Focal theme for the TechSprint: Use of data to improve the quality of green & sustainable loan and investment decisions through data and technology.

2021 is set to be a critical year in acting on urgent environmental challenges from climate change to biodiversity. With the COP 26 international climate negotiations hosted jointly by Italy and the United Kingdom in Glasgow, a unique window of opportunity exists in building momentum to solve these global challenges. It is in this context that the Italian G20 2021 Presidency, Banca d'Italia, and the Bank of International settlements are convening the G20 TechSprint 2021 to foster global innovation for sustainable financial markets.

The TechSprint is focused on how financial institutions and large investors can better **collect, verify and analyse data** to understand whether their loan decisions and investments improve (or worsen) environment outcomes. The TechSprint asks private sector firms to develop technology solutions and techniques that enable financial institutions and investors to conduct environmental risk analysis (ERA) and (a) identify and measure the exposure of their current loans and investments to climate and transition risks, (b) make informed decisions about new green loans and investments, and (c) verify the impact of those new loans and investments using trusted and verifiable data and potentially also guide market assessment of ERA-adjusted asset and portfolio value. It is hoped this cycle of data collection, verification and analysis will improve the quality and impact of loan and investment decisions across the sector.

To raise the kinds of loans and investments that green finance requires, financial institutions and investment managers need to:

- Understand how their existing portfolios are exposed to climate risks;
- Make informed decisions about new green loans and investments;
- Measure the impact of those new loans

Problem Statement 2:

Analysis and Assessment of Transition and Physical Climate-related Risks: One of the main difficulties facing non-financial corporations and financial corporations alike is the ability to accurately predict the vulnerabilities associated with transition and physical risks posed by climate change. As the world transitions towards climate-neutrality, there is the need to support institutions and relevant stakeholders with tools enabling them to visualize, predict, assess and monitor transition and physical risks.

Can big data ingestion, predictive analytics and visualisation tools be developed to aid both regulators and institutions/corporates better assess and analyse these risks across different regions, sectors and asset classes?

Landscape

Beyond verifiable data, financial institutions are critically reliant on the ability to understand the data and draw relevant insights from it. Climate-related risks, both physical and transition (see below), are characterised by a high degree of uncertainty and a radical break from the past – new analytical tools are required to understand, assess, monitor, and manage these risks. New approaches such as the application of big data, machine learning and artificial intelligence, scenario analysis tools and opensource analytics, among others, are quickly revolutionising how financial institutions respond to climate-related risks.

Successful solutions to mitigating climate-related risks will need to draw together large amounts of scientific data and understanding with forward-looking, decision-useful financial insights while conveying relevant levels of uncertainty. Particularly, transparency in methodologies and distilling complex problems into understandable insights across asset classes, geographies, sectors, and products are emerging as key user requirements.

Climate-related risks:

- **Physical:** Physical risks resulting from climate change can be event driven (acute) or longer-term shifts (chronic) in climate patterns. Physical risks may have financial implications for organizations, such as direct damage to assets and indirect impacts from supply chain disruption. Organizations' financial performance may also be affected by changes in water availability, sourcing, and quality; food security; and extreme temperature changes affecting organizations' premises, operations, supply chain, transport needs, and employee safety.

- **Transition:** Transitioning to a lower-carbon economy may entail extensive policy, legal, technology, and market changes to address mitigation and adaptation requirements related to climate change. Depending on the nature, speed, and focus of these changes, transition risks may pose varying levels of financial and reputational risk to organizations.
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Suggested reading

- **Bingler, J.A., Colesanti Senna, C. (2020). Taming the Green Swan: How to improve climate-related financial risk assessments. ETHZ, Zurich.** https://www.sustainablefinance.ch/upload/rm/202007-bingler-taming-the-green-swan-1.pdf?_=1595945567000 – The paper provides a review of key tools available to industry participants today with a discussion on gaps in current analytical approaches and requirements for the next generation of analytics. Applicants should use the paper to gain an understanding of current approaches to measuring transition risks, key user challenges, as well as essential requirments for new analytical tools for assessing transition risks.

- **Smith, Paul A., (2021). The Climate Risk Landscape: a comprehensive assessment of climate risk methodologies. UNEP FI.** https://www.unepfi.org/wordpress/wp-content/uploads/2021/02/UNEP-FI-The-Climate-Risk-Landscape.pdf - The UNEP FI review of current approaches to assessing climate risks, both physical and transition, is an evaluation of all major climate risk tools used by the market today. The paper provides a

critical assessment of the current analytics landscape for applicants to begin thinking about required functionalities, design features, and new approaches to addressing the problem statement.

- **Stone, Alvin, (2021) Business Risk and the Emergence of Climate Analytics, ARC Centre of Excellent for Climate Extremes. https://climateextremes.org.au/business-risk-and-the-emergence-of-climate-analytics/ (summary article)** – A summary article of a 2021 Nature paper of the same name, the article provides a key overview of current climate models, their implications and limitations for assessing physical climate risks. The paper provides applicants with a key understanding of how climate models can be used in financial tools in line with current climate science.

- **Basel Committee on Banking Supervision (2021), Climate-related financial risks – measurement methodologies. https://www.bis.org/bcbs/publ/d518.pdf. –** The BIS paper provides an in-depth overview of methodological considerations for climate risk tools and approaches for future analytical tools. Participants should use the paper for an in-depth discussion of current industry thinking on the problem statement.