

IMPACT REPORT 2025

GUINNESS SUSTAINABLE ENERGY



This is a marketing communication. Please refer to the prospectus, supplements, KIDs and KIIDs for the Funds, which contain detailed information on their characteristics, objectives, and full information of the risks, before making any final investment decisions.

POSITIVELY DIFFERENT

GUINNESS
GLOBAL INVESTORS

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EXECUTIVE SUMMARY

The Guinness Sustainable Energy strategy invests in companies playing a key role in global decarbonisation, providing a vehicle for investors to align their capital with this positive impact. In this report, we disclose our estimates of the positive impact delivered by companies held by the strategy at the end of 2024. Unless otherwise stated, all data is based on calendar year 2024 data.

In the **first section**, starting on page 6, we discuss our sustainable energy universe construction and how the businesses we seek to invest in map to the United Nations Sustainable Development Goals (SDGs). We conclude that the portfolio holdings map closest to SDGs 7, 9, 11 and 13. For balance, we also discuss the business activity of some portfolio companies that detract from the SDGs.

The **second section** of the report, starting on page 11, assesses the positive and negative decarbonisation impact of the strategy's holdings. Our estimate and conclusions are as follows:

- i. The companies held in our portfolio, at the enterprise level, helped to deliver around 115,000 million kWh of energy savings, 23,000 million miles of electrified travel, 58,500MW of clean energy generation capacity and 204,500 GWh of renewable energy generation in 2024.
- ii. The companies in our portfolio sold products and services that help to displace 919 tonnes of CO2e per \$1m of portfolio assets compared to the continued use of incumbent fossil fuel technologies. For context, this would be equivalent to planting around 15,200 tree seedlings, providing energy for 123 homes for one year, avoiding driving 2.34 million miles or displacing the consumption of 2,130 barrels of oil.
- iii. In delivering this positive impact, we estimate that the companies in our portfolio generated an annualised 'carbon cost' of 56 tonnes of CO2e. Our carbon cost figure is based on Scope 1 and 2 (S1+S2) emissions data adjusted for asset life where available to provide a comparable annualised negative impact figure.
- iv. The aggregate positive impact of companies owned at the end of 2024 increased by +9% year-on-year.

The **third section**, starting on page 19, explains our engagement framework of Disclosure, Target Setting and Governance & Incentivisation with case studies of engagement activity over the last year to support our approach. We also detail some of the climate-related initiatives we are involved in.

Within our **appendices**, starting on page 24, we provide historical and background information on impact alignment, our methodology on SDG and business activity mapping as well as discussion points around impact methodology.

We are mindful that impact reporting is still evolving and that there is room for discussion around the approaches adopted. We rely on calculations made on a best-efforts basis and many of the figures we produce are proprietary and unaudited. However, we have included detailed explanations of our methodologies in this report to guide the reader through the assumptions we have taken.

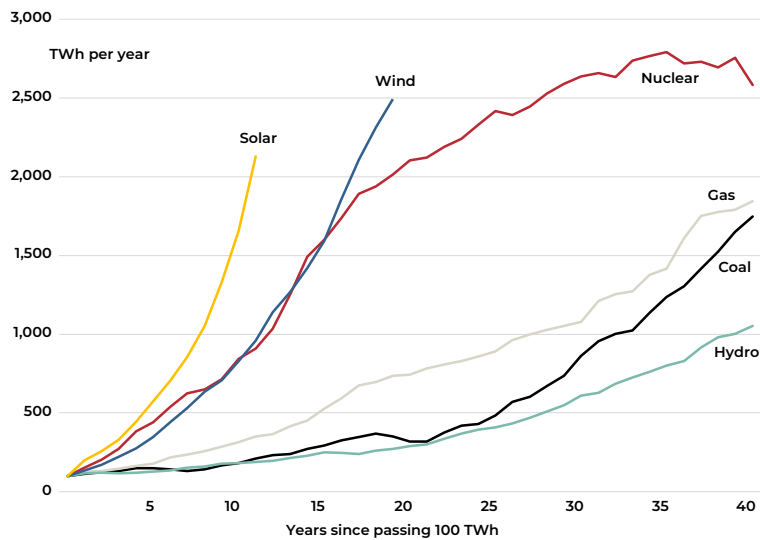
The estimate for carbon displaced is not equivalent to a carbon offset to Guinness Global Investors or our clients. The figure illustrates the extent to which the strategy is fulfilling its objective to invest in companies which help facilitate the low-carbon transition. The carbon cost figure is also illustrative and distinct from weighted average carbon intensity. Both figures are calculated based on model portfolio weights for the Guinness Sustainable Energy strategy rather than the actual portfolio weights of any investment vehicle applying it. The positive impact is owned by the consumer who purchases the underlying products and services. Please see the glossary in Appendix 5 for the definitions of key terms used in the report.

INTRODUCTION FROM THE INVESTMENT TEAM

Sentiment around the global clean energy industry has suffered over the last 18 months due to the nomination and election of Donald Trump as President of the United States. In the subsequent passing of his One Big Beautiful Bill in July 2025, we saw President Trump follow through on his campaign promises, reducing various clean energy tax credits.

With support for the US clean energy industry under pressure, you might be forgiven for thinking that the global energy transition has stalled. We would argue quite differently and suggest that we are still in the very early stages of the secular energy transition trend of growing renewable/low carbon energy supply and the electrification of global energy demand. Wind and solar are growing faster than any prior form of power supply, whilst the electrification of the world energy system is leading to sharply positive revisions for power demand. The energy transition is just getting into its stride.

Annual global power generation after exceeding 100 TWh in a year



Source: Nat Bullard; EMBER; Guinness Global Investors as of December 2024

The recent World Energy Investment 2025 report from the International Energy Agency (IEA) estimates that global investment in clean technologies remains on track to hit nearly \$2.2tn in 2025, 10% more than 2024 and almost twice the spend on coal, oil and gas. Supporting this, in the first half of the year, Bloomberg New Energy Finance (BNEF) estimate that a record \$386bn was invested in renewable energy projects (also up 10% year-on-year), with wind projects up 24% and solar up 5%.

Alongside these developments, electricity demand growth has been revised upwards, both in the US (according to Nextera Energy) and globally, as noted by the IEA. For the first time in nearly two decades, developed markets are contributing positively to global electricity demand growth, driven by AI datacentres, electrification and reshoring of industry.

At Guinness, we remain optimistic about the secular growth opportunity presented by the sustainable energy transition. By investing in companies selling products and services that help to deliver the low carbon transition, the fund provides a vehicle for clients to align their capital with the positive impact of sustainable energy technologies. In this report, we seek to quantify that impact.

Our report starts with an explanation of our philosophy, our thoughts on impact investing, and how we align our universe with climate solutions. We then describe

our impact findings, focusing on CO2 emissions displaced by the products and services of our investee companies, and outline some of the areas of negative impact and controversy within our portfolio. We conclude by outlining our approach to engagement and provide case studies of recent engagement activity.

PHILOSOPHY

THE ENERGY TRANSITION IS HAPPENING

Over the next 25 years, the world will transition towards a sustainable energy system.

The transition will be driven by five key factors:









- **Population and GDP growth:** By 2050, the United Nations projects that the global population will rise by about 20%, while the International Energy Agency expects electricity demand to double.
- **Climate change:** The World Meteorological Organization (WMO) reports that 2024 was the hottest year on record, with global temperatures about 1.55°C above pre-industrial levels and several climate indicators at new highs, intensifying pressure on governments to accelerate climate action.
- **Pollution:** According to IQAir's 7th annual World Air Quality Report, only 17% of global cities met the World Health Organization's guideline for healthy levels of particulate matter (PM2.5). Just seven countries met the standard, while the five most polluted — Chad, Bangladesh, Pakistan, India, and the Democratic Republic of Congo — exceeded it by more than 10 times.
- **Energy security:** President Trump issued executive orders in 2025 declaring a national energy emergency, framing insufficient domestic energy production as a threat to the economy, national security, and foreign policy, and directed agencies to expedite energy production infrastructure.
- **Economics:** In 2024, the International Renewable Energy Agency (IRENA) reported that 91% of new utility-scale renewable energy projects generated electricity at a lower cost than the cheapest fossil fuel option.



WHAT WE INVEST IN

The Guinness Sustainable Energy strategy’s investment objective is to provide investors with long-term capital appreciation by investing in companies that contribute towards reduced global carbon emissions. Specifically, the strategy invests in companies engaged in the generation and storage of sustainable energy, and the electrification and efficiency of energy demand.

Guinness Sustainable Energy strategy exposure by theme

Theme		Weighting (%)	
1	Electrification of the energy mix		36.9%
2	Heating, lighting and power efficiency		17.9%
3	Power semiconductors		9.8%
4	Rise of the electric vehicle and auto efficiency		9.8%
5	Expansion of the wind industry		9.2%
6	Expansion of the solar industry		8.1%
7	Battery manufacturing		4.0%
8	Geothermal		3.5%
9	Other (inc cash)		0.7%

Model weights at 31st December 2024. Source: Guinness Global Investors

WHAT WE DO NOT INVEST IN

The strategy excludes companies which:

- Derive over 5% revenue exposure from the exploration and production of oil or gas;
- Manufacture controversial weapons; or
- Derive over 30% of revenues from thermal coal power generation.

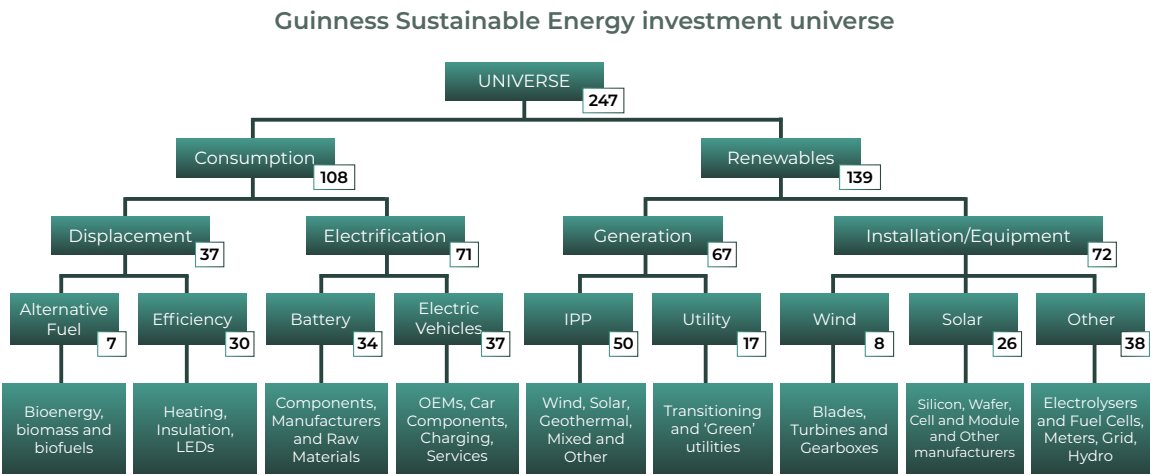
The strategy’s exclusions are also consistent with the Norwegian Council on Ethics (Norges Bank) exclusion list, which screens out some of the more carbon-intensive utilities, tobacco, and companies which breach internationally accepted norms.

MAPPING TO THE SUSTAINABLE DEVELOPMENT GOALS (SDGS)

UNIVERSE CONSTRUCTION

The Guinness Sustainable Energy strategy delivers concentrated exposure to companies in the sustainable energy sector, providing a positive environmental solution for investors’ portfolios.

Our investment universe is unique to Guinness Global Investors. It was first created in 2018 by identifying c.600 companies associated with the energy transition. We screened out c.400 companies due to size, liquidity or relevance, leaving an investible universe of around 200 companies. This universe is updated annually and currently stands at around 250 companies at the end of 2024 (the reference point for this report). We apply our investment process and approach to portfolio construction, resulting in an equally weighted portfolio of 30 positions. We do not limit ourselves to ‘pure plays’, opening our universe up to some companies with existing conventional fuel exposure, but this must be allied with a commitment to transitioning their business models towards sustainable energy sources. Our investment universe is summarised below:



Universe as of 31st December 2024. Source: Guinness Global Investors

This model has four key sustainable energy subsectors:

- **Displacement:** companies selling products and services which displace energy consumed via improving energy efficiency or providing alternative fuels.
- **Electrification:** companies selling products and services which help to enable electrification of transportation and provide energy stationary storage for the grid.
- **Generation:** utilities and independent power producers (IPPs) with a material proportion of business exposure to low-carbon electricity generation.
- **Installation:** companies involved in installing low-carbon infrastructure, manufacturing finished products (e.g. turbines), key components (e.g. solar glass), and services (e.g. grid connection).

We believe that the companies which fall into these business areas sell products and services which are vital to delivering the transition towards a low-carbon economy. As we can only invest in companies which fall into one of these four verticals, we believe that our portfolio is strongly aligned with the positive decarbonising impact associated with these products and services.

UNIVERSE ALIGNMENT WITH THE SDGS

The 17 United Nations Sustainable Development Goals are backed up with 169 targets which act as a framework for “peace and prosperity for people and the planet, now and in the future”. They were adopted by all UN member states in 2015 as a blueprint for sustainable development to 2030. The SDGs have been widely adopted by the private sector as common language for communicating positive (and negative) impact.



We believe that there is strong alignment between our four sustainable energy subsectors and the following four SDGs:

Displacement companies provide energy efficiency solutions and services (Targets 7.1, 7.3). **Generation** companies provide low-carbon energy, helping to increase the share of renewable energy in the global grid mix (Target 7.2).

Installation companies install, upgrade, and service low-carbon energy infrastructure, enabling greater adoption of clean technologies (Target 9.4).

Electrification companies enable the electrification of mobility, facilitating the transition towards sustainable transport systems (Target 11.2).

Collectively, these companies provide the products, services, and solutions which allow governments to integrate climate change measures into national policies, strategies and planning (Target 13.2).

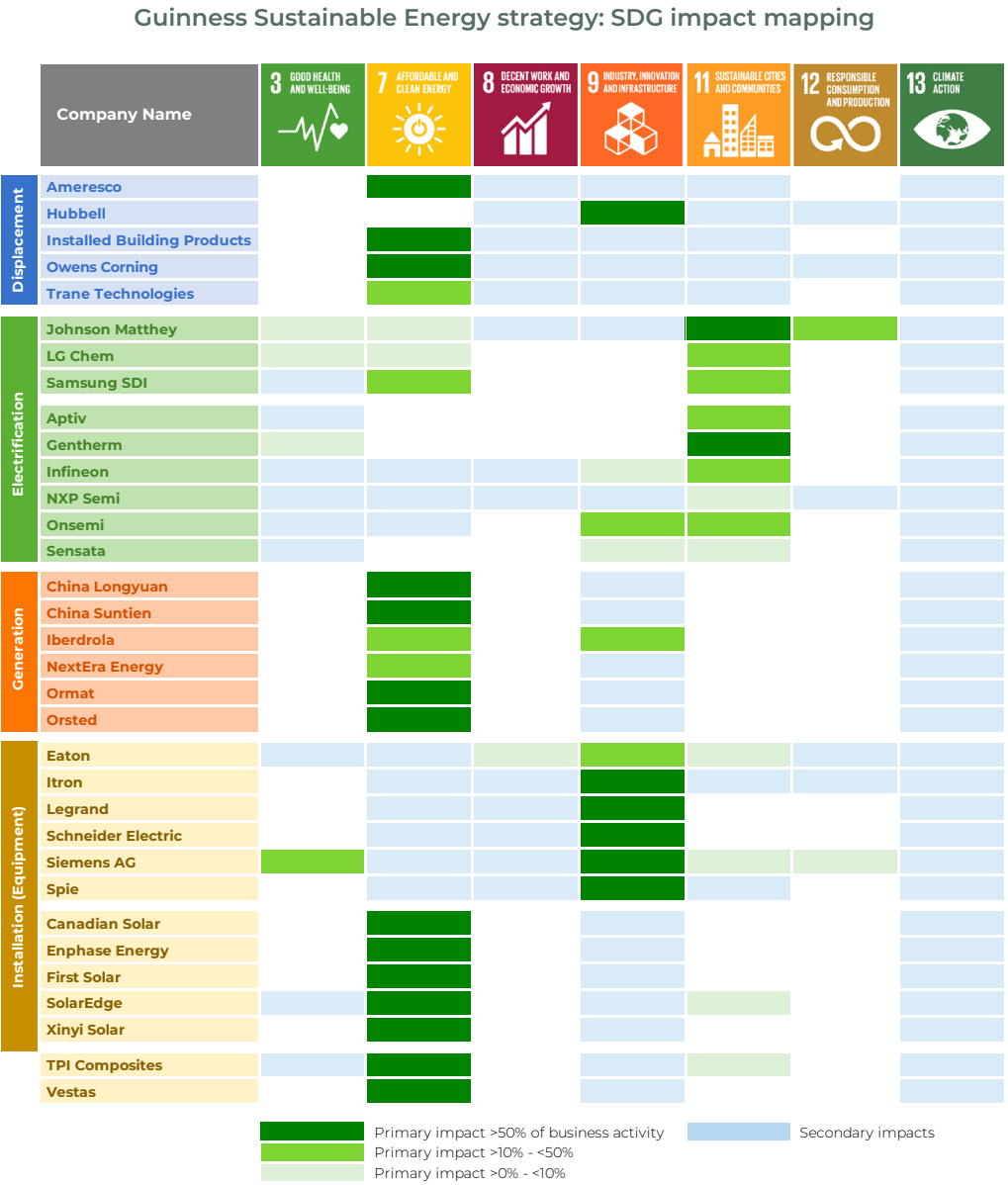
PORTFOLIO ALIGNMENT WITH THE SDGS

We have conducted an impact mapping exercise, matching up divisional business activity to relevant SDG targets to understand the impact our portfolio delivers beyond carbon displacement. Where a company’s divisional activity contributes to more than one impact area, we assign the most relevant SDG/target as the division’s “primary” impact and describe the overlapping / other impacts as “secondary” impact(s). We do not deliberately target these secondary impacts, yet the business activity of some of our portfolio companies also contributes towards the following SDGs:

- Target 3.9: Help reduce the number of deaths and illnesses from hazardous air pollution by enabling the electrification of transportation.
- Targets 8.4 & 11.6: Improve global resource efficiency and reduce the per capita impact of cities, through providing energy and water efficiency products and services.

- Target 12.5: Reduce waste by licensing efficient production processes and recycling batteries, helping to reduce waste generation.

The primary and secondary contributions of our investee companies are shown below:



Portfolio holdings as of 31st December 2024. Source: Guinness Global Investors

We are also aware that some of the business activity of companies in the portfolio detracts from the SDGs. When conducting due diligence, we attempt to consider both a company’s positive and negative impact, seeking only to invest in companies which we view as having a net benefit on the energy transition. We detail below some of the adverse impacts our portfolio companies have.

Many of our displacement and installation names, are manufacturing companies. Some of these companies are diversified with exposure to unfavourable end markets. For example, Hubbell is a leading manufacturer of electrical equipment, but also sells products such as gas connectors into utility end markets. Within the electrification sector, we consider companies involved in the battery and electric vehicle supply chains. Many companies supplying components for electric vehicles also generate revenues from supplying parts for internal combustion engine vehicles.

We consider both utilities and independent power producers within our generation names. Many of these companies will own legacy fossil fuel generation assets, contributing towards increased global carbon emissions, exacerbating the climate crisis.

On average, our utility and IPP holdings have around 13% of their business activities exposed to fossil fuel generation and distribution. We will own these companies on the condition that a sizeable proportion of their business is already dedicated to renewable generation and a clear commitment has been made towards growing this further whilst phasing out fossil fuels.

CASE STUDY: IBERDROLA

Iberdrola positions itself as one of the world's leading energy companies, ranking among the top three globally in its sector by market capitalisation. It is recognised as a leader in renewable energy, with total generation capacity of 57 gigawatts (GW), of which 44 GW is renewable. In 2024, Iberdrola generated 83 terawatt hours (TWh) in renewable energy (45 TWh onshore wind, 26 TWh hydro, 6 TWh offshore wind, 7 TWh solar and others). When combined with the company's nuclear generation of 23 TWh, the company generates just over 106 TWh of low-carbon energy. However, the company also generates around 27 TWh of energy from natural gas (20 TWh) and cogeneration (7 TWh) which releases carbon into the atmosphere, exacerbating the greenhouse gas effect and contributing to global warming.

Despite its residual fossil generation, we believe Iberdrola remains a strong candidate for inclusion in our portfolio for the following three reasons:

- It is growing its renewable generation and reducing its fossil generation:** The company is actively shifting away from fossil fuels. Between 2021 and 2024, fossil fuel-based generation has fallen almost 60% (from 67 TWh to 27 TWh), while renewable generation increased 12% from 74 TWh to 83 TWh over the same period, reinforcing Iberdrola's commitment to clean energy growth.
- It is far less carbon intensive than its peers:** Iberdrola's carbon intensity of generation is 80% lower than the average of its European peer group. The company has set robust decarbonisation targets, including targeting carbon neutrality in electricity generation by 2030, followed by net zero in scopes 1, 2 and 3 before 2040.
- It has actively closed down fossil power plants:** Iberdrola is the largest electricity company in the world to not own or operate coal fired assets. The closure of its final coal plant in 2020 capped a long-term effort dating back to 2001, during which it decommissioned 17 coal and fuel-oil power plants totalling 8,500 MW of capacity.

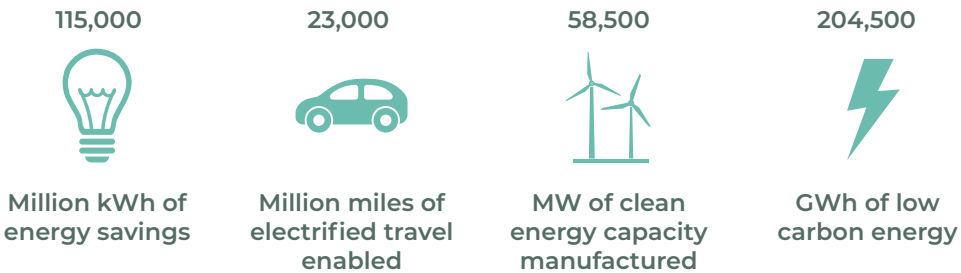
Despite some of our companies having negative impacts, we believe that the companies owned in the Guinness Sustainable Energy strategy deliver a net positive impact. Where companies derive less than 50% of sales, profits or cash flow from sustainable energy, we would look for substantially more than 50% of investment to be going into sustainable energy, meaning that the driver of future growth (and typically therefore the driver of equity value) over the coming years comes from sustainable energy.

IMPACT OF COMPANIES IN THE GUINNESS SUSTAINABLE ENERGY PORTFOLIO

AGGREGATE ENTERPRISE LEVEL IMPACT FIGURES

In this report, we present the positive impact associated with our investee companies by estimating the carbon dioxide emissions displaced and generated through use of their products and services. Please note that these are unaudited figures, which rely on internal estimates.

For 2024, we estimate that in aggregate, the companies in our portfolio achieved all of the following:



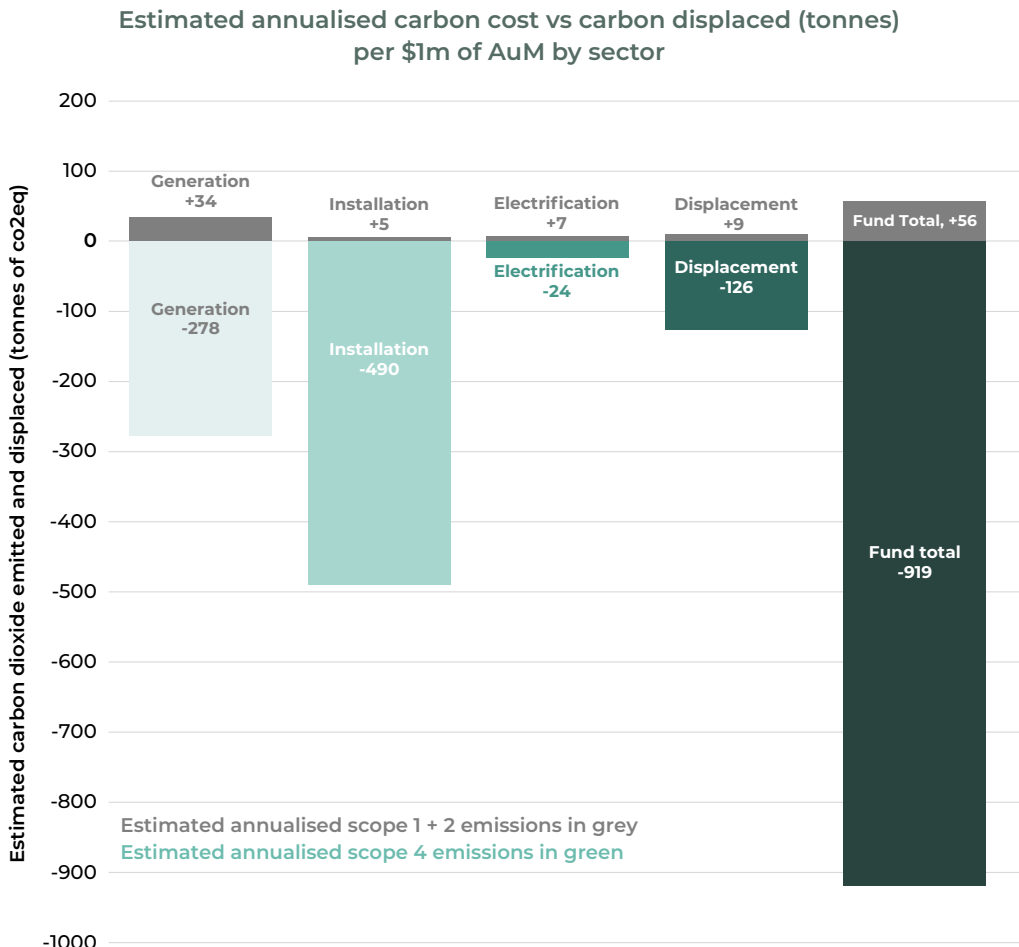
Data for portfolio holdings as of 31st December 2024. Source: Guinness Global Investors



ANNUALISED CARBON DISPLACED PER \$1M OF PORTFOLIO ASSETS

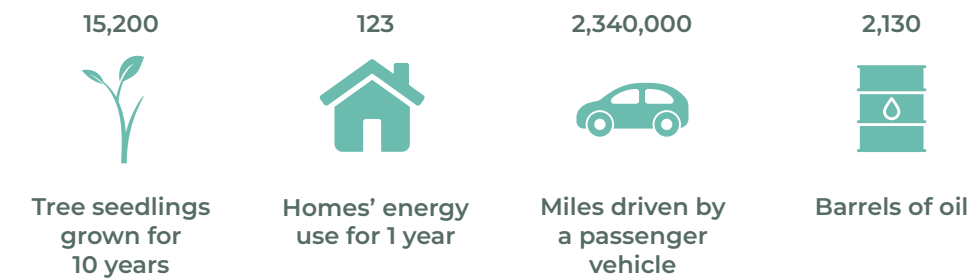
In 2024, we estimate that:

- The annualised carbon cost (Scope 1+2 emissions) associated with our portfolio was 56 tCO2e/\$m portfolio assets
- The annualised carbon displaced (Scope 4 emissions) associated with our portfolio was 919 tCO2e/\$m portfolio assets.



Data for portfolio holdings as of 31st December 2024. Source: Guinness Global Investors

According to the Environmental Protection Agency (EPA), 919 tonnes of CO2 is equivalent to one of the following:



Source: EPA, Guinness Global Investors as of December 2024

We find it interesting to look behind our headline finding of 919 tCO2e displaced/ \$1m of portfolio assets to understand what makes up this figure. Similar to last year, the installation subsector was the largest contributor, accounting for 53% of carbon displaced. Within the installation sector, Canadian Solar was a notable source of displacement. The company is a leading solar photovoltaic module manufacturer and developer of utility-scale solar power projects. Xinyi Solar, the world's largest manufacturer of solar glass was also a large contributor. Given the energy-intensive nature of Xinyi's operations and the continued reliance of glass manufacturing on coal-based power, the company currently has relatively high Scope 1 and 2 emissions. We expect this to decline over time as China progresses in decarbonising its electricity grid.

Within the generation group, our two Chinese wind names (China Suntien and China Longyuan) once again achieved some of the highest displacement per dollar of investment, compared to European and North American generation exposure in the portfolio. This is not particularly surprising given the relatively low valuations of the Chinese names relative to the scale of their generation assets.

The electrification sector makes up only 3% of CO2e displaced. In our calculation of an EV component company's positive impact, we estimate the number of electric miles they have enabled and then apply a scaling factor based on the product's contribution to the cost of a mid-range electric vehicle. Despite playing vital roles in electric drivetrains, components such as Sensata's EV sensors and electrical protection are typically responsible for <3% of the overall cost of an electric vehicle. For a number of our EV names, this results in a relatively low positive impact contribution, although we expect this sector to make some of the biggest gains in positive impact over the next few years. We talk more about scaling factors in our worked example later on in this report.

We note that our headline figure of 919 tCO2e displaced / \$1m of portfolio assets is higher than last year. The main driver behind this was the changes in valuation and market capitalisation, followed by year-on-year increase in positive impact activity. Stripping out changes in market capitalisation, the aggregate positive impact of companies owned in the portfolio at the end of 2024 increased by 9% year on year. Other factors which had less of an impact included: updates and revisions to assumptions and changes in portfolio holdings.

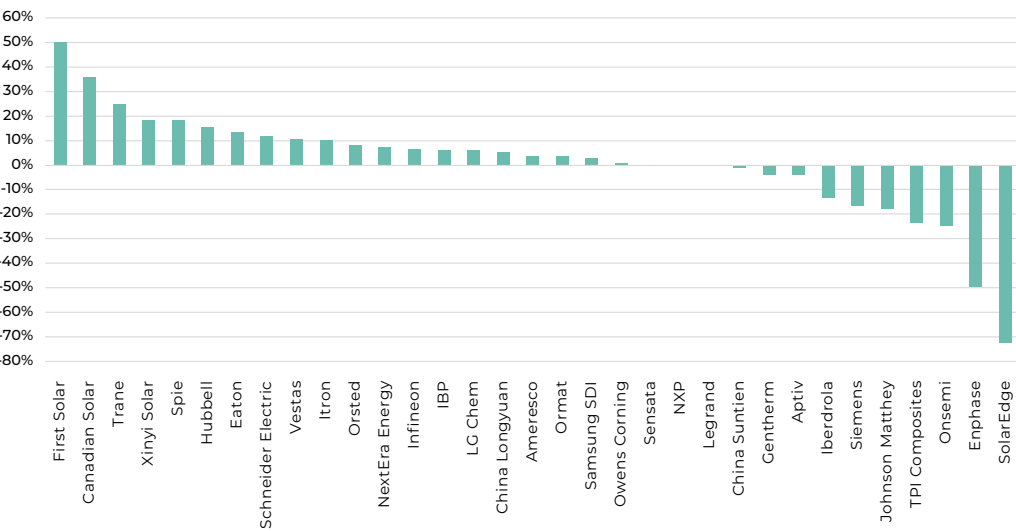
Our calculations described here incorporate the Scope 1 (direct emissions from owned or controlled sources), Scope 2 (indirect emissions from the purchased electricity, steam, and heat purchases) plus the estimated 'Scope 4' emissions displaced through the use of the products and services they deliver. We also include some initial analysis of the portfolio's available Scope 3 data (all other indirect emissions that occur in a company's value chain).



CHANGE IN IMPACT VERSUS 2023

We use our own process of measuring and disclosing investee company impact as a way to identify companies to prioritise for engagement.

Percentage change in estimated annualised CO2 displaced by company, 2024 vs 2023
Aggregate portfolio improvement excluding market cap changes = +9%



Data for portfolio holdings as of 31st December 2024. Source: Guinness Global Investors

Assuming we owned 100% of the companies in our portfolio, the aggregate improvement in gross carbon emissions displaced increased by +9% year-on-year. Some of the companies which saw the biggest increases in positive impact were First Solar, Canadian Solar, Trane Technologies, and Xinyi Solar.

- **First Solar’s** positive impact grew by 50%.
 - The company’s solar module shipments increased by 24% year over year from 11.3 MW in 2023 to 14.1 MW in 2024.
 - The company also benefitted from a modest increase in the scaling factor as module pricing remained resilient despite continued declines in the average levelised cost of solar electricity.
- **Canadian Solar’s** saw its estimated CO2 displaced increase by 36%.
 - The company’s solar power projects in operation doubled from 1,005 MWp to 2,120 MWp, while battery storage projects in operation increased threefold from 600MWh in 2023 to 1,809MWh in 2024.
- **Trane Technologies** saw its estimated scope 4 emissions increase by 25%.
 - This was driven by a 12% increase in sales of heating, ventilation, and air conditioning solutions, with a higher contribution from low-carbon products.
 - The company estimates that its products have helped customers avoid 237 million tCO2e from 2019 to 2024.

- **Xinyi Solar’s** estimated carbon avoided increased by 18%.
 - The company increased its PV glass shipments by 10% and its solar electricity generation by 27% year over year.
 - Xinyi estimates that the electricity generated by its solar farms helped displace approximately 5.2 million tonnes of CO2 in 2024.

This year we identified ten companies which saw their positive impact fall year-on-year: SolarEdge, Enphase, Onsemi, TPI Composites, Johnson Matthey, Siemens, Iberdrola, Aptiv, Gentherm, and China Suntien.

Enphase and **SolarEdge**, two solar inverter manufacturers, both saw a significant drop in emissions avoided driven by a drop in sales as a result of regulatory changes in the United States and a destocking cycle in Europe. Global automotive production softened over the year, with electric vehicle sales in Europe weakening slightly, weighing on suppliers across the value chain. As a result, **Onsemi’s** Scope 4 emissions fell 25% year-on-year, reflecting softer demand for its power semiconductors; **Gentherm** saw an 4% reduction in its positive impact as a result of weaker demand for its climate products; and, we estimate that **Aptiv** saw a 4% drop in Scope 4 emissions due to weaker sales of high voltage electrification solutions. **TPI Composites**, an outsourced wind blade manufacturer, saw a drop in emissions avoided due to a one-off closure of a production facility in Mexico. **Johnson Matthey** saw a modest decline in demand for its hydrogen fuel cell and electrolyser technologies. **Siemens** reported a 16% drop in emissions avoided, mainly due to reduced sales in its Digital Industries division as a result of weaker global demand for factory automation equipment and services. **Iberdrola** reported a 13% drop in its avoided emissions in 2024 compared to 2023. Despite recording a 5% increase in renewable electricity generation, we believe this was outweighed by a larger decrease in the carbon intensities of the grids in which the company operates as renewables continue to displace fossil fuels from the energy mix. **China Suntien** disclosed marginally lower wind electricity sales in 2024, leading to a 1% decline in the company’s Scope 4 emissions.

In all cases, the observed decline in positive impact was due to temporary fluctuations, calculation changes, or one-offs rather than any deviation in corporate strategy. Overall, we are happy that our holdings are well aligned to deliver a positive environmental impact by growing revenues and profits from climate solutions. We will continue to monitor their progress in future reports.



METHODOLOGY

Data collection

We gather relevant operational and environmental metrics for all portfolio companies where data is available or can be reasonably estimated. Please see Appendix 1 for details on the type of data we use.

Calculation of company impact

We apply reasonable assumptions to translate the data into an estimate for annualised CO2e displaced (positive impact) in the current year. This is increasingly being described in the industry as Scope 4 (S4) emissions. Afterwards, we apply a scaling factor to revise our impact estimates downwards to reflect the product's contribution to the final impactful product cost.

CASE STUDY: FIRST SOLAR SCALING FACTOR

First Solar is a vertically integrated global provider of photovoltaic (PV) solar energy solutions. It pioneered the development of thin film technology as an alternative to crystalline silicon. In the absence of clean energy technologies such as solar power, additional fossil fuel capacity would have been added to generate this electricity, leading to higher carbon emissions.

However, on their own, solar panels cannot generate clean energy. They require other hardware (cables, racking systems, wiring, inverters, etc) and soft costs (installation labour, permitting, ongoing service, etc). It would not be fair to award the solar generation that First Solar has enabled 100% of the emissions displaced by that solar generation. We therefore apply a scaling factor.

Drawing on utility solar cost data from Bloomberg New Energy Finance and Lazard's LCOE analysis, we estimate that First Solar's modules account for approximately 37% of the total levelised cost of solar electricity. We therefore use 37% as the scaling factor for First Solar.

Annualising

The S1+S2 emissions of a solar module manufacturer represent the upfront carbon cost which has to be recognised in order to enable 30 years of carbon displacement through solar energy generation. One way of measuring impact would be to present the S1+S2 emissions alongside the emissions displaced by the solar panels over their 30-year operational lives. However, when measuring impact across a number of technologies with different product lives, we believe it is better to present this data on an annualised basis. We divide both the carbon emitted to create the product (S1+S2 emissions) and the estimated lifetime carbon displaced (S4 emissions), by the product's estimated useful product life. This provides an estimate for annualised carbon cost (S1+S2 / product life) and an annualised carbon displaced (S4 / product life).

Calculating impact per \$1m of portfolio assets

A holding of \$1m in an equally weighted portfolio of 30 stocks, would result in an indicative \$33,333 holding in each company. We divide that holding by the company's market capitalisation to get a percentage share of ownership. We can then multiply this by the annual carbon displaced (positive impact) and annual carbon cost (negative impact) estimates to present an estimate for the investor's owned positive and negative impact per \$1m of portfolio assets. This is then aggregated across all of our portfolio holdings in order for us to present a figure for owned carbon displaced and owned carbon cost per \$1m of portfolio assets.

WORKED EXAMPLE: FIRST SOLAR

Positive Impact (estimated carbon displaced)

Data collection:

In 2024, First Solar disclosed that it shipped 14.1 GW of solar capacity, an increase of c.24% from the 11.3 GW shipped in 2023. In its 2025 Sustainability Report, the

company disclosed that the 15.5GW of PV modules it produced in 2024 alone will help avoid an estimated 10 million tCO2e per year during their 30+ year product life.

Calculation of company impact:

To estimate the emissions displaced in 2024, we take First Solar's most recent figure for annual emissions avoided (10m tCO2e in 2024) and divide it by the 15.5 GW of PV modules it produced to derive a figure of 0.65m tCO2e displaced per GW per year. Given First Solar did not ship every module produced in 2024, we then scale this by the actual 14.1GW shipped in 2024 to arrive at an estimate of 9.1m tCO2e avoided in 2024. As discussed earlier, solar modules represent c.37% of the cost of a utility-scale solar system. If we apply a c.37% scaling factor, we reach an estimate for annualised carbon displaced of 3.4m tCO2e.

Negative Impact (estimated carbon emissions generated)

Data collection:

In 2024, First Solar disclosed Scope 1+2 emissions of 998,958 tCO2e suggesting that c.1m tCO2e was emitted in order to manufacture and sell 14.1GW of solar modules in the year.

Annualising

First Solar's positive impact data collected reflects annual data, so no further work is required. The upfront carbon cost (S1+S2) which has been recognised to enable 30 years of solar generation is 1m tCO2e. Dividing this by an average product life of 30 years allows us to derive an annualised carbon cost of 0.033m tCO2e per year.

Impact per \$1m of portfolio assets

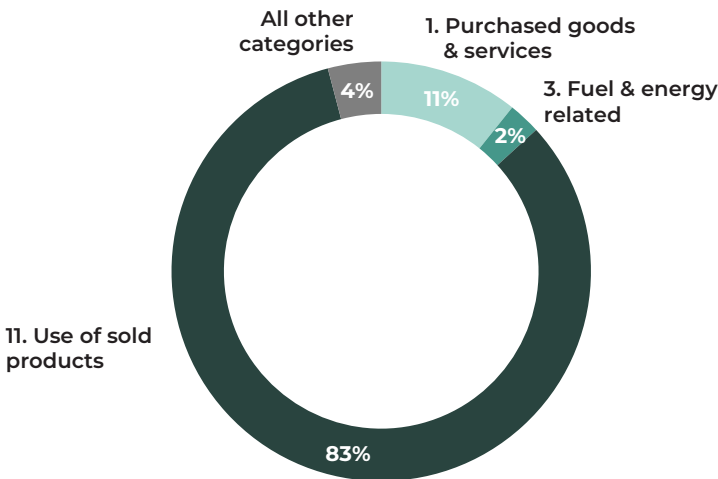
\$33,333 invested in First Solar (\$18.9bn market capitalisation as of 31st December 2024) leads to a 0.0002% ownership stake. If we multiply this stake by the positive and negative impacts, we reach an annualised carbon displaced (positive impact) figure of 6.0 tCO2e and an annualised carbon cost (negative impact) figure of 0.06 tCO2e generated.

SCOPE 3 EMISSIONS

Last year, we found that just three GHG Protocol categories made up 93% of our portfolio's Scope 3 emissions: 81% Category 11 (Use of products sold), 10% Category 1 (Purchased goods & services), 2% Category 3 (Fuel & energy related). After collecting the available data from CDP and company disclosures for 2024, we found that once again, these three categories dominated the portfolio's Scope 3 emissions: 83% Category 11, 11% Category 1, 2% Category 3.

In 2024, the contribution of these categories has remained largely similar to last year.

Scope 3 emissions breakdown by category

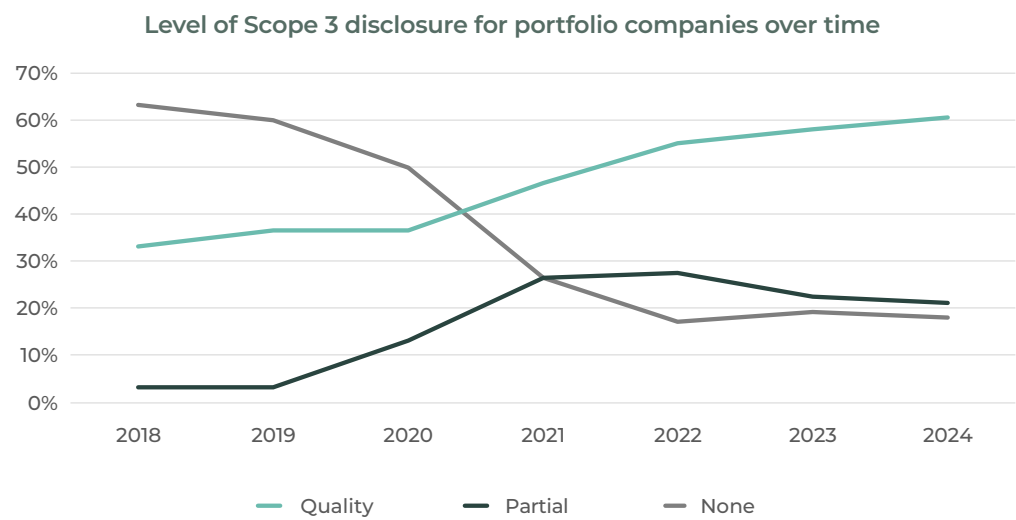


Data for portfolio holdings as of 31st December 2024.

Source: Company reports, CDP, Guinness Global Investors

Scope 3 reporting is still developing, with many companies not reporting any information at all or producing partial disclosures covering one or two of the 15 categories (typically business travel and employee commuting) but not all of them. At present:

- 61% of portfolio companies report high-quality Scope 3 data;
- 21% of portfolio companies report partial Scope 3 data; and
- 18% of portfolio companies do not report any Scope 3 data.



Data to 31st December 2024. Source: Company reports, CDP, Guinness Global Investors

Disclosure is slowly improving, however, incomplete data makes quantitative Scope 3 analysis difficult at present. The quality of this data is also questionable:

- Some categories were relevant but not yet calculated;
- Different companies may use different methodologies for similar categories;
- Different companies rely to different extents on supply chain partner data;
- There can be significant swings in calculations from year to year; and
- Third party estimates can vary materially.

We have conducted some initial analysis, incorporating Scope 3 data into our carbon cost calculations. As many of the companies we own operate within the same industries and are often customers or suppliers to one another, there is likely to be a degree of double counting of upstream and downstream emissions. As a result, we do not currently have enough confidence in the Scope 3 data to publish these results. Having said this, we were encouraged to find that our estimated emissions avoided greatly outweighed the carbon cost even when it included Scope 3 emissions.

Our ambition is to continue to improve our Scope 3 reporting and analysis as disclosure improves.

ENGAGEMENT BY THE GUINNESS SUSTAINABLE ENERGY TEAM

As a public equities investment house with around \$11bn in assets under management, we recognise that our engagement 'clout' is likely to be limited compared, say, to that of a private equity firm which takes majority stakes in its investee companies. However, we believe that successful long-term engagement shares parallels with Richard Thaler's nudge theory; the idea that behaviour and decision making can be influenced through positive reinforcement and suggestions for improvement. We are but one actor trying to nudge companies in the right direction. However, when multiple actors, either independently or collectively, nudge in the same direction of positive change, it is far harder for companies, industries and governments to ignore.

ENGAGEMENT FRAMEWORK

In our engagement efforts, we seek to ensure that the strategies of our portfolio companies are aligned with delivering the low-carbon transition. The desired outcomes of our engagement are to grow our companies' positive impacts, reduce their negative impacts, and shrink their operational emissions. Taking inspiration from Climate Action 100+, our engagement framework revolves around 3 key pillars:

- **Disclosure:** Once a risk is measured, it can be managed through target setting.
- **Target setting:** Once a target has been set, it can be incentivised through remuneration.
- **Governance & Incentivisation:** Once a target is incentivised, it is more likely to be achieved.

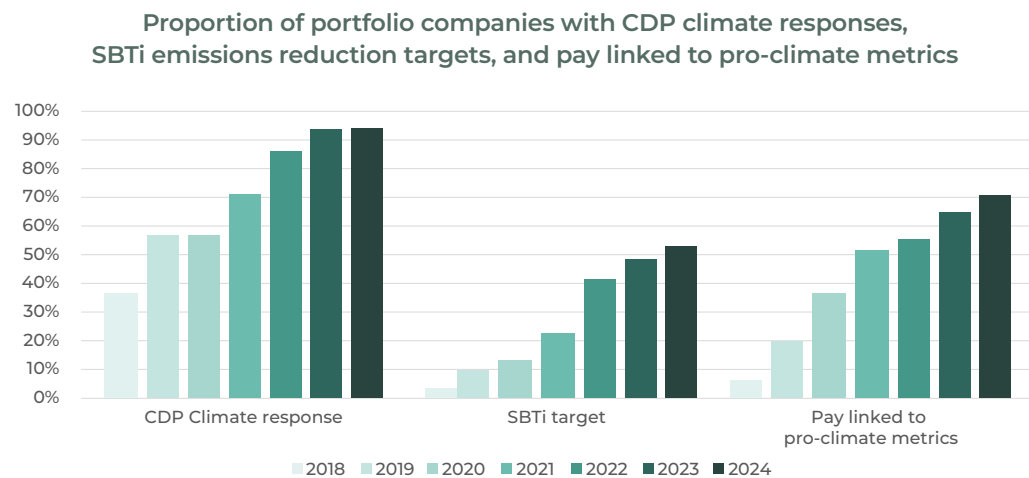
We engage both directly and collectively with participants across the energy spectrum.

When we engage on **disclosure**, we commonly ask companies to produce an ESG report, measure and disclose Scope 1 and 2 emissions, complete the CDP climate survey, produce TCFD aligned disclosures, measure and disclose Scope 3 emissions, disclose green product revenues, or measure and disclose estimates for carbon emissions avoided thanks to customers using their products.

When we engage on **target setting**, we often ask companies to set operational emissions reduction targets, set renewable energy targets, set net zero targets, register carbon reduction targets with the Science Based Targets initiative (SBTi), set Scope 3 targets, set green product sales targets, or set targets to phase out fossil fuels from their generation mix.

When we engage on **incentivisation**, we might ask companies to ensure there is board level oversight of climate issues, disclose which metrics are used in management pay, allow shareholders to vote on the frequency of say on pay votes, consider incorporating ESG metrics in their remuneration plans, consider switching away from undesirable structures and metrics (TSR) and towards pro-climate metrics: sustainable profitability (return on capital), growing positive impact (green sales / reducing customer CO2 emissions), reducing negative impact (phasing out fossil fuel generation), or reducing operational emissions (CO2 emissions reduction).

We track each company's progress against these indicators in our proprietary engagement matrix. While it is almost impossible for individual investors to claim direct responsibility for engagement successes, we provide some examples below where we believe we have contributed to changing company behaviour for the better.



Source: CDP, SBTi, Glass Lewis, Company reports, Guinness Global Investors.
Based on portfolio data to 31st December 2024.

This chart shows an extract from our engagement matrix, showing a steady increase in portfolio companies completing the CDP climate survey, setting science-based climate targets with the Science Based Targets initiative (SBTi) and linking pay to pro-climate metrics over time.

ESCALATION

We often engage and interact with our companies via email, calls and face-to-face meetings. These interactions typically start with a member of investor relations or the management team. Where we have highlighted an issue which we do not think has been given sufficient attention or consideration, we reserve the right to escalate the engagement through meeting with more senior members of management, voting against directors and writing directly to members of the board. Ultimately, if the issue remains unresolved after repeated engagement attempts, we reserve the right to divest.

CASE STUDY: DISCLOSURE & TARGET SETTING

Xinyi Solar is the world's largest manufacturer of solar glass, with around 30% market share. Solar glass manufacturing is highly energy intensive, requiring gas-fired furnaces operating at over 1,300°C and significant electricity for tempering. As a result, the company has relatively high scope 1 and 2 emissions. Despite this, we consider Xinyi a significant contributor to climate change mitigation efforts, producing a critical component for solar power generation, where the carbon payback period is estimated to be just 1-2 years.

After first speaking to management about the firm's energy intensity in 2019, we reflected energy intensity as a material risk in our 2021 ESG review. While Xinyi already disclosed scope 1 and 2 emissions and had set a target to reduce emissions per unit by 5% by 2023, the company lacked longer term commitments. In 2022, we wrote to the company encouraging them to measure and disclose scope 3 emissions alongside setting a longer-term emissions reduction target over a reasonable timeframe. As scope 3 disclosure is required for SBTi validation, we reiterated this ask in 2023 and encouraged the company to work towards setting targets that were science-based.

In January 2025, Xinyi confirmed it would include initial scope 3 disclosures in its 2024 Sustainability Report. The company noted that while it continued to actively reduce carbon emissions intensity, it required more time to establish formal reduction targets across scopes 1, 2, and 3, and to register them with the SBTi. We were pleased to see Xinyi's first scope 3 disclosures and will continue to support its journey toward setting science-based targets.

CASE STUDY: GOVERNANCE & INCENTIVISATION

Infineon is a global leader in automotive power semiconductors, looking to achieve returns over the cycle through its long-term operating model focusing on sustainable revenue growth, profit margins and free cashflow margins. Infineon is held by both the Sustainable Energy and Global Innovators strategies, with the two teams working together to address shared concerns regarding the company's remuneration practices.

In our 2021 ESG review, we highlighted concerns around CEO pay, noting that over 50% of the Long-Term Incentive Plan (LTIP) was linked to relative Total Shareholder Return (TSR). We view TSR as an ineffective incentive metric, being an outcome of operational performance rather than a direct measure of management action. Indeed, one independent study even found a weak negative relationship between TSR-linked pay and TSR performance.

In 2022, we wrote to the company asking if TSR could be de-emphasised. Management confirmed it would remain the dominant metric and that they saw it as a reasonable indicator of management and company performance. Following the 2023 AGM, we held a call with management where we explained why we had voted against the company's Remuneration Policy, shared research, and encouraged a shift toward returns-based metrics. Later that year, we reinforced these views, encouraging management to share our thoughts with the board.

Ahead of the 2024 AGM, we wrote to the company, proposing a revised structure with 40% returns-based metrics, 30-40% TSR, and 20-30% ESG targets, signalling that we may escalate our vote by withholding support for the Chair of the Remuneration Committee if our concerns were not addressed.

Ahead of the 2025 AGM, Infineon reached out to us ahead of the 2025 AGM to inform us that they were reducing the TSR weighting to 40%, allocating 40% to its Target Operating Model, and 20% to ESG targets. We welcomed this shift, which aligned closely with our recommendations, and were pleased to support the company's Remuneration Policy at the 2025 AGM.

CASE STUDY: SOLAR SUPPLY CHAIN

In previous impact reports, we have shared engagement case studies related to forced labour in the solar supply chain. In 2023, reports emerged that **First Solar** had uncovered evidence of forced labour at its Malaysian facility. Within a month of the news breaking, we had set up a meeting to discuss the issue with management. The issue emerged when the company shifted from desk-based to in-person audits, revealing that a third-party cleaning and security service provider had been withholding workers' passports and deducting fees from their wages. These practices, while common in parts of Southeast Asia, are not aligned with responsible investment standards.

First Solar took steps to remediate the situation, working to ensure passports were returned and committing to address wage repayment. We viewed the company's public disclosure of the audit as a positive sign of transparency and accountability and encouraged First Solar to apply lessons learnt to its new Indian manufacturing facility.

In 2024, we followed up to assess progress. First Solar confirmed that a third-party Responsible Business Alliance (RBA) Validated Assessment Program (VAP) audit of the Indian facility was planned for the current audit cycle, noting that RBA audits are valid for two years. As of today, First Solar's manufacturing sites in the United States and Vietnam have achieved Platinum RBA audit ratings, the highest available. The Malaysian site completed a closure audit with no outstanding findings, and has returned all withheld wages and passports, demonstrating meaningful progress in line with international labour expectations.

CLIMATE-RELATED INITIATIVES

Below, we list the climate-related investor initiatives that Guinness Global Investors is involved with:

CLIMATE ACTION 100+

Climate Action 100+ is the largest investor engagement initiative on climate change, encouraging the largest corporate greenhouse gas emitters to take necessary action on climate change. The Climate Action 100+ Net Zero Company Benchmark assesses the performance of focus companies against the initiative's three high-level goals: disclosure, emissions reduction and governance.



CDP'S NON-DISCLOSURE CAMPAIGN

The CDP is an international non-profit organisation that helps companies disclose their environmental impact. The CDP's Non-Disclosure Campaign (NDC) is a collaborative initiative engaging with companies to encourage them to submit their environmental disclosures to CDP. The CDP's Science Based Targets campaign is one of the largest collective investor engagement campaigns in the world, urging global companies to set science-based climate targets through the Science Based Targets initiative.



INVESTOR AGENDA - GLOBAL INVESTOR STATEMENT

The Investor Agenda is made up of seven major groups (AIGCC, CDP, Ceres, IGCC, IIGCC, PRI and UNEP FI) working with investors to pull together the best guidance on tackling the climate crisis. The Investor Agenda's Global Investor Statement outlines key climate policies and urges governments to radically step up their climate ambitions.



WORLD BENCHMARKING ALLIANCE – INVESTOR LETTER AND INVESTOR STATEMENT

In 2022, the World Benchmarking Alliance (WBA), Ninety One and Newton, in coordination with Climate Action 100+ sent a letter on just transition to 100 oil and gas companies, calling for them to engage with relevant stakeholders and publish disclosures regarding their just transition planning. In 2023, the WBA followed up by sending an Investor Statement on the Just Transition to all 100 oil and gas companies. The statement is intended to be a signal to companies directly and other actors of influence of the importance investors are putting on the just transition.



UK SUSTAINABLE INVESTMENT AND FINANCE ASSOCIATION

UKSIF is the membership association for sustainable and responsible financial services in the UK. Through policy engagement, knowledge sharing and networking, it seeks to achieve its mission of promoting sustainable finance and making the UK the 'world's first net-zero financial centre'. They have a 30-year track record of successfully influencing government policy, championing the role of sustainable finance as a tool to help decarbonise the economy and advance a sustainable future.



APPENDIX 1: IMPACT ALIGNMENT

HISTORY OF IMPACT

Impact investing traces its roots back to Socially Responsible Investing, the practice of avoiding “sin” stocks through screening out companies based on the impact of a company’s products. In the 1960s, the Ford Foundation created program-related investing (PRIs), shifting away from using grants and towards making low-interest loans to finance programs like urban redevelopment or affordable housing. PRI established the practice of positively screening for investments based on the perceived societal impact of a company’s products, whilst delivering a return of capital. In 2007, the Rockefeller foundation coined the term “impact investing”, defining it as an activity which seeks to generate social and/or environmental benefits while delivering a financial return. They stated that two key elements should be present, intentionality and measurement. To date, impact investment has typically involved private market-based project financing. As it has matured, it has started to migrate into public markets, accessing deeper pockets of capital

IMPACT INVESTING IN PUBLIC MARKETS

The discussion of whether a public equities strategy can be designated as impactful is fraught with controversy, often centring on the concept of additionality: the extent to which desired outcomes would have occurred without the investor’s intervention. Opponents say that ‘true’ impact investing can only occur in primary markets, where the measured positive externality would not have occurred without the new and additive financial resource. Proponents say that ownership matters: additionality can be achieved through engaging with companies and policy makers to raise standards.

We have sympathy for both views. The investor’s contribution towards the impact may be less intense in secondary markets and delivered primarily through engagement rather than through new capital. But just because the form of additionality is different, does not necessarily mean it should be dismissed. As a fractional owner of a company, it is nearly impossible to draw a causal link between engaging with a company and behavioural change. However, if a mindful investor contributes to a broader trend or group engagement for positive change, it becomes far harder for management, industries and policymakers to ignore.

IMPACT ALIGNMENT

The Guinness Sustainable Energy strategy intentionally screens for companies selling the products and services which will help to deliver the transition towards a low-carbon economy. When companies and consumers purchase and use these solutions (heat pumps, electric vehicles, renewable energy) over incumbent technologies (gas boilers, internal combustion engines, fossil fuel generation) they contribute towards the global effort to reduce greenhouse gas emissions and combat climate change.

By investing in the companies that produce these products and services, we believe that the strategy’s success is closely aligned with this positive environmental impact. This alignment flows through our universe construction, where we deliberately target companies delivering climate solutions; through our reporting, where we measure and report on the carbon avoided and carbon cost of our portfolio; and through our engagement, where the overwhelming focus is on climate action.

APPENDIX 2: SDG MAPPING METHODOLOGY

Where companies have positive exposure to more than one target or goal, we assign the company’s revenues first to the goal which we believe is most relevant to them. We describe this as the company’s “primary impact”, which on our schematic is represented in a green colour. We grade the level of primary impact by the proportion that the relevant activity comprises of the company’s overall business activity. We then record other, or ‘secondary’ areas of positive impact, represented by a light blue colour.

CASE STUDY: VESTAS

Primary impact

We believe that Vestas’ wind turbines help to deliver SDG target 7.2: “By 2030, increase substantially the share of renewable energy in the global energy mix”. In 2024, 79% of its revenues came from wind turbine manufacturing, so we assign 79% of business activity to SDG 7. We believe that this goal and target are most relevant to the division’s activity, so it is designated as a primary impact.

Secondary impact

We believe that products and services which upgrade and decarbonise energy infrastructure also align with SDG target 9.4: “By 2030, upgrade infrastructure and retrofit industries to make them sustainable...”. We consider this to be secondary in relevance to SDG 7, so it is designated as a secondary impact for Vestas.

SDG 13: CLIMATE ACTION

Our mapping work produces the outcome of no primary exposure to SDG 13, ‘Climate Action’, which appears out of place for a sustainable energy strategy. This is because we map business activity to the underlying targets, and the targets for SDG 13 appear to be more aimed at governments, rather than private sector companies. As we believe that all the companies in our universe will contribute “to limit[ing] global temperature rise to well below 2 degrees centigrade”, we recognise their contribution as a secondary impact only.

APPENDIX 3: BUSINESS ACTIVITY MAPPING

SDG	TARGET	RELEVANT BUSINESS ACTIVITIES	COMPANIES
3. GOOD HEALTH & WELL-BEING	3.4. By 2030, reduce by one third premature mortality from non-communicable diseases through prevention and treatment and promote mental health and well-being.	Manufacturing diabetes drugs, generic active ingredients (e.g. for opiod addiction therapy).	Johnson Matthey, LG Chem, NXP Semi, Siemens AG
	3.6 By 2020, halve the number of global deaths and injuries from road traffic accidents.	Manufacturing systems and components which contribute towards autonomous mobility and advanced safety, such as driver assist, sensors, semiconductors, electronics and software.	Aptiv, Infineon, NXP Semi, Onsemi, Sensata
	3.9 By 2030, substantially reduce the number of deaths and illnesses from hazardous chemicals and air, water and soil pollution and contamination.	Companies playing an active role in the supply chain for cleaner transport (EVs, e-bikes, e-buses, FCEVs) including: batteries and cathode material, thermal management, components for hybrids (e.g. 12V, 48V) and fuel cells, auto-catalysts, electronics for EVs, lightweight materials for e-buses.	Aptiv, Gontherm, Eaton, Infineon, Johnson Matthey, LG Chem, Onsemi, NXP Semi, Samsung SDI, Sensata, SolarEdge, TPI Composites
7. AFFORDABLE & CLEAN ENERGY	7.1 By 2030, ensure universal access to affordable, reliable and modern energy services.	Involved in the construction, installation, operation and maintenance of hydro, wind, solar, geothermal and biomass energy, including supply chain contributors, companies which provide grid connection equipment, electricity distribution, smart meters and ESS.	Ameresco, Canadian Solar, China Longyuan, Eaton, Enphase, First Solar, Hubbell, Iberdrola, Infineon, Itron, Johnson Matthey, Legrand, LG Chem, NXP Semi, Ormat, Samsung SDI, Sensata, Schneider, Siemens AG, SolarEdge, Spie, TPI Composites, Vestas, Xinyi
	7.2 By 2030, increase substantially the share of renewable energy in the global energy mix.	Companies involved in hydro, wind, solar, geothermal, biomass generation, ESS, energy networks, or other renewable energy technology and their respective supply chains.	Ameresco, Canadian Solar, China Longyuan, China Suntien, Eaton, Enphase, First Solar, Hubbell, Iberdrola, Infineon, Itron, Johnson Matthey, Legrand, LG Chem, NextEra, NXP Semi, Ormat, Orsted, Samsung SDI, Schneider, Sensata, Siemens AG, SolarEdge, Spie, TPI Composites, Vestas, Xinyi
	7.3 By 2030, double the global rate of improvement in energy efficiency.	Companies involved in selling energy efficiency products and services such as insulation, LEDs, heat pumps, ESS, smart meters or energy management.	Ameresco, Eaton, Enphase, Hubbell, Infineon, Installed Building Products, Itron, Johnson Matthey, Legrand, LG Chem, NXP Semi, Onsemi, Ormat, Owens Corning, Samsung SDI, Schneider, Sensata, Siemens AG, SolarEdge, Spie, Trane Technologies
	7.8 By 2030, expand infrastructure and upgrade technology for supplying modern and sustainable energy services for all in developing countries, in particular least developed countries, small island developing States, and land-locked developing countries, in accordance with their respective programmes of support.	Businesses with significant business activity outside of developed markets (North America, W. Europe, Australia, Japan, S. Korea), or businesses with a significant presence on island territories which deliver hydro, wind, solar, geothermal and biomass energy, including supply chain contributors, smart grid services, and grid storage.	China Longyuan, China Suntien, Ormat, SolarEdge, Xinyi Solar

SDG	TARGET	RELEVANT BUSINESS ACTIVITIES	COMPANIES
8. DECENT WORK & ECONOMIC GROWTH	8.4 Improve progressively, through 2030, global resource efficiency in consumption and production and endeavour to decouple economic growth from environmental degradation, in accordance with the 10-year framework of programmes on sustainable consumption and production, with developed countries taking the lead.	Licencing technology / processes to industry which enable greater resource efficiency, lower emissions and less waste, energy efficiency projects and equipment, resource measurement and management (meters), recycling, repair and maintainance, projects to improve energy and resource efficiency of industry.	Ameresco, Eaton, Hubbell, Infineon, Installed Building Products, Itron, Johnson Matthey, Legrand, NXP Semi, Owens Corning, Schneider, Siemens AG, Spie, Trane Technologies
9. INDUSTRY, INNOVATION & INFRASTRUCTURE	9.4 By 2030, upgrade infrastructure and retrofit industries to make them sustainable, with increased resource-use efficiency and greater adoption of clean and environmentally sound technologies and industrial processes, with all countries taking action in accordance with their respective capabilities.	Upgrading, maintaining, and operating the grid to enable greater uptake of renewable energy, energy efficiency projects and equipment, resource measurement and measurement, recycling, manufacturing clean energy infrastructure such as wind turbines and solar farms along with their respective supply chains.	Ameresco, Canadian Solar, China Longyuan, China Suntien, Eaton, Enphase, First Solar, Hubbell, Iberdrola, Infineon, Installed Building Products, Itron, Johnson Matthey, Legrand, NextEra, NXP Semi, Onsemi, Ormat, Orsted, Owens Corning, Schneider Electric, Sensata, Siemens AG, SolarEdge, Spie, TPI Composites, Trane Technologies, Vestas, Xinyi Solar
11. SUSTAINABLE CITIES & COMMUNITIES	11.2 By 2030, provide access to safe, affordable, accessible and sustainable transport systems for all, improving road safety, notably by expanding public transport, with special attention to the needs of those in vulnerable situations, women, children, persons with disabilities and older persons.	Electric transportation / batteries for electrified transposrt and their supply chains, electrical systems and semiconductors which support electrification of transport, battery thermal management, hybrid systems, light weight composite marterials for electric buses.	Aptiv, Eaton, Gentherm, Infineon, Johnson Matthey, LG Chem, Onsemi, Samsung SDI, Sensata, Siemens AG, SolarEdge, TPI Composites
	11.6 By 2030, reduce the adverse per capita environmental impact of cities, including by paying special attention to air quality and municipal and other waste management.	Sales of energy efficiency products which can make homes and offices more aware of consumption (meters) or resource efficient such as insulation, LEDs, heat pumps, etc and companies which deliver such projects. Products which help improve air quality including EVs, e-bikes, E-buses, batteries, auto catalysts.	Ameresco, Hubbell, Infineon, Installed Building Products, Itron, Johnson Matthey, LG Chem, Owens Corning, Samsung SDI, Siemens AG, Spie, TPI Composites, Trane Technologies
12. RESPONSIBLE CONSUMPTION & PRODUCTION	12.5 By 2030, substantially reduce waste generation through prevention, reduction, recycling and reuse.	Manufacture of products using less energy / fewer raw materials, water and gas metering, battery recycling, waste to energy (bagasse biomass). Repair and maintenance services which avoid scrappage of higher value items.	Eaton, Hubbell, Itron, Johnson Matthey, NXP Semi, Owens Corning
13. CLIMATE ACTION	13.2 Integrate climate change measures into national policies, strategies and planning.	Displacement Reducing energy consumption via energy efficiency and alternative fuels.	Ameresco, Hubbell, Installed Building Products, Owens Corning, Trane Technologies,
		Electrification Reducing transport emissions by transitioning towards battery electric vehicles.	Aptiv, Gentherm, Infineon, Johnson Matthey, NXP Semi, LG Chem, Onsemi, Samsung SDI, Sensata
		Installation Manufacturing and installing the equipment and infrastructure required to enable low carbon energy generation.	Canadian Solar, Eaton, Enphase, First Solar, Itron, Legrand, Schneider Electric, Siemens AG, SolarEdge, Spie, TPI Composites, Vestas, Xinyi
		Generation Increasing the percentage of energy generated from renewable and alternative sources.	China Longyuan, China Suntien, Iberdrola, Nextera, Ormat, Orstead, Sunnova

Portfolio holdings as of 31st December 2024.

APPENDIX 4: DISCUSSION POINTS AROUND IMPACT METHODOLOGY

1. IMPACT REPORTING IS SUBJECTIVE

This document outlines how the Sustainable Energy team thinks about impact investment. By the nature of the topic, these views can be highly subjective. We debate our own impact methodology internally and with others in the impact community and expect our methodology to evolve as more data becomes available, and as industry standards emerge.

2. DOES A COMPANY NEED TO HAVE GOOD ESG TO BE AN IMPACT INVESTMENT?

We believe that impact is about the “what”, whereas ESG is more about the “how”. That said, we take ESG into account in our investment process. We take a holistic view of our investments, assessing strategy, financials, valuation, ESG and impact. If a company has a compelling strategy, is attractively valued, and has a product with a strong positive impact, we are willing to tolerate some ESG issues and use these as a catalyst for engagement. We would then track the company’s ESG behaviour, looking for improvement over time.

3. HOW DO YOU ACCOUNT FOR THE IMPACT OF THE STRATEGY CHANGING OVER TIME?

The impact of our strategy is likely to change over time as a result of changing allocations across our four subsectors (efficiency, electrification, installation, generation), depending on where we think the most attractive returns are available. Changes in company market capitalisations will also have an effect on the impact relative to a specific amount of portfolio assets. Over time, we are more focused on the impact trajectories of the individual investee companies than the overall portfolio outcome. A material change in strategy at an investee company, leading to a de-emphasis on the division(s) which generate positive impact, would cause us to re-visit our investment thesis and engage with the company to understand the shift.

APPENDIX 5: GLOSSARY

Carbon intensity: Amount of carbon dioxide (CO2) emissions produced per unit of output.

Carbon dioxide equivalent (CO2e): A unit of measurement that compares different greenhouse gases based on their contribution to global warming and climate change.

Carbon emissions avoided: Avoided emissions refer to the reduction in greenhouse gas emissions resulting from the adoption of sustainable practices or technologies.

Carbon footprint: A metric that quantifies the release of greenhouse gases, primarily carbon dioxide, into the atmosphere.

Greenhouse Gas (GHG) Protocol: Provides international greenhouse gas accounting standards and a global framework to help countries measure and manage greenhouse gas emissions from both the private and public sector, and track progress towards climate goals. Source: Greenhouse Gas Protocol

Heating, Ventilation, and Air Conditioning (HVAC): Systems and technologies used to regulate the temperature, humidity, and purity of the air in an enclosed space.

IPP: Independent Power Producers, commonly called IPPs, are independent owners of generation that are not part of the regulated utility. Source: Energy Knowledge Base

LCOE: Levelised cost of electricity, a metric used to assess the average cost of generating electricity from a particular energy source over its entire lifetime.

Scaling factor: In our scope 4 emissions calculation methodology we apply scaling factors to adjust the emissions displaced by the company products downwards, to reflect the products contribution to the final impactful product cost.

Scope 1: Emissions from sources owned or controlled directly by an organisation, such as burning of gas in on-site boilers. Source: National Grid

Scope 2: Emissions from indirect sources but used or bought by the organisation, such as energy produced elsewhere but used by the organisation’s buildings. Source: National Grid

Scope 3: Emissions from indirect sources upstream and downstream of the value chain of an organisation that it is responsible for, such as product-level emissions or those from business travel. Source: National Grid

Scope 4: Emissions ‘avoided’ by an organisation, or a reduction in emissions that “occurs outside of a product’s life cycle or value chain but as a result of the use of that product”. Source: World Economic Forum

Sustainable Development Goals (SDGs): The 17 Sustainable Development Goals were adopted by the United Nations in 2015 as a universal call to action to end poverty, protect the planet, and ensure that by 2030 all people enjoy peace and prosperity. Source: UNDP

Solar inverters: A device that converts direct current (DC) electricity (which is what solar panels generate) to alternating current (AC) electricity, which the electrical grid uses.

Solar modules: Also known as solar panels, are devices composed of multiple interconnected photovoltaic (PV) cells that convert sunlight directly into electricity.

The Paris Agreement: A legally binding international treaty on climate change, adopted by 196 Parties at the UN Climate Change Conference (COP21) in Paris, France, in 2015. The Paris Agreement aims to limit global average temperature rise to well below 2°C above preindustrial levels, and to pursue efforts of limiting this to 1.5°C. Source: UNFCCC

Total Shareholder Return (TSR): A performance metric that reflects the total return an investor earns from holding a company’s stock over a specific period.

IMPORTANT INFORMATION

Issued by Guinness Global Investors, which is a trading name of Guinness Asset Management Limited which is authorised and regulated by the Financial Conduct Authority.

This report is primarily designed to inform you about the Guinness Sustainable Energy Fund and the WS Guinness Sustainable Energy Fund. It may provide information about the Funds' portfolios, including recent activity and performance. It contains facts relating to the equity markets and our own interpretation. Any investment decision should take account of the subjectivity of the comments contained in the report.

This document is provided for information only and all the information contained in it is believed to be reliable but may be inaccurate or incomplete; any opinions stated are honestly held at the time of writing but are not guaranteed. The contents of the document should not therefore be relied upon. It should not be taken as a recommendation to make an investment in the Funds or to buy or sell individual securities, nor does it constitute an offer for sale. OCFs for all share classes are available on www.guinnessgi.com.

GUINNESS SUSTAINABLE ENERGY FUND Documentation

The documentation needed to make an investment, including the Prospectus, Supplement, Key Investor Information Document (KIID), Key Information Document (KID) and Application Form, is available in English from www.guinnessgi.com or free of charge from the Manager: Waystone Management Company (IE) Limited 2nd Floor 35 Shelbourne Road, Ballsbridge, Dublin DO4 A4E0, Ireland; or the Promoter and Investment Manager: Guinness Asset Management Ltd, 18 Smith Square, London SW1P 3HZ.

Waystone IE is a company incorporated under the laws of Ireland having its registered office at 35 Shelbourne Rd, Ballsbridge, Dublin, D04 A4E0 Ireland, which is authorised by the Central Bank of Ireland, has appointed Guinness Asset Management Ltd as Investment Manager to this fund, and as Manager has the right to terminate the arrangements made for the marketing of funds in accordance with the UCITS Directive.

Investor Rights

A summary of investor rights in English, including collective redress mechanisms, is available here: <https://www.waystone.com/waystone-policies/>

Residency

In countries where the Fund is not registered for sale or in any other circumstances where its distribution is not authorised or is unlawful, the Fund should not be distributed to resident Retail Clients. **NOTE: THIS INVESTMENT IS NOT FOR SALE TO U.S. PERSONS.**

Structure & regulation

The Fund is a sub-fund of Guinness Asset Management Funds PLC (the "Company"), an open-ended umbrella-type investment company, incorporated in Ireland and authorised and supervised by the Central Bank of Ireland, which operates under EU legislation. If you are in any doubt about the suitability of investing in this Fund, please consult your investment or other professional adviser.

Switzerland

This is an advertising document. The prospectus and KID for Switzerland, the articles of association, and the annual and semi-annual reports can be obtained free of charge from the representative in Switzerland, REYL & Cie S.A., Rue du Rhône 4, 1204 Geneva. The paying agent is Banque Cantonale de Genève, 17 Quai de l'Île, 1204 Geneva.

Singapore

The Fund is not authorised or recognised by the Monetary Authority of Singapore ("MAS") and shares are not allowed to be offered to the retail public. The Fund is registered with the MAS as a Restricted Foreign Scheme. Shares of the Fund may only be offered to institutional and accredited investors (as defined in the Securities and Futures Act (Cap.289)) ('SFA') and this material is limited to the investors in those categories.

Australia

For professional investors only.

WS GUINNESS SUSTAINABLE ENERGY FUND Documentation

The documentation needed to make an investment, including the Prospectus, the Key Investor Information Document (KIID) and the Application Form, is available in English from www.waystone.com/our-funds/waystone-fund-services-uk-limited/ or free of charge from Waystone Management (UK) Limited, PO Box 389, Darlington DL1 9UF. General enquiries: 0345 922 0044. E-Mail: wtas-investorservices@waystone.com

Waystone Management (UK) Limited is authorised and regulated by the Financial Conduct Authority.

Residency

In countries where the Fund is not registered for sale or in any other circumstances where its distribution is not authorised or is unlawful, the Fund should not be distributed to resident Retail Clients.

Structure & regulation

The Fund is a sub-fund of WS Guinness Investment Funds, an investment company with variable capital incorporated with limited liability and registered by the Financial Conduct Authority.

GUINNESS SUSTAINABLE ENERGY UCITS ETF Documentation

The documentation needed to make an investment, including the Prospectus, the Key Investor Information Document (KIID), Key Information Document (KID) and the Application Form, is available in English from www.guinnessgi.com, www.hanetf.com or free of charge from the Administrator: J.P Morgan Administration Services (Ireland) Limited, 200 Capital Dock, 79 Sir John Rogerson's Quay, Dublin 2 DO2 F985; or the Investment Manager: Guinness Asset Management Ltd, 18 Smith Square, London SW1P 3HZ.

Residency

In countries where the Fund is not registered for sale or in any other circumstances where its distribution is not authorised or is unlawful, the Fund should not be distributed to resident Retail Clients. **NOTE: THIS INVESTMENT IS NOT FOR SALE TO U.S. PERSONS.**

Structure & regulation

The Fund is a sub-fund of HANetf ICAV, an Irish collective asset management vehicle umbrella fund with segregated liability between sub-funds, which is registered in Ireland by the Central Bank of Ireland and authorised under the UCITS Regulations.

Telephone calls will be recorded and monitored.



Guinness Global Investors is a trading name of Guinness Asset Management Ltd., which is authorised and regulated by the Financial Conduct Authority (223077).

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