Market Navigation

Sustainable Investment | Green Revenues

Sizing the green economy: Green Revenues and the EU taxonomy

September 2020

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Overview

The greening of the global economy presents significant opportunities. However, investors and policymakers face a common challenge: How can green business activities be systematically identified, categorized, and measured across diverse sectors, supply chains and asset classes to mobilize investment at scale?

The EU Taxonomy is an ambitious regulatory initiative that aims to address this challenge. However, while the EU Taxonomy will set out a catalogue of green criteria, it leaves it to markets to assess individual companies against these criteria.

Yet in their current form, corporate disclosures are typically insufficient—FTSE Russell research has found that less than 30% of companies with green revenues provide disclosures that are granular enough to allow investors to systematically break out and quantify companies' green business activities.

The research paper discusses the need for green taxonomies, summarizes the development of and approaches taken by the EU Taxonomy and the FTSE Russell Green Revenues Classification System (GRCS), and examines the overlaps and points of difference between the two approaches. Importantly, it explains how GRCS dataset can provide a steppingstone for investors to comply with the requirements of the EU Taxonomy regulation.

Acknowledgements

Table of contents

Executive summary

The greening of the global economy—in response to the threat of climate change and other environmental challenges—presents myriad opportunities to investors. However, investors and policymakers face a common challenge: How can green business activities be systematically identified, categorized, and measured across diverse sectors, supply chains and asset classes to mobilize investment at scale?

The EU Taxonomy is an ambitious regulatory initiative that aims to address this challenge. The Taxonomy report (first published by the EU Technical Expert Group on Sustainable Finance in June 2019 and updated in March 2020) sets out detailed criteria for 72 economic activities that make a significant contribution to climate change mitigation and 70 to adaptation (for now covering two of the EU's six environmental objectives[1]).

The legal basis for the Taxonomy classification, the EU Taxonomy Regulation creates additional legal disclosure obligations that are scheduled to come into force from January 2022:

- c. 6000 large EU companies subject to the EU Non-Financial Reporting Directive (NFRD) will be required to disclose whether, and to what extent, their activities are Taxonomy-aligned, in terms of turnover, capex or opex; and

- Providers of financial products, offered in the EU, that pursue sustainable investment or promote environmental characteristics must demonstrate how they have used the Taxonomy and the proportion of underlying investments that are Taxonomy-aligned.

Investors face a considerable practical challenge in meeting these requirements. While the EU Taxonomy will set out a catalogue of green criteria, it leaves it to markets to assess individual companies against these criteria. Yet FTSE Russell research shows that currently less than 30% of companies with green revenues provide disclosures that are granular enough to allow investors to systematically break out and quantify companies' green business activities. These disclosures will improve over time, but this process is likely to be gradual, particularly for non-EU companies.

In the meantime, rigorous estimates that can supplement disclosed data will have to play a key role in determining green revenues for individual companies; and to provide investors with robust datasets to measure the degree to which investment products and portfolios are aligned with the EU Taxonomy.

FTSE Russell's Green Revenues data provides investors with a highly granular dataset for assessing over 16,000 stocks for their exposure to green business activities. The data is based on FTSE Russell's Green Revenues Classification System (GRCS) [2], now covering 10 green sectors and 133 green micro-sectors. This classification system builds on earlier versions that have been used to track leading companies in the green economy for indexes since 2008.

The EU Taxonomy and the GRCS are highly aligned on core activities, providing investors with an effective and transparent tool to assess the exposure of equity portfolios to revenues from EU Taxonomy aligned activities, in a granular and accurate manner.

This paper explains the need for green taxonomies, summarizes the development of and approaches taken by the EU Taxonomy and the GRCS, and examines the overlaps and points of difference between the two approaches. Crucially, it explains how the GRCS dataset can provide a steppingstone for investors to comply with the requirements of the EU Taxonomy regulation.

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[1] See Section 2 for details.

[2] The initial FTSE Environmental Market Classification System was developed by FTSE Russell in collaboration with Impax Asset Management and based on a precursor of the GRCS, the Environmental Markets Classification System (EMCS).

Section 1: Sizing the sustainable finance opportunity

The emerging green economy is perhaps the defining opportunity of the 21st century. The investment required to decarbonize the global economy and address other environmental challenges will be enormous. To address climate change alone, $90 trillion of capital will need to be invested by 2030, according to the New Climate Economy, a body co-chaired by Lord Nicholas Stern.[3] Similarly, the European Commission estimates that the bloc alone will have to invest an additional €175-€290 billion each year to reach net-zero emissions by mid-century.[4]

Investors are increasingly seeking to identify the opportunities associated with this shift to the green economy. The green investment theme has emerged over the last two decades as awareness has grown of the sustainability challenges and constraints faced by the global economy. In 2019, inflows from US investors into sustainability funds reached a record $21 billion—four times the levels of 2018, according to Morningstar data.[5]

Meanwhile, green economy companies have been growing as policy and regulation become more supportive and consumers are increasingly concerned about environmental impacts. Over the past five years (2015-2020), the FTSE Environmental Opportunities All Share Index, where constituents are companies that generated at least 20% of their revenues from green products or services, has outperformed its benchmark, the FTSE Global All Cap, by 4.2%.[6]

Figure 1: Performance of companies with at least 20% green revenues
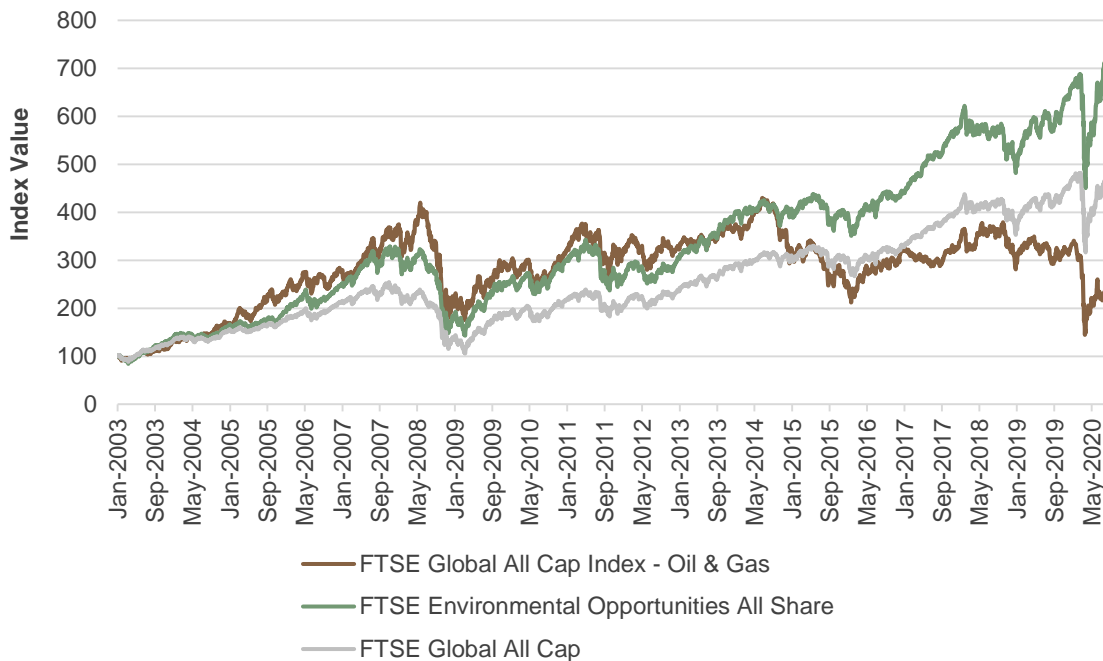
Source: FTSE Russell as of August 2020. Past performance is no guarantee of future results. Please see the end for important legal disclosures.

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[3] The New Climate Economy (2018), *The 2018 Report of the Global Commission on the Economy and Climate,* Executive Summary

[4] A Clean Planet for all - A European strategic long-term vision for a prosperous, modern, competitive and climate neutral economy. https://ec.europa.eu/clima/policies/strategies/2050_en.

[5] Chris Flood (2020), *Record sums deployed into sustainable investment funds* https://www.ft.com/content/2a6c38f7-4e4b-411b-b5e6-96b36e597cfc.

[6] Compound annual return over five years. Source: FTSE Russell as of 31st August 2020.

However, accurately identifying and measuring the exposure of companies to green products and services across large investment universes is a challenging task. Conventional business classification frameworks, for example ICB[7] or GICS[8], rarely distinguish between environmentally friendly and environmentally damaging products. There is also a lack of granularity to capture nuances of emerging green products and services in a wide range of sectors.

In addition, the lion share of green economic activity is undertaken by firms that combine both green and non-green products and services (such as industrials)—and very few of these report on the proportion of their business that is directed towards the green economy.[9] There are of course a growing number of "pure play" green companies (such as wind turbine manufacturers, or electric vehicle companies), which only account for a small portion of the green economy.

Such challenges notwithstanding, there is a clear benefit in finding common taxonomies or a common classification system to describe the green economy. Global financial markets rely on such common language to be able to identify green investment opportunities and measure the associated growth and performance. Crucially, this enables investors to direct capital to these opportunities, and it facilitates the creation of indexes and financial products through which capital can be deployed at scale. In addition, they encourage corporate disclosure. Recognizing the growing number of investors looking to allocate capital to the green economy, companies will seek to set out how their activities are aligned.

As policy makers identify ways to promote the green economy and increase investment flows into the low-carbon transition, the provision of such classifications has also emerged as a policy priority – not least as a yardstick to track the success, or failure, of the wider suite of green policies. For example, over the last two years, the European Commission has been working on the EU Taxonomy to define sustainable economic activities. Chinese regulators have created the Green Bond Endorsed Project Catalogue in 2015, demonstrating what is green, specifically for its green bond market.[10] Other countries such as the UK, Canada, Japan and Malaysia are also exploring potential taxonomies for sustainable finance. The EU has also set up an International Platform on Sustainable Finance to strengthen international cooperation on taxonomies, disclosures, standards and labels.

This paper describes two of the most developed systems: the recently proposed EU Taxonomy for sustainable activities, based on the report of the EU Technical Expert Group on Sustainable Finance; and FTSE Russell's Green Revenues Classification System (GRCS), which has been incrementally developed under the oversight of an independent global advisory committee for over a decade. It looks at how these two systems identify green products, services and economic activities, and how to use the GRCS to assess associated revenues and demonstrate EU Taxonomy alignment. The paper also provides case studies on General Electric, Total, Corning and Amazon.com.

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[7] Industry Classification Benchmark (ICB) is a globally utilized standard for the categorization and comparison of companies by industry and sector. It is the official sector classification used across FTSE Russell indexes. https://www.ftserussell.com/data/industry-classification-benchmark-icb

[8] The Global Industry Classification Standard (GICS®) was developed by S&P Dow Jones Indices and MSCI to provide accurate, complete and standard industry definitions. https://www.spglobal.com/marketintelligence/en/documents/112727-gics-mapbook_2018_v3_letter_digitalspreads.pdf

[9] FTSE Russell (2018), *Investing in the global green economy: busting common myths* https://www.ftserussell.com/research/investing-global-green-economy-busting-common-myths

[10] In June 2020 a consultation was launched on the consolidation of the Catalogue developed by the People's Bank of China, together with the National Development and Reform Commission and the China Securities Regulatory Commission.

Box 1: Sustainable Investment, Green Revenues and ESG

FTSE Russell defines Sustainable Investment as any investment approaches that explicitly and meaningfully take sustainability considerations and data into account as part of the investment process. This could be based on corporate ESG ratings, but also can include many other types of metrics, ranging from screenings for controversial products or "green revenues" to carbon data or diversity metrics.

Similar to the proposed EU Taxonomy, FTSE Russell Green Revenues Data aims to identify the green attributes of products, services and economic activities, i.e. what does the company do (such as renewable energy generation); whereas the ESG data model measures a wide range of non-financial factors (such as exposure to climate change, bribery and corruption, and labor relations) that can be the source of material investment risks and opportunities during business operations, i.e. how the company is operating.

Section 2: The EU Taxonomy

To achieve the Paris Agreement on Climate Change and the UN's Sustainable Development Goals, the European Commission has established the EU Taxonomy as part of its Action Plan on Financing Sustainable Growth.[12] The Taxonomy identifies sustainable economic activities in consideration of the EU's six environmental objectives, with an underlying goal of encouraging sustainable investment and directing capital towards a green economy. It is also an important enabler of the "European Green Deal," an ambitious set of EU sustainable economy reforms.[13]

The EU Taxonomy Regulation (published in June 2020) identifies six environmental objectives that the Taxonomy will, ultimately, capture. These are:

1. Climate change mitigation

2. Climate change adaptation

3. Sustainable use and protection of water and marine resources

4. Transition to a circular economy, waste prevention and recycling

5. Pollution prevention and control

6. Protection of healthy ecosystems

Starting from the **climate change mitigation** objective, the TEG has adopted a top-down process, first identifying priority sectors (using the NACE industry classification system[14]) in terms of the size of their emissions, or where they have the potential to enable substantial reductions. It then identified potential activities, within each sector, that can make a significant contribution to mitigation. For each of these, it provides technical screening criteria – emissions thresholds from energy generation, or emissions reduction trajectories for livestock production, for example. The Taxonomy report provides a list of 72 economic activities with substantial contribution to mitigation.

For the **climate change adaptation** objective, the TEG proposed three principles to define activities with substantial contribution to adaptation. These activities are required to: reduce all material physical climate risks to the extent possible; not adversely affect adaptation

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Box 2: The EU Taxonomy Development Process

In December 2016, the EU High-Level Expert Group (HLEG) on Sustainable Finance was established. Its final report, published in January 2018, formed the basis of the EU's Action Plan on Financing Sustainable Growth, and the first of its key recommendations was to "establish and maintain a common sustainability taxonomy at the EU level".

In March 2018, the European Commission passed the Action Plan; and it created the Technical Expert Group (TEG) in May. The TEG was made up of 35 members from civil society, academia, business and finance. It was mandated to make recommendations for the Taxonomy.

In June 2019, the TEG published its first technical report on the Taxonomy, which explains its conceptual approach, the underlying methodology, technical screening criteria for climate change mitigation activities (environmental objective 1), use cases and expected economic impacts.

In December 2019, the European Council and the European Parliament reached political agreement on the EU Taxonomy Regulation, meaning that its provisions will come into force at the end of December 2021.[11]

In March 2020, TEG's final report was published with additional details on the proposed climate change adaptation criteria (environmental objective 2), and guidance on what companies and financial institutions can disclose to demonstrate EU Taxonomy alignment.

The European Commission is currently working on the development of the delegate acts supporting the regulation, which will set out the criteria for objective 1 and 2 and are expected to be published by December 2020. The Commission is also seeking to establish a Platform on Sustainable Finance, which takes over from TEG, to provide criteria on environmental objectives 3-6 for an extended Taxonomy.

Representatives of FTSE Russell and London Stock Exchange Group participated as members of both the HLEG and the TEG.

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[11] European Commission (2020). https://data.consilium.europa.eu/doc/document/ST-5639-2020-INIT/en/pdf
[12] https://ec.europa.eu/info/publications/180308-action-plan-sustainable-growth_en.
[13] European Commission (2020). TEG Final Report on the EU Taxonomy https://ec.europa.eu/info/publications/sustainable-finance-teg-taxonomy_en.
[14] NACE (Nomenclature générale des Activités économiques dans les Communautés Européennes) is an industry classification system used in the European Union to collect and present statistical data on economic activities such as production, employment and national accounts. The use of NACE is mandatory within the European Statistical System. https://ec.europa.eu/eurostat/web/products-manuals-and-guidelines/-/KS-RA-07-015

efforts by others; and have adequate indictors to demonstrate adaptation-related outcomes. The Taxonomy report includes 70 economic activities with substantial contribution to adaptation, 68 of which are also activities with substantial contribution to mitigation.

The TEG has stressed that the technical report is not the last word on the screening criteria. The proposed criteria will be reviewed by the Commission for inclusion in draft Delegated Acts supporting the regulation, which will be opened to consultation with stakeholders. The final Delegated Acts covering objectives 1 and 2 are expected to be published by December 2020. The criteria established through the delegated acts are also expected to be subject to periodic revisions, and further criteria will be developed for activities contributing to the other four environmental objectives.[15]

Box 3: Compliance with the Proposed EU Taxonomy

To qualify as "environmentally sustainable" under the proposed EU Taxonomy, an activity must meet all three requirements below:

1. Make a substantial contribution to one of the six environmental objectives (such as mitigation or adaptation activities discussed above);

2. Do no significant harm (DNSH) to the other five environmental objectives;

3. Meet minimal social safeguards (aligning with the OECD Guidelines on Multinational Enterprises, the UN Guiding Principles on Business and Human Rights, and ILO Conventions on Labor Standards)

Disclosure obligations

To drive the adoption of the Taxonomy, the EU Taxonomy Regulation imposes a number of obligations on companies that offer investment products for sale within the EU, and on companies within scope of the EU Non-Financial Reporting Directive (NFRD). These obligations are phased in from 2022 onwards, with full applicability by 2023.

Financial and non-financial companies that are required to report information under the scope of the EU's Non-Financial Reporting Directive (NFRD) will have to disclose whether, and to what extent, their activities are associated with environmentally sustainable economic activities. These disclosures should include the proportion of their turnover, capital expenditures (capex) and operational expenditures (opex) that are aligned with the Taxonomy. The regulation applies to around 6,000 large companies and groups across the EU.[16]

Financial market participants, who offer financial products in the EU that are intended for environmentally sustainable investments, or that promote environmental objectives, will be required to disclose how, and to what extent, the underlying investments support economic activities that are aligned with the EU Taxonomy. This includes disclosures on the environmental objective(s) to which the underlying investments contribute, and the share of investments that are aligned with the EU Taxonomy. Turnover, capex and opex associated with Taxonomy-aligned activities can be used to calculate the proportion of underlying investments that are Taxonomy-aligned. [17]

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[15] The final Delegated Acts for environmental objective 3-6 will be published by December 2021.

[16] https://ec.europa.eu/info/business-economy-euro/company-reporting-and-auditing/company-reporting/non-financial-reporting_en.

[17] European Commission (2020). https://data.consilium.europa.eu/doc/document/ST-5639-2020-INIT/en/pdf

Other financial products will need to state that "*The investments underlying this financial product do not take into account the EU criteria for environmentally sustainable investments.*"

We expect that regulations surrounding disclosure against the Taxonomy will over time generate much greater volumes of data—and higher quality data—about sustainable economic activity. This data will facilitate more sophisticated analytics that will help investors anticipate and respond to emerging trends in the green economy. In turn, these will help to inform policymakers as they seek to encourage investment that facilitates the transition to sustainable global economy.

However until companies globally, not only those in the EU, provide full transparency on the extent to which taxonomy-aligned activities contribute to their revenues and capital expenditures, it will prove challenging to precisely measure the green exposure of global investment portfolios and calculate the size of the green economy.[18] The requirement for related disclosure by companies covered by the EU's Non-Financial Reporting Directive will, over time, address this issue (at least for companies covered by the NFRD), but it is likely to take time for standardized disclosures to emerge. Investors must, therefore, choose datasets that provide the best proxy to measure alignment with the EU Taxonomy.

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[18] See more details https://www.unpri.org/download?ac=11506

Section 3: FTSE Russell's Green Revenues Classification System (GRCS)

FTSE Russell's Green Revenues Classification System (GRCS) was created to help investors and financial markets to better identify companies with green products and services, track their performance and facilitate the construction of financial products that seek exposure to such companies.

It offers a practical solution to the challenges that financial market participants face in complying with the EU Taxonomy Regulation. Indeed, in undertaking its financial impact assessment of the Taxonomy, the Joint Research Centre of the European Commission used the FTSE Russell Green Revenues data to estimate the share of financial investments that are currently funding EU Taxonomy-eligible activities.[19]

The GRCS identifies green products and services across the whole value chain covering 10 green sectors, 64 subsectors and 133 micro sectors (see Figure 2), based on seven environmental objectives—all six environmental objectives set by the European Commission, plus "sustainable and efficient agriculture."

Figure 2 The Green Revenues Classification System 2.0

ENERGY GENERATION [EG] 19	ENERGY MANAGEMENT AND EFFICIENCY [EM] 13	ENERGY EQUIPMENT [EQ] 22	ENVIRONMENTAL RESOURCES [ER] 11	ENVIRONMENTAL SUPPORT SERVICES [ES] 5
Bio Fuels	Buildings & Property (Integrated)	Bio Fuels	Advanced & Light Materials	Environmental Consultancies
Cogeneration	Controls	Cogeneration Equipment	Key Raw Minerals & Metals	Finance & Investment
Fossil Fuels	Energy Management Logistics & Support	Fossil Fuels (Integrated)	Recyclable Products & Materials	Smart City Design & Engineering
Geothermal	Industrial Processes	Fuel Cells		
Hydro	IT Processes	Geothermal		
Nuclear	Lighting	Hydro		
Ocean & Tidal	Power Storage	Nuclear		
Solar	Smart & Efficient Grids	Ocean & Tidal		
Waste to Energy	Sustainable Property Operator	Solar		
Wind		Waste to Energy		
		Wind		

FOOD & AGRICULTURE [FA] 17	TRANSPORT EQUIPMENT [TE] 12	TRANSPORT SOLUTIONS [TS] 9	WASTE & POLLUTION CONTROL [WP] 15	WATER INFRASTRUCTURE & TECHNOLOGY [WI] 10
Agriculture	Aviation	Railways Operator	Cleaner Power	Advanced Irrigation Systems & Devices
Aquaculture	Railways	Road Vehicles	Decontamination Services & Devices	Desalination
Land Erosion	Road Vehicles	Video Conferencing	Environmental Testing & Gas Sensing	Flood Control
Logistics	Shipping		Particles & Emission Reduction Devices	Meteorological Solutions
Food Safety, Efficient Processing & Sustainable Packaging			Recycling Equipment	Natural Disaster Response
Sustainable Plantations			Recycling Services	Water Infrastructure
			Waste Management	Water Treatment
				Water Utilities

10 SECTORS   **64 SUBSECTORS**   **133 MICRO SECTORS**

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[19] European Commission Joint Research Centre (2019), *The EU Sustainability Taxonomy: a Financial Impact Assessment*

The GRCS is developed with guidance and input from the FTSE Russell Green Industries Advisory Committee[20], consisting of senior and leading expert members from the investment community, ensuring that the classification system follows best practice and addresses market needs.

Over 16,000 equities across 50 developed and emerging markets are assessed and categorized against the GRCS as part of the FTSE Russell Green Revenues dataset. Approximately 3,000 of these companies are identified as being engaged in providing green products and services. For these companies, the Green Revenues dataset provides a detailed breakdown of green activities and associated revenues, as well as an overall company green revenue estimate. This is compiled through a thorough research process in a series of steps.

Box 4: Example − Green Revenues from General Electric

The industrial multinational General Electric (GE) categorizes its business into eight segments and reports revenues.

Revenues from renewable energy and lighting segments, which fully qualify under GRCS, and separately disclosed revenue from locomotives manufactures (0.7%) in the transportation segment, result in GE's **9.7% minimum green revenue**. By adding the full revenue from the power and transportation segments (which contain both green and non-green activities) the **maximum green revenue** is established at **33.9%**.

Information such as technology types, numbers of product lines and revenues at acquisition are then used to estimate green revenues from the power and transportation segments at 5.9% and 0.8%, respectively. Adding this to the revenue from the fully green segments yields the more precise **company-specific green revenue estimate** of **15.7%** (see Appendix 1 for more details).

Because all of GE's activities that qualify under the GRCS are also eligible under the EU Taxonomy, this also represents the estimate of GE's **EU taxonomy-aligned revenue** (see Section 4).

1. Semantic screening.
The first stage is an automated "big data" step. Keywords based on the GRCS such as "biofuel" or "electric vehicles" are being used for automated screening of corporate disclosures to identify companies involved in green business activities. Any companies with matches are then verified by analysts for actual involvement in products or services that qualify under the GRCS.

2. Business segments identification.
For those companies, where involvement of green products or services is confirmed, the company-reported business segments are analyzed and microsectors under the GRCS classification are attached to the relevant segments. In this process, analysts will also assess each reported segment to determine whether it contains: (a) no green activities; (b) a mix of green and non-green activities; or (c) only green activities. This provides the basis for determining minimum green revenues (=revenue from category c segments) and maximum green revenues (=revenue from category b and c segments) for each company, which are directly based on corporate disclosures.

3. Micro-sector breakdown.
For the lion's share of companies with green revenues, public disclosures will be insufficient to determine exact revenues from individual types of green business activities (green 'micro sectors'). This is because revenue segments reported by companies typically aggregate multiple green activities (say 'renewables' comprising wind, solar and biomass), or both green and non-green business activities (say 'power generation' consisting of gas, solar and hydro power). This prevents not only a granular revenue breakdown across green activities, but in many cases makes it difficult to establish the overall green revenue for a company.

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[20] FTSE Russell Green Industries Advisory Committee (formally the 'FTSE Environmental Markets Advisory Committee') includes members of the global investment community, including asset managers and banks, as well as technical experts in environmental industries. The Committee is currently chaired by Jack Ehnes, CEO of CalSTRS, and includes, or has included members with expertise from Aberdeen Standard Investments, GIC, Joint US-China Collaboration on Clean Energy, Jupiter Asset Management, Morgan Stanley, PGGM, Pictet Asset Management, the World Bank and USS Investment Management. The Committee has played an critical role in shaping this work and been meeting twice a year to incrementally develop the classification system since FTSE's work in this area began in 2007.

In these cases, further research is required to break down the revenues associated with each business segment to obtain revenues associated with each green micro sector and to establish their share in the company's overall revenues. FTSE Russell achieves this through:

- **Requests for supplementary disclosure.** All companies are engaged directly by FTSE Russell to verify the green revenue assessment, and, where required, are asked to confirm the breakdown of revenues by green activity and the overall green revenue.

- **Company-specific estimates.** Where companies provide limited revenue disclosures and do not respond to the request for disclosure, analysts will identify additional data, such as non-revenue data (e.g. production volumes) and/or relevant market or peer data (such as market share of a product) that can form a reasonable basis for estimating revenues from each green micro sector.

- **Sector-specific estimates**. For companies, where limited additional information is available to generate robust company-specific estimates, a quantitative model is used to estimate green revenues using reported data from sector peers (an approach akin to carbon emissions models). The model uses data input from disclosure and company-specific estimates to extrapolate green revenues at sector level. The green revenue of a specific company depends on the sector in which the company operates.

In all three cases, the resulting data is triangulated against the minimum and maximum green revenue data established during the business segment identification, to ensure robust estimates are built on publicly available corporate disclosure.

As corporates begin to make more detailed disclosures on green revenues—currently less than 30% of companies with green revenues provide disclosures (either as part of public filings or on request) that are granular enough to identify their green revenues—the role of estimated data in measuring green revenues will decline over time. The new mandatory disclosures for EU companies are likely to be an important catalyst for such disclosures.
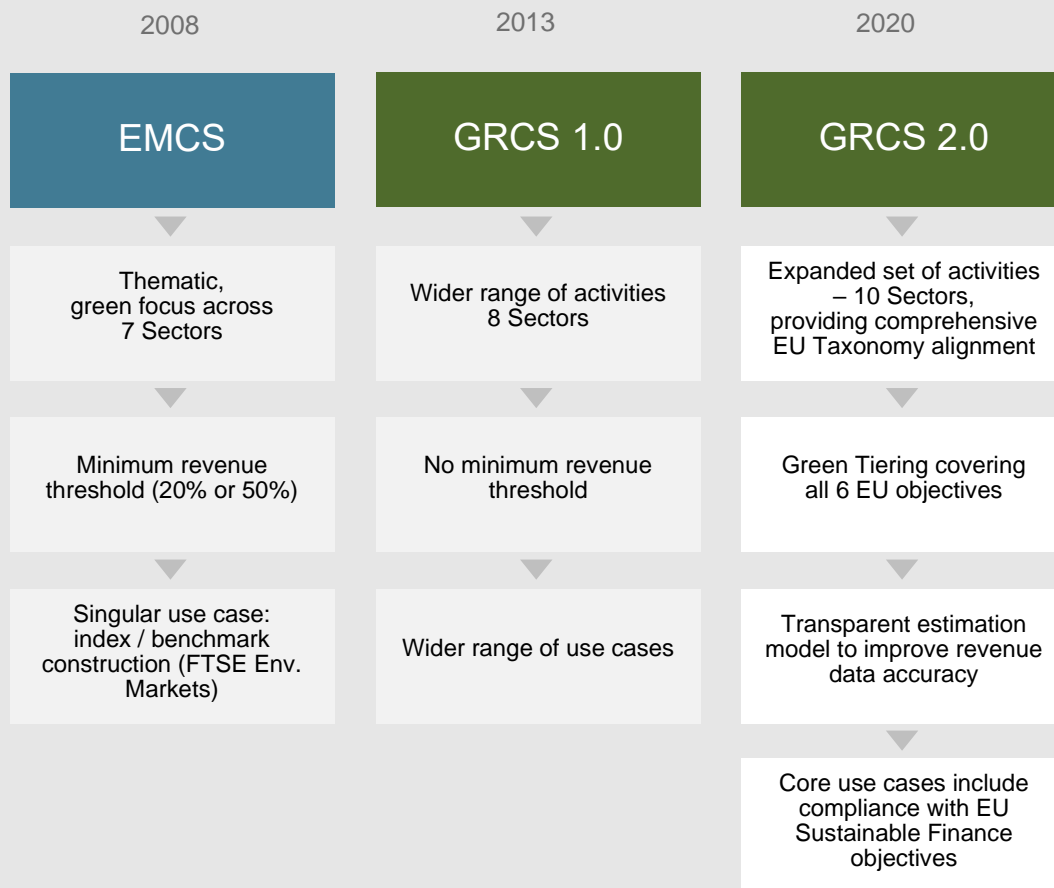
However, disclosure improvements are likely to be gradual, and estimated green revenue data will play a critical role for investors in coming years – not only in enabling investors to allocate capital to green investment opportunities at scale, but also in reporting on green revenues and complying with the reporting requirements under the EU taxonomy.

Box 5: GRCS − A Decade of Evolution

The roots of the GRCS stretch as far as 2008 when FTSE Russell and the Impax Asset Management launched the Environmental Markets Index Series.[21] The collaboration between FTSE Russell and Impax continues today. The initial Environmental Markets Classification System had a thematic focus on sectors including clean energy, energy efficiency, water and waste management and were assessed and included in the index family based on revenue thresholds.[22]

On this basis, **FTSE Russell created the GRCS in 2013** that offered a wider scope and improved granularity. It provided a broader view of what could be considered green and therefore catered to a wider range of use cases including portfolio monitoring and reporting, portfolio construction and benchmarks.

The latest iteration of the classification system, **GRCS 2.0, was launched in September 2020**. It takes a broad, bottom-up view of the green economy, capturing products and services across the whole value chain. These products and services are analyzed based on their impact on climate change mitigation and adaptation, water, resource use, pollution, and agricultural efficiency, which are well aligned with the EU's environmental objectives.

2008	2013	2020
EMCS	**GRCS 1.0**	**GRCS 2.0**
Thematic, green focus across 7 Sectors	Wider range of activities 8 Sectors	Expanded set of activities – 10 Sectors, providing comprehensive EU Taxonomy alignment
Minimum revenue threshold (20% or 50%)	No minimum revenue threshold	Green Tiering covering all 6 EU objectives
Singular use case: index / benchmark construction (FTSE Env. Markets)	Wider range of use cases	Transparent estimation model to improve revenue data accuracy
		Core use cases include compliance with EU Sustainable Finance objectives

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[21] https://www.ftserussell.com/products/indices/env-markets.

[22] Companies are required to have at least 50% of their business derived from environmental markets and technologies to be eligible for the FTSE Environmental Technology Index Series; at least 20% of their business derived from environmental markets and technologies to be eligible for the FTSE Environmental Opportunities Index Series.

Section 4: EU taxonomy in practice
Measuring EU taxonomy alignment with FTSE Russell Green Revenues data

FTSE Russell's Green Revenues data provides a granular, robust and transparent solution to assess and report on EU Taxonomy alignment for individual companies, investment products and broader portfolios. While not identical, the proposed EU Taxonomy and FTSE Russell's Green Revenues Classification System are broadly similar in structure and highly aligned on core activities, giving investors an effective tool to conveniently identify companies involved in the green economy and quantify the share of their revenues that is likely to qualify under the proposed EU Taxonomy.

Although the GRCS is somewhat broader because it addresses environmental objectives that are not yet covered by the EU Taxonomy (such as waste management and pollution control solutions) in its current form based on the TEG report, its modular structure allows to exclude these elements from the calculation of EU Taxonomy-aligned revenues. Figure 3 schematically illustrates the process and Appendix 1 provides four case studies for General Electric, Corning Incorporated, Amazon.com and Total, showing how we identify revenues under the GRCS and measure EU Taxonomy alignment respectively.

Figure 3 Demonstrating EU Taxonomy-aligned Green Revenues

To identify the EU Taxonomy-aligned GRCS micro sectors, a mapping of the sustainable economic activities under the EU Taxonomy and the micro sectors covered by the FTSE Russell GRCS has been undertaken (see Appendix 2 for details).

This mapping demonstrates that GRCS is much broader than the EU Taxonomy and therefore **encompasses all the main sustainable activities covered by the EU Taxonomy**. Core green economy activities that account for the lion's share green revenues − such as renewable power generation, low carbon transport or green buildings – are unsurprisingly eligible under both the EU Taxonomy and the GRCS as they are making substantial contribution to climate change mitigation.

There are a number of activities that are covered by the GRCS but currently not captured by the EU Taxonomy, notably several activities related to water, waste and pollution control. This is mostly due to the fact that the current version of the EU Taxonomy has not yet covered all six of their environmental objectives. It is limited to economic activities, making substantial contributions to climate change mitigation or adaptation, and does not yet capture other environmental objectives such as pollution control.

The GRCS also includes some activities that are related to the green economy but are simultaneously associated with potential environmental challenges (e.g. nuclear power generation or lithium mining). These activities are captured by the GRCS as 'Tier 3' activities to give investors flexibility in how they want to consider these revenues but are currently not eligible under, or covered by the EU Taxonomy report.

> In both cases, green revenues associated with these non-compliant activities are excluded by FTSE Russell from the calculation of EU Taxonomy-aligned revenues.

Some activities, though covered by both the proposed EU Taxonomy and the GRCS, are considered with slightly different environmental objectives in mind. For example, the GRCS considers organic food producers and distributors green because organic farming takes account of the impacts on the broader ecosystem (e.g. climate change, soil fertility, waste & pollution and animal welfare), which is more environmentally friendly compared to non-organic farming practices.[23] This is aligned with the EU's environmental objectives of climate change mitigation, biodiversity & ecosystem, and pollution prevention and control. However, the approach to agriculture under the currently proposed EU taxonomy only focuses on the environmental objective of climate change mitigation, including land management and carbon sequestration (covered by the "Growing of Perennial/Non-perennial Crops" activity).[24]

> FTSE Russell includes these activities in the calculation of EU Taxonomy-aligned revenues, because the vast majority of revenues associated with these activities is likely to qualify under the Taxonomy, even if they are captured under a slightly different rationale in the GRCS.

A limited number of carbon-intensive activities[25]—including e.g. the production of cement, livestock, aluminum or plastics—can under certain circumstances qualify under the EU Taxonomy based on the TEG report**, which allows revenues from such activities to be captured if companies can demonstrate that these activities meet stringent, "best-in-class" environmental performance criteria.

The bulk of such revenues are likely to be captured under GRCS as part of recycled materials e.g. for plastics or aluminum. In practice, it will be difficult to meet the EU environmental performance criteria in the production of virgin materials, except in some instances (e.g. aluminum produced using exclusively hydropower). So far, our research has not identified meaningful revenues of this type in these sectors that could be systematically identified. However, FTSE Russell continues to review the GRCS criteria in this area, particularly as disclosures in these sectors improve.

Classifications of environmentally sustainable activities and the performance thresholds that define these activities will continue to change over time. Maintaining classification systems to define green activities will therefore remain a continuous process as climate targets, new green technologies and company disclosures evolve. The EU Taxonomy, the GRCS and other green taxonomies are likely to reflect this, and we expect to see further convergence of such

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[23] http://www.organicresearchcentre.com/?go=Organic%20Research%20Centre&page=Organic%20farming.

[24] European Commission (2020). TEG Final Report on the EU Taxonomy https://ec.europa.eu/info/publications/sustainable-finance-teg-taxonomy_en.

[25] The EU Taxonomy considered these activities as "transitioning" activities, which should improve performance continuously.

classification systems as part of the effort of building a common language for markets to describe and measure the green economy.

Note that for full EU Taxonomy compliance, in addition to making substantial contribution to one of the six environmental objectives, companies are also required to **do no significant harm (DNSH)** to the other five objectives, and to meet **minimal social safeguards (MSS).** These two requirements work in a way similar to the ESG overlay that screens out activities with significant environmental or social risks, which is more relevant to ESG Data Model instead of Green Revenues that purely identifies products and services with environmental benefits.

The proposed **technical screening criteria** to define substantial contribution to environmental objectives under the EU Taxonomy, such as 100gCO_2/kWh threshold for electricity generation, is likely to pose challenges for different types of financial asset classes. The application of such thresholds is more straightforward for green bonds, where the use of proceeds is usually designated to specific projects or activities and is normally being disclosed according to the Green Bond Principles. But these thresholds will prove more difficult for other asset classes such as listed equities, given the range of products and services across broad value chains in which companies participate and lower current levels of granular disclosure on green products and services. Currently it is very challenging to fully implement such technical screening criteria across the broad listed equity market in a consistent way due to lack of disclosure. As such FTSE Russell's GRCS use the disclosed data available plus an activity-based approach to capture the degree of revenue exposure to the green economy.

In summary, the use of the GRCS presented in this paper is an initial step towards measuring potential alignment of portfolios with the EU Taxonomy. Further developments will be associated with checking that activities meet both the technical screening criteria for significant contribution and those for DNSH and MSS (as currently outlined by the TEG report).

Appendix 1: Case studies

Case study 1: General Electric (GE)

Industrials generally have a greater potential for green products or services than other business sectors due to their diversified operations and broad coverage of value chains. For example, GE has a business portfolio with products and services across a wide range of sectors. The company—which was founded partly to commercialize Thomas Edison's incandescent lightbulb— is now playing a leading role in manufacturing new technologies such as renewables that are central to the low-carbon transition.

Figure 4 Green Revenues of General Electric Green Revenues
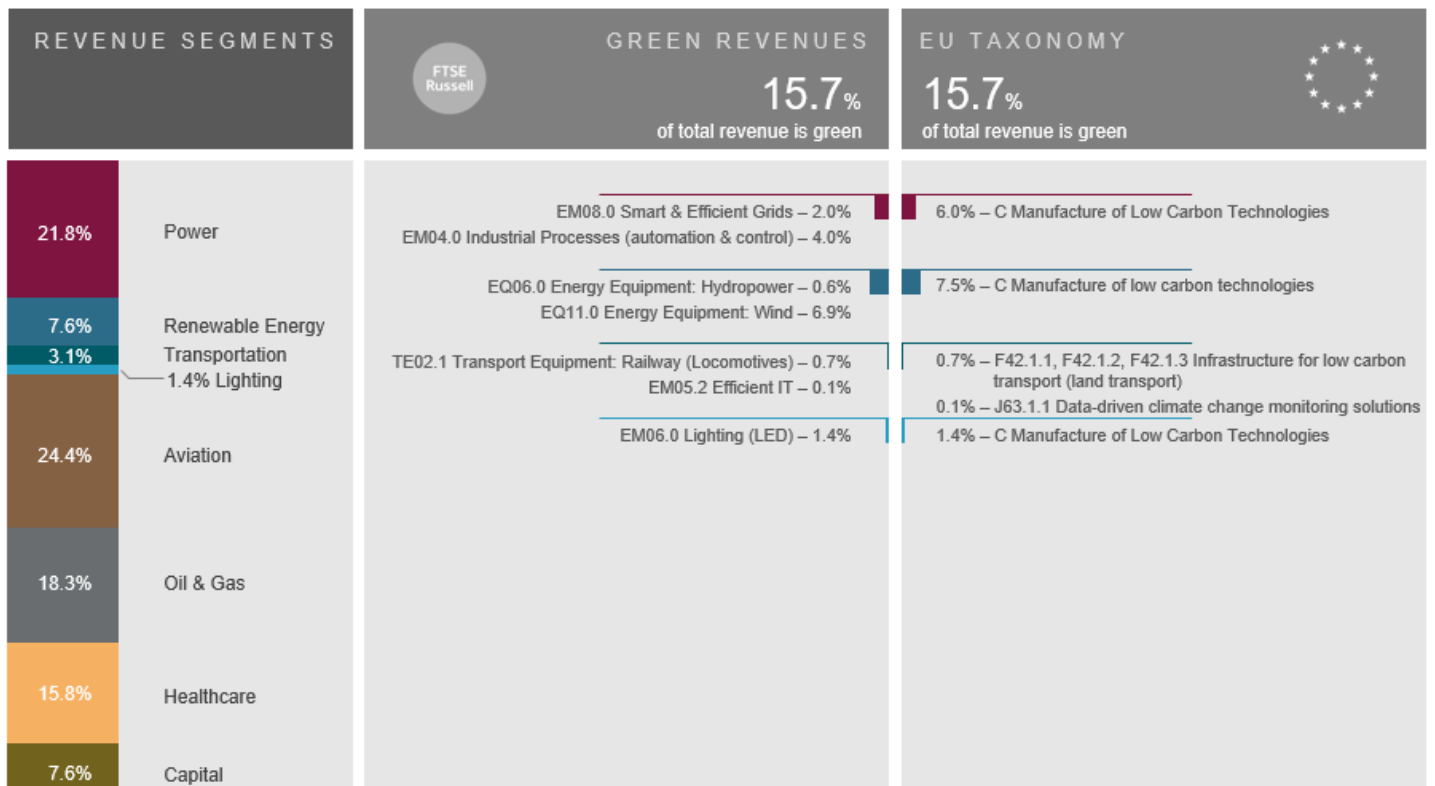
As Figure 4 shows, GE reports its revenues based on eight business segments. The **Oil & Gas, Healthcare** and **Capital** segments are not considered green by either the FTSE Russell GRCS or the current EU Taxonomy.

GE Aviation manufactures aircraft engines. Although aviation is a significant source of carbon emissions, products and services that enable advances in the environmental impact of aviation that go above and beyond business-as-usual improvements in fuel economy are considered as green activities by the FTSE Russell GRCS. However, GE's latest model is designed to achieve a 10% improved efficiency compared to the previous generation, and a 2% fuel efficiency advantage over other similar engines available in the market.[26] These improvements are equivalent to the standard practice in the industry, meaning that the FTSE Russell GRCS does not consider GE Aviation as green.

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[26] https://www.geaviation.com/commercial/engines/ge9x-commercial-aircraft-engine.

GE Aviation is not covered by the proposed EU Taxonomy. Although the current version of the EU Taxonomy recognizes the importance of reducing carbon emissions from the aviation industry, the criteria and potentially a list of eligible economic activities are yet to be developed.

The **Power, Renewable Energy, Lighting** and **Transport** segments do provide green products and services according to both the FTSE Russell GRCS and the EU Taxonomy.

The **Power** segment offers grid solutions, power conversion and automation and control services, which support energy management and efficiency. We estimate the associated revenue to be 5.91% of GE's total revenue.[27] **GE Renewable Energy** delivers equipment and services for wind and hydropower energy generation; it accounts for 7.61% of total revenue as disclosed. The **Lighting** segment focuses on LED technology, generating 7.37% of total revenue. The **Transportation** segment produces locomotives and offers digital solutions, with an estimated revenue of 3.11%.[28]

GE's green products and services recognized by the FTSE Russell GRCS as explained above are all also covered by the EU Taxonomy. We estimate that GE's green revenues from these products and services represent 15.70% of total revenue.[29]

Despite the stiff competition in the renewable energy space, GE's investment in digital strategy and technology innovation provides opportunities for additional green products or services. The strategy includes improvement of efficiency and flexibility of hydropower technologies, which enables grids to accommodate more renewable energy; and enhancement or repower of wind turbine products.[30]

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[27] As disclosed, the revenue from all these products and services plus GE Hitachi Nuclear is $8.4bn. Deducting GE Hitachi Nuclear 's revenue of $1bn, GE's total revenue from grid solutions, power conversion, and automation and control is estimated to be $7.4bn (5.91%).

[28] As disclosed, the revenue from locomotives production is $900m; total revenue from marine, stationary, drilling and digital solutions is $400m, assuming revenue from digital solutions is $400m/4=$100m.

[29] Excluded revenues from nuclear equipment manufacturing, which is 1.56%.

[30] General Electric (2019). United States Securities and Exchange Commission Form 10-K. https://www.ge.com/investor-relations/sec-filings.

Case study 2: Corning Incorporated

There is an increasing awareness of the importance of pollution prevention and control technologies, given the air and water quality, and land contamination issues around the world, particularly in emerging markets such as India and China.

Figure 5 Green Revenues of Corning Incorporated
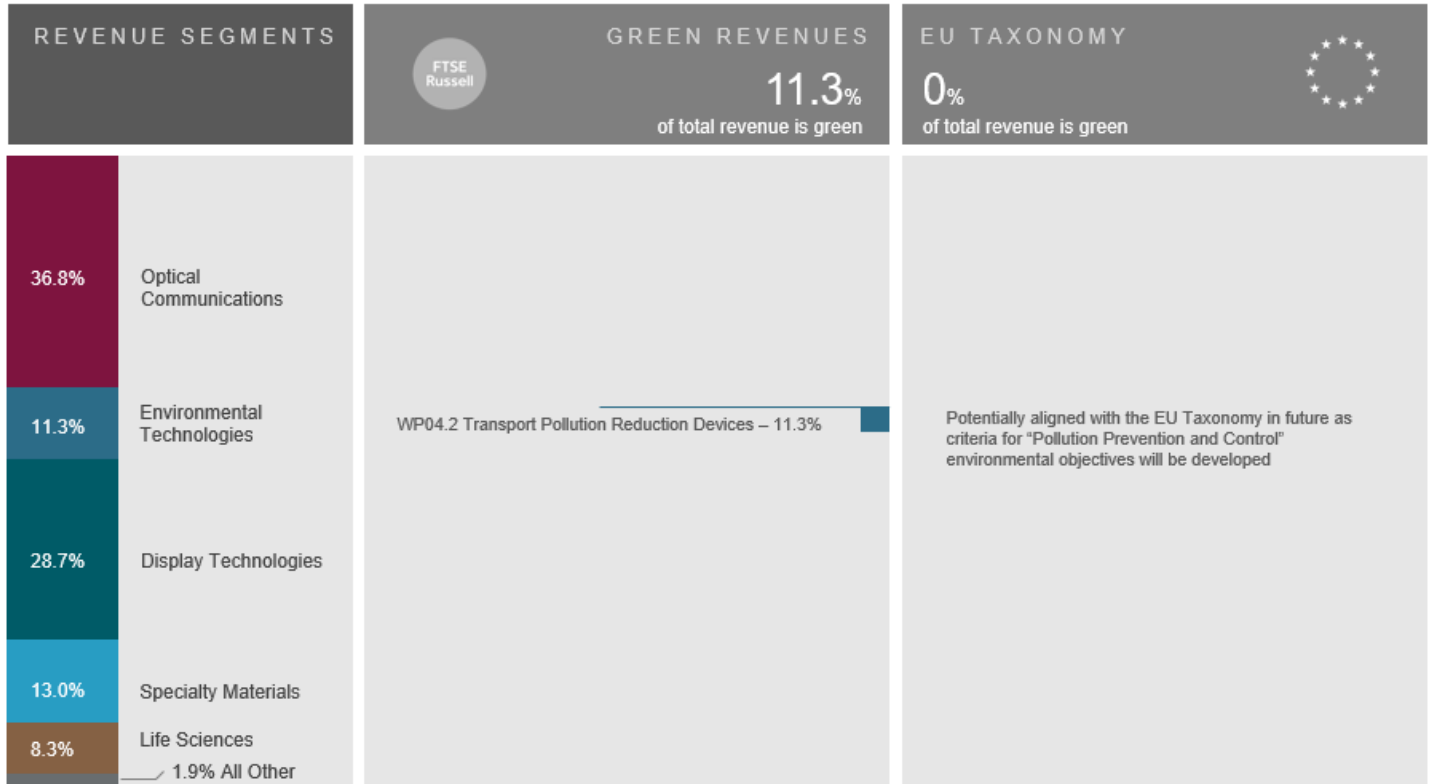
Corning Incorporated, with its core business in material science, generates revenues from five business segments (See Figure 5). Its **Life Science, Specialty Materials, Optical Communications**, and **Display Technologies** segments have no clear environmental benefits and thus are not considered as green under either the FTSE Russell GRCS or the EU Taxonomy.

Its **Environmental Technology** segment involves the manufacture of ceramic substrates and filter products for pollution control systems in the transport sector, and therefore is regarded as green by the FTSE Russell GRCS. The reported revenue from this segment (i.e. the green revenue) is 11.31% of Corning's total revenue; this percentage is expected to increase as the company aims to double the sales from the Environmental Technologies segment by 2023.[31]

However, the products produced by Corning's Environmental Technology segment are not recognized as aligned with the EU Taxonomy. As the EU Taxonomy currently covers only climate change mitigation and adaptation, it doesn't include economic activities related to transport pollution reduction. Nevertheless, "Pollution Prevention and Control" is one of the six underlying environmental objectives of the EU Taxonomy for criteria development[32,] and we expect that future iterations of the Taxonomy will cover such activities.

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[31] Corning Investor Day 2019. https://investor.corning.com/investor-relations/news-and-events/events-and-presentations/details/2019/Investor-Day-2019/default.aspx

[32] European Commission (2020). TEG Final Report on the EU Taxonomy https://ec.europa.eu/info/publications/sustainable-finance-teg-taxonomy_en.

Case study 3: Amazon.com

The technology sector accounts for the five largest companies within the FTSE All World Index (Microsoft, Apple, Amazon, Facebook and Alphabet), which represent about 9% of its total market cap.[33] Their exposure to the green economy mainly originates from their cloud computing businesses, which improve energy efficiency and reduce resource consumption compared to on-site data centers.

Figure 6 Green Revenues of Amazon.com
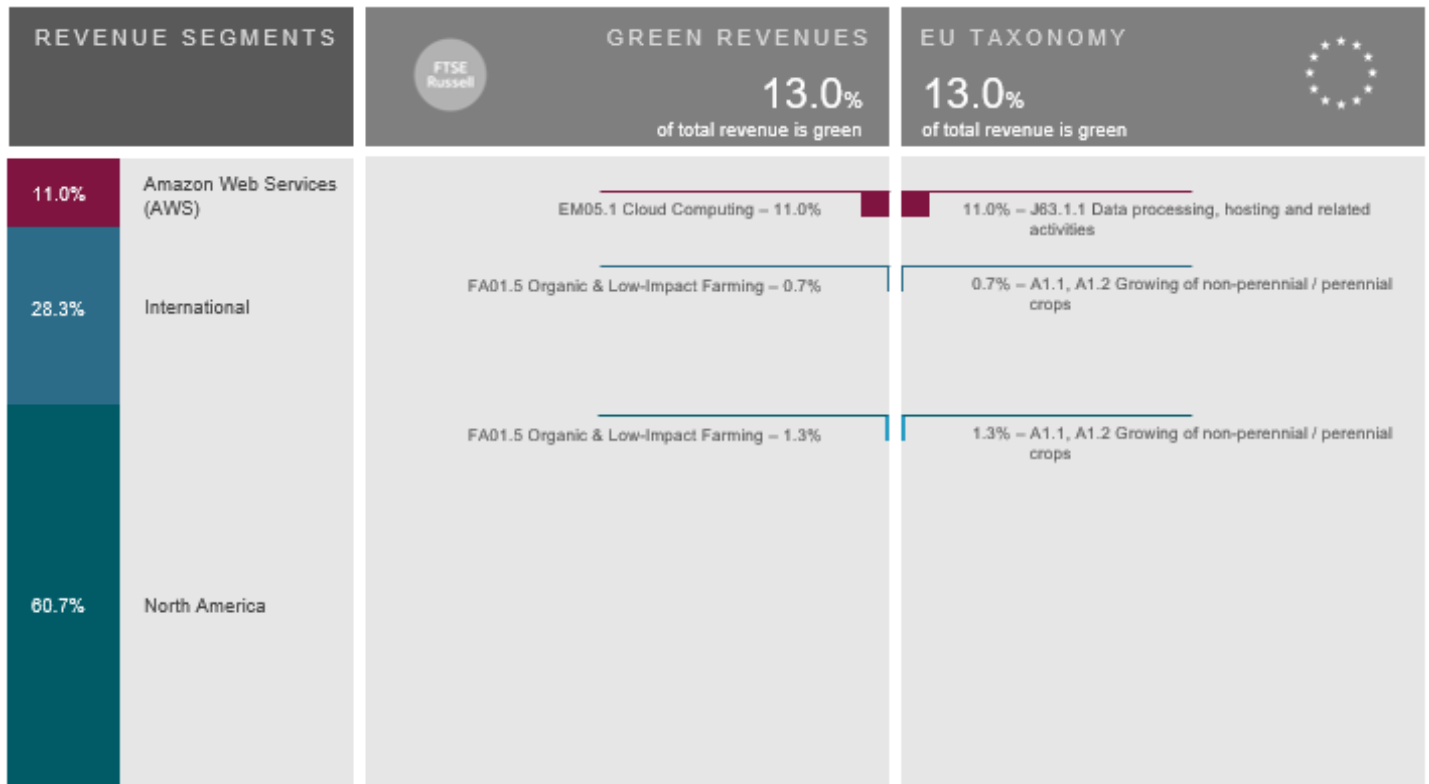
Amazon reports revenues according to three segments (Figure 6). The majority of the green products or services it provides come from the Amazon Web Services (AWS) segment (11% of total revenue), which includes computing, storage and other data services.[34] This cloud computing activity is considered green by both the FTSE Russell GRCS and the EU Taxonomy.

Geographical segments for North America and International consist of retail sales of consumer products and subscriptions through online stores, which do not generate clear environmental benefits. However, Whole Foods Market (WFM), a certified organic food grocer acquired by Amazon in 2017, is considered green under the FTSE Russell GRCS and is aligned with the EU Taxonomy.

The revenue from WFM is estimated to be 1.99% of Amazon's total, based on disclosed revenue of physical stores by Amazon in 2017 ($17.2bn), and the disclosed percentage of organic food sales (30%) by WFM in 2016, as the latest information is not available.

Therefore, 13.01% of Amazon's revenues are green under the FTSE Russell GRCS and the EU Taxonomy.

With the great potential of the cloud computing market and the CEO's commitment to address climate change, green revenues from Amazon and other tech titans are expected to grow.

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[33] Data source: FTSE Russell (2020).

[34] Amazon *2018 Annual Report*

Case study 4: Total

Although most of their assets are still in non-green or brown sectors, some oil and gas companies are starting to adapt their business models and increase their exposure to the green economy. For example, Total has been increasing its involvement in green activities through acquisitions of and investments in clean energy companies such as SunPower, Quadran, Total Eren and Saft.

Figure 7 Green Revenues of Total
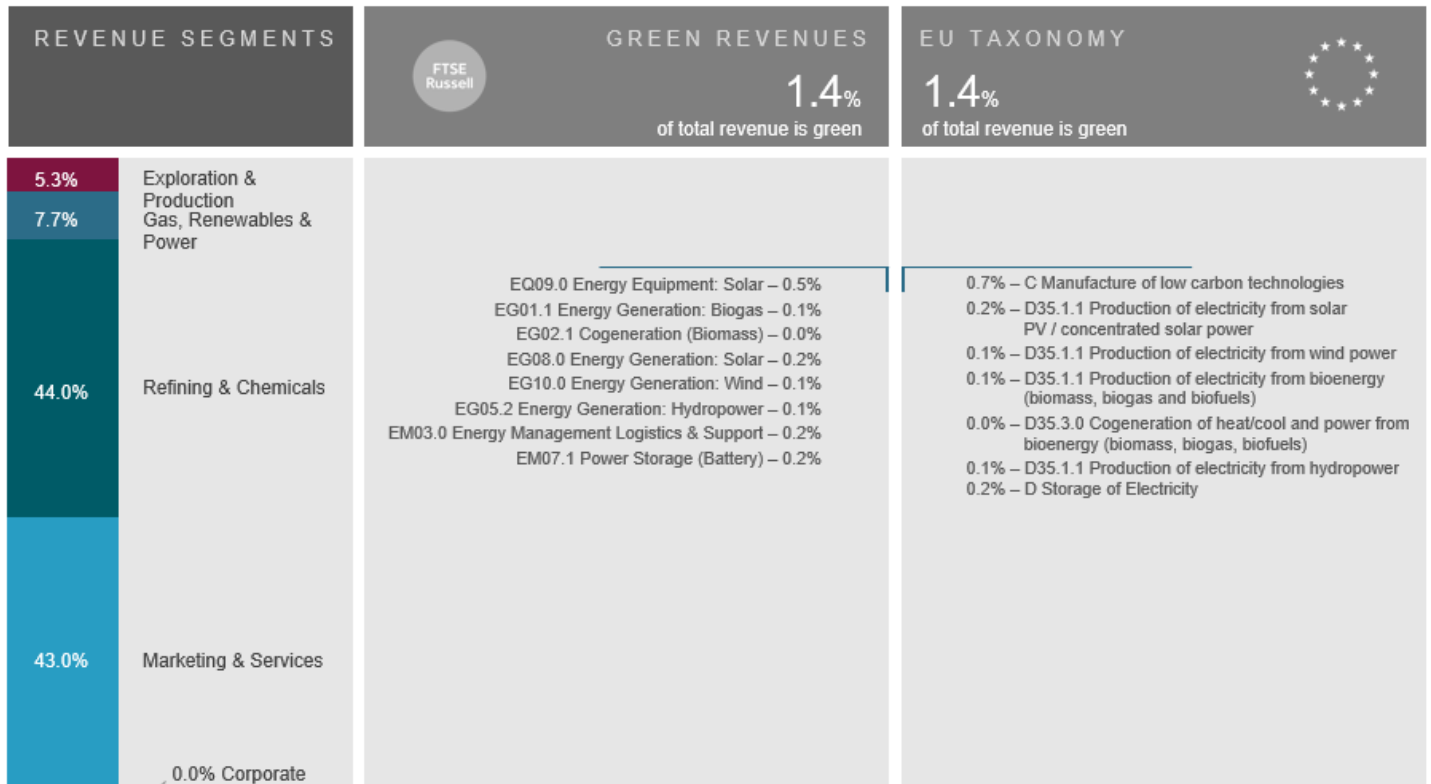
Total has five business segments, as illustrated by Figure 7, of which three are not considered green under either the FTSE Russell GRCS or the EU Taxonomy: The **Exploration & Production** and **Refining & Chemicals** businesses generate high carbon emissions and negative environmental impacts. The **Corporate** segment does not deliver any environmental benefits or impacts.

The **Gas, Renewables & Power** segment provides some green products and services, including renewable energy (solar, wind, hydropower and bioenergy generation), batteries and energy efficiency (such as improvement and management of energy performance of buildings, equipment, utilities and processes). The estimated revenue from these activities is 1.44% of total revenue. The estimation is primarily based on information about Total's subsidiaries.

Specifically, these estimates are derived from disclosed revenues from pure plays acquired by Total, including SunPower, Quadran and Green Flex, and estimated revenue from Total Solar based on generation capacity.[35] These show that Total generates 1.05% of its revenues from renewable energy and 0.20% from energy efficiency services. Saft contributes another 0.19%,

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[35] The net capacity at Total Solar is as about twice that of Total Eren, a renewable energy company with a total revenue of $99.427m, where Total has a 23% interest. Assuming revenues from Total Solar are also twice those of Total Eren, with Total's revenue of $209.363bn, the green revenue percentage from Total Solar is 99.427 × 2 /209,363 = 0.09%.

assuming half of the end markets (buildings, utilities and transportation), where it provides high-tech batteries are green.

Under the **Marketing & Services** segment, Total offers electric vehicle/hydrogen charging services at existing service stations, which represent an important part of a low-carbon transport system. However, there is limited information to make robust estimation on the revenues from these services.

All green products and services identified at Total are aligned with the EU Taxonomy. That is, 1.44% of Total's revenue is green under both the FTSE Russell GRCS and the EU Taxonomy.

Total is also building a footprint in carbon capture and storage, smart grid, biopolymers and plastic recycling across business segments. However, with limited disclosure and insufficient granularity of revenues breakdown, it is challenging to identify or estimate green revenues from these businesses. As Total is investing in R&D for digital and low-carbon technologies (c.$667million in 2018),[36] continued growth of green revenues is expected.

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[36] Total (2019). *Integrating Climate into Our Strategy*.

Appendix 2: Mapping FTSE Russell GRCS and EU taxonomy

The table below illustrates the mapping of sustainable economic activities under the proposed EU Taxonomy and microsectors covered by the FTSE Russell GRCS. Note that it does not include activities/micro sectors that are covered by the FTSE Russell GRCS but not the proposed EU Taxonomy.

🟩 Activities/Microsectors that are covered by both the FTSE Russell GRCS and the proposed EU Taxonomy with the same environmental objective

🟨 Activities/Microsectors that are covered by both the FTSE Russell GRCS and the proposed EU Taxonomy with slightly different environmental objectives

🟧 Activities/Microsectors that are covered by the proposed EU Taxonomy but not the FTSE Russell GRCS

EU TAXONOMY			FTSE RUSSELL GRCS		
SECTOR	NACE CLASSIFICATION	ACTIVITY	MICRO-SECTOR	CODE	SECTOR
Agriculture, forestry and fishing	A2	Afforestation	Sustainable Forestry	FA06.1	Food & Agriculture
	A2	Rehabilitation, Reforestation	Sustainable Forestry	FA06.1	Food & Agriculture
	A2	Reforestation	Sustainable Forestry	FA06.1	Food & Agriculture
	A2	Existing Forest Management	Sustainable Forestry	FA06.1	Food & Agriculture
	A2	Conservation forest	Sustainable Forestry	FA06.1	Food & Agriculture
	A1.2	Growing of perennial crops	Organic & Low Impact Farming	FA01.5	Food & Agriculture
	A1.1	Growing of non-perennial crops	Organic & Low Impact Farming	FA01.5	Food & Agriculture
	A1.4	Livestock production			

EU TAXONOMY			FTSE RUSSELL GRCS		
SECTOR	NACE CLASSIFICATION	ACTIVITY	MICRO-SECTOR	CODE	SECTOR
Manufacturing	C	Manufacture of low carbon technologies	Geothermal, Hydropower, Solar, Wind, Ocean&Tidal, Electrified Road Vehicles & Devices (inc hydrogen powered), Trains (Electrified & Magnetic), Shipping, Buildings & Property	EQ02.1, EQ02.2, EQ02.3, EQ03.1, EQ04.0, EQ05.0, EQ06.1, EQ06.2, EQ09.0, EQ11.0, EQ08.0, TE03.4, TE02.0, TE04.0, EM01.0	Energy Equipment, Transport Equipment, Energy Management & Efficiency
	C23.5.1	Manufacture of cement			
	C24.4.2	Manufacture of aluminum	Recyclable Materials	ER03.1	Environmental Resources
	C24.5.1 C24.5.2	Manufacture of iron and steel	Recyclable Materials	ER03.1	Environmental Resources
	C20.1.1	Manufacture of hydrogen			
	C20.1.3	Manufacture of other inorganic basic chemicals - Manufacture of carbon black			
	C20.1.4	Manufacture of other inorganic basic chemicals - Manufacture of disodium carbonate (soda ash)			
	C20.1.5	Manufacture of other inorganic basic chemicals - Manufacture of chlorine			
	C20.1.4	Manufacture of other organic basic chemicals			
	C20.1.5	Manufacture of fertilizers and nitrogen compounds	Organic & Low Impact Farming	FA01.5	Food & Agriculture
	C20.1.6	Manufacture of plastics in primary form	Recyclable Materials	ER03.1	Environmental Resources

EU TAXONOMY			FTSE RUSSELL GRCS		
SECTOR	NACE CLASSIFICATION	ACTIVITY	MICRO-SECTOR	CODE	SECTOR
Electricity, gas, steam and air conditioning supply	D35.1.1	Production of Electricity from Solar PV	Solar (general)	EG08.0	Energy Generation
	D35.1.1	Production of Electricity from Concentrated Solar Power	Solar (general)	EG08.0	Energy Generation
	D35.1.1	Production of Electricity from Wind Power	Wind (General)	EG10.0	Energy Generation
	D35.1.1	Production of Electricity from Ocean Energy	Ocean and Tidal	EG07.0	Energy Generation
	D35.1.1	Production of Electricity from Hydropower	Small Hydro, Large Hydro	EG05.1, EG05.2	Energy Generation
	D35.1.1	Production of Electricity from Geothermal	Geothermal	EG04.0	Energy Generation
	D35.1.1	Production of Electricity from Gas (not exclusive to natural gas)	Clean Fossil Fuels	EG03.1	Energy Generation
	D35.1.1	Production of Electricity from Bioenergy (Biomass, Biogas and Biofuels)	Biogas, Biomass (Grown), Biomass (Waste)	EG01.1, EG01.2, EG01.3	Energy Generation
	D35.1.2 D35.1.3	Transmission and Distribution of Electricity	Smart and Efficient Grids	EM08.0	Energy Management & Efficiency
	D	Storage of Electricity	Power storage (Battery), Power Storage (Pumped Hydro)	EM07.1, EM07.2	Energy Management & Efficiency
	D	Storage of Thermal Energy	Power storage (Battery), Power Storage (Pumped Hydro)	EM07.1, EM07.2	Energy Management & Efficiency
	D	Storage of Hydrogen	Power storage (Battery), Power Storage (Pumped Hydro)	EM07.1, EM07.2	Energy Management & Efficiency
	D35.2.1	Manufacture of Biogas or Biofuels	Biogas, Biomass (Grown), Biomass (Waste)	EQ01.3, EQ01.4, EQ01.5	Energy Equipment
	D35.2.1 H49.5.0	Retrofit of Gas Transmission and Distribution Networks			

EU TAXONOMY			FTSE RUSSELL GRCS		
SECTOR	NACE CLASSIFICATION	ACTIVITY	MICRO-SECTOR	CODE	SECTOR
Electricity, gas, steam and air conditioning supply	D35.3.0	District Heating/Cooling Distribution	Buildings & Property	EM01.0	Energy Management & Efficiency
	D35.3.0	Installation and operation of Electric Heat Pumps	Buildings & Property	EM01.0	Energy Management & Efficiency
	D35.1.1 D35.3.0	Cogeneration of Heat/cool and Power from Concentrated Solar Power	Cogeneration (Renewable)	EG02.2	Energy Generation
	D35.1.1 D35.3.0	Cogeneration of Heat/cool and Power from Geothermal Energy	Cogeneration (Renewable)	EG02.2	Energy Generation
	D35.1.1 D35.3.0	Cogeneration of Heat/cool and Power from Gas (not exclusive to natural gas)	Cogeneration (Gas)	EG02.3	Energy Generation
	D35.1.1 D35.3.0	Cogeneration of Heat/cool and Power from Bioenergy (Biomass, Biogas, Biofuels)	Cogeneration (Biomass)	EG02.1	Energy Generation
	D35.3.0	Production of Heat/cool from Concentrated Solar Power	Buildings & Property	EM01.0	Energy Management & Efficiency
	D35.3.0	Production of Heat/cool from Geothermal	Buildings & Property	EM01.0	Energy Management & Efficiency
	D35.3.0	Production of Heat/cool from Gas (not exclusive to natural gas)	Buildings & Property	EM01.0	Energy Management & Efficiency
	D35.3.0	Production of Heat/cool from Bioenergy (Biomass, Biogas, Biofuels)	Buildings & Property	EM01.0	Energy Management & Efficiency
	D35.3.0	Production of Heat/cool using Waste Heat	Buildings & Property	EM01.0	Energy Management & Efficiency

EU TAXONOMY			FTSE RUSSELL GRCS		
SECTOR	NACE CLASSIFICATION	ACTIVITY	MICRO-SECTOR	CODE	SECTOR
Water, sewerage, waste and remediation	E36.0.0	Water collection, treatment and supply	Water Utilities	WI08.0	Water Infrastructure & Technology
	E37.0.0	Centralized wastewater treatment	Water Utilities	WI08.0	Water Infrastructure & Technology
	E37.0.0	Anaerobic Digestion of Sewage sludge	Water Utilities	WI08.0	Water Infrastructure & Technology
	E38.1.1	Separate collection and transport of non-hazardous waste in source segregated fractions	Recycling Services	WP06.0	Waste & Pollution Control
	E38.2.1	Anaerobic digestion of bio-waste	Organic Waste Process	WP07.2	Waste & Pollution Control
	E38.2.1	Composting of bio-waste	Organic Waste Process	WP07.2	Waste & Pollution Control
	E38.3.2	Material recovery from non-hazardous waste	Recyclable Materials	ER03.1	Environmental Resources
	E39.0.0	Landfill gas capture and utilization	Waste to Energy	EG09.0	Energy Generation
	E39.0.0	Direct Air Capture of CO2	Carbon Capture & Storage	EQ03.1	Energy Equipment
	E39.0.0	Capture of anthropogenic emissions	Carbon Capture & Storage	EQ03.1	Energy Equipment
	E39.0.0	Transport of CO2	Carbon Capture & Storage	EQ03.1	Energy Equipment
	E39.0.0	Permanent Sequestration of captured CO2	Carbon Capture & Storage	EQ03.1	Energy Equipment
Construction and real estate activities	F41.1 F41.2	Construction of new buildings	Buildings & Property	EM01.0	Energy Management & Efficiency
	F41.1 F41.2	Building renovation	Buildings & Property	EM01.1	Energy Management & Efficiency
	F41.2	Individual renovation measures, installation of renewables on-site and professional, scientific and technical activities	Buildings & Property	EM01.2	Energy Management & Efficiency
	L68	Acquisition and ownership of buildings	Sustainable Property Operator	EM09.0	Energy Management & Efficiency

EU TAXONOMY			FTSE RUSSELL GRCS		
SECTOR	NACE CLASSIFICATION	ACTIVITY	MICRO-SECTOR	CODE	SECTOR
Transport and Storage	F42.9.1	Infrastructure for low carbon transport (water transport)			
	F42.1.1 F42.1.2 F42.1.3	Infrastructure for low carbon transport (land transport)	Smart City Design & Engineering, Railway (Infrastructure), Bikes and Bicycles	ES03.0, TE02.1, TE03.2	Environmental Resources, Transport Equipment
	H49.1.0	Passenger Rail Transport (Interurban)	General Railways, Electrified Railways	TS01.1, TS01.2	Transport Solutions
	H49.2.0	Freight Rail Transport	General Railways, Electrified Railways	TS01.1, TS01.2	Transport Solutions
	H49.3.1	Public transport	Electrified Railways, Bus and Coach operators	TS01.2, TS02.2	Transport Solutions
	H49.4.1	Freight transport services by road	Electrified Road Vehicles & Devices (incl Hydrogen powered)	TE03.4	Transport Equipment
	H49.3.9	Interurban scheduled road transport	Electrified Road Vehicles & Devices (incl Hydrogen powered)	TE03.4	Transport Equipment
	H50.3.0	Inland passenger water transport	Shipping	TE04.0	Transport Equipment
	H50.4.0	Inland freight water transport	Shipping	TE04.0	Transport Equipment
	H	Passenger cars and commercial vehicles	Electrified Road Vehicles & Devices (incl Hydrogen powered)	TE03.4	Transport Equipment

EU TAXONOMY			FTSE RUSSELL GRCS		
SECTOR	NACE CLASSIFICATION	ACTIVITY	MICRO-SECTOR	CODE	SECTOR
ICT	J63.1.1	Data-driven climate change monitoring solutions	Efficient IT	EM05.2	Energy Management & Efficiency
ICT	J63.1.1	Data processing, hosting and related activities	Cloud Computing	EM05.1	Energy Management & Efficiency
Finance and Insurance Activities	K65.12	Non-life insurance			
Professional, Scientific and Technical Activities	M71.12	Engineering activities and related technical consultancy dedicated to adaptation to climate change	Flood Control	WI03.0	Water Infrastructure & Technology
Professional, Scientific and Technical Activities	M71.12	Engineering activities and related technical consultancy dedicated to adaptation to climate change	Meteorological Solutions	WI04.0	Water Infrastructure & Technology
Professional, Scientific and Technical Activities	M71.12	Engineering activities and related technical consultancy dedicated to adaptation to climate change	Natural Disaster Response	WI05.0	Water Infrastructure & Technology

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