

# Sustainability in the age of Digital Disruption

by Paddy Molony

## How being sustainable might become easier by leveraging off the available digital technologies.

Sustainability can mean many things for different industries, at its core is the acknowledgement of businesses to assess their operational performance on the environment, climate, and social issues as well as the effects these issues have on their own business operations.

Specifically looking at the financial industry, sustainable finance refers to the process of taking environmental, social and governance (ESG) considerations into account when making investment decisions, leading to more long-term investments in sustainable economic activities and projects<sup>1</sup>. Like most things in the 21st century, digital technology, artificial intelligence, and machine learning are enhancing this process, enabling a greater uptake of sustainable finance practices within the financial services industry.

## The Data Barrier Curtailing Sustainable Finance

One of the barriers in the sustainable finance space is the availability, accessibility, and verifiability of ESG data. The challenge of combining digital technology and ESG data relates to the characteristics of the underlying data, which when compared with traditional financial accounting data is none standard and incomplete. Most ESG risks tend to be under-disclosed, non-standardised, and inconsistent which significantly limits the ability for automated ESG analysis.

However, all is not lost and for Ireland, smaller nations tend to be more open to the adoption of digital technology.

This is highlighted in the Digital Economy and Society Index (DESI)<sup>2</sup> where in 2020 Ireland was ranked 6th in the European Union, ahead of states including the UK, Luxembourg, and France.

Although the use of digital technology to address all ESG data problems is not a silver bullet, applying digital technology to ESG data harvesting and deployment to a similar degree as to other parts of finance is the only viable way to scale sustainable finance. Through the recent publication of the European Commission's Strategy for Financing the Transition to a Sustainable Economy<sup>3</sup>, Europe will need an estimated €350 billion in additional investment per year over this decade to meet its 2030 emissions-reduction target in energy systems alone, alongside the €130 billion it will need for other environmental goals. To bridge this gap, there can be no doubt that drawing on the capabilities of digital technology will be pivotal in achieving this.

Some examples facilitating the uptake of sustainable finance being assisted by digitised applications exist in the areas of green bond issuances, carbon offsets, and the huge array of work data providers and academic institutions are doing and making available to markets and the general public.

For businesses to become more sustainable, they must first gauge where they are currently at. Attempting to build anything without a foundation is a recipe for disaster and sustainability is no different here. The environment, and more specifically climate, leads the way when it comes to ESG. The reason for this is that the common metric to measure and manage operational effects on climate change is carbon

emissions, there is not yet a similar globally recognised metric for nature, the ocean, or social injustices.

## Digital Solutions Scaling Up Sustainable Finance

Disclosing non-financial and climate-related information is becoming more prevalent across all sectors of the economy. This is in part being stimulated by investor demand and internal company objectives, but it is primarily the output of legal and regulatory frameworks requiring firms to disclose such information.

The Task Force on Climate-related Financial Disclosures (TCFD) has become the leading reporting framework for listed equities to disclose their climate-related financial information. Through the disclosure provided by companies reporting on the framework, ESG data providers are capable of using digital technology to scrape this data, using this to aggregate company ESG scores.

Several of the largest ESG data providers leverage artificial intelligence supervised analysis (algorithms) of company disclosure reports and applied machine learning techniques to score companies on alignment with the four TCFD recommendations and their underlying 11 indicators. Providers mainly use textual analysis to assess the ESG risks of companies using the Natural Language Processing (NLP) capabilities of Artificial Intelligence (AI) based on a data taxonomy. This is where algorithms are trained to pick specific words and categorise these to automatically analyse texts, in this case textual analysis based on TCFD keywords.

1 [https://ec.europa.eu/info/business-economy-euro/banking-and-finance/sustainable-finance/overview-sustainable-finance\\_en](https://ec.europa.eu/info/business-economy-euro/banking-and-finance/sustainable-finance/overview-sustainable-finance_en)

2 <https://digital-strategy.ec.europa.eu/en/policies/desi>

3 [https://ec.europa.eu/finance/docs/law/210704-communication-sustainable-finance-strategy\\_en.pdf](https://ec.europa.eu/finance/docs/law/210704-communication-sustainable-finance-strategy_en.pdf)



The textual analysis assesses disclosure from annual and sustainability reports, web-based scraping from social media platforms to gain a higher frequency of company data, and other expert reports on companies and their ESG-related risks.

The data providers then aggregate this information to deduce their ESG company scores.

### Carbon Markets

Ireland has pledged to become a net-zero carbon economy by 2050. This means that any emissions Ireland secretes into the atmosphere will have to be 'offset' by practices which absorb or sequester carbon from the atmosphere, like planting trees or developing viable carbon capture and storage facilities.

Different sectors of the economy will transition at different rates, and the key will be how to get there. A development facilitating this is carbon offsets. These are 'credits' that can be bought to offset the amount of carbon emitted, thus decreasing one's net carbon emissions. One carbon credit bought offsets 1 tonne of carbon emitted. Carbon offsets

will play a key role for heavy emitting sectors such as oil and gas, agriculture, and aviation. The need for a carbon offsetting market has never been so ripe.

The Taskforce on Scaling Voluntary Carbon Markets (TSVCM) is a private sector-led initiative working to scale an effective and efficient voluntary carbon market to help meet the goals of the Paris Agreement. The purpose of the TSVCM is to significantly scale up voluntary carbon markets and ensure they are transparent, verifiable, and robust. Specifically looking at the TSVCM's commitment to verification, they outline the role digital technology has to play in this process.

The TSVCM recommends the development of a shared digital data protocol across standards. This data protocol should be tailored to specific project types by defining necessary project data fields and procedures to protect the integrity of the verification process. Furthermore, technology is rapidly evolving. The Taskforce recommends that the shared digital data protocol explore the use of satellite imaging, digital sensors, and distributed-ledger technologies (DLT), to further

improve speed, accuracy, and integrity. Implementation of the digital data protocol could be a first step toward broader end-to-end life-cycle and value-chain tracking of all carbon credit data<sup>4</sup>.

An interesting tool developed in the U.S. by CIBO Technologies<sup>5</sup> connects individuals and organisations to verifiable, US agriculture-based carbon credits. This helps farmers generate and sell carbon credits from their regenerative agricultural practices by verifying these changes through proven, science-based technology, including satellite imagery. Organisations are then able to join the platform and purchase these verifiable carbon credits. The verification is done through the online platform via the use of geospatial technologies and rarely requires individual human-lead verified assessments. This process enhances the efficiency of verifying the new or altered agricultural practices, from both a time and cost perspective making it convenient for both buyer and seller.

### Leveraging Satellite Data to Focus on Nature

As previously mentioned, the benefit of addressing and mitigating climate change disasters is the availability of carbon emissions data, and a similar metric to assess operational effects on nature or biodiversity are not yet as prevalent or as well understood as carbon emissions.

It is the goal of the recently formed Task Force on Nature-related Financial Disclosures (TNFD) to provide a framework for organisations to report and act on evolving nature-related risks, in order to support a shift in global financial flows away from nature-negative outcomes and toward nature-positive outcomes. This should facilitate enhanced data on nature-related risks for the financial services industry, a key concern for asset managers and owners<sup>6</sup>.

The Central Bank in the Netherlands (DNB) was the first in the central banking community to undertake an assessment of the dependency of the

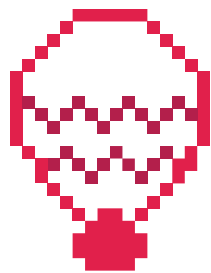
4 [https://www.iif.com/Portals/1/Files/TSVCM\\_Report.pdf](https://www.iif.com/Portals/1/Files/TSVCM_Report.pdf)

5 <https://www.cibotechnologies.com/>

6 <https://www.responsible-investor.com/reports/responsible-investor-and-credit-suisse-or-unearting-investor-action-on-biodiversity>



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Dutch financial system on biodiversity. Incumbent banks in the Netherlands have focused on digital solutions to decarbonise real-estate and to green farming and food production. The Netherlands has developed a soil index, which leverages soil analysis and satellite data to index soils. That data is being leveraged by the banking sector for innovative products including Rabobank biodiversity linked loan to dairy farmers<sup>7</sup>. The soil index is leveraged to track soil improvements linked to the behavioural shifts of the lenders in terms of the carbon soil content. It is with an aim to enable farmers to sell soil carbon credits on the voluntary carbon market with Rabobank as the carbon banking intermediary.

### Green Bonds and DLT

Green, ESG, and sustainability-linked bonds have experienced rapid growth in recent years and have become an effective investment instrument for fund and asset managers, as well as owners to gain exposure to sustainable investments. The use of proceeds for these bonds can be costly which increases their price of issuance and DLT can be a tool to limit this.

Essentially blockchain, this allows for a decrease in the number of participants for issuance and governance but increases the accessibility to investors for these bonds. DLT offers bond markets the opportunity to have no difference in costs dependant on the investment<sup>8</sup> i.e., the cost between a €10 and a €1 million investment is the same, thus allowing green bonds to be opened up to a wider investor population across the world.

In 2018, the World Bank in collaboration with the Commonwealth Bank of Australia (CBA) issued its 'Bond-i' – the first bond created, allocated, transferred and managed through its life-cycle using distributed ledger (blockchain) technology<sup>9</sup>. The bond was subsequently offered on secondary markets and was also opened to new investors.



Highlighted results from this approach included a reduction in the number of intermediaries and a more immediate communication between investors and issuer<sup>10</sup>.

The first Green DLT bond was issued in 2019 by the BBVA, whilst Spanish insurance firm MAPFRE acted as the investor. Listing at €35 million, the BBVA also employed DLT to simplify the process and streamline negotiation time frames with investors. Through the use of DLT, the process was carried out in a totally digital manner. The arrangement, negotiation and issue were all undertaken from the BBVA platform itself. The same platform that guarantees the immutability of the agreements and that the agreed terms are complied with, while opening the possibility for investors to choose among a myriad of options to configure their product<sup>11</sup>. This bond qualified as 'green' via the international certification agency DNV GL<sup>12</sup>.

### Concluding Remarks

Even if sustainability becomes easier with the advancements of new and maturing digital technologies, this does not warrant the delay in people, businesses, and governments to become more sustainable.

Delaying today's transition will only escalate tomorrow's burden, with or without the technology.

The above examples show what is possible through digitising financial activities to scale sustainable finance, over time with evolution of ideas and technologies this will form a large part in the transition to our net-zero emissions future.

The use of these technologies has shown to be efficient, transparent, and most importantly, they allow for a wider investor base, attracting more capital to financial instruments and bridging the sustainable financing gap, long may it continue.



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7 [https://www.accountingforsustainability.org/content/dam/a4s/corporate/12567\\_FFTF%20Rabobank%20case%20study%20v1.pdf.downloadasset.pdf](https://www.accountingforsustainability.org/content/dam/a4s/corporate/12567_FFTF%20Rabobank%20case%20study%20v1.pdf.downloadasset.pdf)

8 <https://greendigitalfinancealliance.org/wp-content/uploads/2019/12/blockchain-gateway-for-sustainability.pdf>

9 <https://www.worldbank.org/en/news/press-release/2019/08/16/world-bank-issues-second-tranche-of-blockchain-bond-via-bond-i>

10 [blockchain-gateway-for-sustainability.pdf \(greendigitalfinancealliance.org\)](https://www.worldbank.org/en/news/press-release/2019/08/16/world-bank-issues-second-tranche-of-blockchain-bond-via-bond-i)

11 <https://www.bbva.com/en/blockchain-set-to-shape-future-of-green-bonds/>

12 <https://www.bbva.com/wp-content/uploads/2019/02/BBVA-Green-Bond-DNV-GL-Eligibility-Assessment-Opinion.pdf>