FINTECHS AND THE ESG DATA CHALLENGE

BNP PARIBAS

The bank
for a changing
world

"Applying climate risk projections at the asset level gives us a refined view of exposure for corporations, even – or especially for those with a global footprint. These detailed analytics provide the foundation for TCFD reporting and inform scenario analysis as well as risk management at the portfolio level."

Emilie Mazzacurati, Founder & CEO, Four Twenty Seven

"We have never been in a better position to observe assets and what is going on in listed and non-listed companies. Asset-level data, particularly that is secured using new geospatial datasets and machine learning, unlocks these capabilities. As financial analysis becomes increasingly 'spatial', geospatial analysis enabled by asset-level data will become a core competency for many financial analysts. It will be part of the toolbox and an increasingly important one."

Dr Ben Caldecott, Director, Oxford Sustainable Finance Programme & Associate Professor Smith School of Enterprise and the Environment, University of Oxford

CONTENTS

1. ESG DATA LANDSCAPE: OVERVIEW & CHALLENGES

Standard ESG data providers have significantly strengthened their offer and increased their scale over recent years. However, they are still struggling to solve key data challenges and no single provider can currently provide a robust 'one-stop-shop' ESG solution. The most sophisticated institutional investors typically have to implement a multi provider approach leveraging a mix of standard ESG data providers (e.g. MSCI[1], Sustainalytics[2], etc.), complemented by specialised providers (e.g. Carbone 4[3], Trucost[4], Beyond Ratings[5], etc.), fintechs (e.g. Four Twenty Seven[6], Carbon Delta[7], Truvalue Labs[8], etc.) and consultants.

In particular, as a result of the low trust in company-reported information, a fintech ecosystem has emerged which aims to go beyond company-reported data sources. To do so, these fintechs are harnessing an arsenal of new technologies: big data based on asset-level information (facilities, power plants, etc.), natural language processing (NLP), the Internet of Things (IoT), satellite imagery, blockchain, and robo-advisors.

If properly integrated, these new technologies and alternative data sets could give an investment firm a significant competitive edge. Although the proliferation of data providers can make an investor's operating model even more complex, this can be mitigated by outsourcing the data management to banks. In fact, the custodian arms of banks are ideally placed in the investment value chain to provide the required infrastructure. As such the model of custodians is evolving from the 'safe-keeping of assets' to the 'safe-keeping of data', grounded in a multi provider approach. A race is taking place amongst them to evolve their capabilities and integrate this fintech and data ecosystem.

[1] https://www.msci.com/esg-ratings

[2] https://www.sustainalytics.com/

[3] http://www.carbone4.com/

[4] https://www.trucost.com/

[5] https://beyond-ratings.com/

[6] http://427mt.com/

[7] https://www.carbon-delta.com/

[8] https://www.truvaluelabs.com/

A THIRST FOR HIGHER ESG DATA QUALITY

The BNP Paribas ESG Global Survey 2019[9] highlighted that ESG data remains the biggest obstacle to ESG integration for investors, well ahead of costs, a lack of advanced analytical skills and the risk of greenwashing. At 66% across

all respondents, the evidence of this ESG data challenge in 2019 is even greater than reported in our 2017 survey[10]. This suggests that investors have become more sophisticated in their ESG integration, demanding a solution to the current data challenges they face.

A NON-EXHAUSTIVE LIST OF ESG DATA CHALLENGES

- Low correlation between ESG data providers due to inconsistent methodologies and data sources,

- Inconsistent data across asset classes,

- Lack of forward-looking data for scenario analysis,

- Insufficiently granular data to measure impacts at a local level,

- No robust link to the UN Sustainable Development Goals (SDGs),

- Low frequency of data updates,

- Low trust in the quality of company-reported information with inconsistent methodologies and disclosures,

- Difficulty in linking ESG performance with financial performance,

- Preferences of the end individual beneficiary (retail investor /pension saver) not integrated.
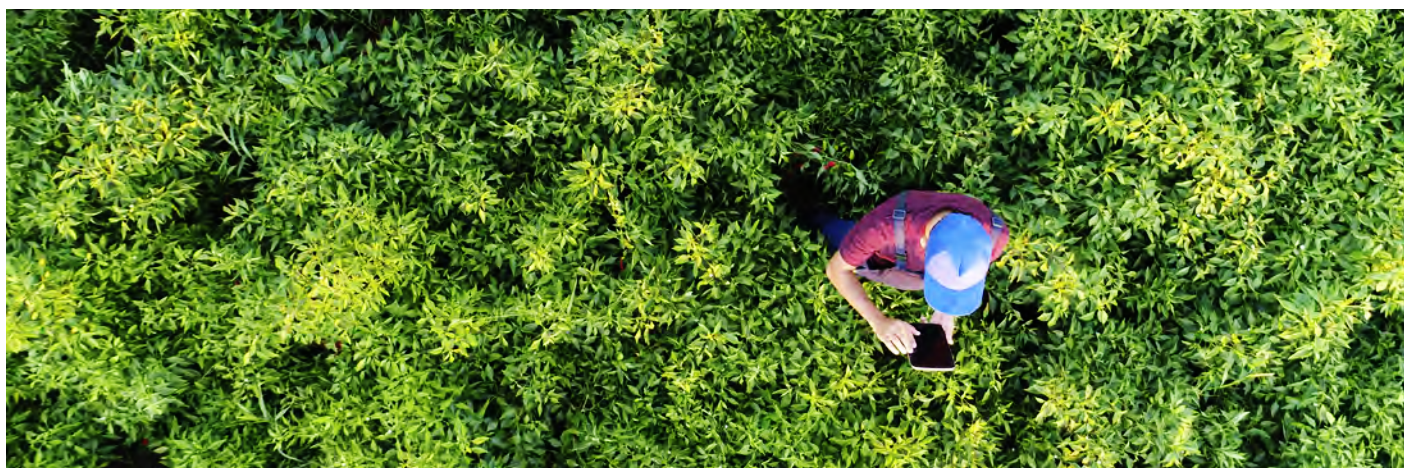
2. THE EMERGENCE OF NEW ESG DATA TECHNOLOGIES, ILLUSTRATED THROUGH SIX CASE STUDIES:

In this section, through six case studies we will explore some of the new technologies being developed to tackle the ESG data challenges. The fintech ecosystem emerging in this space is vibrant and includes dozens of companies across all regions. These case-studies are not intended to provide a comprehensive list of all developments. However, they aim to provide insight into the plethora of new applications, approaches and commercial offers available to investors.

1. Beyond company-reported information: The rise of asset-level data

Public and private satellite operators are making impressive advances in geospatial solutions using more data, remote sensing, computing power and machine learning capabilities. The European Commission's Copernicus programme[11] collects vast amounts of data from their Sentinel satellites to create global, continuous, and high quality observations of Earth. This accurate and timely information is freely and openly available and can help improve among other things environmental management.

Commercial and research organisations are starting to apply this data in many useful ways, from the measurement of carbon emissions at asset level, to deforestation exposure, or supply chain traceability.

Research organisations: The Oxford Sustainable Finance Programme has made remarkable progress, and has been a pioneer and advocate of 'spatial finance', bringing together geo-spatial capabilities and financial analysis. The programme is developing new asset-level datasets through data science and combining these with new approaches to spatial analysis, scenarios, and stress tests. Successful adoption of spatial technology also requires partnerships across various stakeholders. The Spatial Finance Initiative[12] has been established by the Alan Turing Institute[13], Green Finance Institute[14], Satellite Applications Catapult[15], and the University of Oxford[16]. The Initiative thereby combines research capabilities in space, data science, and financial services.

Commercial organisations: As an example, the climate fintech Carbon Delta[17] uses one of the best available climate data sets incorporating satellite imagery. They have developed a database of company locations for 25,000 enterprises, providing coordinates for millions of production installations. When processing satellite imagery, Carbon Delta is working to develop a three-dimensional understanding of the technological activity happening at facilities. This robust data forms the basis of their Climate Value-at-Risk (CVaR) model, which provides financial institutions with the necessary tools to protect assets from the worst effects of climate change and also to help identify new and unforeseen investment opportunities in the low carbon field.

---

[11] https://www.copernicus.eu/en/about-copernicus

[12] https://spatialfinanceinitiative.com/

[13] https://www.turing.ac.uk/

[14] https://www.greenfinanceinstitute.co.uk/

[15] https://sa.catapult.org.uk/

[16] https://www.smithschool.ox.ac.uk/research/sustainable-finance/

[17] https://www.carbon-delta.com/

2. Climate scenario analysis through big data: New ways of modelling climate change

Climate scenario analysis has been a major focus for the market since the 2017 recommendations by the FSB Taskforce on Climate-related Financial Disclosures (TCFD)[18]. It is a well-recognised tool to enhance critical thinking and involves measuring the potential financial impact of climate-related issues under different future states. At a minimum, both transition and physical risks and opportunities need to be taken into account under a 2°Celsius (2°C) scenario, a business-as-usual scenario (greater than 2°C), physical climate risk scenarios, or any other challenging scenarios. Transition risks relate to the transition to a lower-carbon economy and include policy, technological, market and reputational risks. Whereas physical risks relate to the physical damages from variations in weather patterns (such as severe storms, floods, and drought) and impacts such as sea level rise and desertification.
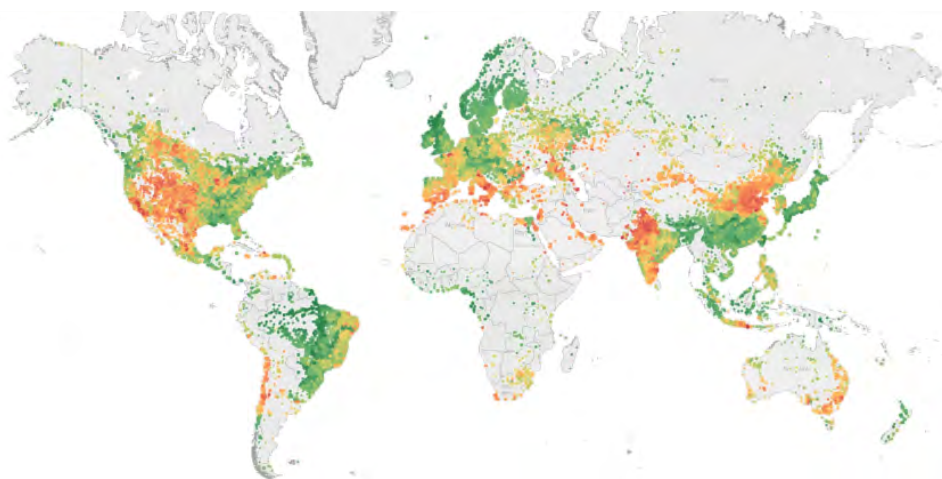
In 2019, in a move unprecedented by a central bank, Mark Carney, Governor of the Bank of England, confirmed climate stress-testing for insurance companies[19]. This could pave the way for a banking sector climate stress test in the near future.

Many organisations (including fintechs, think tanks, universities and consultants) are rallying to develop the necessary forward-looking tools to help assess the risks and opportunities associated with climate change and its impact on the bottom line of companies. In particular, 2 Degrees Investing Initiative[20], Four Twenty Seven[21] and Carbon Delta[22] have made headway, leveraging big data technologies. Their methodologies go beyond company-reported information and are grounded in asset-level data sources (facilities, power plants, etc.).

For example, on climate transition risks, 2 Degrees Investing Initiative has launched the free online PACTA tool[23]. This tool analyses exposure to risks in equity and fixed income portfolios over multiple scenarios so that investors can see the gap between their existing portfolio and two-degree benchmarks.

On climate physical risks, Four Twenty Seven has developed a comprehensive technology platform that allows for rapid, efficient processing of climate data across multiple locations. It powers real-time screening of large portfolios for risks such as floods, rising sea levels, heat stress, wild fires or hurricanes (see images below), each of which would soar in a four-degree scenario.

Exposure to water stress for all corporate facilities

Source: Four Twenty Seven[21]

[18] https://www.fsb-tcfd.org/publications/

[19] https://www.bankofengland.co.uk/prudential-regulation/letter/2019/insurance-stress-test-2019

[20] https://2degrees-investing.org/

[21] http://427mt.com/

[22] https://www.carbon-delta.com/
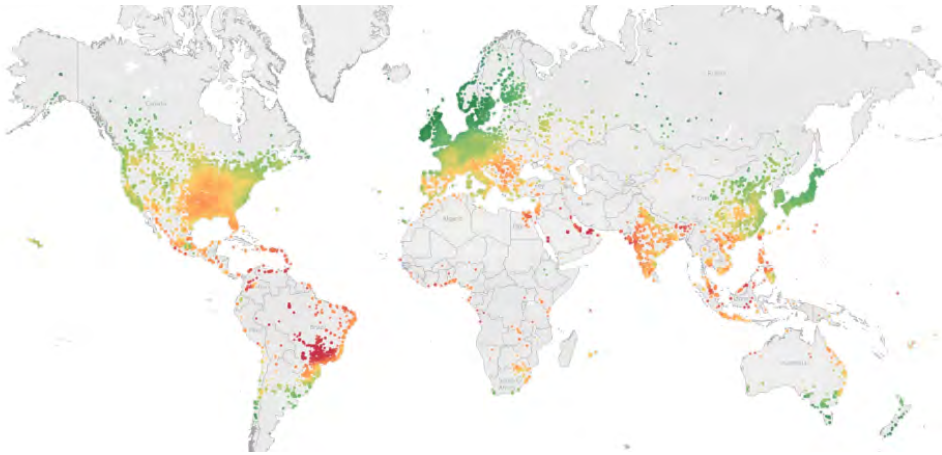
[23] https://www.transitionmonitor.com/

Heat stress in manufacturing facilities

Source: Four Twenty Seven

3. Implementing the UN SDGs: An emerging blockchain platform

According to a report by the Business & Sustainable Development Commission[24], meeting the SDGs would create USD 12 trillion per annum in new market opportunities extending prosperity to all. However, the market infrastructure needed to support this ambition does not yet exist, particularly the robust Monitoring, Reporting and Verification (MRV) of organisations and initiatives. Nonetheless progress is being made. Cities, governments, and technology companies are developing the necessary infrastructure, leveraging blockchain, the IoT and big data. This includes initiatives on topics as diverse as collecting SDG-related data, the end-to-end management of green bonds, the traceability of data in the supply chain, and the development of carbon-offsetting capabilities.

The fintech World Wide Generation (WWG)[25] has become the technology partner for the UK Government and City of London backed Sustainable Development Capital Initiative (SDCI)[26]. They are developing G17Eco, a combined monitoring and marketplace platform that could solve transparency and trusted data challenges using blockchain technology. G17Eco will allow corporates, governments, financial institutions and non-profit organisations to collect, process and disseminate data before digitally mapping these to globally recognised sustainability standards, frameworks, polices and the SDGs. This will support decision-making for investing, divesting, risk management and the development of sustainability products and solutions at scale. G17Eco will show real-time financial returns and the impacts of investments and initiatives.

"I am keen to see the lion's share of Sustainable Development Capital flow through London, where we have the expertise and solutions for monitoring, measurement, capacity building and investment solutions for scale. The corporation are particularly excited about the G17Eco platform leveraging distributed ledger technology for the public good."

Peter Estlin, The Rt Hon Lord Mayor of the City of London Corporation

"BNP Paribas were one of the first financial institutions to be part of the SDCI Network, being a key member contributing their insights and feedback during 2019. They have demonstrated industry leadership by investing into the creation of '5 Assets for the Public Good' and becoming a Founding Member of the G17Eco Platform."

Manjula Lee, CEO/Founder World Wide Generation

[24] http://report.businesscommission.org/

[25] http://www.worldwidegeneration.co/

[26] https://news.cityoflondon.gov.uk/london-set-to-help-meet-un-sustainable-development-goals/

4. Real-time ESG market sentiment analysis using artificial intelligence

Impressive solutions leveraging AI machine learning and NLP have come to the market in recent years. For example, Truvalue Labs[27] applies AI to massive volumes of unstructured data, in order to uncover opportunities and risks that have a material impact on a company's value. This technology goes far beyond what is humanly possible, sifting through millions of data points. It can be used to compare company ESG behaviour in real time relative to a peer, sector, industry or benchmark. This empowers investors to detect trends before they occur.

Several universities have started to study Truvalue Labs' data, demonstrating the link between real time public sentiment and financial performance. A study by Harvard Business School[28] found that AI-generated Truvalue Labs data, when combined with MSCI ESG ratings, led to 4-5% alpha annually. Another study by the University of Pennsylvania's Wharton School[29] found that Truvalue Labs' ESG scores capture timely and material events such as regulatory inquiries, investigations and lawsuits, which are correlated with credit risk and the likelihood of default.

"We recently introduced a new version of our artificial intelligence engine, Truvalue AI, which enables rapid implementation of any investment framework whether an ESG standard such as SASB30, or proprietary client-defined categories. It was built using a highly scalable multi-pipeline architecture that allows us to rapidly add new frameworks, languages and asset classes and process more than a decade of history from more than 100,000 sources to help our clients capitalize on insights found in unstructured data."
Hendrik Bartel, CEO, and co-founder of Truvalue Labs.

---

[27] https://www.truvaluelabs.com/

[28] Serafeim, George, Public Sentiment and the Price of Corporate Sustainability (October 12, 2018). Harvard Business School Accounting & Management Unit Working Paper No. 19-044.
Available at SSRN: https://ssrn.com/abstract=3265502

[29] Henisz, Witold and McGlinch, James, "ESG, Material Credit Events, and Credit Risk," Journal of Applied Corporate Finance, Volume 31, Number 2, Spring 2019.
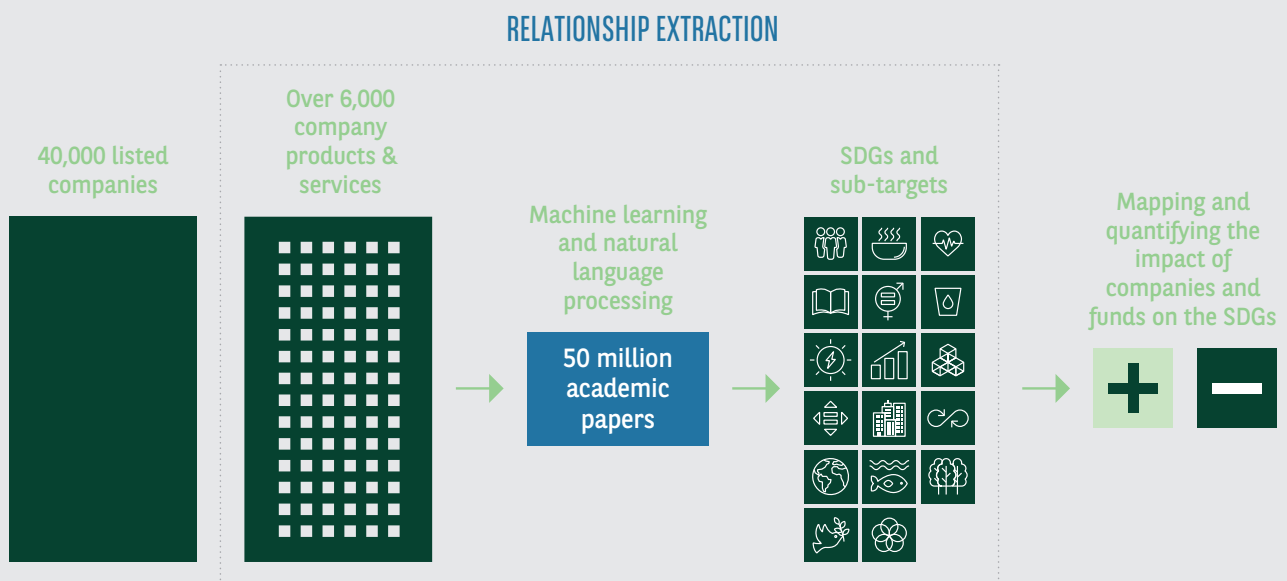
[30] https://www.sasb.org/

5. Another way of using AI: Quantifying alignment to the UN SDGs

Linking a company's activity to the SDGs is something of a holy grail for investors, international organisations and providers. Although no single robust solution exists today, UTIL , a London-based fintech, has developed a unique approach. Using machine learning, UTIL can identify and quantify the negative and positive impact of a company's products and services on all 17 SDGs. It does this by mining over 50 million academic research papers and a host of other information, applying NLP to better understand the nature, strength and direction of relationships between products, services and SDGs.

"Our industry has a once-in-a-generation opportunity to channel trillions of dollars towards the UN Sustainable Development Goals. With this vision in mind, we have used machine learning to develop comprehensive, quantifiable and comparable analytics that measure every company's positive and negative impact. Using our analytics, asset managers and owners are finally able to maximise their financial, social and environmental investment returns."
Stephen Barnett, CEO, and co-founder of UTIL

Relationship extraction

RELATIONSHIP EXTRACTION

40,000 listed companies

Over 6,000 company products & services

Machine learning and natural language processing

50 million academic papers

SDGs and sub-targets

Mapping and quantifying the impact of companies and funds on the SDGs

Source: UTIL

6. Channelling retail investors' funds towards sustainable investments with robo-advisors

A survey by Natixis[31] shows that the majority of individual investors believe it important to make a positive social impact including through their own investment portfolios. However, up until now, individual preferences relating to non-financial objectives have barely been profiled or integrated within pension markets.

A multitude of robo-advisor tech companies are accelerating product development to address this challenge. By interfacing directly with retail investors and bypassing traditional asset managers, these technologies could greatly disrupt the traditional investment value chain. This could provide members of defined contribution pension schemes with a personalised interface that is low cost, aligned to their values, automated and able to integrate all of their pension accounts under one umbrella.

To accelerate this dynamic, the global think tank 2 Degrees Investing Initiative launched the KliFin-Scanner project[32], aiming to build quantitative client profiling software for non-financial objectives and a platform that can be used by banks and consumers to translate non-financial objectives into investment beliefs and strategies. This builds on their 2017 report, Non-Financial Message in a Bottle[33], in which they demonstrate how mobilising retail investors to take investment decisions in line with international climate goals could be an important factor in closing the funding gap to meet emissions reduction targets.

CONCLUSION

Custodians are in a position to become the main keepers of ESG data on behalf of institutional investors. By accessing ESG standard providers, as well as the multitude of new fintech providers, custodians could incorporate this vast amount of data into the services already provided to investors such as risk management, investment compliance, regulatory reporting, data analytics and portfolio optimisation capabilities.

We believe that the current developments in both infrastructure and new technologies could deeply transform the financial services industry. We aim to access all these new data sets taking a multi ESG provider approach, and to derive meaningful insights at the portfolio level for our institutional investor clients by leveraging our own in-house expertise.

[31] Natixis. (2017). Mind Shift: Getting Past the Screens of Responsible Investing. Retrieved from https://www.im.natixis.com/us/resources/mind-shift-getting-past-the-screens-of-responsible-investing

[32] https://2degrees-investing.org/klifin-scanner-climate-finance-product-scanner-for-retail-investors-and-banks/

[33] http://degreesilz.cluster023.hosting.ovh.net/wp-content/uploads/2018/01/retail_savings_final.pdf

FOLLOW US

FIND US

securities.bnpparibas.com

BNP PARIBAS

The bank
for a changing
world