Quantifying corporate societal impact using United Nations' Sustainable Development Goals

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Contents

1. Overview

This is the second in a series of Qontigo and Clarity AI research papers, it

> Focuses on the challenge of measuring impact as a key means of bridging the gap between impact investment theory and practice.

> Identifies the United Nations' Sustainable Development Goal (SDG) framework, which comprises 17 goals and 169 targets, as a way to structure company impact assessments.

> Introduces and describes the approach developed by Clarity AI, which uses the SDGs to produce estimates of companies' impact for each SDG goal plus an aggregated overall impact measure.

> Summarizes the aggregate results obtained by taking this SDG approach to identify the SDGs with the greatest impact, the impact by sector and the SDGs overall.

> Discusses the empirical relationships between the SDG impact measure and other metrics such as ESG performance and further company characteristics.

2. The challenge of measuring a company's impact

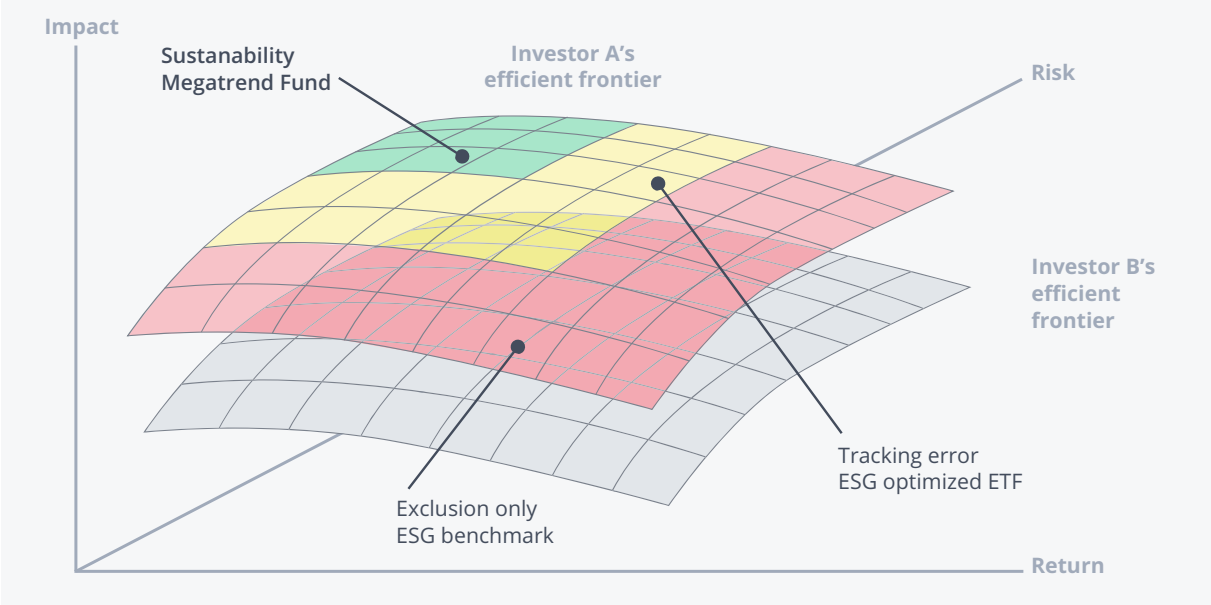
The Global Impact Investment Network (GIIN) defines impact investments as "investments made with the intention to generate positive, measurable social and environmental impact alongside a financial return."[1]

While this definition provides a theoretical starting point for evaluating companies, measuring the impact that they generate is a key challenge for impact investment. There is no widely accepted way of measuring impact, much less one that is easy to digest. This applies in particular to investors in listed companies, where impact is only one of several considerations in investment decision making. Systematically collecting impact-relevant data on target companies and evaluating their social impact is challenging when portfolio analysts have to consider hundreds of companies from different industries, and impact is one of several dimensions of the analysis. In the absence of a single standard, investors can be overwhelmed by the complexity of, and resources needed for, additional data collection and validation. Some existing approaches rely on tailor-made, detailed measurement methodologies that are implemented by specialist firms and that often reflect investment companies' own principles or focus areas (e.g., poverty, health, geographical coverage). Conversely, many impact reporting standards that have emerged constitute a long list of metrics relating to every imaginable type of impact without giving any indication of their relative importance for different types of companies. For example, the Global Reporting Initiative (GRI) comprises roughly 200 different disclosures on everything from parental leave policies to the amount of water consumed.

The current state of measuring impact is to be expected in a developing field that is experimenting with different approaches to impact, and for which contributions towards social causes or the public good can take many different forms, from improving the labor conditions of their employees to lowering their carbon emissions or reaching disadvantaged consumers. As the topic matures, "impact" will become embedded in the approach and language adopted even by those investors that don't have it as a main focus. Simple and consistent measures are needed that can be used by investors alongside traditional assessment dimensions such as risk and return. This would enable investors to make decisions in practice by using a common measure to compare the impact generated by companies in different sectors (e.g., energy companies and consumer goods companies), the relative impact that can be expected from an investment for different levels of return. Finally, possible trade-offs between these dimensions would be made transparent in a practical way. This is a key part of the toolkit necessary to realize the vision of incorporating societal impact as a third dimension alongside risk/return in a "new efficient frontier" – a vision that Qontigo has embraced (see Figure 1).

[1] GIIN 2020. What is impact investing?

Figure 1. Qontigo's vision is to be able to incorporate societal impact as a third dimension to risk/return to define investors' new efficient frontiers



Source: Qontigo.

Investors wishing to assess listed companies will need measures that enable meaningful comparisons to be made across sectors, and that are simple and readily available. Impact currently has many dialects but no lingua franca. At present, companies and investors are doing their best to report on a long list of metrics that only a few impact-first investors and stakeholders can model and understand. By contrast, ordinary investors and stakeholders who want to use such reporting metrics efficiently or who need a holistic approach that synthesizes in a simpler way the many dimensions of the issue may struggle to make sense of the many different and occasionally conflicting approaches.

One way to tackling these challenges is to use the SDGs as a framework for understanding and measuring impact.[2] The SDGs are the actionable core of the 2030 Agenda for Sustainable Development, "a universal call to action to end poverty, protect the planet and improve the lives and prospects of everyone, everywhere."[3] This is a consensus-based document adopted by all United Nations Member States in 2015 after long debate, and as such can serve as a measure of the impact companies can have. Companies have begun to embrace it as a reporting device in relation to sustainability: over 72% of the 721 companies studied by a consulting firm include information about the SDGs as they relate to their company in their annual reports.[4]

[2] See the first paper in this series for a variety of alternative approaches to measuring impact.

[3] The 2030 Agenda for Sustainable Development.

[4] PwC, SDG Reporting Challenge, 2018.

Building on the SDG approach to measure impact, this paper looks at three aspects:

> First, we explain how the SDG framework can be turned into a methodology for estimating companies' impact that tackles some of the challenges posed by alternative approaches. This is achieved by accounting for the impact of companies' products and services (as well as their own internal operations) for every goal and attaching a value to these forms of impact that permits comparability in monetary terms. This approach builds on over a decade of thinking on how to embed impact in investor approaches, and is inspired by recent advances in conceptualizing and measuring impact by researchers at the Harvard Business School.[5] Using the SDG framework and the measures derived from it enables investors to pursue the basic dimensions of any impact investment framework that we identified in the first paper in this series: **intentionality**, **additionality** and **inclusivity**.

> Second, we pursue this methodological approach to gain insight into the amount of impact created. For the first time, we can provide an estimate of the total social value that companies create and put into perspective, by comparing it with e.g. current foreign aid efforts, or the total value that would be generated by achieving the SDG targets. We are also able to compare the relative value to society of the different dimensions of impact (health, poverty alleviation, environmental improvements…) that companies generate. As an example, a comparison of the different sources of impact reveals that listed companies' contributions are currently highest for the "Good Health and Wellbeing" SDG. We also find that there are "virtuous cycles" of impact, in which companies have a positive impact on different dimensions.

> Third, having established how we measure impact, we explore possible drivers of company-level impact. While causality is hard to establish, we describe some company characteristics that are correlated with impact in our data. We find that, by sector, Healthcare and Consumer Staples companies are the most impactful. We also find that companies based in emerging markets tend to have more impact than others. In addition, it is interesting to note that a large part of the variation in scores cannot be explained by these observable characteristics, something that highlights the need to analyze individual companies. We close with our finding that, while the two measures are different, companies that score highly on ESG criteria also tend to have greater impact. In other words, companies that perform well on the SDGs also tend to do better on other dimensions that investors may be interested in.

3. Linking company activities with the SDGs

In the first paper in the Qontigo/Clarity AI series, we identified a large gap between theory and practice in impact investment. In part, this gap is driven by the limitations of the data available about companies. A recent paper issued by the Impact Weighted Accounts project at Harvard Business School[6] highlights the importance of going beyond operational measurements such as the treatment of employees or the amount of pollution generated (see Figure 2). They include evaluating the impact that a company's products and services have on society through individual users' benefits. This is a core part of measuring impact (but not ESG) and involves answering the question "how does this product change people's lives?" in a measurable way. In practice, this means asking specific questions about the many ways in which a particular product serves to feed the undernourished or improve life expectancy, for example, and attaching an economic value to this impact.

[5] Other alternative approaches to quantifying impact include, for example, the Capitals Coalition and the Impact Management Project.

[6] See the introduction to the HBS framework at A Framework for Product Impact-Weighted Accounts. and broader context and developments at the Impact-Weighted Accounts Project.

Figure 2. Product impact framework dimensions, as defined by Harvard Business School – Impact-Weighted Accounts Initiative

Reach		Dimension of customer usage			Env. usage	End of life
Quantity	Duration	Access	Quality	Optionality	Pollutants & efficiency	Recyclability
The magnitude of individuals reached	Length of time the product can be used, particularly for durables	Accessibility of product through pricing and efforts to provide for the undeserved	Quality of product through health, safety, effective-ness, and inherent need or goodness	Ability to choose an alternative product with full information and free will	All pollutants and efficiencies enabled through customer usage	Projected product volume recycled at the end of product life

Source: A Framework for Product Impact-Weighted Accounts.

We will now describe how Clarity AI specifies these questions and answers them systematically.

3.1. Using the SDG framework to measure company impact

Quantifying the impact of different ways of generating impact by estimating the contribution made to it by all products and services for a single company is a serious challenge. What is more, some investors with a broad horizon have the additional challenge of incorporating a large number of very different impact dimensions. Understanding the impact that a company has on each of the SDGs is key and can be analyzed separately. In practice, though, investors may be interested in holistic measures of impact. For example, comparing the impact of a company that provides inexpensive food for the underprivileged with one that is involved in ensuring energy security. The advantage of the SDGs is that they provide a thorough but restricted set of impact dimensions that we can use to develop a methodology for addressing this mind-boggling complexity. However, this presents a challenge since, as a recent paper stated, "the UN SDGs have been written by policy makers not by investors – therefore the goals, targets and indicators are considered from a country and governmental standpoint rather than a company one."[7]

Clarity AI's methodology tackles these challenges by mapping the impact of a company's operations, products and services to each of the SDG targets, and quantifying the social value that they contribute to the SDGs. In other words, it measures on a uniform unit (monetary value) the contribution that companies make to each of the measurable targets under the SDGs. It does this by applying the following set of principles:

> Considering the impact that companies have on individual SDG targets due to their products, services and internal operations.
> Providing a bottom-up measure of the impact created by individual SDG targets that can be aggregated into the impact by SDG and a single (monetary) value for the impact on the SDGs overall.
> Taking a quantitative approach to measure the impact companies have on the SDGs on the basis of their revenue sources and a measure of the impact that each unit of revenue generates. An alternative approach focuses on rougher measures of the relationship between business activities and SDGs goals, i.e. taking only the share of revenues that is overall aligned with some SDGs.

[7] BlackRock, June 2021. Sustainable Investing. Integrating the UN SDGs in Investments.

> Using listed company data with a broad coverage, allowing near-universal assessment of companies from the outside in.
> Measuring impact using metrics that are relevant to each industry, while also providing comparability across companies and sectors.
> Measuring the impact for which companies are directly responsible and is agnostic about what would happen in the absence of these activities.[8]

3.2. Using the SDG framework to guide investments

As we described in the first paper in the Qontigo/Clarity AI series, impact investors generally adopt three principles regardless of the approaches they follow: they aim to consider whether their investments are intentional, additional and inclusive.

Intentional means that investments involve a deliberate and unambiguous desire to contribute towards impact. **Additional** expresses the fact that they are facilitated by the investor and would not happen otherwise. And **inclusive** means that they involve impacting underserved populations.

Clarity AI's SDG impact approach assists investors that are focused on these dimensions. It helps them put their intentions to contribute impact into practice by making it easier to spot impactful companies, and to do this systematically. Its standardized, quantitative approach enables informed decisions to be made about potential trade-offs, e.g., with financial companies' or portfolios' metrics.

Clarity AI also helps to ensure additionality for investors. In our first paper, we highlighted that investor engagement with companies is the best way of ensuring investments contribute to creating additional impact. Clarity AI's measures of impact facilitate this engagement beyond simply identifying companies with high aggregate impact scores. The use of the granular target-level metrics for each SDG can enable very productive conversations between investors and companies on how to increase impact over time, by highlighting opportunities in some targets on which companies can focus and facilitating progress monitoring over time.

Finally, Clarity AI's bottom-up approach to measuring impact also permits a focus on inclusivity, since it provides baselines and monitors progress for each SDG, including those that focus specifically on underserved populations. These SDGs include:

> 1 No poverty,
> 2 Zero hunger,
> 5 Gender equality,
> 8 Decent work and economic growth, and
> 10 Reduced inequalities.

Many targets in other SDGs focus specifically on underserved communities, and Clarity AI's metrics permit zooming in on them. For example, target 3.1 of SDG 3 (Health) is: "By 2030, reduce the global maternal mortality ratio to less than 70 per 100,000 live births." This focuses on the intersection of two populations

[8] Assessments of the "additionality" of company activities necessarily involve taking a stance on what may have happened in a counterfactual scenario that does not in fact hold true. Short of using a randomized control trial or quasi-experimental statistical techniques any such approach will be imperfect. Such techniques are unavailable for assessing companies overall, even if it may be possible to use them to assess certain companies or projects. This is slightly different to additionality as seen from the investor's perspective, as discussed below.

that are underserved – women and people living in developing countries – that suffer disproportionately from maternal mortality. And by providing a measure of the impact that companies have on this specific target, it allows impact investors that prioritize inclusivity to do their job.

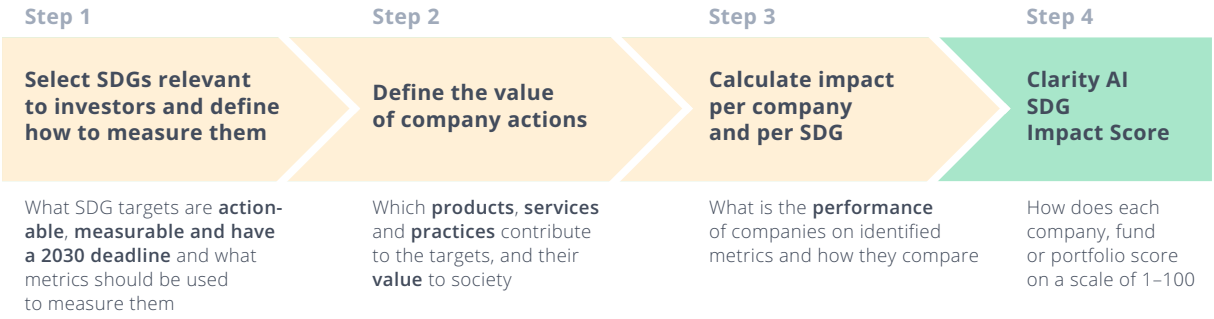
The next section explores Clarity AI's methodology and uses it to provide an example of for assessing company impact against the SDGs.[9]

4. Clarity AI's methodology

Clarity AI's SDG impact scores measure a company's impact on the SDGs in a way that enables comparison across companies, within and across industries, and across different SDGs. It currently quantifies the SDG impact for around 30,000 organizations in different industries, including coverage of approximately 98% of the companies in major equity indices (e.g., the MSCI World Index or S&P 500 Index) and roughly 24,000 small and mid-caps.[10]

Figure 3 shows the four-step process for calculating the SDG impact scores:

Figure 3. Overview of SDG impact scoring methodology



Source: Clarity AI.

4.1. Step 1: Select SDGs relevant to investors and define how to measure them

Each SDG comes with a set of actionable targets. The starting point in constructing SDG impact scores is selecting which targets are relevant for investors and clearly defining how to measure company performance for each target – i.e., picking which metrics to use.

[9] A detailed methodology document is available from Clarity AI on request.

[10] Companies with a market capitalization of less than USD 10 billion.

To start with, 52 targets[11] are selected from within the 16 SDGs that have been identified as being relevant to investors and measurable and with a timeline that is actionable, as illustrated in Figure 4.[12]

Figure 4. Funnel for establishing targets relevant to investors

Source: Clarity AI.

The next step is to identify how to measure companies' performance for each of these 52 targets. To define the best metrics for this:

1. We analyzed the targets and the UN indicators (typically applicable to countries rather than companies)[13] to understand what the changes being asked for through this agenda are.

2. We reviewed hundreds of different sources of information from the relevant literature – from data released by public bodies to recent scholarly articles published in leading journals– to understand which company actions can have which impact.

3. We evaluated the metrics reported by companies and assessed which ones can be used to effectively measure their performance for each of the actions with an impact. As a result, Clarity AI developed a set of 60+ relevant metrics to measure companies' contributions to achieving the 52 targets.[14,15]

[11] Target 8.7 has been identified as a relevant target, but is not currently measured given the lack of appropriate metrics to measure company performance.

[12] Some of the targets to be excluded are 17.1 "Strengthen domestic resource mobilization, including through international support to developing countries, to improve domestic capacity for tax and other revenue collection" or 15.2 "By 2020, promote the implementation of sustainable management of all types of forests, halt deforestation, restore degraded forests and substantially increase afforestation and reforestation globally".

[13] United Nations. About Sustainable Development Goals

[14] This set of metrics covers both the amount of impact for a specific target and the breadth of impact across different themes. This is why we use twice as many metrics as most other providers of impact scores.

[15] We are limited in the metrics we are able to use to those that are publicly available or have been developed by other providers that we use. As can be readily seen from our example in Figure 5, it is not currently possible to know how much of the revenues for every relevant company are due to explicitly affordable and sustainable transportation other than by using the proxy of all passenger transportation revenues. Metrics are constantly being expanded.

Figure 5. Example of a goal, target and metrics

11 – Sustainable cities and communities	**Goal**
11.01 – Ensure safe and affordable housing	**Target**
11.02 – Provide affordable and sustainable transport systems	
Multi type passenger transportation revenues	**Metric**
Transportation construction revenues	**Metric**

Source: Clarity AI.

4.2. Step 2: Define the value of company actions

Understanding the environmental and social value of the different metrics and themes is critical to creating a consolidated view of companies' impacts. In addition, only by having a common unit of comparison the trade-offs between themes as diverse as greenhouse gases, gender equality and employment creation can be effectively understood.

We have calculated an impact conversion rate – i.e., the value to society of a one-unit difference in the metric – for each target and metric. We used monetary values measured in USD as of 2010 that take into account the impact on health, the environment, individual incomes and global GDP. For example, for each gigawatt hour (GWh) of renewable energy produced we consider the effect on health and GDP of reduced emissions of air pollutants and greenhouse gases, and for each additional student educated we calculate the expected extra income they will receive throughout their life. Clarity AI calculates impact conversion rates by leveraging theoretical frameworks and widely accepted research from individuals or institutions that are acknowledged authorities in their fields.[16]

4.3. Step 3: Calculate impact per company for each metric

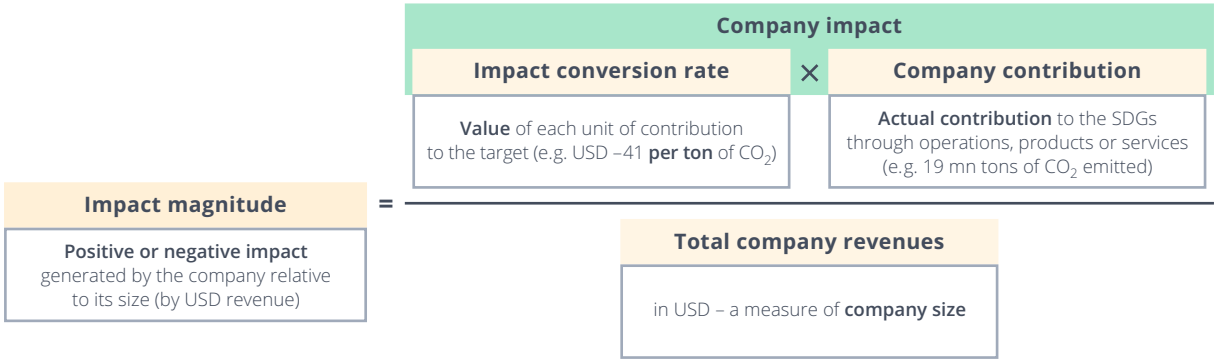
After the impact conversion rate per metric has been established, the absolute levels of impact – i.e., the current environmental and social value generated by the company's operations[17] and products and services – are calculated. This needs to be done for each company and for each of the metrics we consider. We call this the "company contribution". Examples could include greenhouse gases emitted from a company's operations or the number of children educated through its products and services. The total company impact therefore comprises the company's contributions to all dimensions multiplied by the value of each of the contributions (measured using the impact conversion rate). It is expressed

[16] The Appendix provides examples of the specific approach and calculations used to develop impact measures for a sample SDG (SDG 3).

[17] We impute the average impact for the industry in those cases in which data is not available from company reports or estimation models. This avoids penalizing or rewarding companies for which data is not available.

as a monetary value of the impact per target. Finally, this figure is normalized by company revenues.[18] These monetary values can be used to aggregate the company impacts per target to produce a company impact per SDG, and then aggregated further to produce an overall impact on the SDGs. Figure 6 offers a visual summary of the key elements of the impact calculation.

Figure 6. Framework for measuring company impact



Source: Clarity AI.

The example in Figure 7 illustrates how impact is calculated both for different products sold by companies (education services and renewable energy) and as part of a company's operations (CO_2e emissions).

The example shows how different products can have significantly different impacts per USD of revenue – something that is not reflected by methodologies that focus on revenue alignment – and how the companies' operations can be as important as their products and services.

[18] Since a company's impact is highly influenced by its size, we calculate the magnitude of the impact by dividing it by the company's revenues. This helps make impact comparable across companies of different sizes by creating a common unit of comparison. Figure 6 shows this relationship in graphic form.

Figure 7. Impact magnitude calculation

	Impact conversion rate		Company contribution		Total company revenues		Impact magnitude
Education services	USD 9k / +1 children educated	×	**44k** children educated*	/	**USD 73 mn**	=	**USD 5k** of impact per USDk of revenue
Renewable energy produced	USD 43k / +1 GWh	×	**11k** GWh	/	**USD 9 bn**	=	**USD 53** of impact per USDk of revenue
CO_2e emissions	–USD 41 / +1 tCO_2e	×	**19 mn** tCO_2e	/	**USD 17 bn**	=	**USD –46** of impact per USDk of revenue

* Based on average cost of USD 1,293 per student per year

Source: Clarity AI.

4.4. Step 4: Calculate and aggregate SDG impact scores at metric, target, goal and company levels

The impact magnitude calculated in Step 3 is used as the basis for generating the company score. By computing the impact magnitudes for all companies and **comparing them to each other,** we arrive at a score ranging from 1 (worst impact magnitude) to 100 (best impact magnitude).[19] This can be done at different levels:

Metric level – This measures a company's impact magnitude on a specific issue (e.g., women on the board).

Target level – This adds together the impact magnitudes across all relevant metrics for a target (e.g., 5.1 – End all forms of discrimination against all women and girls everywhere).

Goal level – This adds together the impact magnitudes across all targets relevant to a goal (e.g., 5 – Gender Equality).

Company – This adds together the impact magnitudes across all goals for a specific company.

[19] Extreme values from the impact distribution are identified and addressed to prevent skewing the results of the scores.

Figure 8. Company-level scores including impact magnitudes

		Impact magnitude (in units per USD 1,000 revenue)	
VINCI SA	Company-level score – all goals	90	78
MONSTER BEVERAGE CORPORATION		54	73
ADOBE INC.		53	72
1 – No poverty	Company score – goals level	≈ 1	40
2 – Zero hunger		-	-
3 – Good health and well-being		≈ –1	44
4 – Quality education		1	60
5 – Gender equality		≈ –1	57
5.1 – End discrimination against women and girls	Company score – target level	≈ 1	52
Female employment growth	Company score – metric level	≈ 1	52
5.4 – Value unpaid care and promote shared domestic responsibilities		≈ 1	78

Source: Clarity AI.

To visualize this information, Figure 8 shows examples of these scores at company level using screenshots from Clarity AI's Web app.[20] The impact score is designed to enable investors to be given a complete yet simple picture of their portfolio's impact, to understand each company's positive and negative contributions to society and to create a view of where the portfolio is exposed to better or worse performing companies across a single or several goals. In addition, the impact magnitude (measured in impact units per USD 1,000 of revenue) measures the actual impact a company makes relative to its size. Using this measure, one can see both the impact made and the relative performance of a company, fund or portfolio through the lens of the SDGs.

[20] In turn, portfolios can be assessed by aggregating company metrics, taking the weight of each company in the portfolio into account.

5. How much impact can companies create and how do they create it?

We can now use this novel and proprietary impact measurement approach to analyze the amount of impact companies generate and the dimensions of the SDGs generating it. We estimate that listed companies contribute yearly a total of USD 117 billion in social value (total current impact in 2019). This can be defined as the value to society of the operations undertaken and of the products and services generated by the companies to those who impact them. It is not obvious how large this is, as it is difficult to get a feel for the magnitude of these large figures. We try to make sense of them in two ways:

> The first is to compare the magnitude of the value that companies create with conventional measures of the effort that is now dedicated to tackling world challenges, giving a sense of the effort that citizens are currently willing to invest. Looked at in this light, the current company contribution is of a similar magnitude to all official development aid disbursed annually (USD 168 billion in 2019[21]).[22] This figure helps put into perspective the amount of additional effort required to achieve what seem to be aspirational targets. Seen in this light, small increases in companies' impact can be as impactful as many of the current demands for larger development budgets, which are increasingly being guided by the SDGs. This also suggests that, while public investment (including aid) of the kind being demanded to achieve the SDGs has a central role to play, the private sector is also indispensable and can generate additional value.[23]

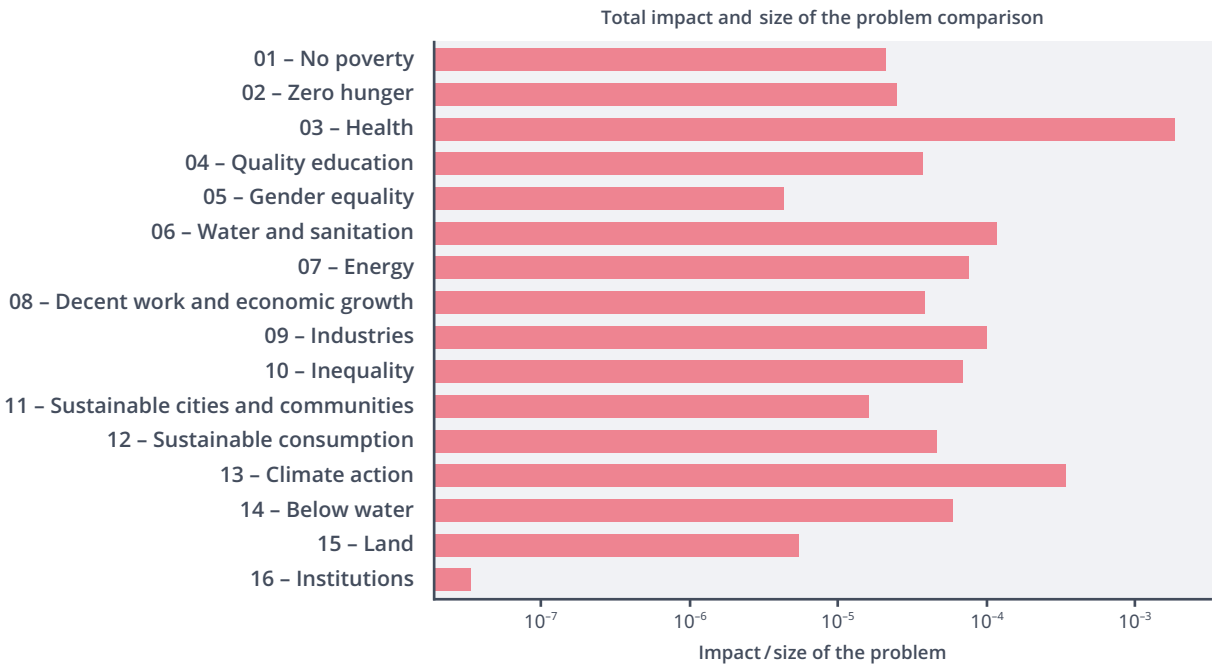
> The second is to compare our estimate of the value of the current contribution made by listed companies with the size of the challenge that each target entails for the world. That is, with how much value in monetary terms would be added to the world if the ambitious SDG target were to be met. When we do that, once we aggregate the total value of the challenge, listed companies contribute a relatively small annual share (less than 1%), with the rest either outstanding and not being met, or relying on other types of companies and government. However, it is interesting to see listed companies meet some SDG challenges to a much greater extent than others. For example, listed companies' contributions are currently highest in the areas of health and climate action, as is shown in Figure 9.

[21] As measured by the World Bank, https://data.worldbank.org/indicator/DT.ODA.ALLD.CD

[22] It is, of course, a lot smaller than the current economic contribution of the private and public sector using the conventional measure of economic development, since SDGs are additional challenges to be achieved by 2030 as opposed to a measure of baseline welfare in the world as expressed by GDP measures. The World Bank estimated world GDP at roughly USD 85 trillion dollars in 2020: https://data.worldbank.org/indicator/NY.GDP.MKTP.CD. Listed companies contribute about 0.14% of world GDP towards the SDGs.

[23] Moreover, others have noted the opportunities associated with this challenge, with an estimated annual USD 12 trillion additional net revenues becoming available if the SDGs are achieved. See the Business and Sustainable Development Commission, Valuing the SDG Prize, 2017.

Figure 9. Share of the size of the SDG problem currently accounted for by listed companies (total impact of listed companies over size of the problem)



Note: Clarity AI estimates of companies' total impact and of the size of the problem (monetary value equivalent that would be added to the world if the SDG targets were met). Figure shows the sum total of all absolute values for company impact (positive and negative) over the estimated size of the problem. Both the size of the challenge and the company contribution are annualized. Log scale.

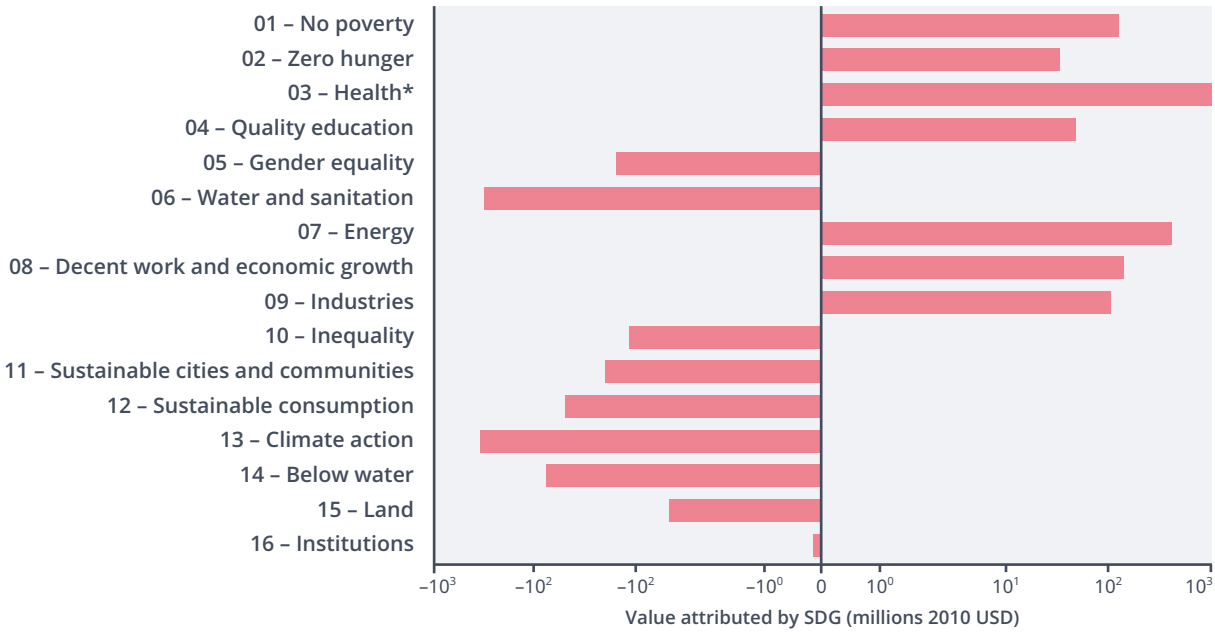
Source: Clarity AI calculations.

5.1. Impact by individual SDGs

For the first time our approach allows us to compare the value that companies contribute to each of the different SDGs. This type of comparison may be useful for investors interested in impact but without strong views about what dimension or dimensions of it they want to optimize across. The impact in each of these dimensions is shown by the equivalent monetary value created or destroyed, taking into account for example, the additional measurable income generated, the estimated cost of medical care, environmental damage, or estimates of the values of life created. Unlike other approaches that produce a qualitative measurement of company alignment with the SDGs, this means we can measure and compare how much value to society companies add with respect to gender equality, education or employment creation.

Using this method, we estimate that the greatest overall social value added by listed companies comes from their contribution to increased health levels. This highlights the tangible improvements to life that companies can create. This value to society is calculated by estimating the value contributed by extending people's lives or improving their quality of life. This is followed by the values for Energy (SDG 7), Decent Work and Economic Growth (SDG 8) and No Poverty (SDG 1). The impact associated with some other SDGs is net negative, i.e., they slow down progress towards the achievement of SDGs, measured in terms of the impact that companies have on them. For example, the dominant effect in relation to SDG 6 (Clean Water and Sanitation) is polluting or using water, which is always negative. SDG 5 (Gender Equality) has a negative absolute impact, with some companies having a positive and others a negative impact. Figure 10 shows the net impact for each SDG associated with listed companies.

Figure 10. Total net impact by listed companies on each of the SDGs



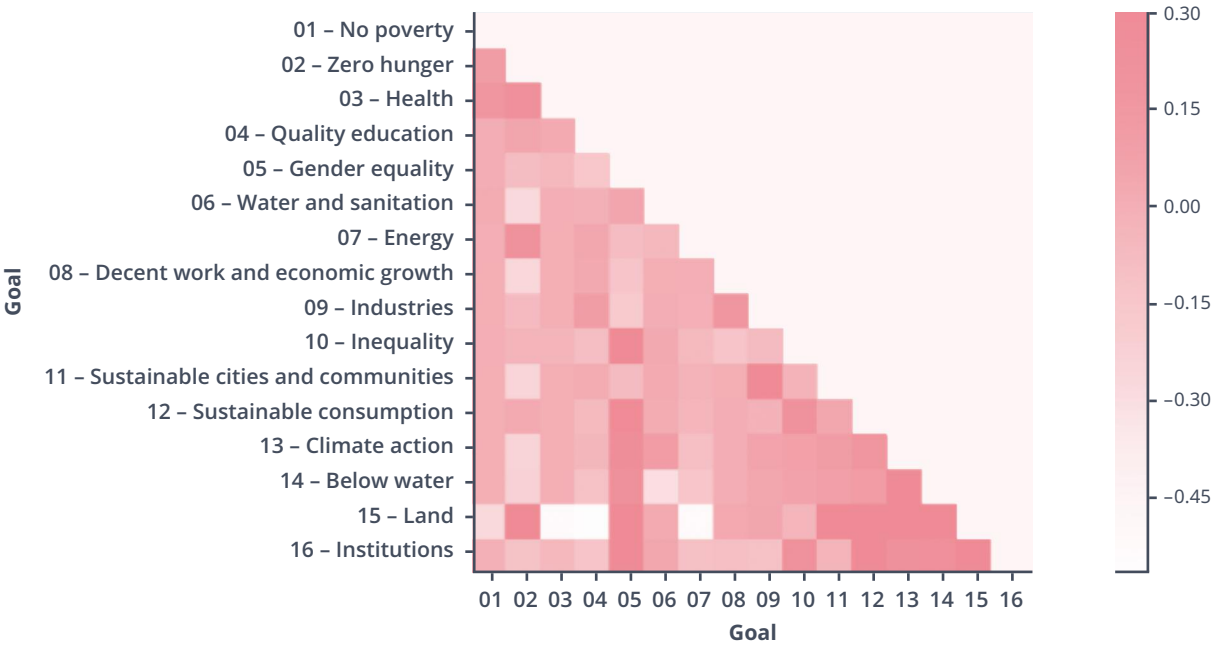
Note: Universe of 27,438 companies.
* The impact of SDG 3 Good Health and Well-being is ~10^4 2010 USD million; this is capped in the graphic.

Source: Clarity AI estimates.

One question that investors interested in impact may have is whether selecting companies with the biggest positive impact overall implies sacrificing impact on specific dimensions of impact that they are interested in. In particular it may seem that, given its large contribution, making a contribution on health would take precedence over all other SDGs. In fact, we find that there is a relatively strong correlation for the impact created across in various SDGs and so no trade-offs between impacts are necessary. Rather, "virtuous cycles" seem to exist in which companies that have a high impact on one dimension also have a high impact on others. The correlation levels are displayed in Figure 11, where we can see that the impact on Good Health and Well-being is positively correlated to a certain extent with other dimensions of impact. Similarly, a positive impact on institutions is very highly correlated with having an impact on seven other SDGs.[24]

[24] Appendix Table A1 shows the contribution made by each sector towards each SDG.

Figure 11. Company-level correlation of company impact between individual goals



Note: A positive value at the intersection between two goals means that companies that have a positive (negative) impact on one goal also have a positive (negative) impact on the other goal. A negative value means that companies that have a positive (negative) impact on one goal also have a negative (positive) impact on the other goal.

Source: Clarity AI calculations.

5.2. Explaining differences in impact across companies

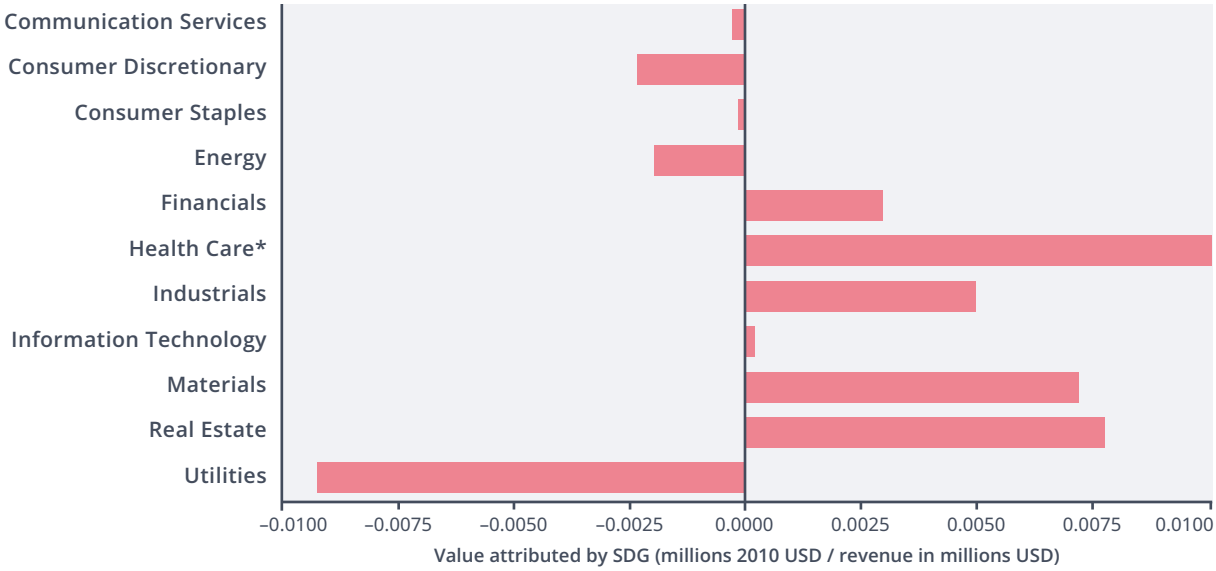
We now turn to exploring what types of companies have the most impact in terms of value under Clarity AI's methodology. Our goal is to help investors understand what Clarity AI's holistic approach to social impact implies when aggregating all the different dimensions of impact for the 16 SDGs we consider. What companies have the greatest levels of impact when all different impacts are evaluated and compared, and what is the source of that impact? We first explore the differences between companies in different sectors and then look at other company attributes that may explain their impact, such as productivity, company size and productivity levels. We then also examine how impact measures relate to other company measures and identify regularities. Ultimately, it is the job of investors to select specific companies. However, company-specific impact correlations can help narrow down the search for optimal companies.

5.2.1. Impact by sector

We focus first on understanding the sectors in which companies have the most impact. Given the content of the SDGs, companies that produce certain types of products which directly affect health (healthcare companies), and that are targeted at the basic needs of the global poor, have the greatest impact. When we aggregate the impact of all companies in a sector and the impact on each SDG, we can conclude that the Healthcare sector (driven by the direct impact of pharmaceuticals and healthcare provision on extending people's lives), Real Estate, Materials and Industrials have the most positive impact. Other sectors such as Consumer Discretionary (driven in this case by tobacco revenues) or Utilities (due to their high CO_2 emissions) result in significant negative values. In fact, a large portion of the impact that a company has (about 41%) can be explained by the sector it belongs to. This also means that slightly more than half

of the impact that companies have is still explained by other company characteristics.[25] The net impact results (produced by aggregating positive and negative impacts by sector) are depicted in Figure 12. This shows the absolute impact level for each sector in panel normalized by the size of the sector.[26]

Figure 12. Net impact across different sectors



Note: The impact is normalized by revenues in the sector.
* The normalized impact of the Health Care sector is 2010 USD ~1 million per revenue in USD millions; this is capped in the graphic.

Source: Clarity AI estimates.

Let us now turn to exploring other general characteristics of companies that correlate with having a greater impact. Naturally, individual companies will have a significant impact component that cannot be explained using these general rules, and so this can only scratch the surface of decision-making.[27]

5.2.2. Relationship to ESG scores

Company impact measures something different from ESG performance scores. While ESG performance scores typically measure the financial risk to a company based on its revenue sources and how it operates, company impact provides information on the positive and negative outcomes it generates through its products and operations on the world at large. One focuses on potential future negative effects

[25] The percentage variation in impact is explained by the R2 statistic in the Appendix. However, the results of a breakdown by companies with net positive and net negative impact suggest that most sectors include companies with both positive and negative impacts.

[26] Appendix Table A1 shows the impact of companies in each sector by SDG, while Table A2 shows the number of companies in each sector that have an impact.

[27] In order to make our analysis easier to follow, the rest of this paper uses the scores 1–100 (as used in the Clarity product) rather than absolute levels of impact. This "scoring" procedure essentially condenses the full variation of impacts into a linear scale that is not sensitive to outliers.

on the company, while the other focuses on impact in the world, in Clarity AI's approach, particularly in tackling the global challenges identified by the SDGs. However, we may expect the two to go together: companies that are concerned about, and actively manage for, ESG may also achieve better impact.

Running regressions for 27,000 companies on the cross-section of the latest data (2019) reveals that this is in fact the case. We statistically control for sector effects by including 166 sub-industry fixed effects, so as to account for the substantial impact of being in a particular sector. This allows us to look at differences in ESG measures within industry. We find that, in practice, a company that has a larger ESG score tends to have a greater impact score as well (after adjusting for industry differences). In fact, every one-point increase in the ESG score is associated with a .15-point increase in the impact score, a coefficient that is statistically highly significant.

This pattern in fact extends to each of the individual components making up ESG. Higher scores in each of the individual ESG dimensions are associated with greater impact.[28] A one-point increase in the environmental dimension (E) is associated with a .04-point rise in the impact score. A one-point increase in the social dimension (S) is associated with a .09-point increase in impact. Finally, a one-point increase in the governance dimension (G) is associated with an impact score that is .11 points higher. All of these regression coefficients are highly significant, but it seems that the largest association with impact is for governance metrics (see Table 1).

Table 1. Simple regression models of Impact (top table) and Impact scores (bottom table) on ESG scores, and each of its components (no additional control variables)

Independent variable	P value	Coefficient	Standard error	r^2	Number of observations
ESG score	1.14E-01	2.02E+04	1.28E+04	9.18E-01	27,438
E score	1.09E-01	1.03E+04	6.44E+03	4.26E-01	27,438
S score	9.60E-02	1.71E+04	1.03E+04	4.26E-01	27,438
G score	5.92E-01	7.22E+03	1.35E+04	4.26E-01	27,438
ESG score	1.47E-34	1.52E-01	1.24E-02	9.18E-01	27,438
E score	2.51E-10	3.96E-02	6.26E-03	9.18E-01	27,438
S score	2.62E-18	8.73E-02	9.99E-03	9.18E-01	27,438
G score	2.05E-17	1.11E-01	1.31E-02	9.18E-01	27,438

Source: Clarity AI.

5.2.3. Geographical differences

Companies from different parts of the world may generate different impact profiles. After all, the SDGs anchoring Clarity AI's measure of impact naturally focus on improving life in emerging markets by setting targets such as for alleviating hunger, tackling poverty and reducing non-communicable diseases. In other

[28] The high levels of correlation partly reflect the fact that impact scores consider the impact both of goods and services and of operations, while ESG scores consider operations. When we restrict the company metrics used to ones that are solely focused on operations, the correlations are as high as 96% in the case of the ESG scores and 76% in the case of impact values.

words, companies that provide goods and services (and create employment) targeting underserved populations are likely to be more impactful. For example, many of the targets relating to SDG 6 (Good Health and Well-being), such as reducing child mortality, are either solely or primarily relevant to populations in emerging markets. As a result, the impact measures for companies tackling these specific needs will have large contributions by their activity in those markets. Since many targets have a focus on those types of issues, presence in developing markets will tend to be correlated with greater impact, as they provide benefits to underserved populations.

When we look at the differences in impact generated by companies headquartered in different regions of the world, companies in Southeast Asia, the Eastern Mediterranean, Latin America and the Caribbean, and Africa have higher impact levels than those in North America or Europe after controlling for industry composition and individual ESG scores.[29]

Table 2. Simple regression models of Impact (top table) and Impact scores (bottom table) on company headquarters

Independent variable	P value	Coefficient	Standard error	r^2	Number of observations
Region: Eastern Mediterranean	4.99E-04	1.54E+06	4.43E+05	4.13E-01	37,157
Region: Europe	2.12E-02	−6.07E+05	2.63E+05	4.13E-01	37,157
Region: Latin America & Caribbean	8.56E-01	−9.01E+04	4.97E+05	4.13E-01	37,157
Region: North America	1.79E-03	−8.68E+05	2.78E+05	4.13E-01	37,157
Region: South-East Asia	2.11E-10	1.86E+06	2.93E+05	4.13E-01	37,157
Region: Western Pacific	4.26E-03	−6.78E+05	2.37E+05	4.13E-01	37,157
Region: Eastern Mediterranean	2.35E-01	5.38E-01	4.53E-01	9.13E-01	37,157
Region: Europe	7.32E-01	9.23E-02	2.69E-01	9.13E-01	37,157
Region: Latin America & Caribbean	9.16E-01	−5.33E-02	5.08E-01	9.13E-01	37,157
Region: North America	1.30E-02	−7.05E-01	2.84E-01	9.13E-01	37,157
Region: South-East Asia	1.03E-02	7.69E-01	3.00E-01	9.13E-01	37,157
Region: Western Pacific	3.00E-05	1.01E+00	2.42E-01	9.13E-01	37,157

Note: Regression models of impact values by geography. The example shows the coefficient on each region's fixed effects relative to Africa (the reference category).

Source: Clarity AI.

5.2.4. Company size and productivity

Lastly, we now look at other company variables such as a firm's labor productivity or size. One might think that companies that are more productive or larger would be able to put more emphasis on, or dedicate more resources to, creating impact even after impact levels have been normalized by revenue.

[29] The order given in this sentence reflects the order of average impacts per region, although the differences are not always statistically significant.

However, this theory is not borne out by our data. After controlling for industry effects, regional effects and ESG scores, impact levels are similar for companies with different levels of labor productivity, or that are of different sizes in terms of revenues, employees or market capitalization. This suggests that our measures of impact are not a function of larger structures, but are instead driven by whether or not the companies concerned are tackling challenges singled out by the SDGs. In fact, underserved communities prioritized by the SDGs may often be targeted by smaller, more nimble companies, which may also be the most effective in terms of size. Companies with the greatest impact (adjusted by size) could require significant effort to identify by investors, as they may not be the ones with the largest reach or biggest PR departments. "Impact diamonds" in the rough (smaller and possibly underfunded/undervalued companies) that would likely otherwise go unnoticed are out there and can be identified using Clarity AI.

Table 3. Simple regression models of Impact (top table) and Impact scores (bottom table) on each ESG score component, company headquarters, labour productivity, company revenues, company market cap, and total number of company's employees

Independent variable	P value	Coefficient	Standard error	r^2	Number of observations
Region: Eastern Mediterranean	7.00E-03	2.25E+06	8.33E+05	4.22E-01	25,358
Region: Europe	6.10E-02	−6.21E+05	3.31E+05	4.22E-01	25,358
Region: Latin America & Caribbean	9.80E-01	1.74E+04	7.12E+05	4.22E-01	25,358
Region: North America	1.82E-01	−4.68E+05	3.51E+05	4.22E-01	25,358
Region: South-East Asia	1.84E-10	2.60E+06	4.08E+05	4.22E-01	25,358
Region: Western Pacific	3.03E-02	−6.30E+05	2.91E+05	4.22E-01	25,358
Labour prod	8.47E-01	−1.18E+03	6.14E+03	4.22E-01	25,358
Revenues	2.84E-01	−1.49E+01	1.39E+01	4.22E-01	25,358
Employees	5.11E-01	2.87E+00	4.37E+00	4.22E-01	25,358
Market cap	7.18E-02	6.73E+00	3.74E+00	4.22E-01	25,358
E score	1.23E-01	1.13E+04	7.31E+03	4.22E-01	25,358
S score	6.47E-01	5.44E+03	1.19E+04	4.22E-01	25,358
G score	6.47E-01	6.91E+03	1.51E+04	4.22E-01	25,358
Region: Eastern Mediterranean	2.07E-02	1.89E+00	8.17E-01	9.17E-01	25,358
Region: Europe	2.59E-01	−3.66E-01	3.25E-01	9.17E-01	25,358
Region: Latin America & Caribbean	3.37E-01	6.70E-01	6.98E-01	9.17E-01	25,358
Region: North America	3.74E-01	−3.05E-01	3.44E-01	9.17E-01	25,358
Region: South-East Asia	6.42E-04	1.37E+00	4.00E-01	9.17E-01	25,358
Region: Western Pacific	1.97E-04	1.06E+00	2.85E-01	9.17E-01	25,358
Labour prod	8.72E-01	9.72E-04	6.02E-03	9.17E-01	25,358
Revenues	7.26E-01	4.76E-06	1.40E-05	9.17E-01	25,358
Employees	8.45E-01	−8.34E-07	4.00E-06	9.17E-01	25,358
Market cap	7.76E-02	6.47E-06	4.00E-06	9.17E-01	25,358
E score	4.73E-02	1.42E-02	7.16E-03	9.17E-01	25,358
S score	1.99E-06	5.53E-02	1.16E-02	9.17E-01	25,358
G score	2.26E-09	8.85E-02	1.48E-02	9.17E-01	25,358

Note: Regression models of impact values by company characteristics. All models include industry fixed effects for 166 industries. R-squared = .42. N = 25,358.

Source: Clarity AI.

Taken together, the regression analyses in this section serve to identify the location of impact clusters by sector, region and operational practices (ESG). They also illustrate that identifying impact is nontrivial, by showing a number of potential correlates that are not in fact good predictors of impact. It is worth noting that there is a great deal of variation even within individual sectors and regions that investors will want to analyze.

6. Implications and next steps

The challenge of measuring impact appropriately is at the heart of the difference between theory and practice in impact investment. One starting point for a common measurement approach is to use the SDGs as a framework for understanding what constitutes impact.

This paper explores the implications of taking such an approach to measuring impact using publicly available information about listed companies. We identify companies' relative contribution towards achieving these SDGs compared to government-led actions such as foreign aid. We then analyze the relative impact of each of the different SDGs, as well as the sectors in which companies have the greatest impact. For the first time these analyses do give a sense of the magnitude of the relative contribution of different sectors and of each different issues (each of the goals) to the achievement of the SDGs, particularly in relative terms.

Lastly, we suggest that there is considerable room beyond these coarse, aggregate measures for deeper analysis of individual companies' impact. This can be achieved by making granular use of publicly available information and social science research that can be used to connect with impact. Such an approach can assist both in the analysis of specific companies and in the construction of portfolios and indices that include impact measures.

Appendix: Example calculations

Calculations and key impact assumptions for SDG 3

3 Good Health and Well-being: Ensure healthy lives and promote well-being for all at all ages

Target 3.1 – Reduce maternal mortality By 2030, reduce the global maternal mortality ratio to less than 70 per 100,000 live births	
How do we measure company performance	Companies can have an impact in this target by providing treatments that reduce maternal mortality. We measure companies performance based on their: – Gynecology Biopharmaceuticals Revenues in Low Income and Lower Middle Income countries for the applicable industries – Bacterial Infectious Disease Biopharmaceuticals Revenues in Low Income and Lower Middle Income countries for the applicable industries – Vascular Disorders Biopharmaceuticals Revenues in Low Income and Lower Middle Income countries for the applicable industries – Healthcare Revenues in Low Income and Lower Middle Income countries for the applicable industries
How much value can be unlocked by a change in company performance	A company can generate: – **17 Impact units per USD of revenue from bacterial infectious disease biopharmaceuticals** for the applicable industries – **3 Impact units per USD of revenue from vascular disorders biopharmaceuticals** for the applicable industries – **41 Impact units per USD of revenue from gynecology biopharmaceuticals** for the applicable industries – **25 Impact units per USD of revenue from healthcare services** for the applicable industries For each treatment, the impact conversion rate is calculated based on the cost of the treatment, its effectiveness, the share of the treatment dedicated to the disease, and the value of the lives saved
What is the value listed companies can unlock from achieving the target	The total potential value unlocked comes from two scenarios: – The business-as-usual scenario is calculated based on a sustained annual rate of reduction of the maternal mortality ratio – The counterfactual scenario is calculated based on a linear decrease of the maternal mortality ratio of the countries to reach a global value of less than 70 per 100,000 live births by 2030. The scenario also considers that all countries reduce their maternal mortality ratio by at least two-thirds from its 2010 baseline and that no country has a ratio greater than 140 deaths per 100,000 live births by 2030 – Only postpartum hemorrhage, sepsis (infection), hypertensive disorders/eclampsia, obstructed labor, and unsafe abortion are considered - these causes account for 72% of the maternal deaths
Target 3.2 – End all preventable deaths under 5 years of age By 2030, end preventable deaths of newborns and children under 5 years of age, with all countries aiming to reduce neonatal mortality to at least as low as 12 per 1,000 live births and under-5 mortality to at least as low as 25 per 1,000 live births	
How do we measure company performance	Companies can have an impact in this target by providing treatments that reduce the probability of dying of newborns and children under 5. We measure companies performance based on their: – Bacterial Vaccines Revenues in Low Income and Lower Middle Income countries for the applicable industries – Healthcare Revenues in Low Income and Lower Middle Income countries for the applicable industries

How much value can be unlocked by a change in company performance	A company can generate: – **391 Impact units per USD of revenue from bacterial vaccines** for the applicable industries – **35 Impact units per USD of revenue from healthcare revenues** for the applicable industries For each treatment, the impact conversion rate is calculated based on the cost of the treatment, its effectiveness, the share of the treatment dedicated to neonatal and under-5 care and the value of the lives saved
What is the value listed companies can unlock from achieving the target	The total potential value unlocked comes from two scenarios: – The business-as-usual scenario is calculated based on UN projections of deaths and distribution across age groups – The counterfactual scenario is calculated - for countries that won't reach the target in the business-as-usual scenario - based on a linear improvement from 2020–2030 to reach the neonatal and under-5 mortality rates specified by the target (12 per 1,000 and 25 per 1,000 respectively) – Companies impact was limited to treatment of respiratory infections, birth asphyxia, trauma and premature births - other causes of neonatal and under-5 represent less than 10% of deaths each in Low and Lower Middle Income countries
Target 3.3 – Fight communicable diseases By 2030, end the epidemics of AIDS, tuberculosis, malaria and neglected tropical diseases and combat hepatitis, water-borne diseases and other communicable diseases	
How do we measure company performance	Companies can have an impact in this target by providing treatments for the most relevant communicable diseases. We measure companies performance based on their: – Viral Biopharmaceuticals Revenues for the applicable industries – Antibiotics Revenues for the applicable industries
How much value can be unlocked by a change in company performance	A company can generate: – **83 Impact units per USD of revenue from viral biopharmaceuticals** for the applicable industries – **35 Impact units per USD of revenue from antibiotics** for the applicable industries For each treatment, the impact conversion rate is calculated based on the cost of the treatment, its effectiveness, the share of the treatment dedicated to the disease and the value of the lives saved
What is the value listed companies can unlock from achieving the target	The total potential value unlocked comes from two scenarios: – The business-as-usual scenario is calculated based on a constant mortality rate for HIV and tuberculosis and expected reduction of malaria incidence – The counterfactual scenario is calculated based on reaching the global targets for HIV, tuberculosis and malaria – Hepatitis B is not considered in this target since over 80% of deaths related to hepatitis B are due to cancers – cancers are taken into account on target 3.4
Target 3.4 – Reduce mortality from non-communicable diseases and promote mental health By 2030, reduce by one third premature mortality from non-communicable diseases through prevention and treatment and promote mental health and well-being	
How do we measure company performance	Companies can have an impact in this target through prevention or treatment of non-communicable diseases. The main actions related to prevention are provision of better quality food, provision of reduced harm tobacco alternatives and reduction of air pollutants emission. Companies can contribute to treatment through provision of healthcare services and medicine related to the different non-communicable diseases. We measure companies performance based on their: – Adjusted Food and Beverage Revenues for the applicable industries • Risks associated with dietary deficiencies are not considered. Only those risks that can be mitigated by providing less unhealthy food (which represent 24% of total dietary risk) are considered

	– Adjusted Food and Beverage Revenues for the applicable industries • Risks associated with dietary deficiencies are not considered. Only those risks that can be mitigated by providing less unhealthy food (which represent 24% of total dietary risk) are considered – Adjusted Tobacco Revenues for the applicable industries • E-cigarettes are considered a reduced harm alternative to regular tobacco – Emissions of Air Pollutants • Actions to reduce deaths by indoor air pollution are not considered in this target, but rather on target 7.1 – Oncology Biopharmaceuticals Revenues for the applicable industries – Healthcare Revenues for the applicable industries – Diabetes Biopharmaceuticals Revenues for the applicable industries – Respiratory System Biopharmaceuticals Revenues for the applicable industries – Cardiovascular System Biopharmaceuticals Revenues for the applicable industries – Toxicology Biopharmaceuticals Revenues for the applicable industries – Alcohol and physical inactivity are not considered in this target – each of this factors accounts for less than 4% of the global NCD deaths
How much value can be unlocked by a change in company performance	A company can generate: – **3 Impact units per USD of adjusted food revenue** for the applicable industries – **44 Impact units per USD of revenue from toxicology biopharmaceuticals** for the applicable industries – **47 Impact units per USD of adjusted revenue from tobacco and reduced harm alternatives** for the applicable industries – **670 Impact units per USD of revenue from oncology biopharmaceuticals** for the applicable industries – **84 Impact units per USD of revenue from healthcare services** for the applicable industries – **127 Impact units per USD of revenue from cardiovascular system biopharmaceuticals** for the applicable industries – **480 Impact units per USD of revenue from respiratory system biopharmaceuticals** for the applicable industries – **35 Impact units per USD of revenue from diabetes biopharmaceuticals** for the applicable industries – The metric used to measure air pollution is already expressed in terms of social impact. The impact is just converted into Impact Units for consistency The impact conversion rate for each metric is calculated based on: – **Adjusted Food and Beverage Revenues** – The value of lives saved from having a healthier diet and the total additional revenues adjusted by total fat, saturated fat, sodium and sugar levels – **Adjusted Tobacco Revenues** – The total value of lives saved and the total additional adjusted revenues of tobacco and reduced harm alternatives – **Toxicology Biopharmaceuticals** – The total value of lives saved and the total additional revenues from toxicology biopharmaceuticals – **Air pollution** – The metric used for this challenge is already expressed in USD. The dollars are just converted into USD 2010 for consistency – **Healthcare and Pharmaceuticals** – For each treatment, the impact conversion factor is calculated based on the cost of the treatment, its effectiveness, the share of the treatment dedicated to the disease and the value of the lives saved

What is the value listed companies can unlock from achieving the target	The total potential value unlocked comes from two scenarios: – The business-as-usual scenario is calculated based on the expected population evolution and a constant premature mortality rate from Non-communicable Diseases (NCDs) in each country – The counterfactual scenario is calculated based on a linear decrease of the premature mortality rate from NCDs to reach a one-third reduction of its original value by 2030 – Suicide is not considered in the calculations – total number of suicides is lower than 2% of global NCD deaths
Target 3.5 – Prevent and treat substance abuse Strengthen the prevention and treatment of substance abuse, including narcotic drug abuse and harmful use of alcohol	
How do we measure company performance	Companies can have an impact in this target by providing reduced harm tobacco alternatives or by providing toxicology treatments. We measure companies performance based on their: – Adjusted Beverages Revenues for distillers and vintners – Adjusted Tobacco Revenues for the applicable industries • E-cigarettes are considered a reduced harm alternative to regular tobacco – Toxicology Biopharmaceuticals Revenues for the applicable industries
How much value can be unlocked by a change in company performance	A company can generate: – **27 Impact units per USD of revenue adjusted by average alcohol content of beverages sold** for distillers & vintners – **46 Impact units per USD of adjusted revenue from tobacco and reduced harm alternatives** for the applicable industries – **44 Impact units per USD of revenue from toxicology biopharmaceuticals** for the applicable industries The impact conversion rate for each metric is calculated based on: – **Adjusted Beverages Revenues** – The total value of lives saved and the total additional revenues adjusted by average alcohol content of beverages sold – **Adjusted Tobacco Revenues** – The total value of lives saved and the total additional adjusted revenues of tobacco and reduced harm alternatives – **Toxicology Biopharmaceuticals Revenues** – The total value of lives saved and the total additional revenues from toxicology biopharmaceuticals
What is the value listed companies can unlock from achieving the target	The total potential value unlocked comes from two scenarios: – The business-as-usual scenario is calculated based on the current tobacco related mortality rate and the expected population evolution – The counterfactual scenario is calculated based on the current potential for additional toxicology drugs and reduced harm tobacco alternatives observed across companies in the universe that is covered by Clarity AI
Target 3.7 – Universal access to sexual and reproductive care, family planning and education By 2030, ensure universal access to sexual and reproductive health-care services, including for family planning, information and education, and the integration of reproductive health into national strategies and programmes	
How do we measure company performance	Companies can have an impact in this target by providing modern contraceptive methods. We measure companies performance based on their: – Childbirth and Contraception Biopharmaceuticals Revenues for the applicable industries – We currently don't have data available for Mechanical contraceptive methods but plan to include this data when it becomes available

How much value can be unlocked by a change in company performance	A company can generate: – **102 Impact units per USD of revenue from contraceptives** for the applicable industries • Contribution of companies is not adjusted by lack of information or current social stigmas The impact conversion rate is calculated based on the value of the total lives saved and the additional revenues from contraceptive methods
What is the value listed companies can unlock from achieving the target	The total potential value unlocked comes from two scenarios: – The business-as-usual scenario is calculated based on the expected evolution of unmet needs for modern contraceptive methods and its effect in reducing unwanted pregnancies and maternal deaths – The counterfactual scenario is calculated based on reaching full access to modern contraceptive methods The maternal mortality rate for unintended pregnancies is considered to be equal to the overall maternal mortality rate, despite the propensity to abortion being highest for unintended pregnancies.
Target 3.8 – Achieve universal health coverage Achieve universal health coverage, including financial risk protection, access to quality essential health-care services and access to safe, effective, quality and affordable essential medicines and vaccines for all	
How do we measure company performance	Companies can have an impact in this target by providing healthcare services in countries where it is needed the most. We measure companies performance based on their: – Healthcare Revenue in Low Income, Lower Middle Income and Upper Middle Income countries for the applicable industries
How much value can be unlocked by a change in company performance	A company can generate: – **3 Impact units per USD of revenue from healthcare services** for the applicable industries The impact conversion rate is calculated based on the value of lives saved and the additional revenue expected by private healthcare providers
What is the value listed companies can unlock from achieving the target	The total potential value unlocked comes from two scenarios: – The business-as-usual scenario is calculated based on the mortality rate by country, the share of deaths that are amenable and are due to lack of utilization of healthcare services and on the expected evolution of healthcare services coverage – The counterfactual scenario is calculated based on achieving zero amenable deaths due to lack of healthcare services coverage Total and private health care expenditure growth is assumed to be proportional to health care coverage growth. The share of private health care is assumed to be constant over time in both the business-as-usual and the target scenarios.
Target 3.9 – Reduce illnesses and death from hazardous chemicals and pollution By 2030, substantially reduce the number of deaths and illnesses from hazardous chemicals and air, water and soil pollution and contamination	
How do we measure company performance	Companies can have an impact in this target by providing modern contraceptive methods. We measure companies performance based on their: – Air pollutant emissions
How much value can be unlocked by a change in company performance	The metric used for this challenge is already expressed in terms of social impact. The impact is just converted into Impact Units for consistency
What is the value listed companies can unlock from achieving the target	The total potential value unlocked comes from two scenarios: – The business-as-usual scenario is calculated based on a constant mortality rate from outdoor air pollution and the expected evolution of countries population – The counterfactual scenario is calculated based on the current potential for reduced air pollution observed across companies in the universe that is covered by Clarity AI

Table A1. Impact per sector and goal (SDG 1–8)

		Impact in 2019 (USD 2010 mln)							
	SDG goals	01 – No poverty	02 – Zero hunger	03 – Health	04 – Quality education	05 – Gender equality	06 – Water and sanitation	07 – Energy	08 – Decent work and economic growth
Industrial sector	Impact type								
Communication Services	–	–80	0	–7,031	0	–1,834	–205	–793	–448
Communication Services	+	105	0	0	2,322	198	0	1,755	378
Consumer Discretionary	–	–797	0	–899,337	0	–4,504	–3,475	–1,368	–44,600
Consumer Discretionary	+	1,179	3	513,661	22,320	839	40	12,432	16,497
Consumer Staples	–	–297	–4,742	–7,522,867	0	–2,706	–19,836	–869	–1,258
Consumer Staples	+	396	9,066	467,791	2,732	282	0	7,020	843
Energy	–	–74	0	–71,636	0	–3,470	–13,837	–14,074	–13,509
Energy	+	3,000	0	0	1,411	59	2,929	64,006	366
Financials	–	–164	0	–4,038	0	–5,234	–891	–3,671	–500
Financials	+	4,504	31	132,123	4,988	499	0	1,190	389,468
Health Care	–	–56	0	–634	0	–1,840	–4,042	–131	–18,646
Health Care	+	216,953	3,896	99,609,388	1,527	269	0	1,301	19,856
Industrials	–	–442	0	–121,513	0	–6,047	–298,299	–4,705	–58,589
Industrials	+	17,093	6,774	663,774	4,991	533	15,593	492,590	6,900
Information Technology	–	–168	0	–1,552	0	–2,812	–6,082	–1,401	–40,916
Information Technology	+	616	0	0	3,742	429	219	45,248	34,951
Materials	–	–129	0	–229,088	0	–2,819	–175,862	–13,009	–19,718
Materials	+	14,612	52,288	1,516,191	1,912	117	14,423	152,513	6,046
Real Estate	–	–31	0	–579	0	–1,055	–592	–464	–71
Real Estate	+	1,663	2	218,648	585	78	0	718	290
Utilities	–	–26	0	–124,028	0	–1,289	–93,931	–437	–92
Utilities	+	454	0	0	1,037	71	397	96,999	122

Note: This divides the impact for each sector by the companies with negative impact ("–" in the second column) and those with positive impact ("+" in the second column).

Source: Clarity AI.

Table A1. Impact per sector and goal (SDG 9–16)

		Impact in 2019 (USD 2010 mln)							
	SDG goals	09 – Industries	10 – Inequality	11 – Sustainable cities and communities	12 – Sustainable consumption	13 – Climate action	14 – Below water	15 – Land	16 – Institutions
Industrial sector	Impact type								
Communication Services	–	0	–2,657	–2,232	–11	–6,109	–169	0	–5
Communication Services	+	295	818	0	0	0	0	0	0
Consumer Discretionary	–	–8,235	–13,947	–1,308	–3,028	–15,905	–2,415	0	–14
Consumer Discretionary	+	551	10,002	301	0	391	0	0	0
Consumer Staples	–	–238	–7,194	–1,116	–20,517	–16,007	–3,005	–4,742	–8
Consumer Staples	+	85	3,596	0	0	0	0	0	0
Energy	–	–1,429	–2,304	–22,749	–13,087	–131,709	–35,471	0	–28
Energy	+	82	574	0	0	0	0	0	0
Financials	–	0	–6,253	–1,282	–8	–5,236	–302	0	–18
Financials	+	78,047	2,681	0	0	0	0	0	0
Health Care	–	–369	–2,746	–198	–20	–3,339	–441	0	–7
Health Care	+	572	2,541	0	0	0	0	0	0
Industrials	–	–4,352	–10,758	–38,588	–363	–66,212	–21,244	0	–16
Industrials	+	326,596	4,991	117,585	0	23,712	22,126	0	0
Information Technology	–	–7,571	–5,203	–492	–34	–8,967	–230	0	–7
Information Technology	+	1,040	3,384	0	0	6,102	0	0	0
Materials	–	–177,697	–3,305	–49,411	–10,713	–203,226	–66,368	0	–9
Materials	+	630	2,145	319	0	1,227	165	0	0
Real Estate	–	0	–1,031	–183	–53	–2,846	–114	0	–2
Real Estate	+	0	1,380	0	0	0	0	0	0
Utilities	–	0	–967	–39,424	–198	–253,983	–49,395	0	–4
Utilities	+	3	511	0	0	21,245	10,901	0	0

Note: This divides the impact for each sector by the companies with negative impact ("–" in the second column) and those with positive impact ("+" in the second column).

Source: Clarity AI.

Table A2. Number of companies per sector and goal (SDG 1–8)

		Number of companies							
	SDG goals	01 – No poverty	02 – Zero hunger	03 – Health	04 – Quality education	05 – Gender equality	06 – Water and sanitation	07 – Energy	08 – Decent work and economic growth
Industrial sector	Impact type								
Communication Services	–	826	0	1,616	0	1,610	1,616	378	1,119
Communication Services	+	827	0	0	1,250	1,000	0	1,302	921
Consumer Discretionary	–	2,612	0	5,139	0	5,126	5,153	1,700	4,249
Consumer Discretionary	+	2,584	33	186	4,290	4,284	4	4,022	3,237
Consumer Staples	–	951	230	2,606	0	2,568	2,574	312	2,514
Consumer Staples	+	1,634	1,060	427	2,515	2,426	0	2,548	1,847
Energy	–	966	0	1,483	0	1,482	1,484	314	1,476
Energy	+	538	6	0	1,483	813	18	1,234	626
Financials	–	1,312	0	3,718	0	3,713	3,776	718	2,518
Financials	+	2,462	6	9	3,571	2,963	0	3,171	2,562
Health Care	–	742	0	2,846	0	2,844	2,856	845	2,181
Health Care	+	2,198	60	1,366	2,610	2,674	0	2,051	2,473
Industrials	–	2,775	0	6,737	0	6,731	6,788	1,236	6,604
Industrials	+	4,063	125	23	6,602	5,833	137	6,181	4,820
Information Technology	–	1,669	0	4,525	0	4,523	4,532	1,661	3,875
Information Technology	+	2,879	0	0	4,449	4,079	4	4,123	3,953
Materials	–	1,755	0	4,111	0	4,028	4,126	835	4,091
Materials	+	2,421	288	55	3,890	3,794	87	3,955	3,007
Real Estate	–	1,080	0	2,429	0	2,427	2,437	1,205	1,776
Real Estate	+	1,362	11	12	2,323	2,111	0	1,584	1,382
Utilities	–	316	0	928	0	925	929	60	928
Utilities	+	619	0	0	928	862	11	441	632

Note: This divides the number of companies for each sector by the companies with negative impact ("–" in the second column) and those with positive impact ("+" in the second column).

Source: Clarity AI.

Table A2. Number of companies per sector and goal (SDG 9 –16)

		Number of companies							
	SDG goals	09 – Industries	10 – Inequality	11 – Sustainable cities and communities	12 – Sustainable consumption	13 – Climate action	14 – Below water	15 – Land	16 – Institutions
Industrial sector	Impact type								
Communication Services	–	0	969	1,616	1,616	1,631	1,039	0	1,616
Communication Services	+	321	833	0	0	0	0	0	0
Consumer Discretionary	–	2,624	2,982	5,139	5,156	5,160	4,123	0	5,139
Consumer Discretionary	+	1,406	2,648	23	0	24	0	0	0
Consumer Staples	–	259	1,183	2,570	2,582	2,593	2,515	230	2,570
Consumer Staples	+	599	1,652	0	0	0	0	0	0
Energy	–	318	1,081	1,483	1,487	1,486	1,274	0	1,483
Energy	+	169	542	0	0	0	0	0	0
Financials	–	0	1,946	3,718	3,718	3,734	2,836	0	3,720
Financials	+	130	2,484	0	0	0	0	0	0
Health Care	–	571	1,277	2,846	2,850	2,862	2,627	0	2,846
Health Care	+	1,280	2,131	0	0	0	0	0	0
Industrials	–	2,008	3,299	6,737	6,763	6,813	6,334	0	6,737
Industrials	+	2,432	4,131	345	0	166	75	0	0
Information Technology	–	2,680	2,168	4,525	4,528	4,558	4,212	0	4,525
Information Technology	+	2,708	2,877	0	0	109	0	0	0
Materials	–	3,194	1,874	4,111	4,139	4,129	3,751	0	4,110
Materials	+	1,582	2,571	10	0	13	8	0	0
Real Estate	–	0	1,324	2,429	2,460	2,434	1,420	0	2,429
Real Estate	+	22	1,357	0	0	0	0	0	0
Utilities	–	0	459	928	928	929	928	0	928
Utilities	+	64	613	0	0	182	18	0	0

Note: This divides the number of companies for each sector by the companies with negative impact ("–" in the second column) and those with positive impact ("+" in the second column).

Source: Clarity AI.

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Learn more about how Qontigo can help you better manage risk and enhance your investment process.
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