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The Bank CRO perspective on Climate Change

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Climate Change: Evolution of Bank Risk Management Practices

Financial institutions are progressively focused on risks arising from climate change

- Historically, banks have focused on ***Market Risk, Credit Risk***, and more recently on ***Operational Risk***
- In recent years, critical challenges that don't marry well with traditional risk frameworks have emerged:
  - *Geopolitical Risks*
  - *Operational resilience* – Cyber Risk
  - ***Climate Change Risk***
- Banks have approached climate change through the lens of Reputational Risk and Corporate Social Responsibility
- There is now also a pressing need to build processes to identify, measure and manage the financial risks associated with climate change

Climate Change: Evolution of the ESG agenda

Citi has been prominently engaged in championing sustainability initiatives

- **1997** – UN Environment Finance Initiative
- **2000** – Citi published Global Citizenship Report
- **2003** – Equator Principles and broader Policy
- **2007** – First U.S. bank to publish Statement on Human Rights and set CO_2 reduction target
- **2007** – Citi launches 10-year $50B Climate Initiative
- **2010** – UN Global Compact
- **2014** – Green Bond Principles
- **2015** – Launched Sustainable Progress Strategy and $100B Environmental Finance Goal
- **2016** – Commenced 2020 (3rd gen) environmental footprint goals
- **2017** – Announced 100% renewable energy by 2020 goal
- **2018** – Published climate risk / TCFD Report
- **2018** – Signed “We Are Still In” declaration in support of the Paris Agreement
- **2019** – Signed the UN Principles for Responsible Banking
- **2019** – Issued Inaugural €1B Green Bond
- **2019** – Co-drafted and established Poseidon Principles
- **2019** – Joined UN Global Investors for Sustainable Development Alliance

Climate Change: Emerging Regulatory Agenda

Regulators are now formalising their approach to climate change risks

- ***Bank of England (BoE):*** BES discussion paper setting out proposals to test the performance and health of the UK financial system for a range of climate-linked financial risks *[Dec 2019];* Supervisory Statement: Enhancing banks' and insurers' approaches to managing the financial risks from climate change *[Apr 2019]*

- ***The European Banking Authority (EBA)***: Action Plan on Sustainable Finance *[Dec 2019]*

- ***Hong Kong Monetary Authority (HKMA):*** three sets of measures to support and promote Hong Kong's green finance development: Green and Sustainable Banking, Responsible Investment and Centre for Green Finance *[May 2019]*

- **Monetary Authority of Singapore (MAS):** announcement of publication of consultation paper on environmental risk management guidelines for the banking, asset management and insurance sectors in Q1 2020 *[Nov 2019]*

- ***Australian Prudential Regulation Authority (APRA)***: released their Information Paper – Climate Change: Awareness to action *[Mar 2019]*

Climate Change: Financial Risk

Risk Management Practices

The Vision	***Current Reality: Need for Science & Process***
Well defined Institutional Risk Appetite	**No common framework for Risk Appetite assessment**
Core part of Risk Management Governance	**Embryonic Governance Conversations**
Consistent industry wide conventions	**Need for common Frameworks, Lexicon, Data tagging conventions**
Clear Investor and Regulatory Disclosures	**Disclosures are sporadic and inconsistent**
Appropriate capital charges	**Tenor Mismatch–Outcome horizon construct challenge**
Aligned internal incentive structures	**Banking Book/Trading Book Stress Testing conventions**
Aggregatable outcomes	**Legacy data vs Forward Scenarios**

Climate Change: How banks are responding

Focus Risk Management Topics

- ***Governance*** of financial risks from climate change
- ***Metrics*** on how to measure finance risks from climate change
- ***Stress scenario development*** relevant to portfolios
- ***Vulnerable industries*** identification e.g. oil & gas, auto manufacturers and insurance
- ***Classification of financial risks***; supporting the development of consistent industry wide taxonomy
- ***Client*** dialogue and strategy
- ***Disclosures*** – climate related disclosures from regulatory and investor perspective
- ***New business opportunities*** and associated risks
- ***Regulatory requirements***; BoE, EBA, MAS, HKMA etc.

Climate Change: How banks are responding

Risk Management Priorities

Governance

- Identify required resourcing across first and second line control functions
- Establish formal climate risk working groups
- Formalise climate change considerations within existing governance structures
- Board, senior management and wider staff training on climate change and relevant types of climate-related risks

Framework and Metrics

- Identify relevant metrics and data sources to inform climate-related management information
- Assess how climate-related risks should be reflected within risk monitoring and management frameworks

Scenario Analysis & Stress Testing

- Identify relevant climate scenarios
- Evaluate climate taxonomies for measurement and data tagging
- Conduct stress analysis on vulnerable industries and eventually the full portfolio:

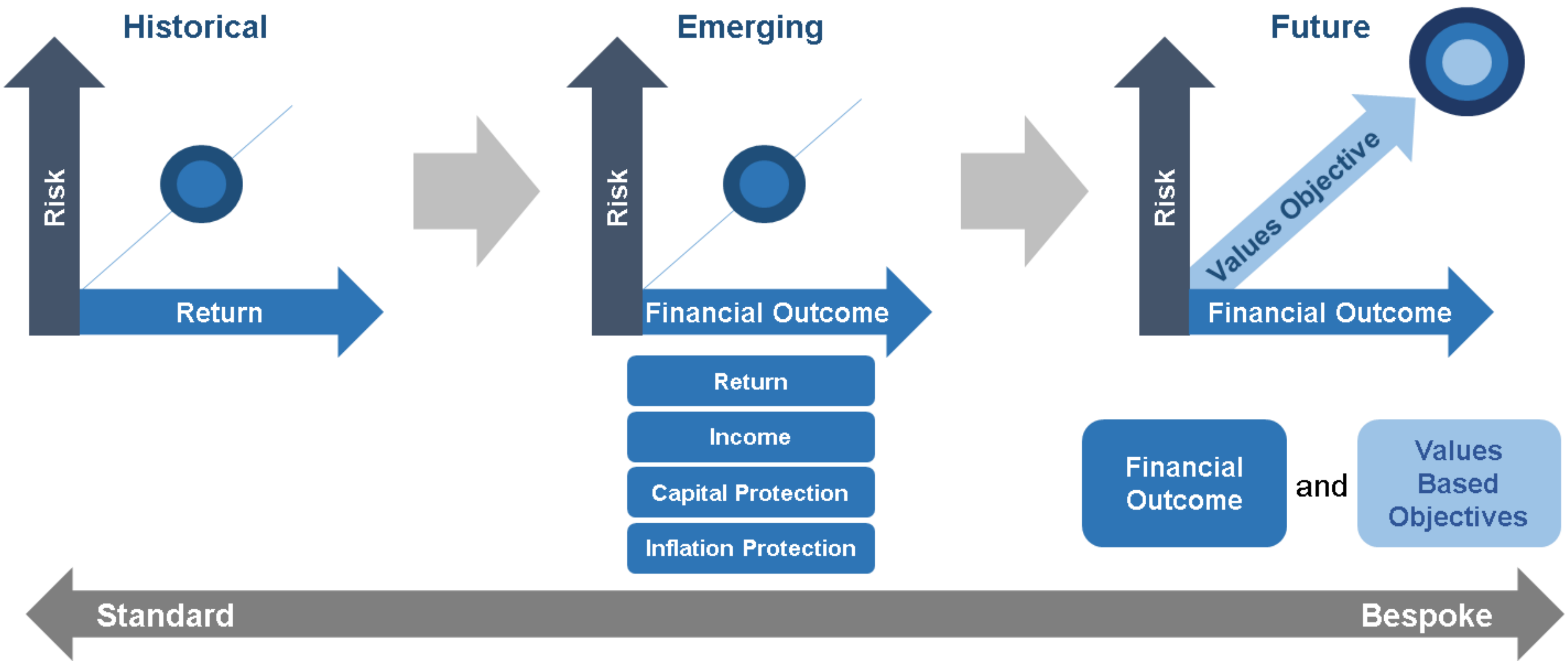
Strategy

- Incorporate climate-related risks within strategic decision-making
- Introduce climate-related risks into discussions with clients
- Identify new business opportunities and products

Capital Markets Progression: New Benchmarking Approach

For 60 years, portfolios delivered risk-adjusted returns, but investors are now offered a range of financial outcomes; adding values-based objectives to portfolio measurement might be next.

Move from 2-Dimensional to 3-Dimensional Portfolio Benchmarking



Risk-Adjusted Returns
Since the emergence of Modern Portfolio Theory and the Capital Asset Pricing Model, investors look to benchmark their portfolios by their ability to obtain risk-adjusted returns

Outcome-Oriented Returns
Emerging approach is to let the investor pick from a range of financial outcomes versus their portfolio risk - though the options for the outcome expand, the approach is still 2-dimensional

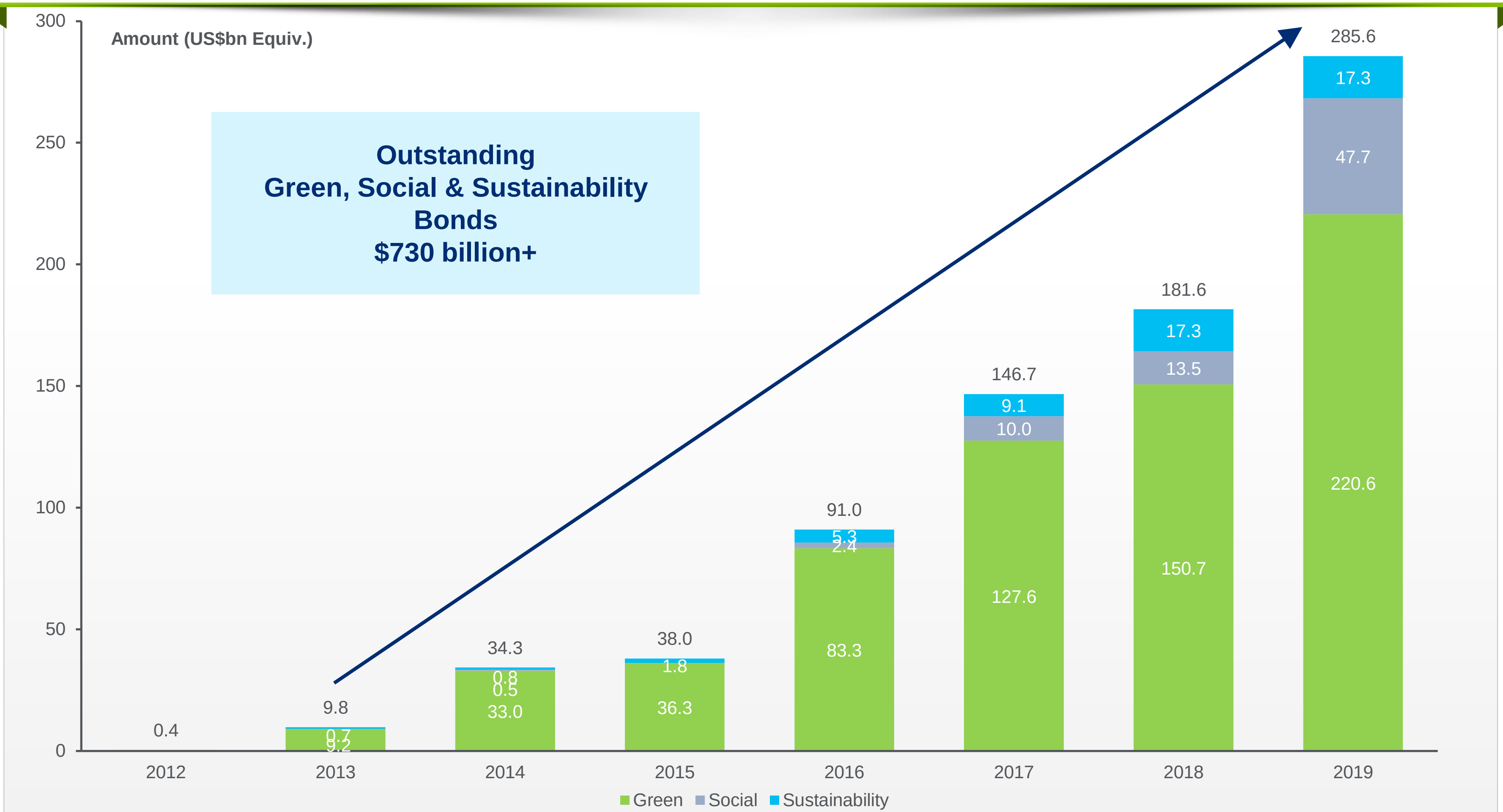
Three Dimensional Returns
ESG is an example of a broadening view of a portfolio delivering more than just financial outcomes; adding value-based objectives (possibly fee-related) could mark an expanded approach to portfolio measurement

Source: Citi Business Advisory Services

Capital Markets Progression: The Green, Social and Sustainability Bond Market

The Green, Social and Sustainability bond market continues to develop with record issuance year on year. Investor interest in socially responsible fixed income investing is growing faster than issuance volumes.

Green, Social and Sustainability Bond Issuance Volumes



Source: Citi, Dealogic, updated for year-end 2019

Looking Forward

- Academia, Business and regulators will need to collaboratively progress a common framework
- The science of a rigorous analytical approach has yet to be established
- Traditional risk management approaches do not speak cleanly to the exam question
- The framework will need to scale across institutions and global borders – to common standards
- There is urgency – financial climate risks, both physical and migratory, are highly complex and have broadly outpaced risk management constructs
- The pace of progression is unprecedented as are the profound implications for the global allocation of capital