CARBON IMPACT QUARTERLY


« CARBON EMISSIONS ARE A KEY COMPONENT OF ESG DATASETS, INFLUENCING INVESTMENT DECISIONS »

CONTENTS

INTRODUCTION

Financial markets are increasingly aware that ESG data provides decision-relevant information. Carbon emissions are one of the most developed datasets to be used in investment analysis. They are crucial inputs for ESG data models, carbon footprinting and climate risk assessments. In this report we discuss the properties and quality of carbon emissions data – both reported and estimated.[1]

The challenges relating to ESG data are well rehearsed: disclosure levels, reporting standards, time consistency, time series, auditing, materiality and aggregation – to name a few. Indeed, from this perspective, carbon datasets can be considered more mature than others, as some of these challenges are already being addressed by established organisations like the WRI, CDP, SBTi and many others.

Nevertheless, given the importance of carbon data in our investment process we decided not to use carbon estimates provided by third-party data vendors – not least on account of the significant discrepancies which exist between data from different providers. In this report we address some of the challenges relating to inconsistent and missing disclosure and present our solution: the creation of a broad-based time series of carbon emissions covering all our equity holdings and most of our bond holdings.

As we continue to further integrate ESG information into our investment processes, we are going back to basics by looking at carbon emissions data as a key component of ESG datasets. Carbon footprinting is an established yet limited use case for carbon data. Therefore, we employ complementary analytical tools based on our carbon data and estimation model that allow us to look ahead and to assess climate-related risks and opportunities more comprehensively. Through this integration we can design investment solutions like our Carbon Impact strategies that help provide the capital to bring about the transition to a zero-carbon economy.

Roland Rott, CFA

(1) Unless stated otherwise the following terms are used synonymously: carbon emissions, GHG emissions and CO2e emissions. All terms include the following greenhouse gases: Carbon dioxide (CO2), Methane (CH4), Nitrous oxide (N2O) and Fluorinated gases (HFCs, PFCs, SF6, NF3).

1 – REPORTED CARBON EMISSIONS

At La Française, we rely on annual corporate carbon emissions (Scope 1, 2 and 3) reported to CDP as the most efficient way to gather and model this type of data. CDP, formerly known as the Carbon Disclosure Project, is an international non-profit organisation that coordinates a disclosure system for investors, companies, cities, states, and regions to manage their respective environmental impacts focusing on climate, water and forests.

CDP works with companies and collects corporate disclosures throughout the year, in line with the corporate reporting cycle and publishes an annual update of its dataset, usually in November. The CDP questionnaire covers a wide range of topics including GHG emissions, energy and water consumptions and sustainability targets.

CDP disclosures form one of the most comprehensive sources of company-level environmental data available today – and it is growing each year. The number of companies disclosing to CDP has been rising steadily during the past 10 years, from circa 1,800 companies reporting in 2010 to more than 2,500 companies in 2019. A great deal of efforts must be deployed to clean the standard disclosure: the raw data contains a certain amount of misreported numbers, with companies disclosing in incorrect units (kilograms instead of tons) or numbers that are not consistent with historical levels because the scope of reporting has changed significantly.

From a sector perspective, CDP data can be considered a good proxy for the global equity market. 40% of responses to the 2018 questionnaire – published by CDP at the end of 2019 – were from companies in industrial sectors like Process Industries, Manufacturing, Utilities and Transportation, and further 18% were from the financial sector, which gives us a good representation of a broad global equity index, such as the MSCI ACWI. Moreover, the sectorial distribution in the CDP disclosures has not significantly changed over the years.

The GHG Protocol[2] differentiates between direct and indirect greenhouse gas emissions. Direct GHG emissions are those from sources that are owned or controlled by the reporting company in question. Indirect GHG emissions are those that are a consequence of the activities of the reporting company but occur at sources owned or controlled by another company or party. The three different scopes of GHG emissions further defined by the GHG Protocol are as follows (see Figure 1 for illustration):

- **Scope 1:** The direct emissions from the activity of an organisation.
- **Scope 2:** The indirect emissions from the purchase of electricity, steam, heating & cooling by an organisation for its own use.
- **Scope 3:** The indirect emissions across the value chain of an organisation but owned by a different entity.

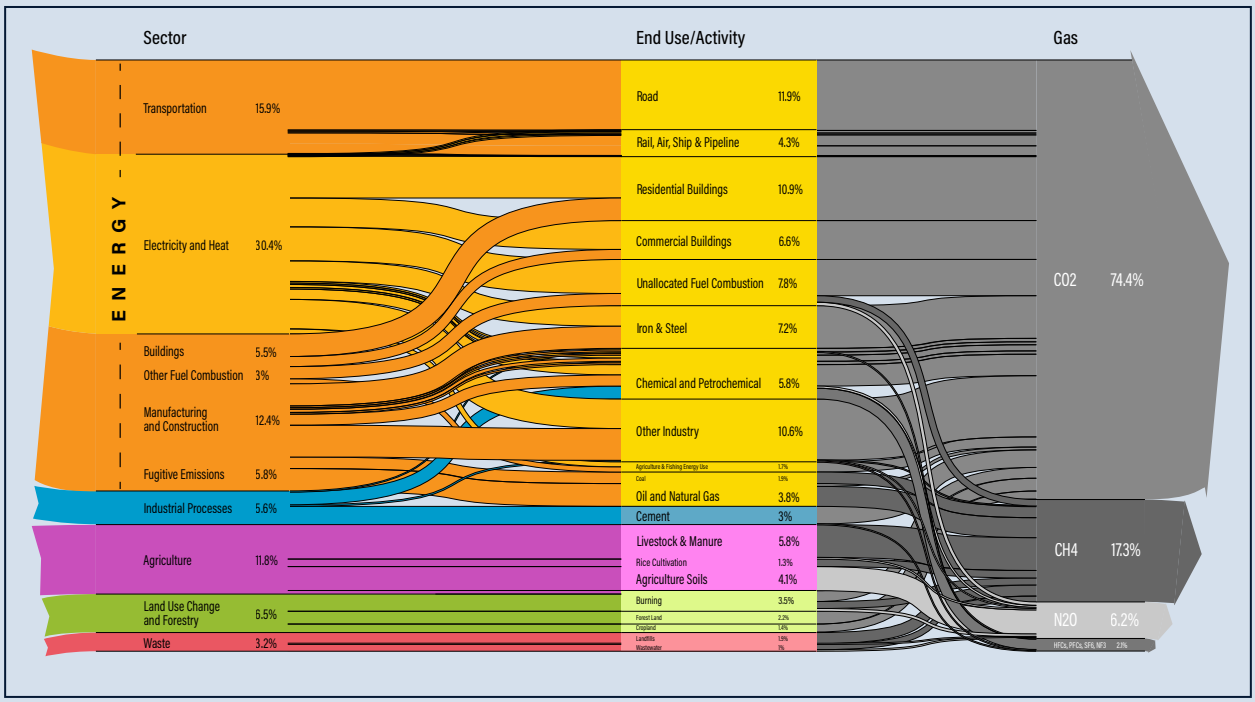
(2) Greenhouse Gas Protocol: A Corporate Accounting and Reporting Standard. Revised Edition (2004). www.ghgprotocol.org/corporate-standard

THE BIG PICTURE – ANNUAL GLOBAL GHG EMISSION

Climate science shows that total human-caused GHG emissions have to be significantly reduced during this century to limit global warming. The direct link between the annual global GHG emissions and companies' emissions is provided by Scope 1 data that we discuss in this report.

According to the WRI and UNEP, total annual human-caused GHG emission have not yet peaked.* UNEP figures show them at 52.8 Gt in 2016, 53.5 Gt in 2017 and rising to 55.3 Gt CO2e in 2018.

Figure A1: Global Greenhouse Gas Emissions



Source: WRI 2016 (Total: 49.4 Gt CO2e)

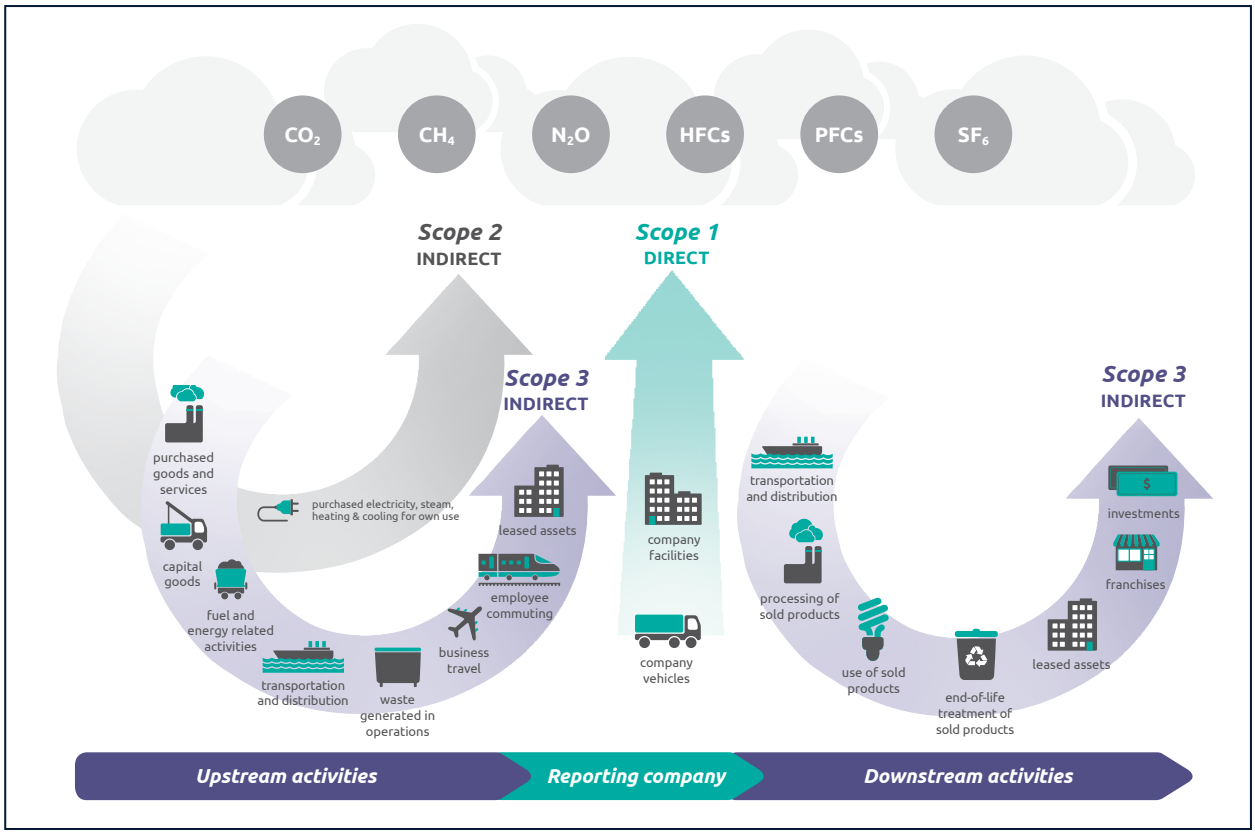
A closer look at Figure A1 shows that nearly 80% of global GHG emissions are caused by energy-related carbon emissions (72.9%) and industrial processes (5.6%, mainly cement production) with the remaining 20% related to agriculture (11.8%), land use change & forestry (6.5%) and waste (3.2%).

Four sectors alone contribute 64% of total GHG emissions or 88% of total energy-related GHG emissions: electricity and heat production (30.4%), transport (15.9%), manufacturing and construction (12.4%) and buildings (5.5%).

According to the IEA some 90% of the total CO2 emissions are energy-related comprising approximately 34 Gt CO2 in 2016. The sources are the use of fossil fuels (55%) and coal (15%) plus coal-fired power generation (30%).

* Global estimates vary somewhat. These following numbers are taken from the UNEP Emissions Gap Report 2019. The UNEP Report also states that we are on track to reach 56 Gt CO2e by 2030. The latest WRI data is available at www.wri.org/resources/data-visualizations/world-greenhouse-gas-emissions-2016

FIGURE 1: Overview of GHG Protocol scopes and emissions across the value chain



Source: Greenhouse Gas Protocol: Corporate Value Chain (Scope 3) Accounting and Reporting Standard (2011)

Depending on the economic activity of an organisation, Scope 1, 2 and 3 can have very different contributions to their overall footprint.

- For instance, an airline's footprint primarily comprises of Scope 1 emissions – the direct emissions from the fuel burned by its aircraft. The challenge for an airline seeking to reduce its GHG footprint would therefore revolve around developing a greener fleet of aircraft, with lower fuel consumption, running on biofuel or alternative propulsion systems that do not rely on the combustion of fossil fuels.
- On the other hand, for sectors that rely on purchased electricity, such as communications, the relative share of Scope 2 emissions is higher. In these cases, the footprint mainly derives from emissions created in the generation of electricity, then used in the company's operations, and could be reduced, for example, by switching to renewable energy providers or enhancing on-site energy efficiency.
- Finally, we can consider the business model of a bank as an example of a footprint mostly driven by Scope 3 emissions. Banks have relatively low Scope 1 and 2 emissions, but a potentially high indirect footprint across the value chain, through their financing activities and the businesses and sectors to which they lend. For a bank to reduce its overall footprint, this would be the scope with the highest leverage, through phasing out or limiting financing for companies with a high carbon footprint.

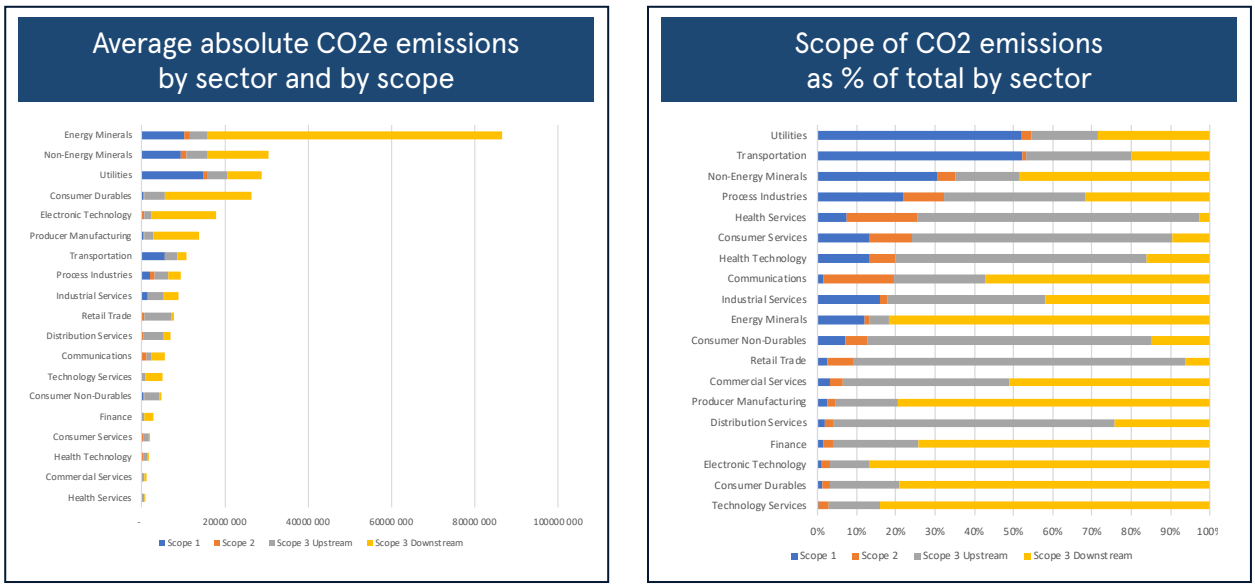
Scope 3 emissions are further broken down into 15 different categories, corresponding to emissions from different activities at various stages along the value chain.[3] This includes upstream activities, such as emissions related to purchased goods and services and upstream transportation and distribution, as well as downstream activity, primarily, the use of

(3) Greenhouse Gas Protocol: Scope 3 Standard (2011). www.ghgprotocol.org/standards/scope-3-standard

sold products. Not all of the 15 categories will always be applicable to all sectors, and under the Corporate Standard, as defined by the GHG Protocol, a company can choose which Scope 3 emissions to report – if any at all, thus making any comparison of Scope 3 emissions between two companies a difficult exercise.

Figure 2 presents the contribution of Scopes 1, 2 and 3 to total GHG emissions for a broad sample of companies. To provide a more meaningful interpretation we have split the Scope 3 data into upstream and downstream activities:

FIGURE 2: Absolute and relative proportion of Scope 1, 2 and 3 (up-/downstream) in total GHG emissions



Notes: The graphs show 2018 data. We combine our Scope 1 and Scope 2 data with the Scope 3 data from CDP. The size of the sample is determined by the Scope 3 data available in CDP's cleaned and accepted dataset and comprises about 4,600 companies.

The key challenge for us stems from the fact that the GHG Protocol's standards were defined for use by individual organisations and to ensure that for any given reporting company there is no overlap between the three scopes.[4] They are not, however, designed for portfolio aggregation, due to the inherent problem of so-called 'double counting' which arises when combining companies' emissions from different sectors into a single portfolio value. Indeed, the GHG Protocol explicitly states that "scope 3 emissions should not be aggregated across companies to determine total emissions".[5]

In other words, they are ill-suited for carbon footprinting by investment management firms. Instead, the purpose of Scope 3 emissions is the identification of carbon risks and opportunities for an individual company across its full value chain. This is an unquestionably important objective which forms the basis of our bottom-up investment research and carbon impact analysis, using the information presented in Figure 2 to help identify and focus on the most relevant scope(s) for each sector or company under consideration, in the context of controlling and influencing carbon reductions.

(4) GHG Protocol: Scope 3 Standard, page 27: "Scope 1, scope 2, and scope 3 are mutually exclusive for the reporting company, such that there is no double counting of emissions between the scopes. In other words, a company's scope 3 inventory does not include any emissions already accounted for as scope 1 or scope 2 by the same company. Combined, a company's scope 1, scope 2, and scope 3 emissions represent the total GHG emissions related to company activities."

(5) GHG Protocol: Scope 3 Standard, page 28.

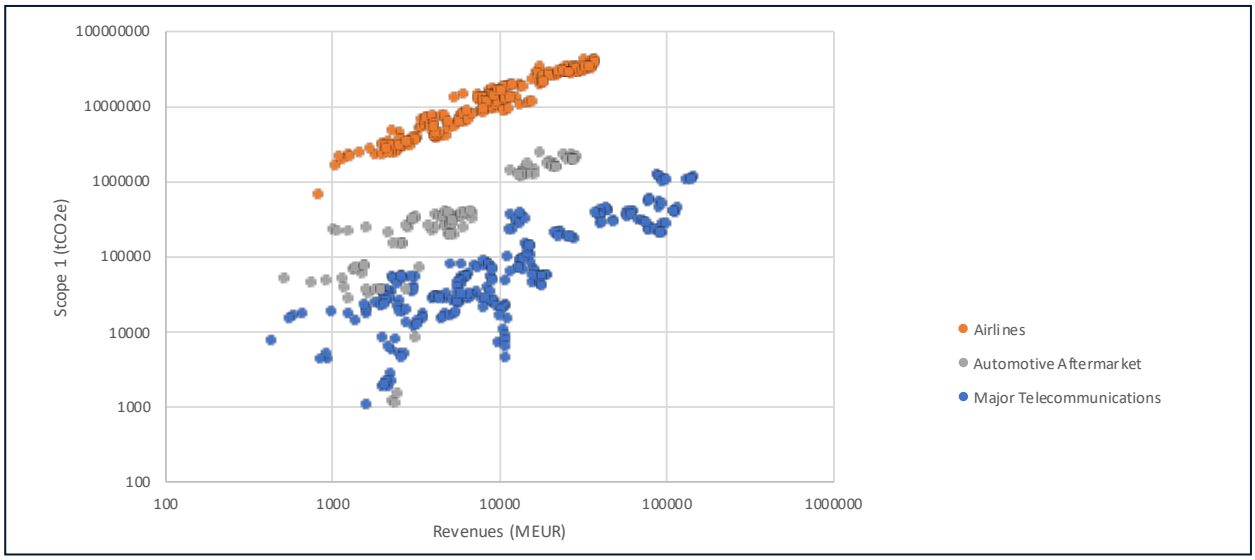
2 – A DATA DRIVEN APPROACH TO INCREASE THE COVERAGE

Though steadily growing, the absolute number of CDP disclosures remains low – most companies still do not disclose any information on their GHG emissions and exposures to climate risks. The direct emissions (Scope 1) as reported in 2018 by circa 2,200 companies sum up to 6.4 Gt CO2e or 11.5% of the total of 55 Gt CO2e emitted globally. [6] Of course, this percentage does not account for the influence reporting companies have on emissions, and specifically emissions reduction in their supply chain and through their products and services (Scope 2 & 3). For illustrative purposes, we can therefore add Scope 2 and 3 emissions to this calculation where data is available (about 1,600 companies)[7]. This gives us an upper estimate for the sample representing 30.5 Gt CO2e or 56% of the total annual GHG emissions – certainly a significant overestimate considering the issue of double counting along the value chain, as explained above. Given the wide dispersion in such data aggregates we urge all companies to report to CDP both through our voting and engagements, in order to build up a more comprehensive overview of global emissions levels. Furthermore, we support the adoption of the more far-reaching TCFD recommendations to become a globally accepted reporting standard for assessing climate risks and opportunities.

In the EuroStoxx600 equity index, the number of companies disclosing in 2019 their annual emissions for the fiscal year 2018 was around 70%. In broader indices and for emerging markets, this percentage is much lower. For investment managers trying to understand and manage climate-related risks and opportunities in their portfolios, this lack of coverage can be a real problem. At La Française, we have therefore developed a model to estimate Scope 1 and 2 emissions and overcome this key challenge.

Scope 1 emissions are a direct result of the activity of an organisation over a given period. For any listed organisation, this activity will be well known to investment managers, since companies report it at least annually and often quarterly. The most prominent measure of activity for a company is revenues. In Figure 3, we compare the Scope 1 emissions and the revenues of companies for the same fiscal year in different sectors (Airlines, Telecommunications and Automotive Aftermarket):

Figure 3: Scope 1 vs Revenues profiles for a sample of sectors



(6) On our covered universe of more than 7,000 publicly listed and private companies, the Scope 1 emissions (reported and estimated) add up to 10.6 Gt CO2e, which is 19% of the 2018 total.

(7) Note that most finance companies have not started to report on their Scope 3 emissions, i.e. the carbon footprint of the loan portfolio, underwriting book or investment portfolio is not available.

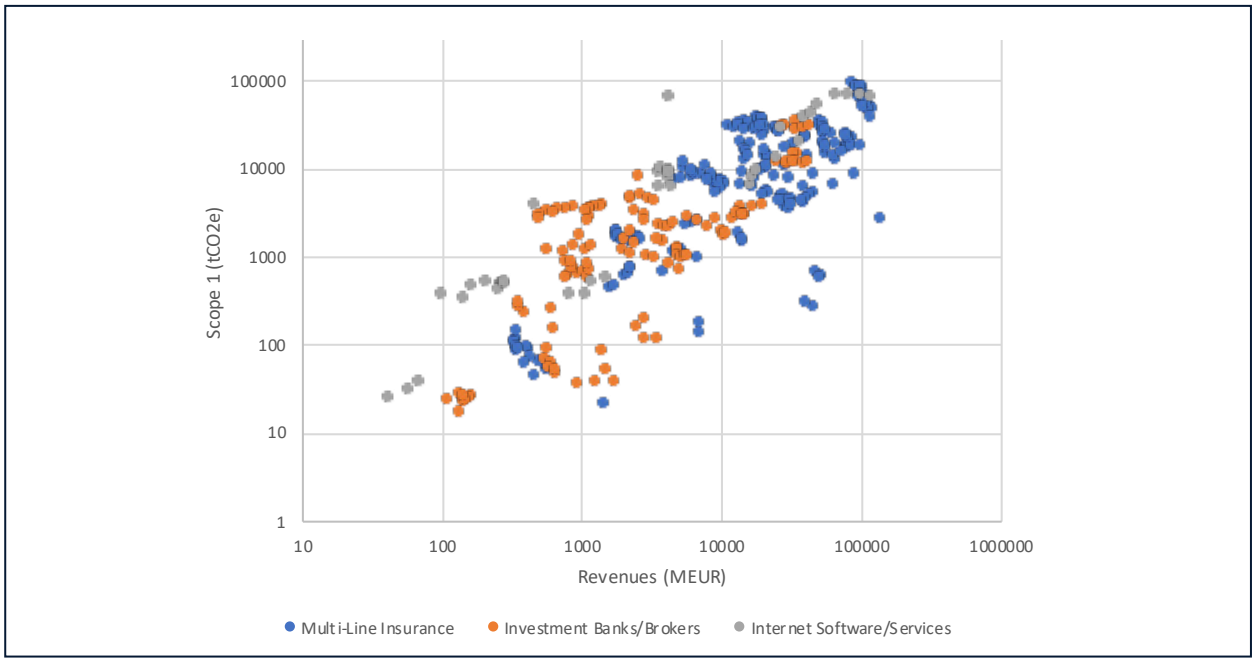
We highlight three key takeaways from this graph:

- The three sectors presented have very different business models, and the profile of their Scope 1 emissions versus revenues is strikingly different
- For all three sectors, there is a strong positive correlation between the revenues and the Scope 1 emissions, which indicates that emissions are growing with revenues. This is of course not at all surprising, but is nonetheless interesting from a modelling perspective
- Even if the rate at which emissions seem to grow with revenues is comparable for the three groups, there is almost no overlap between the sectors. Once again, this is not surprising – some business models are more carbon intensive than others and it does not seem unreasonable that for equal levels of revenues, an airline business would emit more GHG from flight operations than a telecommunications company from operating its network – but the extent to which this is true is noteworthy

Of course, the three sectors chosen above were not selected at random but carefully picked to illustrate a crucial point: when it comes to the problem of estimating GHG emissions, the economic sector is a key variable.

That being said, we can use reported GHG emissions to find groups of industries that have comparable Scope 1 vs revenues profiles. In Figure 4, we present these profiles for a further three different sectors: Internet Software / Services, Investment Banking / Brokerage and Multi-line Insurance.

Figure 4: Scope 1 vs Revenues profiles for a sample of sectors



Like the groups presented earlier, these three sectors have very different business models:

- For each sector, we still observe a strong positive correlation between revenues and reported Scope 1 emissions, which further corroborates the idea of using revenues as a measure of activity to infer emissions
- However, unlike the sectors in Figure 3, in this case there is a high overlap between the three sectors, and they all follow the same pattern. Any company represented on this chart could reasonably be part of any of the given sectors and not look like an outlier in the group. Once again, this is perhaps not surprising but a very significant finding from a modelling perspective

These three sectors may have different business models, but the business "physicality" stays the same. In the digital 21st century, an investment bank or brokerage firm comprises mostly of office buildings and people operating computers linked to the internet. In this regard, an insurance company or a software business operates in the same fashion. Though carrying out different

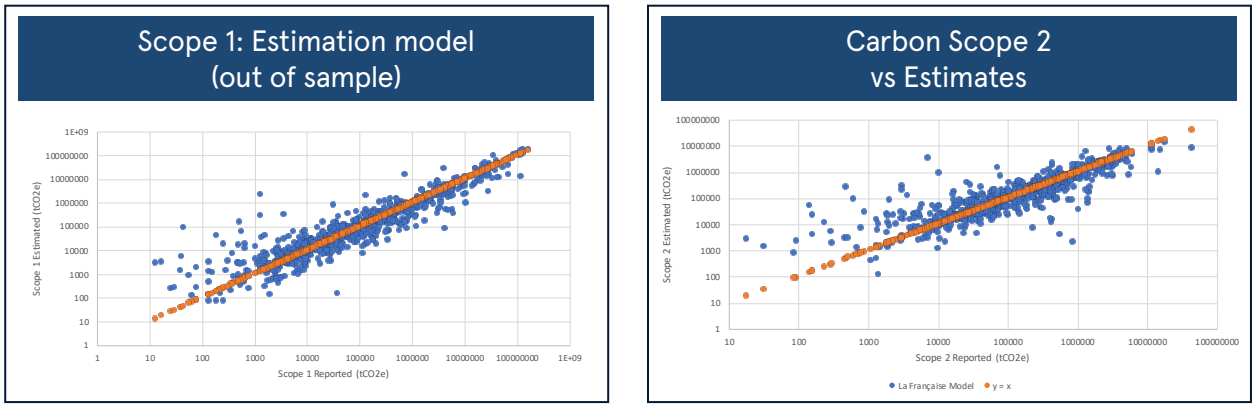
work, from the perspective of Scope 1, the assets and activities generating GHG emissions are comparable, which means these sectors have similar Scope 1 vs revenues profiles.

Beyond revenues, we have identified several other relevant metrics derived from company filings that can also serve as good predictors of Scope 1 and 2 emissions.[8]

Using such sector-specific correlations between business physicality and reported filings, we are able to estimate the emissions for companies not yet included in the CDP dataset.

Figure 5 below presents the results of the out-of-sample testing of our model for Scope 1 emissions, to verify our estimations:

Figure 5: Out of sample testing – Estimation model for Scope 1 and Scope 2 emissions



The charts in Figure 5 show our predicted Scope 1 and 2 emissions value, plotted against the realised values for a sample of companies reporting to CDP. Importantly, this validation step is done out of sample, meaning that the companies used to validate the model were not used to train the model. There are a few outliers, but in most cases we can see the model appears to predicting the general level of emissions with a high level of accuracy.

We carried out similar tests on the sector-specific emissions profiles used to arrive at the carbon-specific industry classifications used in our estimation model. Scope 1 emissions are directly created by the operations of an organisation and can be measured most reliably. On the other hand, Scope 2 emissions are more reliant on estimates and are not as directly determined by the activity of an organisation. Unsurprisingly, the out-of-sample goodness of fit (model R^2) of our in-house model is 85% for Scope 1 emissions, and 71% for Scope 2.

Given the current state of Scope 3 reporting, with the challenges noted above, we do not believe that it is practical to estimate the Scope 3 emissions with a reasonable degree of accuracy. Therefore, we do not estimate Scope 3 at large. In Figure 2 we present the Scope 3 data including CDP estimates. In our investment research, we use CDP data in addition to the Scope 3 data as reported in financial statements or sustainability reports. If not reported, we approximate Scope 3 emissions case-by-case.

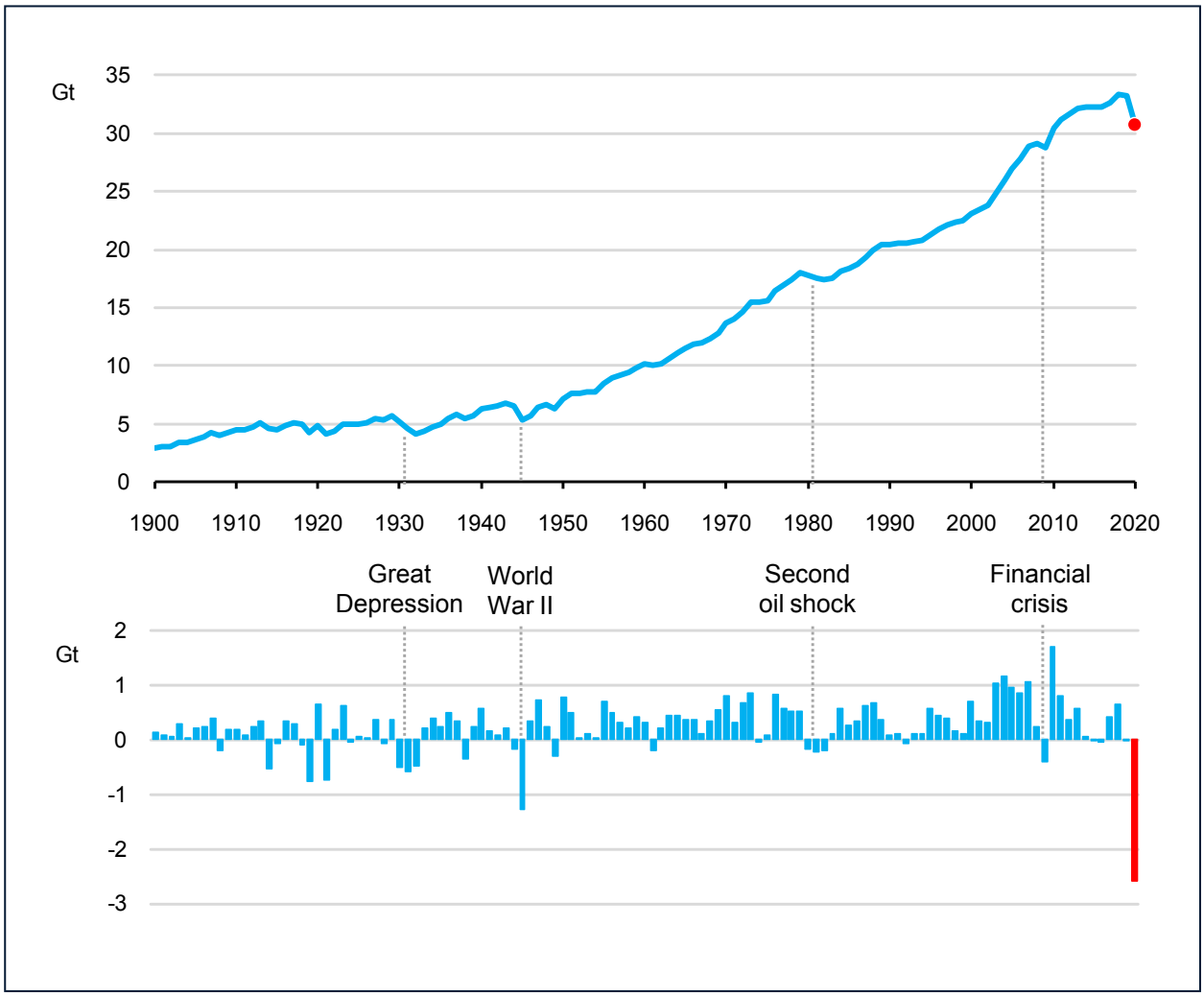
It is worth emphasising, that as time goes by, we expect a decoupling of GHG emissions from economic growth due to sufficient progress in climate risk mitigation. This means that the observed patterns which support our estimation model may cease to hold true. However, once this becomes reality, we hope most, if not all, companies will be reporting their GHG emissions, thus removing the need for estimates.

(8) A detailed methodology document is available for clients on request.

3 – THE SHORT-TERM IMPACT OF COVID 19 ON CARBON EMISSIONS

The analysis of climate change is long-term by nature. It therefore remains a challenge for asset managers to measure climate risks for their respective investments over a time horizon that is usually much shorter – typically years as opposed to decades. The dominant approaches for dealing with secular trends are qualitative assessments and scenario analyses.[9] However, at the time of writing, the economic impact of the Covid 19 crisis is suddenly refocussing the attention on the short-term, which requires the application of specific estimates.

Figure 6: Global energy-related CO2 emissions and annual changes, 1900-2020



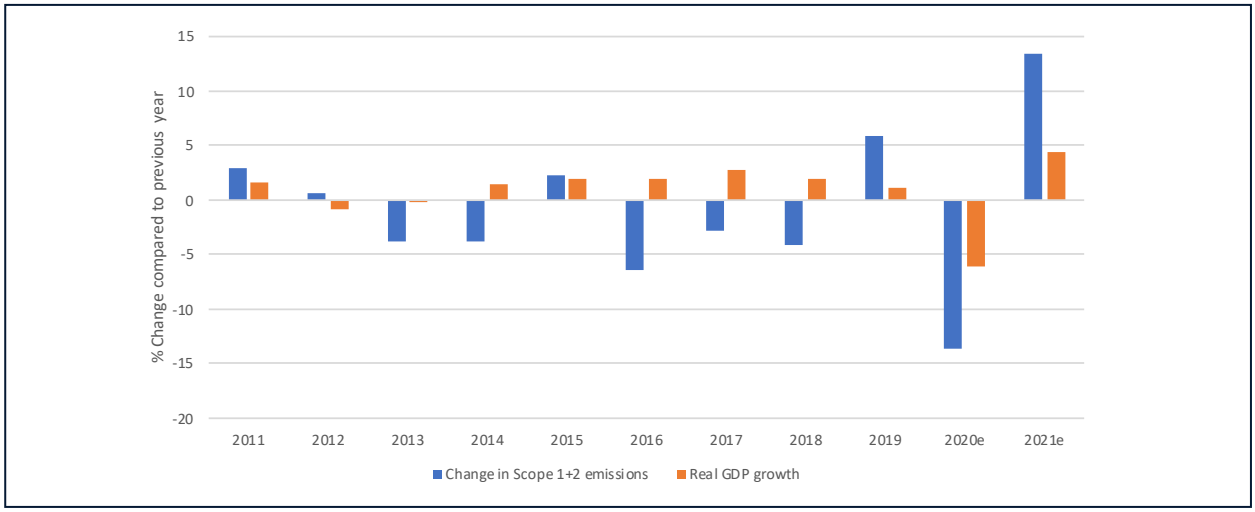
Source: IEA: Global Energy Review (April 2020)

(9) See Mark Carney: Breaking the tragedy of the horizon – climate change and financial stability, speech given at Lloyd's of London (September 2015). www.bankofengland.co.uk. See also Final Report: Recommendations of the Task Force on Climate-related Financial Disclosures (June 2017). www.fsb-tcfd.org

In April 2020, the IEA predicted a fall in global energy-related CO2 emissions by 8% in 2020 compared to 2019 (see Figure 6).[10] Such a reduction would be the largest ever annual drop, six times larger than the previous record of 0.4 Gt observed in 2009 during the financial crisis, and twice as large as the combined total of all previous reductions since the end of World War II. A similar result was just published by climate scientists forecasting an annualised reduction in GHG emissions of between 4% and 7% due to Covid 19.[11]

Our bottom-up carbon estimation model enables us to approximate the development of carbon emissions in 2020e and 2021e, based on consensus estimates of corporate revenues. As shown in Figure 7, we currently anticipate that carbon emissions in the Eurozone will drop by more than 10% in 2020e due to the devastating recessionary consequence of the global health crisis.

Figure 7: Estimated growth in GHG emissions in 2020e and 2021e – Eurozone



While this effect might seem like a silver lining for achieving carbon reduction targets, it is unlikely to last and is ultimately too small relative to the progress required to set us on a long-term path towards a low carbon economy. Once again based on current consensus forecasts, our model estimates that carbon emissions will 'recover' at the same rate or even faster into 2021e, as the economy is expected to rebound. Climate scientists confirm this view: "... while CO2 build-up [in 2020] will be slightly slower than previously expected, it will not be enough to substantially slow global warming."[12]

Rather than offer an unforeseen solution, the Covid 19 crisis instead highlights the scale of the effort needed to avoid a climate crisis: according to the UN Environmental Programme it is still possible to limit global warming to 1.5-degree Celsius if GHG emissions are reduced by 7.6% every year between 2020 and 2030.[13] This is similar in magnitude to the 8% CO2 emissions reduction estimated by the IEA for 2020, a reduction wholly driven by a sudden and unsustainable halt of global economic activity. It is therefore evident that the only way to achieve this 1.5-degree Celsius target is through a fundamental rebuilding of the economy over the next decade based on low-carbon technologies.[14]

Thus, we are presented with an opportunity on the way out of this health crisis, for a "green recovery", in which the vast capital support from governments for the economic recovery is linked to the transition to a zero-carbon economy. It will be by doing so, that we will be able to ensure that the necessary decoupling of economic activity and carbon emissions becomes a reality.

(10) International Energy Agency: Global Energy Review 2020. The impacts of the Covid 19 crisis on global energy demand and CO2 emissions, (April 2020). www.iea.org

(11) Le Quéré, C., Jackson, R.B., Jones, M.W. et al. Temporary reduction in daily global CO2 emissions during the Covid 19 forced confinement. Nat. Clim. Chang. (2020). https://doi.org/10.1038/s41558-020-0797-x

(12) Prof Richard Betts et al: 'What impact will the coronavirus pandemic have on atmospheric CO2?', guest post in Carbon Brief (www.carbonbrief.org), 7th May 2020.

(13) UNEP: 'Emissions Gap Report', November 2019 (www.unenvironment.org/interactive/emissions-gap-report/2019)

(14) The IEA states that "As after previous crises, however, the rebound in emissions may be larger than the decline, unless the wave of investment to restart the economy is dedicated to cleaner and more resilient energy infrastructure.", Global Energy Review 2020, p. 4.

4 – CARBON REDUCTIONS BY CORPORATE ISSUERS 2014–2018

Our estimation model enables us to estimate the emissions of any corporate entity which publicly discloses its fundamentals to a high degree of accuracy. This allows us to consistently manage the carbon footprint of our funds and make meaningful comparisons with broader indices. We can also use our model to estimate the carbon emissions for any given universe over time, which can be an important tool for climate risk assessments with a forward-looking approach. As in any fundamental model, to do this we need highly accurate time-series data, to form the basis of our forecasts and act as a comparator of ambitious reduction targets.

For example, to answer the question of whether companies have reduced their direct carbon emissions over the last five years, we need to analyse the time series of reported emissions. From one year to the next, the sample of companies disclosing their emissions to CDP for any given year is not necessary the same, with some companies' reporting cycles lagging by more than a year, and others reporting for the first time. Building time series of reported emissions therefore requires a careful aggregation of the available data.

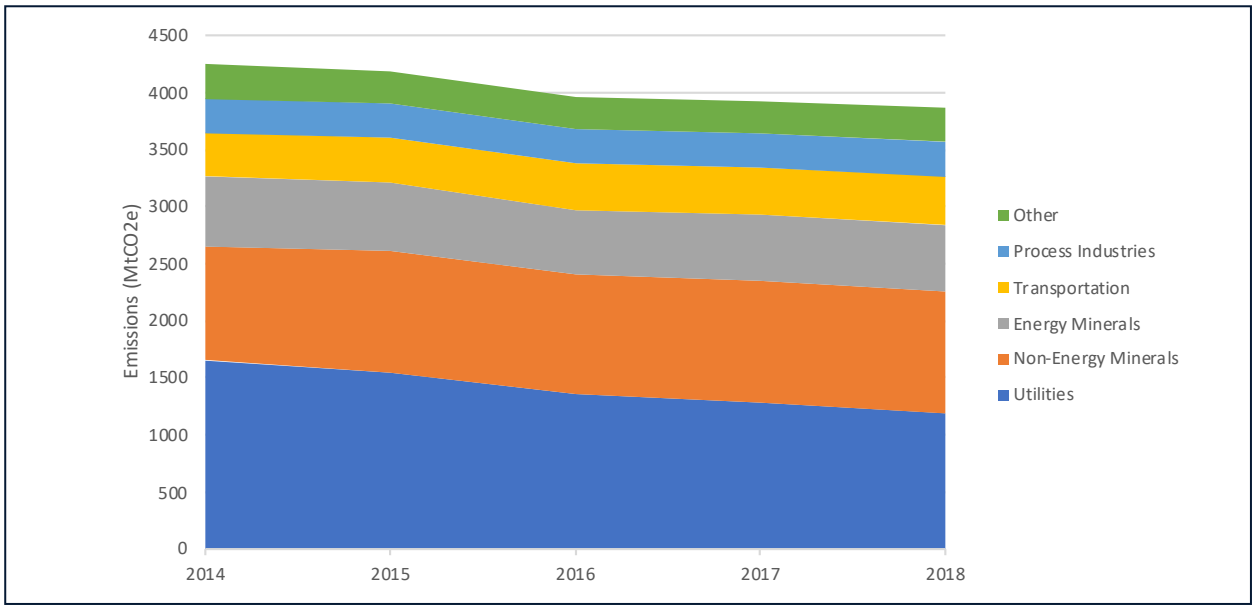
To ensure our assessment was meaningful, we started with a sample of listed companies that have been consistently reporting annual emissions every year from FY 2014 to FY 2018. We focused the analysis on direct emissions only (Scope 1), to avoid any cases of double counting at the aggregate level (the Scope 2 emissions of one company are the Scope 1 emissions of another). Moreover, from the perspective of emissions reduction, direct emissions are, by definition, those which companies control rather than influence.

We analysed a sample of roughly 1,000 companies, with a sector distribution representative of the wider CDP disclosure universe. The total emissions of this sample are taken as the sum of the Scope 1 emissions of these companies. This sample gives a useful insight into how those companies that have been most consistent in their emissions disclosure are acting in the face of climate change.

Sector differences

In 2018, the total emissions of this sample were 3.9 Gt CO2e, which accounts for approximately 7% of the world's total emissions that year. The full time series – i.e. total of emissions levels over the given five-year time period – by sector, is shown in Figure 8.

Figure 8: Total emissions of sample – time series



From the outset, we can observe a 9% decrease in total emissions over the five years, equating to a roughly 1.8% annual reduction. This downward trend is not unexpected: it is reasonable to assume that companies which have been consistently reporting their emissions for the past few years, are those at the forefront of climate issues and therefore most likely to act to reduce their footprint. Even though total global emissions have been going up, as reported by the UNEP, it is not surprising that the emissions of this sample have been going down.

However, looking at this result through a sectoral lens, the conclusions are more nuanced: we can observe that not all sectors are contributing equally to the total emissions, with only five sectors responsible for 92% of 2018 direct emissions. Unsurprisingly, these sectors are Utilities, Minerals (Energy and non-Energy), Transportation and Process Industries. From 2014 to 2018, the total emissions of the Utilities sector went down by 28%, and since this sector is responsible for 31% of the total emissions (in 2018), it is driving the total emissions down. Most of these companies operate in developed economies. The US, Canada, France, UK and Japan account for 60% of the sample.

In Figure 9, we can see that not all sectors are on a decarbonisation trajectory. Whilst the emissions of the Utilities and Energy Minerals sectors have been going down, others, like Transportation have not. The latter should not surprise. Though some industries have already established green alternatives and solutions to replace current modes of operation, this is not the case across the board. For example, the IEA's 2-degree scenario for Marine Shipping assumes emissions will only peak in 2030, on the basis that there will not be a viable substitute to current shipping technology before then. Electric or sail ships are not mature enough to offer solutions yet and therefore, the IEA forecasts that new disruptive technologies will only kick in post 2030. However, even during this decade the IEA expects biofuel playing a role to limit the rate of increase in emissions despite growing levels of activities (i.e. number of shipping km).

Figure 9: Scope 1 emissions by sector by Fiscal year

Scope 1 emissions of the sample of companies (Base 100 in 2014)	2014	2015	2016	2017	2018	% of total direct emissions in 2018
Utilities	100	93,2	82,3	77,7	72,0	31%
Non-Energy Minerals	100	108,0	105,4	106,3	106,8	28%
Energy Minerals	100	95,9	91,6	94,6	95,1	15%
Transportation	100	101,7	103,2	105,6	108,9	11%
Process Industries	100	99,8	100,6	100,3	103,4	8%
Industrial Services	100	94,7	95,7	89,6	93,3	1,7%
Producer Manufacturing	100	94,9	94,0	95,9	97,0	1,5%
Consumer Non-Durables	100	91,7	95,6	96,6	94,4	1,2%
Consumer Services	100	101,8	105,5	107,1	109,0	0,8%
Consumer Durables	100	99,7	97,7	97,3	97,9	0,6%
Electronic Technology	100	98,5	96,2	110,2	115,8	0,8%
Retail Trade	100	100,0	96,7	97,4	96,7	0,4%
Health Technology	100	96,6	96,7	95,6	96,9	0,2%
Finance	100	96,6	97,2	95,9	93,8	0,1%
Communications	100	98,7	98,9	91,1	88,8	0,1%
Distribution Services	100	101,4	101,9	108,7	118,8	0,1%
Commercial Services	100	97,3	96,1	95,9	95,4	0,04%
Technology Services	100	98,3	95,3	94,7	90,6	0,02%
Miscellaneous	100	102,3	87,8	77,2	75,5	0,02%
Health Services	100	106,6	107,7	125,9	125,8	0,01%
Global	100	98,5	93,3	92,4	91,0	100%

These results are consistent with the findings of a report published by the IEA earlier this year highlighting that even though the global anthropogenic emissions increased in 2019, the GHG emissions in the developed economies have been going down, driven primarily by reductions in the energy sector.(15)

(15) See www.iea.org/news/defying-expectations-of-a-rise-global-carbon-dioxide-emissions-flatlined-in-2019

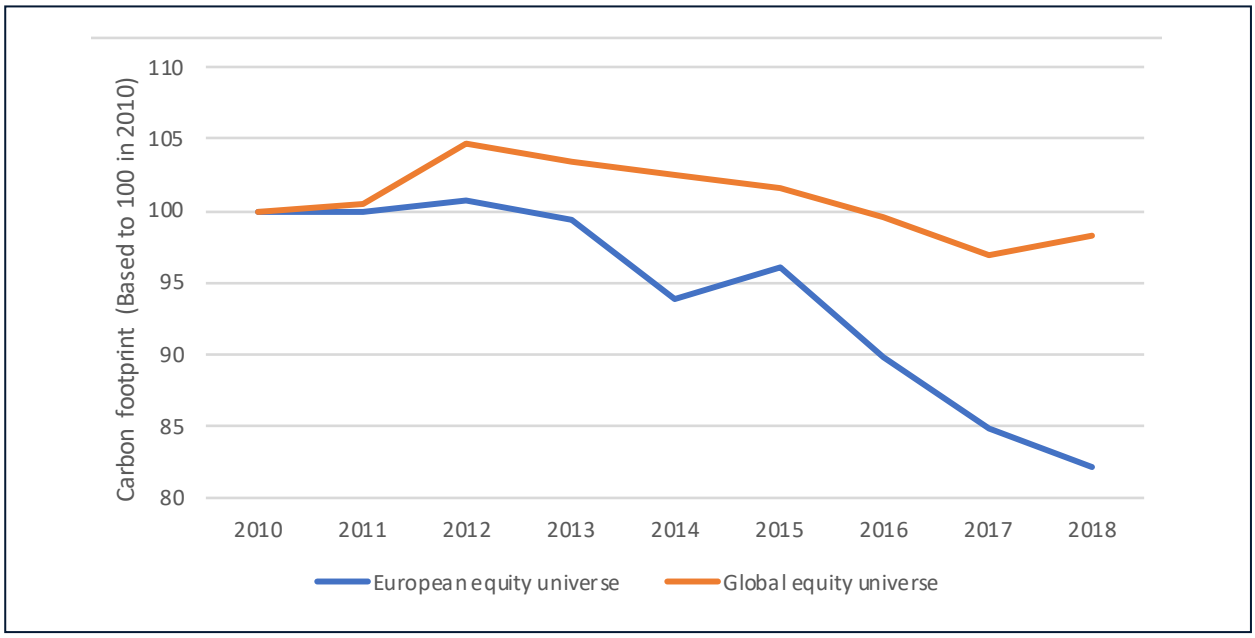
The outsized impact of few sectors is a key reason why we have developed a methodology to assess whether a company in a high-emitting sector is on a low-carbon trajectory or not (see our Carbon Impact Quarterly Report Q1/2020).

Regional differences

In order to delve deeper into progress in different geographies, we applied this same model to estimate historical direct emissions for the companies in a European equity universe (EuroStoxx600 index) and looked at how these emissions varied over time. We found that the total direct emissions in this European universe have been going down at an annualised rate of 2.5% since 2014, and that most of this reduction comes from the Utilities sector (-8.6% annualised), which is in line with our previous results from the global sample of CDP disclosures and echoes the findings of the recent IEA report mentioned above.

We created a time series of historical carbon emissions, this time stretching back to 2010, using estimations where reported figures were not available. In Figure 10, we compare the historical carbon footprint of the EuroStoxx600 index with that of the global MSCI ACWI index.

Figure 10: Historical footprint of European & Global equity universe



We can see on the chart in Figure 10 that the historical footprint of the European universe remained stable up to 2013, then started trending down while the footprint of the global universe has oscillated around the same level. This result is consistent with our previous findings and indicates that the transition toward a low-carbon economy is more advanced in Europe. The countries driving this difference in the global universe are the United States, China, India and Japan.

5 – CONCLUSION

To date, human activities are estimated to have already caused approximately 1.0°C of global warming above pre-industrial levels (average over the 1850–1900 period).[16] The financial implications of this climate change are already being felt by companies around the world. For some, this might be in the form of increasing costs of carbon allowances, for others, higher capital expenditure for adaptation measures to protect against flooding and extreme weather events - to give just two examples. As the effects of climate change on the companies in which we invest - or may in future - become more pronounced, the use cases for carbon data in portfolio management are only going to increase.

The limitations of carbon footprinting

Carbon footprinting is a reporting tool that has become a voluntary standard over the past five years. It is a snapshot of a portfolio, usually expressed as a carbon intensity ratio, calculated using historic data and covering a company's operations (Scope 1 and Scope 2 emissions). We disclose the carbon footprint of our portfolio to provide transparency for our clients in line with this standard. At the same time, we acknowledge its limitations – not least that it does not account for the often significant indirect impact of companies' products and services, or other Scope 3 emissions. We therefore continue to develop and test other metrics and approaches.

Climate risk management the next frontier

For its simplicity, carbon emissions data is widely used as a proxy for climate risk, however we understand that climate risks and opportunities cannot adequately be expressed in a single number.

In our quant research, we are testing the risk and performance characteristics of a carbon factor which yields promising results, and at the same time we are looking for innovative ways to measure investment risk caused by climate change more comprehensively. We have developed a series of complementary analytical tools based on our carbon data and estimation model that allow us to assess climate-related risks and opportunities:

- Carbon Impact Analysis and Scoring: TCFD-aligned framework for comprehensive climate change-related investment analysis covering Scope 1, 2 and 3
- Low-carbon Trajectory Methodology for high-emitting sectors: forward-looking company-specific analysis of 2-degree alignment covering Scope 1, 2 and 3
- Portfolio temperature measurement: beta-version of a simplified model for measuring 2-degree alignment of portfolios
- Climate Value-at-Risk measurement: piloting of an external model to quantify the impact of climate change on a company's financial statements and valuation
- Voting and Engagement: active ownership activities, for example, incentivising CDP disclosure

For investment purposes, this work is mainly driven by our fundamental research, which seeks to integrate financial data and ESG data into investment decisions.

(16) IPCC, 2018: Summary for Policymakers. www.ipcc.ch/sr15

Helping our clients to navigate climate change

As we observe that climate risks and opportunities are increasingly driving investment performance, we are expanding our capabilities in the management and analysis of ESG data – not least carbon data, as discussed in this report. This expertise spreads throughout the organisation and enables us to create proprietary solutions, giving us confidence in selecting the best external partners as needed. By doing so, we are well-positioned to take informed investment decisions, to engage with our investee companies in critical dialogue, to make our voice heard in the public debate and to address the emerging needs of our clients.

APPENDIX

FactSet Sector and Industry Categorisation

SECTOR	INDUSTRY
Non-Energy Minerals	
	Steel
	Aluminum
	Precious Metals
	Other Metals/Minerals
	Forest Products
	Construction Materials
Producer Manufacturing	
	Metal Fabrication
	Industrial Machinery
	Trucks/Construction/Farm Machinery
	Auto Parts: OEM
	Building Products
	Electrical Products
	Office Equipment/Supplies
	Miscellaneous Manufacturing
	Industrial Conglomerates
Electronic Technology	
	Semiconductors
	Electronic Components
	Electronic Equipment/Instruments
	Telecommunications Equipment
	Aerospace & Defense
	Computer Processing Hardware
	Computer Peripherals
	Computer Communications
	Electronic Production Equipment
Consumer Durables	
	Motor Vehicles
	Automotive Aftermarket
	Homebuilding
	Home Furnishings
	Electronics/Appliances
	Tools & Hardware
	Recreational Products
	Other Consumer Specialties
Energy Minerals	
	Oil & Gas Production
	Integrated Oil
	Oil Refining/Marketing
	Coal
Process Industries	
	Chemicals: Major Diversified
	Chemicals: Specialty
	Chemicals: Agricultural
	Textiles
	Agricultural Commodities/Milling
	Pulp & Paper
	Containers/Packaging
	Industrial Specialties
Health Technology	
	Pharmaceuticals: Major
	Pharmaceuticals: Other
	Pharmaceuticals: Generic
	Biotechnology
	Medical Specialties
Consumer Non-Durables	
	Food: Major Diversified
	Food: Specialty/Candy
	Food: Meat/Fish/Dairy
	Beverages: Non-Alcoholic
	Beverages: Alcoholic
	Tobacco
	Household/Personal Care
	Apparel/Footwear
	Consumer Sundries

SECTOR	INDUSTRY
Industrial Services	
	Contract Drilling
	Oilfield Services/Equipment
	Engineering & Construction
	Environmental Services
	Oil & Gas Pipelines
Commercial Services	
	Miscellaneous Commercial Services
	Advertising/Marketing Services
	Commercial Printing/Forms
	Financial Publishing/Services
	Personnel Services
Distribution Services	
	Wholesale Distributors
	Food Distributors
	Electronics Distributors
	Medical Distributors
Technology Services	
	Data Processing Services
	Information Technology Services
	Packaged Software
	Internet Software/Services
Health Services	
	Managed Health Care
	Hospital/Nursing Management
	Medical/Nursing Services
	Services to the Health Industry
Consumer Services	
	Media Conglomerates
	Broadcasting
	Cable/Satellite TV
	Publishing: Newspapers, Books/Magazines
	Movies/Entertainment
	Restaurants
	Hotels/Resorts/Cruiselines
	Casinos/Gaming
Retail Trade	
	Food Retail
	Drugstore Chains
	Department Stores
	Discount Stores
	Apparel/Footwear Retail
	Home Improvement Chains
	Electronics/Appliance Stores
	Specialty Stores
	Catalog/Specialty Distribution
	Internet Retail
Transportation	
	Air Freight/Couriers
	Airlines
	Trucking
	Railroads
	Marine Shipping
	Other Transportation
Utilities	
	Electric Utilities
	Gas Distributors
	Water Utilities
	Alternative Power Generation
Finance	
	Banks
	Insurance
	Investment Managers
	Finance/Rental/Leasing
	Real Estate Development
	Real Estate Investment Trusts
Communications	
	Major Telecommunications
	Specialty Telecommunications
	Wireless Telecommunications

GLOSSARY

TERMS	DEFINITION/MEANING
Carbon emissions	Refers to CO2e or GHG emissions in this report.
Carbon footprint (funds)	We follow TCFD recommendations and use the following metrics: total carbon emissions, carbon footprint, carbon intensity and weighted average carbon intensity.
CDP	CDP is a not-for-profit charity that runs the global disclosure system for investors, companies, cities, states and regions to manage their environmental impacts.
CO2	Carbon dioxide
CO2e	Carbon dioxide equivalent: this is a measure used to compare the emissions from various greenhouse gases (GHG) based on their global warming potential, which allows us to convert any GHG into CO2e.
Covid-19	Corona Virus Disease 2019.
ESG	Environmental, Social, Governance
EuroStoxx600	The STOXX Europe 600 Index represents large, mid and small capitalization companies across 17 countries of the European region.
FY	Fiscal Year
GHG	Greenhouse Gas: the main GHG reported by companies are carbon dioxide (CO2), methane (CH4), nitrous oxide (N2O), Fluorinated gases (HFCs, PFCs, SF6, NF3)
GHG Protocol	GHG protocol establishes comprehensive global standardised frameworks to measure and manage greenhouse gas emissions.
Gt	Giga tonne
IEA	The International Energy Agency has a mission to shape a secure and sustainable energy future for all.
IPCC	Intergovernmental Panel on Climate Change: this is a United Nations body which assesses the science related to climate change.
MSCI ACWI	This index developed by MSCI is designed to represent performance of the full opportunity of large-and mid-cap stocks across 23 developed and 26 emerging markets. As of the end of 2019 it had more than 3,000 constituents
SBTi	Science Based Target Initiative: It is a collaboration between CDP, the United Nations Global Compact (UNGC), World Resources Institute (WRI), and the World Wide Fund for Nature (WWF) and one of the We Mean Business Coalition commitments.

TERMS	DEFINITION/MEANING
Scope 1	Direct emissions from owned or controlled sources.
Scope 2	Indirect emissions from the generation of purchased energy.
Scope 3	All other indirect emissions, which occur in the value chain (upstream and downstream).
TCFD	The Task Force on Climate-related Financial Disclosures is an organisation established in 2015 to develop a set of disclosures of financial climate-related material metrics.
UNEP	The United Nations Environment Programme is the leading global authority which sets the environmental agenda and promotes the implementation of the sustainable development goals.
WRI	The World Resource Institute is a global research organisation which aspires to create a world where the actions of government, business and communities combine to eliminate poverty and sustain the natural environment for all people.

Imprint

The main authors of this Carbon Impact Quarterly report are Ludovic Thulliez and Roland Rott, CFA.

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