report**

Final draft implementing technical standards on prudential disclosures on ESG risks in accordance with Article 449a CRR

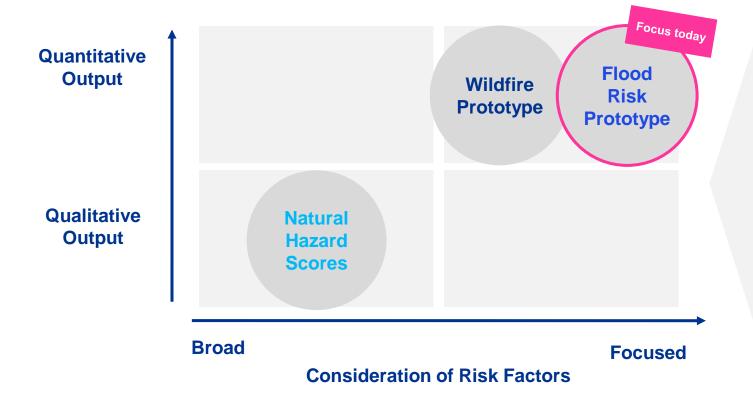
- Within its disclosure regulation, the EBA requires financial institutions to disclose their assets subject to severe physical risks
- Disclosing this measure requires organizations to implement a methodology to measure physical risks



Regulators have recognized the importance of physical risks and urge financial institutions to improve their data and methods



KPMG has developed three prototypes to address Physical Risk Management





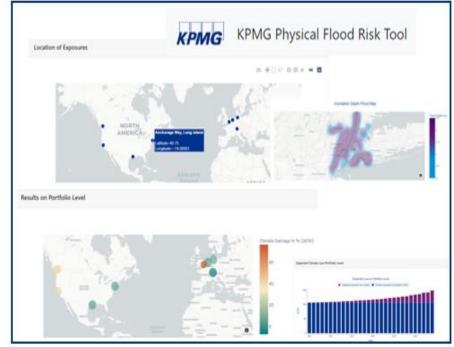
- KPMG's natural hazard scores is a broader tool which covers many different physical risk drivers
- KPMG's flood and wildfire risk prototypes are more focused and very similar in methodology, use cases and output variables

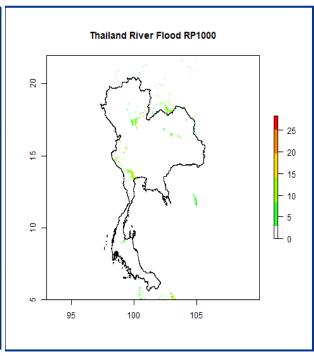
# Flood Risk Prototype



# **KPMG's Flood Risk Prototype**

- ✓ Works as-is for real estate assets, can be expanded for business interruptions
- Derives yearly expected flood damages for real estate assets for the present and for the future
- ✓ As an end-result, real estate assets are revalued based on the changes in risk profile





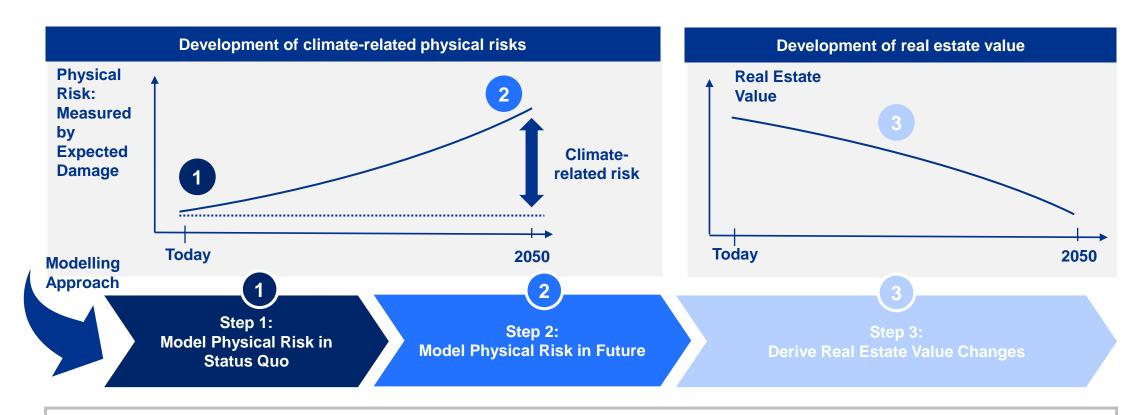
Main Use Cases Stress testing

**Credit Scoring** 

Conduct scenario-stress tests to understand how climate change will impact your realestate portfolio

Integrate results into the credit-process to reflect long-term flood risks

# Overview of the Modeling Approach - What does Climate do?





### **Comments**

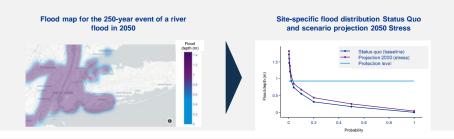
The approach focuses on analyzing long-term changes in the risk exposure regarding physical hazards. In other words, the focus is not on instantaneous damage from natural disasters, but on understanding the long-term changes in expected damage for given locations; an "expected-value" of damages from natural disasters is considered.



# Deep Dive: Methodology of the Flood Risk Prototype



- Evaluation of public flood maps (e.g. 10-, 100-, 200-year event) from the World Resources Institute
- Translation into **risk distributions** (frequency and severity)
- Consideration of current level of protection (e.g. levees for 100-year event)



- 2 Damage function
- Translation of flood depth into damage to the object via damage function (source: Huizinga et. al., 2017)
- Scaling of the damage function based on historically observed damage (residual value of the object at maximum damage)

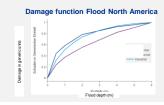
ALTERNAL SERVICE

Cloth final demay furthers

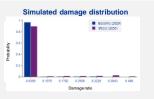
Matternal Aller

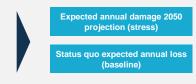
Matternal A





- 3 Expected annual loss
- Simulation of the damage distribution from flood distribution and damage function via Monte Carlo method
- Calculation of the expected value for the annual damage







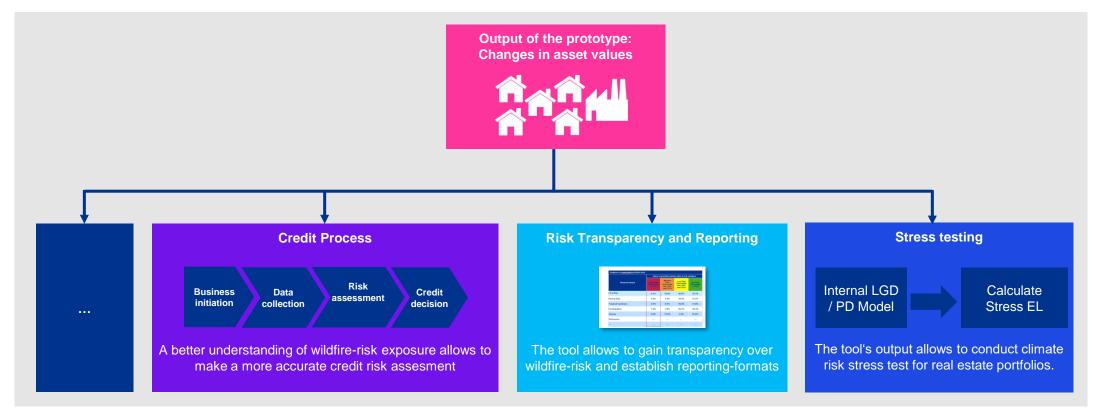
- Change in expected losses has direct effect or via higher insurance costs – property assumed to remain insurable
- Reduction of net operating income (NOI) and value discount on real estate (approximated via multiple)





# Integration of Results in the Bank's Processes

The approach can be used as a central tool to quantify flood-related risks. The output of the prototype is to be integrated in a variety of processes.





The prototype's output can be integrated into many processes inside the bank to identify, measure, and manage risks arising from exposure to flooding.

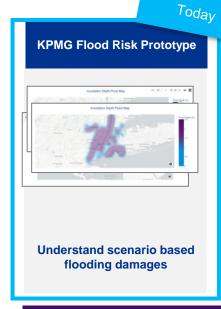


# **Live Demo**

# Deep Dive: ESG-Risk Models and Framework

Many more customizable ESG prototypes are available e.g.
Biodiversity – if you have an ESG problem we are probably on the case!









Get physical hazard scores for 11 different natural hazards

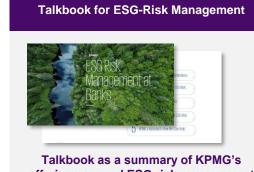




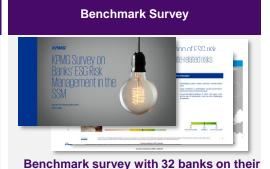
Conduct stress tests based on different carbon-price scenarios







offerings around ESG risk management



status quo ESG risk management

# Our Credentials - KPMG EU

### KPMG

# European development bank

Climate risk stress testing implementation, focusing on CO2 emission scenario analysis

2020/2021

### KPMG

# Development bank

Detailed gap analysis wrt. all relevant regulatory requirements in ESG area and determination of ESG-TOM

2022

### KPMG

# German commercial bank

Design and implementation of ESG Risk Management Framework, indepth analysis of Oil & Gas clients

# KPMG

### **Various banks**

2020/2021

(Educational)
Sustainable Finance
Workshops

2020-2022

## KPMG

### German Landesbank

Climate risk assessment and preparations for stress testing (Gap analysis, Road map)

2020/2021

# KPMG

### **Italian D-SIFI**

ESG impact on the credit monitoring process

2020/2021

# KPMG

# **Greek** universal bank

ESG Risk integration, Focus ECB questionnaire on ESG (Gap analysis, Road map)

2021

# KPMG

### Italian D-SIFI

Supporting Risk Management in assessing the impacts of ESG

2020/2021

## KPMG

### German Landesbank

Introduction of a framework for ESG-

2022

# KPMG

## Large UK Bank

Review of ESG Reporting and TCFD Disclosures including benchmarking insights

## KPMG

### German Landesbank

Establishment of an ESG risk credit decision framework

2022

# KPMG

### Large UK bank

Supporting Group Internal Audit Review of Climate Risks

# KPMG

### German Landesbank

Establishment of an ESG-risk inventory process

2022

# KPMG

### **German bank**

Development of a sustainability classification

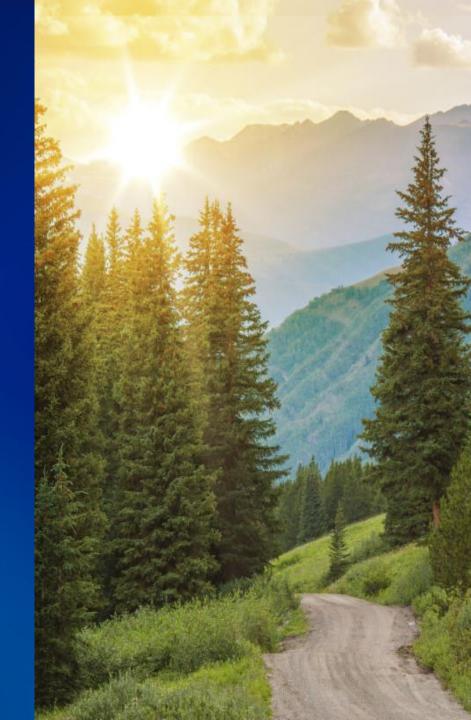
2020/2021





# Q&A Feedback







# Thank you

### Contact



Ganesan Kolandevelu
Partner, Climate Change and
Sustainability
KPMG in Thailand
Email: ganesan@kpmg.co.th



Martin Klaas Specialist, ESG Risk KPMG in Germany Email: mklaas@kpmg.com





Twitter: @KPMG\_TH

LinkedIn: linkedin.com/company/kpmg-thailand Facebook: facebook.com/KPMGinThailand YouTube: youtube.com/kpmginthailand Instagram: instagram.com/kpmgthailand/



Dr. Clemens Wieck
Senior Manager, Financial
Services, ESG Specialist
KPMG in Germany
Email: cwieck@kpmg.com



Amnat Ritdumrongkul
Director, Financial Risk
Management Advisory
KPMG in Thailand
Email: amnat@kpmg.co.th

The information contained herein is of a general nature and is not intended to address the circumstances of any particular individual or entity. Although we endeavor to provide accurate and timely information, there can be no guarantee that such information is accurate as of the date it is received or that it will continue to be accurate in the future. No one should act on such information without appropriate professional advice after a thorough examination of the particular situation.

The KPMG name and logo are trademarks used under license by the independent member firms of the KPMG global organization.

© 2022 KPMG Phoomchai Business Advisory Ltd., a Thai limited liability company and a member firm of the KPMG global organization of independent member firms affiliated with KPMG International Limited, a private English company limited by guarantee. All rights reserved. The KPMG name and logo are trademarks used under license by the independent member firms of the KPMG global organization.