

ESG and Sustainability Report 2023



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Introduction

The world’s fight against climate change is facing fresh challenges amid a growing backlash against green policies due to the Ukraine war, the cost-of-living crisis, and global supply chain challenges.

Gore Street Energy Storage Fund plc (“GSF” or “the Company”) believes the transition to a net zero economy is the solution to many of the current crises, making it vital for securing a sustainable, prosperous future for all. The Company remains fully committed to advancing the green energy transition and is proud to present the latest ESG & Sustainability Report, outlining its continued efforts to improve the measurement, management and disclosure of environmental and social outcomes.

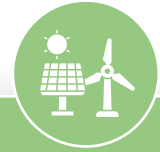
Supporting the transition to a net zero economy is at the core of the Company’s business. By investing in energy storage, it provides the infrastructure needed to integrate more renewable energy into power systems. In the last year, the Company invested in assets in California and Texas, where battery storage plays an important role in facilitating the shift away from fossil fuel-fired power. The facilities can also provide services to alleviate some of the worst impacts of climate-induced extreme weather events such as heatwaves, as the Texas case study (page 6) shows. As of March 2023, the Company owns 1.17 GW of battery energy storage capacity across five different grids, thereby making a global contribution to the transition towards clean, sustainable power.

Nevertheless, the Company recognises that investing in green technologies is not enough to be a truly sustainable business – it needs to look at the impact of its own operations as well. This is why it continues to track and disclose a range of ESG metrics through internationally recognised frameworks designed to promote transparency in the financial sector.

This report includes the Company’s latest Sustainable Finance Disclosure Regulation (SFDR) and Task Force on Climate-Related Financial Disclosures (TCFD) reports, which outline the performance of the portfolio in areas such as greenhouse gas emissions, biodiversity impacts, waste, and gender diversity. To provide an overview of the portfolio’s exposure to physical climate risks, the report also includes a climate risk assessment for the newest asset in California – the Company’s biggest project to date and its first in the coastal state.

For the first time, the report also looks at the impact of GSF’s operations up and down the value chain, discussing issues including human rights in mining and the disposal of batteries.

Highlights include:



Environmental

Supporting the green energy transition through investment in energy storage:

During the reporting period, GSF expanded its portfolio to a total capacity of 1.17 GW, with 291.6 MW operational. The Company’s fleet avoided 3,590 tCO_{2e} and stored 9,055 MWh of renewable electricity.



Social

Promoting diversity, equity and inclusion at the Investment Manager:

GSF believes diversity in the workplace improves financial performance and drives the technological innovation needed for a successful energy transition. This belief is reflected in the Investment Manager which, at the end of March 2023, had 40% of senior management positions held by women. The Investment Manager also recognises the value of cultural diversity, with many different nationalities and languages represented in its workforce.



Governance

Improving transparency and accountability:

The Company is committed to high standards of transparency and continues to report environmental and social outcomes against internationally recognised frameworks, including the UN Sustainable Development Goals (SDGs), SFDR and TCFD. In this reporting period, the Company worked with external sustainability consultants to improve the methodology for some of its metrics, including net CO₂ emissions avoided.

Patrick Cox Chair of the Company



On behalf of the Board, I am pleased to present the FY2022/2023 ESG and Sustainability Report for Gore Street Energy Storage Fund plc.

In the year since our inaugural report, the need for the Company's contribution to climate change mitigation has never been more keenly felt. Geopolitical uncertainty and associated threats to the security of energy supplies have reinforced the drive to accelerate the transition from polluting and insecure fossil fuels to clean, independent power.

The role of energy storage in facilitating the adoption of renewables is more important than ever and the Company has been expanding its activities to match.

With a portfolio of almost 1.2 GW, the Company has grown significantly in the five years since the £30m raised at IPO in May 2018 to fund the acquisition of 10 MW. We are now present across five distinct markets: Great Britain, Ireland, Germany, ERCOT in Texas and CAISO in California, with operational assets storing over 9 GWh of renewable electricity in the past year.

While this shows how we are helping to integrate clean power in more locations than ever, it also means that further embedding sustainability in our strategy is crucial. To provide a transparent platform on which to operate we have enhanced how we report the impact of our activities on the planet, its people, and the businesses we interact with.

The Company has built on its decision to adopt the recommendations of the Task Force on Climate-Related Financial Disclosures (TCFD) and report under Article 8 of the EU's Sustainable Finance Disclosure Regulation (SFDR) to hold ourselves accountable for the business we conduct.

Cobalt is a vital ingredient in our technology's supply chain. We have been approved as a member of the Fair Cobalt Alliance which aims to make mines safer and less impactful on the environment, while creating dignified working conditions for those working in them. The board has encouraged and supported our Investment Manager to take a more active role in the promotion of green technologies, diversity and inclusion, and community engagement.

Delivering against these metrics ensures that by example the Company continues to play a leading role in our market segment through maintaining sustainability as a core driver of how we generate value for our shareholders.

We look forward to the continued fostering of these commitments in the coming years.

Alex O’Cinneide

Chief Executive of the Investment Manager



Following a period of substantial growth for the Company and the Investment Manager, we are proud to showcase our latest achievements in ESG and sustainability with our second report.

The last year has presented an unprecedented mix of challenges for the global energy system as Russia’s invasion of Ukraine sent shockwaves across the market. The resulting gas price volatility proved that fossil fuels no longer represent the secure form of energy many have argued, with countries instead accelerating their transition to renewables.

Energy storage is essential to the integration of this intermittent generation, supporting the Investment Manager’s founding ambition to use the asset class to make a material impact on the transition to a low carbon economy.

This is needed now more than ever with the latest report from the Intergovernmental Panel on Climate Change, published in March 2023, laying bare the necessity for accelerated climate action. We now know that global surface temperatures have reached 1.1C above pre-industrial levels as a result of human activity and to limit warming to 1.5°C, we need global greenhouse gas emissions to peak before 2025 and fall by nearly half (43%) by 2030.

We have the means to achieve this with wind and solar able to close half the emissions gap needed by the end of the decade. Energy storage will be essential in achieving this, which is no doubt why governments in the US and Europe are ramping up their support for the technology.

This has allowed the Company to expand its portfolio across new and existing markets, with the Investment Manager growing in parallel to ensure we continue to have a material impact on the success of Gore Street Energy Storage Fund.

As a diverse group of almost 40 energy professionals in GB, Ireland and the US working across finance, construction, engineering, legal and more, embedding ESG and sustainability into daily operations has become integral to delivering the service required by the Company. This allows us to ensure we are meeting the high standards of sustainability required by the Company while delivering a clean transition to a decarbonised world.

This report charts the increased ESG and sustainability reporting and activities being undertaken by the Company, and the support provided by the Investment Manager. We look forward to continuing to play a material role in the Company’s ESG journey.

About us



About Gore Street Energy Storage Fund

Gore Street Energy Storage Fund plc (“GSF” or “the Company”) is London’s only internationally diversified energy storage fund, launched in 2018 and listed on the Premium Segment of the London Stock Exchange. It is also included in the FTSE All-Share Index. The Company is the only UK-based energy storage fund with a portfolio spread across five grid networks.

In addition to being one of the principal owners and operators of battery storage facilities in Great Britain and Ireland, the Company owns and operates facilities in Western Mainland Europe and the US. The portfolio is managed by Gore Street Capital Limited (the “Investment Manager”), which is a full-scope Alternative Investment Fund Manager (“AIFM”) authorised and regulated by the Financial Conduct Authority.

Green Economy Mark

The Company has been awarded the London Stock Exchange Green Economy Mark for its contribution to the global green economy. The award recognises companies that derive 50% or more of their revenues from environmental solutions.



Why battery storage?

Energy storage captures excess energy to be used when needed, mitigating imbalances between energy demand and supply. The significance of energy storage lies in its critical role in integrating renewable energy generation, which exhibits inherent variability throughout the day. Effectively capturing, storing, and discharging this energy when demand is highest significantly enhances the efficiency of energy systems while reducing reliance on fossil fuels. Accelerating innovation in energy storage technology and its widespread deployment are crucial steps toward achieving a greener, more sustainable world.

Battery energy storage owners also play a vital role in providing grid operators with balancing services to manage system intermittency driven by the incorporation of more renewable energy sources such as wind and solar. Utilising storage to balance supply and demand is essential to maintain the electricity grid system at the correct frequency, ensuring uninterrupted power supply while maximising the utilisation of renewable generation.

Governments, grid system operators, technology companies, and the investment community have recognised the importance of energy storage to meet the growing demand for system flexibility and are actively supporting the growth of the sector. By establishing and expanding energy storage as an asset class available for public investment, the Company has paved the way towards a sustainable energy future, where renewable sources play a pivotal role in meeting our energy needs.

“Battery storage technologies are essential to speeding up the replacement of fossil fuels with renewable energy. Battery storage systems will play an increasingly pivotal role between green energy supplies and responding to electricity demands.”

National Grid

Case study: Texas

Texas has become an exceptionally volatile market in recent years as seasonal extremes of winter storms and summer heatwaves grow in frequency.

The North American storm of February 2021, which left 246 people¹ dead, revealed how unprepared the state's grid system, operated by the Electric Reliability Council of Texas (ERCOT), was for extreme weather and its effect on energy supply and demand. Over 52 GW of capacity² was lost from the grid, led by outages at gas-fired power plants as frozen systems failed across the state.

ERCOT faced a similar situation on 23 December 2022 when 17 GW of generation was lost or derated overnight during Winter Storm Elliott.

The grid operator must also tackle capacity issues during heatwaves, which result in record-breaking power demand as the public seek relief from the heat. With Texas experiencing some of the hottest temperatures seen in the US over summer 2023, ERCOT reported a preliminary all-time high demand level of over 82.5 GW on 18 July – the fifth time such a record was broken in 2023³.

Combatting the impact of climate change during these periods has become a major challenge for ERCOT, which has turned to energy storage as a key resource. These systems are less affected by extremes of temperature and can offer higher levels of reliability than struggling conventional energy providers.

The Company operates a c. 30MW/60MWh (three 9.95 MW/19.9 MWh) portfolio acquired as part of its first US investment in March 2022. The entire Texas portfolio, which includes five more projects and 115MW expected online in 2024 and 2025, is targeted at ERCOT's ancillary services market to respond to deviations in electricity grid frequency.

The operational assets have been called upon by ERCOT in both winter and summer crises to deliver at times of high demand and low output from thermal generators.

As the generation produced by legacy coal and gas plants diminishes, Texas has ambitious plans to add to its status as the leading US state for wind capacity, with almost 37 GW installed by the end of 2022. Solar capacity has also grown to 18.2 GW as of March-end 2023, with over 40 GW expected to follow in the next five years⁴.

ERCOT has already realised energy storage will be needed to integrate this capacity and supported the growth of the technology on its network from 288 MW in the first calendar quarter of 2021 to almost 3.3 GW in just two years. This could reach near 7 GW in 2024⁵, providing an essential means of integrating ever-increasing penetration of renewable generation. Energy storage assets will be needed more than ever to manage the evening decline of solar output while limiting curtailment during the day.

As the state's energy mix decarbonises, energy storage systems like those being operated and built by the Company – including the 75 MW Dogfish project, due online by the end of 2024 – will facilitate greater integration of renewable capacity and accelerate the displacement of thermal generation as the key source of grid flexibility. Adding this resilience to the grid by enabling greener, cheaper power to be reliably dispatched will help reduce the state's power sector emissions. This will provide ERCOT and the people of Texas with secure, clean power when they need it most.



1 The Texas Tribune: <https://www.texastribune.org/2022/01/02/texas-winter-storm-final-death-toll-246/>

2 The University of Texas at Austin: <https://energy.utexas.edu/sites/default/files/UTAustin%20%282021%29%20EventsFebruary2021TexasBlackout.pdf>

3 Houston Chronicle: <https://www.houstonchronicle.com/business/energy/article/ercot-electricity-demand-record-texas-18253925.php>

4 Solar Energy Industries Association: <https://www.seia.org/state-solar-policy/texas-solar>

5 S&P Global: <https://www.spglobal.com/commodityinsights/en/market-insights/latest-news/electric-power/060523-us-battery-storage-capacity-reached-nearly-108-gw-in-q1-317-gw-planned-in-q2>

Our strategy



Our approach

The Investment Manager’s investment, construction and development, and asset performance teams seek to monitor and integrate the Company’s health, safety, environmental, social and investment objectives into its acquisition, construction, and operations model. ESG supports and services the Company’s goals on the way to a sustainable future.

Asset identification and assessment

As part of its assessment of investment opportunities, the Investment Manager routinely runs market analyses on each grid network within its geographical mandate. The Investment Manager’s team also works with local advisors to evaluate the regulatory environment applicable to each grid operator. The Company has established a strong network of project developers with a deep understanding of early-stage project development to ensure that projects identified for investments meet or will meet land, planning and grid energisation requirements by the time of acquisition.



John-Michael Cheshire
Investment Principal at Gore Street Capital:

“Any project we take on must have met planning and permitting conditions that may include onerous ecological impact assessments and prospective wildlife habitat mitigation. We have also invested in projects in high unemployment areas, creating new job opportunities; minimised sound pollution in response to local concerns; and even invested in a project that limited the visual impact of the site by placing it within a barn.”

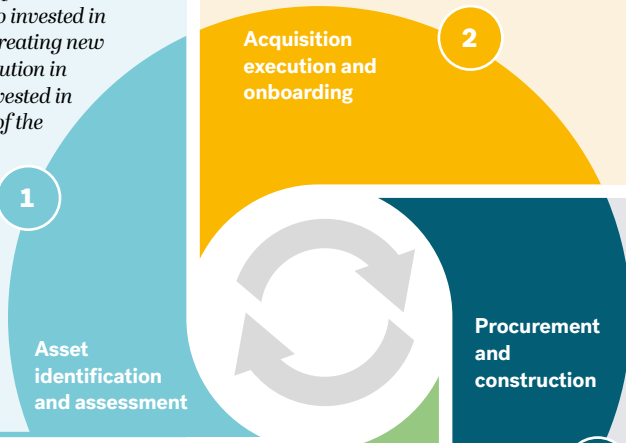
Acquisition execution and onboarding of new assets/projects

The Investment Manager manages the acquisition process from bid to close, using third parties to assist with due diligence and remove biases when assessing opportunities. It aims to design transactions in a manner that allocates project risks in accordance with the Company’s investment policy. The Investment Manager’s commercial team supports the onboarding process of new assets by screening route-to-market partners. This allows the construction and commercial teams to begin the technical implementation and detailed preparation for commissioning tests and onboarding of the assets into revenue streams.



Alicja Kowalewska-Montfort
Technical Principal at Gore Street Capital

“We are increasingly interested in local flexibility markets to improve grid stability in the immediate areas around our projects, and utilise local suppliers and partners to limit the environmental impact of our activities. We also target brownfield locations able to pass our viability criteria to limit our use of sites that would have a positive alternative use.”



Procurement and construction

The Investment Manager has an in-house procurement team, with the legal and technical expertise to negotiate all key contracts for project engineering and construction and obtaining warranties for continued battery performance. The construction and development team are responsible for monitoring project construction and holding relevant stakeholders accountable for cost and quality control, and timeline management.



Richard Wagstaff
Head of Project Development at Gore Street Capital:

“Maximising the positive environmental impact of our projects is important to us. One aspect we consider carefully is our impact on water resources. We keep surfaces as permeable as possible and include local attenuation ponds to slow the water run-off from the site to watercourses. The ponds can help support biodiversity around the developments.”

Performance optimisation, responsible management, and monitoring

The Investment Manager forms bidding strategies by taking into consideration energy market dynamics, regulatory limitations, and existing contract commitments and then works with optimisation and trading professionals to maximise revenue streams. The team also monitors asset performance to ensure asset availability for revenue contracts. The Investment Manager is responsible for managing relationships with stakeholders, monitoring technical performance and maximising asset availability.

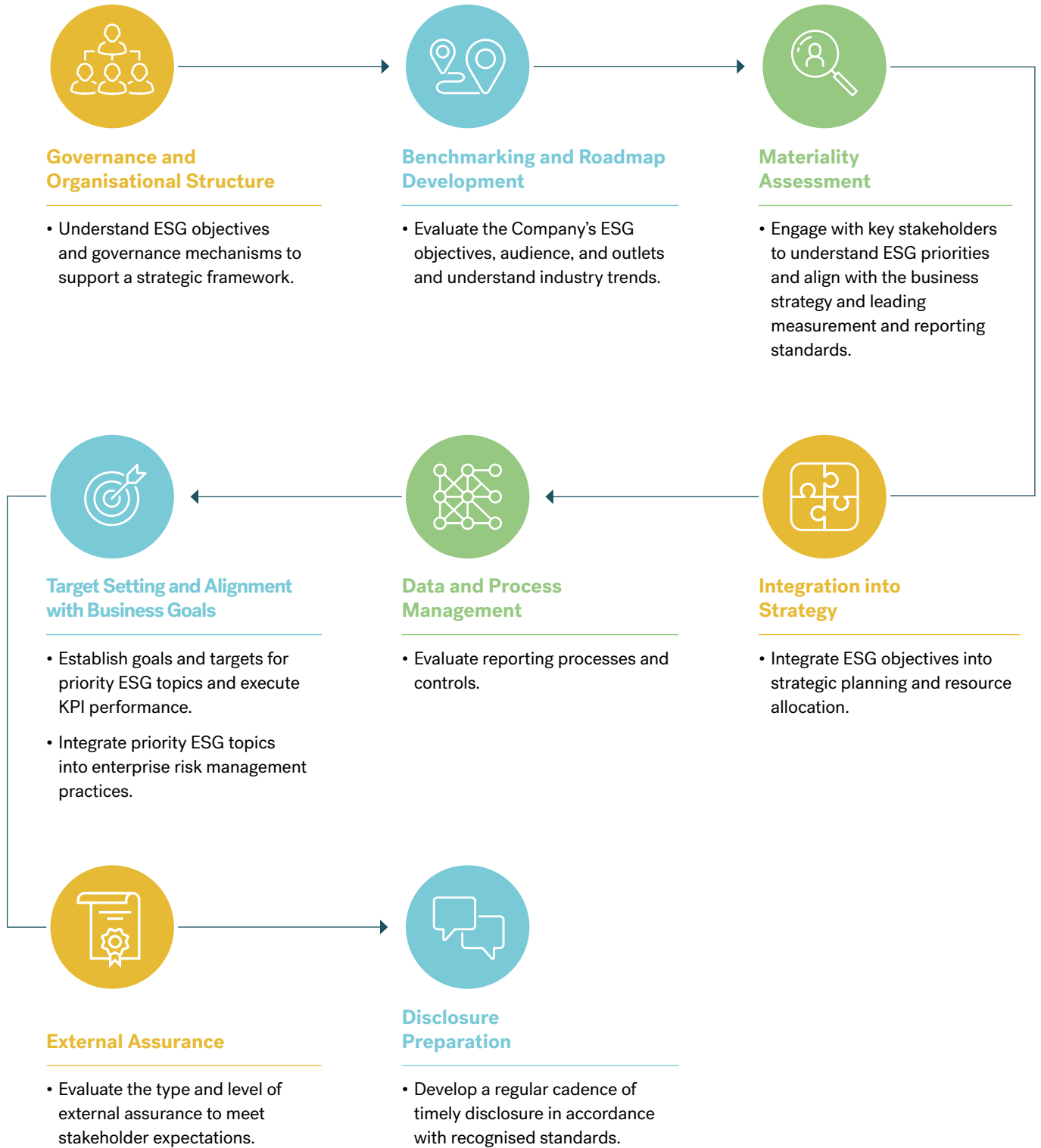


Daniel Sherlock-Burke
Head of Asset Performance at Gore Street Capital:

“Our weighting towards remote monitoring and maintenance services over site visits minimises distance travelled by operational personnel and the associated climate impacts.”

ESG integration and disclosure

From governance and operational structure to data and process management, the figure below details how the Investment Manager integrates ESG factors into the Company’s business strategy and disclosure.



UN Sustainable Development Goals

The Company's approach to sustainability is informed by various internationally recognised standards and frameworks, including the UN Sustainable Development Goals (SDGs) for 2030. The Investment Manager consulted a third-party ESG specialist to assess the Company's alignment with the SDGs. The Company supports the following targets:



GOAL 5:
Achieve gender equality and empower all women and girls.

Target: 5.5 Ensure women's full and effective participation and equal opportunities for leadership at all levels of decision-making in political, economic, and public life.

Indicator: 5.5.2 Proportion of women in managerial positions.

The Company's Investment Manager is committed to supporting the career development of its female employees. As of March 2023, women hold 40% of senior management positions.



GOAL 6:
Ensure availability and sustainable management of water and sanitation for all.

Target: 6.3 By 2030, improve water quality by reducing pollution, eliminating dumping, and minimising the release of hazardous chemicals and materials, halving the proportion of untreated wastewater and substantially increasing recycling and safe reuse globally.

Indicator - 6.3.1 Proportion of domestic and industrial wastewater flows safely treated.

The Company's Investment Manager ensures that its project partners have adequate measures in place to abstain from water pollution, from construction to day-to-day operations. During the reporting period, the Company's assets generated zero emissions to water.

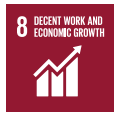


GOAL 7:
Ensure access to affordable, reliable, sustainable, and modern energy for all.

Target: 7.2 By 2030, increase substantially the share of renewable energy in the global energy mix.

Indicator: 7.2.1 Renewable energy share in the total final energy consumption.

The Company acts as an enabler for renewables, facilitating the incorporation of variable green energy sources, such as wind and solar, into power systems. The Company's assets also contribute to the efficient use of existing renewable generators by providing services to avoid their curtailment, while increasing energy efficiency through quicker response than conventional peaking plants. Consequently, the Company contributes to an increase in the renewable energy share of total final energy consumption.



GOAL 8: Promote sustained, inclusive, and sustainable economic growth, full and productive employment, and decent work for all.

Target: 8.8 Protect labour rights and promote safe and secure working environments for all workers, including migrant workers, in particular, women migrants, and those in precarious employment.

Indicator: 8.8.1 Fatal and non-fatal occupational injuries per 100,000 workers, by sex and migrant status.

Indicator: 8.8.2 Level of national compliance with labour rights (freedom of association and collective bargaining) based on International Labour Organization (ILO) textual sources and national legislation, by sex and migrant status.

The Company does not tolerate the use of child labour, forced labour and modern slavery in its supply chains, and the Investment Manager has incorporated these principles in its supplier code of conduct. The Investment Manager also monitors the health and safety measures for major and minor incidents on sites for contractors, minimising the risk of incidents as much as possible and in compliance with regulatory standards.



GOAL 9: Build resilient infrastructure, promote inclusive and sustainable industrialisation and foster innovation.

Target: 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.

Indicator: 9.4.1 CO₂ emission per unit of value added.

The Company sources disruptive technologies in the energy storage sector and contributes to the development of sustainable energy infrastructure. The Investment Manager aims to maximise the efficiency of existing infrastructure and increase the availability of the Company's assets through highest reliability levels and stringent warranties to minimise response times.



GOAL 12:
Ensure sustainable consumption and production patterns.

Target: 12.2 By 2030, achieve the sustainable management and efficient use of natural resources.

Indicator: 12.2.1 Material footprint, material footprint per capita, and material footprint per GDP.

By engaging with suppliers, the Company's Investment Manager seeks to reduce the amount of waste generated on sites and aims to increase the recycling rate and the amount of material recycled. In the past year, the Company reported zero generation of hazardous waste.



GOAL 13:
Take urgent action to combat climate change and its impacts.

Target: 13.2 Integrate climate change measures into national policies, strategies and planning.

Indicator: 13.2.1 Number of countries with nationally determined contributions, long-term strategies, national adaptation plans and adaptation communications, as reported to the secretariat of the United Nations Framework Convention on Climate Change.

Indicator: 13.2.2 Total greenhouse gas emissions per year.

The Company contributes to climate change mitigation efforts by facilitating a higher penetration of renewable energy sources into the power grid. The Company's assets play an important role in reducing greenhouse gas emissions from the power sector as energy storage systems help to tackle the challenges of an electricity system shifting from fossil fuels to intermittent, clean energy sources. The Investment Manager measures the Company's Scope 1, 2 and 3 emissions alongside net CO₂ emissions avoided on an annual basis.



Environment



Supporting the transition to Net Zero

The 2022/23 reporting period saw another series of record-breaking extreme weather events fuelled by climate change.

Heavy rainfall displaced more than 32 million people in Pakistan, while wildfires destroyed vast swathes of forest in Europe, and severe drought caused food insecurity for 21 million people in the Horn of Africa. The IPCC has warned time is running out to keep the rise in global temperatures within the “safe limit” of 1.5C above pre-industrial levels.

With 61%⁶ of total electricity generated from fossil fuels, the power sector remains the single largest contributor to global CO₂ emissions. Yet, the transition to green energy has already begun. In the 2023 calendar year, clean energy growth could outstrip⁷ electricity demand growth for the first time outside of a recession – a milestone that would suggest the world has hit “peak” power emissions.

To meet the world’s target of a net zero economy by 2050, the power sector needs to fully decarbonise by 2040 – or 2035 in OECD and EU countries – while meeting rising demand from decarbonisation efforts in other sectors. Under the International Energy Agency (IEA)’s Net Zero Pathway⁸, wind and solar generation must continue to grow rapidly to provide 41% of global electricity by 2030, up from 12% in 2022. The integration of renewables into existing power systems requires massive scaling of enabling technologies such as interconnections, networks, and energy storage.

Energy storage supports the transition to net zero by providing the flexibility needed for intermittent energy sources such as wind and solar. Storing excess electricity when supply exceeds demand avoids curtailment and allows these clean energy sources to contribute a greater proportion of electricity. This reduces the need for fossil fuel-based power and helps bring down CO₂ emissions. Moreover, technologies such as batteries provide critical ancillary services to ensure grid stability against the backdrop of declining system inertia, a consequence of the increased reliance on renewables.

In a world experiencing more intense and more frequent extreme weather events due to climate change, energy storage solutions also protect against some of the worst impacts by keeping critical services running and providing the means to restart the grid in case of blackouts.

To support the energy transition and keep the global temperature rise to 1.5C, global battery storage capacity needs to increase from 18 GW in 2020 to 590 GW by the end of the decade and 3.1 TW by 2050, according to the IEA. In the UK, there was 2.4 GW⁹ of operational grid-scale battery storage connected at the end of 2022, with this figure expected to reach 24 GW¹⁰ by 2030.

The Company measures the contribution of its operational assets to the net zero transition through two metrics: net CO₂ emissions avoided and total renewable electricity stored. In the past year, the Company’s portfolio helped avoid 3,589.48 tonnes of CO₂e and stored 9,054.53 MWh of renewable electricity, thereby driving the green energy transition in key markets such as the UK, Germany, and the US.

“Grid-scale storage plays an important role in the Net Zero Emissions by 2050 Scenario.”

International Energy Agency

6 Ember: <https://ember-climate.org/insights/research/global-electricity-review-2023/>

7 Ember: <https://ember-climate.org/insights/research/global-electricity-review-2023/>

8 International Energy Agency: <https://www.iea.org/reports/net-zero-by-2050>

9 Solar Media Market Research: <https://www.energy-storage.news/800mwh-of-utility-scale-energy-storage-capacity-added-in-the-uk-during-2022/>

10 Rystad Energy: <https://www.rystadenergy.com/news/charging-up-uk-utility-scale-battery-storage-to-surge-by-2030-attracting-investme>

CleanTech Challenge

The Company has remained agnostic towards the energy storage technology it uses to deliver sustainable returns to investors while supporting the energy transition through integration of clean energy resources.

As an investor in market solutions, the assets deployed within the Company's portfolio have to date been batteries, which deliver the short-duration, fast response incentivised by the markets in which these assets are located.

As new technologies emerge over the course of the energy transition, the Investment Manager has a duty to the Company to investigate and engage with new market innovations as they develop. To this end, during the reporting period, the Investment Manager entered a five-year partnership with the CleanTech Challenge.

The contest, led by students from the London Business School and University College London, aims to help young innovators develop clean technology concepts into credible businesses. GSC provided four mentors to this year's competition, who met with the entrants to provide constructive feedback on their pitches before final presentations to the judging panel, which included founders of the Investment Manager.

Sami Walter, President of the CleanTech Challenge 2023, said: "Academic institutions, such as LBS and UCL, play a huge role in fostering innovation by providing students opportunities to explore and workshop ideas. As part of this journey, it's crucial for students to connect with successful cleantech professionals to receive input and guidance. GSC's mentorship throughout the challenge provided invaluable insight from their real-world commercial experience, supporting our students in becoming the next generation of innovators."



Circular economy

Circular economy principles such as *refuse, reduce, recycle*¹¹ are key to a sustainable future. The need to separate growth from consumption of non-renewable resources is a key driver for the adoption of renewable energy over fossil fuels but extends to the materials used to make those technologies.

Solar panels, wind turbines and energy storage systems all sit within high-impact product value chains due to the resources they use. The Company's fleet of energy storage systems use both lithium nickel-manganese-cobalt (NMC) and lithium iron phosphate (LFP) battery chemistries, which all require use of mining supply chains. Global demand for lithium-ion batteries, such as those used in electric vehicles and across the Company's portfolio, is expected to grow from 700 GWh in 2022 to around 4.7 TWh by 2030¹². While more sustainable means of extracting raw materials are being developed, limiting the need for virgin metals through circular practices such as reuse and recycling is crucial in reducing the environmental and social impact of energy storage as deployment accelerates in the coming years.

Much of the world's recycling capacity has yet to be established, although there are significant facilities under way in Europe and the US. An issue with accelerating these developments is the lack of battery systems available for recycling, as both the electric vehicle and utility-scale energy storage markets remain in their infancy.

The Company has owned assets since 2018 and has, therefore, had few instances where recycling of end-of-life battery cells is required. Systems were removed from the Port of Tilbury asset in GB in February 2023 following a recall by LG Energy Solutions (LG-ES) after it was found that thousands of cells manufactured at two of the company's sites between April 2017 and September 2018 may carry defects.

Under existing waste regulation in Europe, the producer or commercial entity that brings batteries into the market is responsible for their collection and sustainable disposal. The Investment Manager facilitated this process by connecting LG-ES with the battery recycling firm Battri, which uses hydrometallurgical to extract black mass material from cells for use in future battery systems.

The same product recall also affected the Company's operational assets in Texas prior to acquisition. Battery cells returned to LG-ES from other sites were checked for defects, refurbished, and sold back into the market, including to the developer of the Texas portfolio prior to GSF's acquisition. The three 9.95 MW operational assets bought by the Company in March 2022 and managed by the Investment Manager over the reporting period use 7,344 refurbished modules in total.

While these refurbished cells were selected prior to ownership, the Company is supportive of their use and advocates for reuse of cells yet to reach end-of-life, once they have been checked and deemed safe. The refurbished cells in operation in Texas have performed well over the reporting period and the Company encourages their continued use across the industry.

11 UN Environment Programme: <https://www.unep.org/circularity>

12 McKinsey: <https://www.mckinsey.com/industries/automotive-and-assembly/our-insights/battery-2030-resilient-sustainable-and-circular>

Social



Human rights in supply chains: Fair Cobalt Alliance

The energy storage assets within the Company's portfolio use lithium-ion battery technology of various chemistries, including NMC (nickel-manganese-cobalt-oxide). This exposes the Company to cobalt supply chains, which have been the subject of attention for poor working standards, human rights issues, and use of child labour.

The Democratic Republic of Congo (DRC) provides over 70% of global supplies of cobalt, which remains a key material for battery energy storage systems despite development of alternative chemistries. Artisanal small-scale mining (ASM) in the country supplies an estimated 15% to 30% of cobalt production¹³. While this is a lower proportion than cobalt delivered by large-scale mining operations, ASM accounts for a larger workforce as there is less use of machinery. Thousands of families in the DRC are, therefore, reliant on income from ASM sites, making improvements to their working conditions an important priority for any business using cobalt within its products.

It is not thought to be possible to separate the flow of ASM cobalt from the larger supply of industrially mined materials as the two streams are combined at mineral refineries before entering the general supply chain. As the Company cannot effectively divest from ASM cobalt while continuing to use NMC technology, it has chosen to engage with the sector to improve standards and working conditions.

The Fair Cobalt Alliance is a multi-stakeholder action platform working across the cobalt supply chain to help strengthen and professionalise DRC's ASM sector and contribute to local economic development at large. In an effort to engage with the wider supply chain for cobalt and to improve working conditions, the Company and its Investment Manager have joined the initiative to support the responsible extraction of cobalt from ASM sites.

Membership requires the Company to explore how it can work with the Fair Cobalt Alliance to increase the supply of responsibly produced ASM cobalt and improve conditions at ASM sites, and in surrounding communities.

These efforts go above and beyond what is needed from the Company, which does not directly source cobalt. The Investment Manager tenders for and secures assets from contractors, who buy the equipment needed for their bids. Accountability for the direct responsible sourcing of the materials used in these systems, therefore, falls outside of GSF's activities.

The Company does, however, set high standards for the partners selected by the Investment Manager which are enacted through the latter's procurement process and due diligence. An updated Supplier Code of Conduct to be included in the screening process of new partners for upcoming construction projects includes an expectation of suppliers to establish policies, due diligence frameworks, and management systems, consistent with the OECD Due Diligence Guidance for Responsible Supply Chains of Minerals from Conflict-Affected and High-Risk Areas.

The Investment Manager is also committed to encouraging compliance by requiring EPC contractors to provide evidence that their supply chain materials comply with the laws regarding conflict minerals, slavery, child labour and human trafficking of the country or countries in which they are doing business.

© David Sturmes / The Impact Facility



13 World Economic Forum: <https://www.weforum.org/whitepapers/making-mining-safe-and-fair-artisanal-cobalt-extraction-in-the-democratic-republic-of-the-congo>

Fostering diversity, equity and inclusion

Diversity remains a major challenge for the energy industry, with racial and ethnic minorities representing just 22% of the global workforce. According to a report published by the Equal by 30 campaign in 2021¹⁴, about one in three employees in the energy industry is female, yet just 26% of all executive and C-suite leaders are women.

Research by the Boston Consulting Group¹⁵ suggests a correlation between diverse leadership and improved financial performance and innovation. Building a more diverse workforce is therefore not just essential for a more inclusive society but also for advancing the green energy transition, which requires new skills and innovative thinking to build a power system fit for the future.

Diversity in the financial sector

In April 2022, the Financial Conduct Authority published its final rules to increase the disclosure of diversity on the boards and executive committees of listed firms in the UK. This includes three targets:

- women should represent at least 40% of the board,
- at least one senior board position (Chair, CEO, CFO or SID) should be held by a woman,
- at least one board member should be from a minority ethnic background.

As an investment trust with no employees or senior management, and a small number of directors, the Company will aim to meet the board diversity targets where possible. At the end of March 2023, the Company had not met the targets relating to the percentage of women on the Board or the number of individuals from a minority ethnic background¹⁶. However, another female director was added post-reporting period, increasing the percentage of women to 40%. This is in line with the FCA's target and above the 29% average among the top UK energy firms, according to data from POWERful Women and PwC¹⁷.

The Investment Manager, which conducts day-to-day operations on behalf of the Company, also believes in the importance of diversity, equity and inclusion. At the end of March 2023, women represented one-third of the Manager's workforce and 40% of senior management roles.

Beyond gender diversity

Cultural competence can be defined as the ability to build meaningful relationships and work effectively with people of different backgrounds. Increasing cultural competence by fostering an inclusive, multi-cultural environment is integral to the Investment Manager, which operates energy storage facilities across two continents and four different countries. At the end of March 2023, the workforce comprised 18 nationalities speaking a range of different languages, including:



14 Equal by 30: <https://www.equalby30.org/publications>

15 Boston Consulting Group: <https://www.bcg.com/publications/2018/how-diverse-leadership-teams-boost-innovation>

16 The Company's official 'comply or explain' statement can be found in its Annual Report and Financial Statement 2023.

17 POWERful Women: <https://powerfulwomen.org.uk/2023/05/23/women-are-progressing-into-leadership-and-management-in-uk-energy-but-board-and-ceo-roles-remain-male-dominated/>

Community engagement: Association for BME Engineers

Engineering skills are vital for the green energy transition, with research suggesting that the UK energy sector could face significant labour and skills shortages in the coming years¹⁸. Nevertheless, black and minority ethnic (BME) communities continue to face significant barriers in the pursuit of engineering careers. For instance, people from BME backgrounds currently only represent 9% of UK engineers, despite accounting for 29.9% of engineering university graduates¹⁹.

To close this gap, the London-based Investment Manager has decided to support the Association for Black and Minority Ethnic Engineers (AFBE-UK), a not-for-profit organisation promoting higher achievement in education and engineering among people of colour.

AFBE-UK runs a number of school programmes within under-represented communities to inspire children to pursue STEM careers, and supports university students by providing workshops, networking opportunities and career advice. In order to facilitate the progression to leadership positions, AFBE-UK also offers leadership training to nurture the practical skills needed to navigate the corporate world.

The Investment Manager has approved a donation to AFBE-UK to support the organisation's work and promote diversity and inclusion in the engineering sector.



© AFBE-UK

18 PwC: <https://www.pwc.co.uk/who-we-are/our-purpose/building-trust-in-the-climate-transition/supporting-a-fair-transition/the-energy-transition-and-jobs.html>

19 AFBE-UK: <https://www.afbe.org.uk/about-us>

Governance



Governance

The Board of Directors is actively involved in guiding and driving the Company's sustainability strategy, with the day-to-day management and accountability resting with the Investment Manager.

The Investment Manager's ESG team is responsible for creating, implementing, monitoring and reporting on the sustainability strategy. The team regularly reviews and strengthens policies and procedures to ensure the Company is meeting the expectations of its stakeholders, including regulators and investors. In line with the Company's commitment to transparency, the team prepares general sustainability publications as well as periodic ESG disclosures and reports, utilising the expertise of external sustainability consultants to ensure alignment with regulatory requirements and industry best practices.

The Company's Board is given quarterly and, where necessary, ad hoc updates by the Investment Manager to ensure its directors are kept apprised of ESG developments and progress. Moreover, the Board is responsible for the Company's system of risk management and internal control and for reviewing its effectiveness. The Board has adopted a detailed matrix of principal risks affecting the Company's business – including ESG risks – and has established associated policies and processes designed to manage and, where possible, mitigate those risks, which are monitored by the audit committee on an ongoing basis.

These measures reflect the importance that the Company places on ESG and sustainability, allowing the Company greater reassurance and transparency around ESG considerations.

Business ethics

Business ethics refer to "the standards for morally right and wrong conduct in business"²⁰. Acting with integrity promotes fairness in decision-making, builds trust from key stakeholders and creates a positive, respectful working environment.

The Company's Investment Manager is committed to maintaining the highest standards of honesty, openness and accountability and recognises that all employees have an important role to play in achieving this goal. To this end, the Investment Manager has an anti-financial crime policy and organises periodic training on related topics, such as money laundering, bribery and corruption. Additionally, the firm has a whistleblowing policy that encourages staff to report potential or actual infringements through an independent and autonomous channel.

Cybersecurity

Energy is the backbone of the global economy and critical to the delivery of essential services. As energy systems around the world are becoming more digitalised and decentralised, they are increasingly targeted by cybercriminals. In 2022, more than 10% of all cyber incidents²¹ affected the energy industry, making it the fourth most-targeted sector after manufacturing, finance & insurance, and professional & business services. North America and Europe, where the Company's assets are located, suffered the highest number of attacks. Protecting against cyberattacks is, therefore, vital to the Company's business.

The Investment Manager provides regular IT, data and cybersecurity training to its staff to mitigate against the risk of cyberattacks and ensure data and systems confidentiality. Its asset management team, meanwhile, works with expert consultants to audit the cybersecurity of all battery storage sites in the Company's portfolio through penetration tests and is actively engaged in continuous improvement to ensure high security standards are maintained as the portfolio grows and the digital environment changes.

20 University of Redlands: <https://www.redlands.edu/study/schools-and-centers/business/sbblog/2019/may-2019/3-reasons-why-business-ethics-important/#:~:text=What%20is%20Business%20Ethics%3F,acceptable%20behaviors%20beyond%20government%20control>.

21 IBM Security X-Force Threat Intelligence Index 2023: <https://www.ibm.com/reports/threat-intelligence>

Sustainable Finance Disclosure Regulation

The Sustainable Finance Disclosure Regulation (SFDR) is a European regulation aimed at preventing greenwashing and improving transparency in the market for sustainable investment products. As a pure-play investor in energy storage systems and a financial product that has been marketed in EU member states, the Company falls within the scope of the directive. It promotes the following environmental characteristics under Article 8:

- enabling the integration of renewable energy sources into the power grid
- avoiding carbon emissions from the power sector.

The table below summarises the Company's performance in the 2022/23 financial year, as reported against the environmental characteristics and principal adverse impacts (PAI). The Company's full periodic report under Article 11 of SFDR can be found in its Annual Report and Financial Statement 2023.

Figure 1: SFDR disclosures for the Company's operational and under construction assets during the period of 1 April 2022 to 31 March 2023

Topic	#	Indicators	Financial year 2022/23 performance	Financial year 2021/22 performance
Due diligence on principal adverse impacts (PAI)				
Climate and other environment-related indicators				
Greenhouse gas emissions	1	Total Greenhouse gas (GHG) emissions (Scope 1, 2 and 3) (see below for breakdown)	25,621 tCO ₂ e	18,180.30 tCO ₂ e
	2	Carbon footprint	106.58 tCO ₂ e / M€	138.74* tCO ₂ e / M€
	3	GHG intensity of investee companies ²²	185.26 tCO ₂ e / M€	266.42* tCO ₂ e / M€
	4	Exposure to companies active in the fossil fuel sector	No exposure	No exposure
	5	Share of non-renewable energy consumption and production	72.1%	69.9%
	6	Energy consumption intensity per high impact climate sector ²³	0.31 GWh / M€	0.31 GWh / M€
Biodiversity	7	Activities negatively affecting biodiversity-sensitive areas	None identified	None identified
Emissions to water	8	Emissions to water	0.00 mg / L	0.00 mg / L
Waste	9	Hazardous waste ratio	0.00 %	0.00 %
Social and employee matters				
UNGC principles or OECD Guidelines for Multinational Enterprises	10	Violations of principles/guidelines	None identified	None identified
	11	Lack of processes and mechanisms to monitor compliance	No formal process or mechanism identified	No formal process or mechanism identified
Gender equality	12	Unadjusted gender pay gap	N/A	N/A
Gender diversity	13	Board gender diversity	0.22 (weighted average of 0.83 females and 3.86 males at investee company level)	0.17 (weighted average of 0.46 females and 2.64 males at investee company level)
Controversial weapons	14	Exposure to controversial weapons(anti-personnel mines, cluster munitions, chemical and biological weapons)	No exposure for GSF's activities under direct control	No exposure for GSF's activities under direct control
Additional sustainability disclosures				
Air emissions	15	Emissions of air pollutants	0.00 t	0.00 t
Additional water and waste, and material emissions	16	Water usage and recycling	0.00 m ³	0.00 m ³
	17	Non-recycled waste ratio	0.00 %	0.00 %
Human rights	18	Operations and suppliers at significant risk of incidents of child labour	No exposure for GSF's activities under direct control	No exposure for GSF's activities under direct control
	19	Operations and suppliers at significant risk of incidents of forced or compulsory labour	No exposure for GSF's activities under direct control	No exposure for GSF's activities under direct control
	20	Number of identified cases of severe human rights issues and incidents	None identified	None identified
Environmental characteristics	21	Net CO ₂ emissions avoided ²⁴	3,589.48 tCO ₂ e	441.92* tCO ₂ e
	22	Total renewable electricity stored	9,054.53 MWh	7,884.56 MWh

*Last year's results have been recalculated by the third-party sustainability consultant using an improved methodology that captures the Company's impact more accurately.

22 The total intensity of investee companies was computed as per the SFDR prescribed formula and using greenhouse gas emissions data already calculated and financial information obtained from the Investment Manager.

23 Energy consumption intensity (in GWh) per million GBP of revenue of investee companies, per NACE sector denoted as high impact climate sector, expressed as a weighted average based on Net Asset Value of asset.

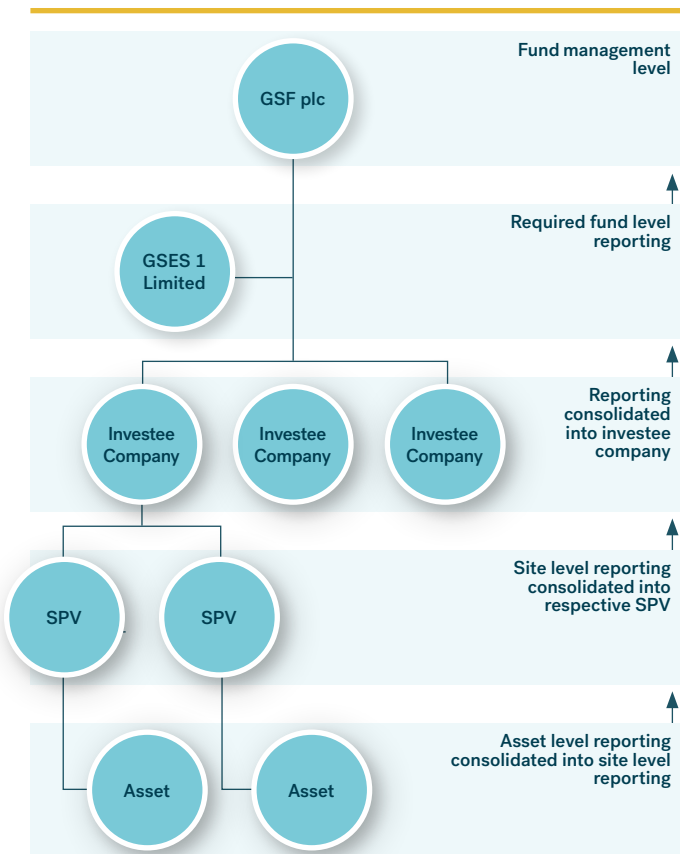
24 On behalf of the Company, the Investment Manager continues to monitor efforts in the battery storage sector to agree on a methodology that reflects the true value battery storage systems add to the electricity system.

Data Gathering

The Scope: The assessment covers all assets in operation or under construction held by the Company’s investee companies during the 2022/23 fiscal year (1 April 2022 to 31 March 2023). In total, this comprises 17 assets, including new projects in Germany and Texas acquired last year. The assessment does not include the Company’s assets which, at the time of the assessment, were in pre-construction phase and did not record any operational or commercial activity.

The Process: The picture below illustrates GSF’s organisational structure and shows the levels at which data collection and consolidation was conducted. Depending on the indicator, information was readily available at fund level, but if data was only available at a lower organisational level, data compilation and consolidation was required. The collected data was then processed by external sustainability consultants to calculate the Company’s metrics.

Figure 2: GSF’s organisational structure and different data reporting levels relevant to fund level reporting



Discussion of the results

The Company’s total GHG emissions increased significantly during the reporting period due to increased construction activity in the portfolio, causing higher Scope 3 emissions (a further breakdown of the Company’s emissions can be found below). The carbon footprint, meanwhile, decreased by 23% due to the value of investments growing more than the total GHG emissions. The GHG intensity of investee companies fell as well.

The share of non-renewable electricity consumed/produced went up as a result of the Company’s acquisition of new operational assets connected to Texas’ ERCOT grid, which is still highly reliant on fossil fuels. The Company also saw an increase in net CO₂ emissions avoided and total renewable electricity stored caused by more operational facilities in the portfolio – meaning higher volumes of exported electricity – and grid decarbonisation progress in the UK.

Greenhouse Gas Emissions

There are three categories of greenhouse gas (GHG) emissions under the Greenhouse Gas Protocol Corporate Accounting and Reporting Standard: Scope 1, 2 and 3.

● Scope 1	covers direct emissions from owned or directly controlled sources;
● Scope 2	covers indirect emissions from the generation of purchased energy;
● Scope 3	covers all other indirect emissions that occur in producing and transporting goods and services, including the Company’s supply chain

Total greenhouse gas emissions were calculated at 25,621 tCO₂e. The Company’s breakdown of emissions is as follows:

- Scope 1 emissions represent less than 1% of total emissions²⁵.
- Scope 2 emissions comprise approx. 13% of total emissions, arising from:
 - battery efficiency losses
 - operational air conditioning
 - small electricity consumers such as lighting and surveillance cameras
- Scope 3 represent approx. 87%, the largest share of total emissions, stemming from:
 - the acquisition and construction of the battery storage facilities
 - fuel and energy-related emissions
 - upstream transportation and distribution
 - waste
 - the impact of the electricity commercialised downstream.

25 The Company’s only source of Scope 1 emissions are fugitive emissions from refrigerants on site. As data on leakages was not available for the 2022/23 reporting period, this figure represents an estimate based on last year’s results.

Task Force on Climate-Related Financial Disclosures

The Company does not fall within the scope of the UK Financial Conduct Authority's climate-related reporting requirements but has chosen to voluntarily report in alignment with the Task Force on Climate-Related Financial Disclosures (TCFD) recommendations to increase transparency around its governance and consideration of climate-related risks.

This report comprises four pillars:

- **Governance:** information on the Company's oversight of climate-related risks and opportunities.
- **Strategy:** disclosure of actual and potential impacts of climate-related risks and opportunities on the Company's business, strategy, and financial planning where such information is material.
- **Risk Management:** a description of how the Company identifies, assesses and manages climate-related risks.
- **Metrics and Targets:** metrics and targets used to assess and manage relevant climate-related risks and opportunities where such information is material.

The following chapters provide information on the Company's governance, monitoring and management of climate-related risks during the 2022/23 fiscal year.

Governance

Over the past 12 months, the Company has built on its commitments towards increased transparency and reporting of ESG-related metrics. Its first ESG & Sustainability report, published in August 2022, delivered disclosures for assets in Great Britain and Ireland covering a range of social and environmental metrics, including greenhouse gas emissions and energy consumption. The Company has increased the scope of these efforts over the reported period to include its German and US assets.

Through the Investment Manager, the Board has established a framework to identify and manage the Company's principal risks and opportunities, including those relating to climate. The Investment Manager reports to the Board on a quarterly basis, ensuring that the Directors are kept updated on progress and developments. This system allows the Board to guide and approve the Company's sustainability and ESG strategies, as well as conduct regular assessments of the Company's climate commitments and disclosures.

The Investment Manager's role in assessing and managing climate-related risks

The Investment Manager is responsible for the development, execution, monitoring, and reporting of the Company's sustainability strategy, including meeting the requirements outlined by SFDR for Article 8 products. The Company has also adopted a number of voluntary frameworks to guide its sustainability strategy and reporting, including the Task Force on Climate-Related Financial Disclosures (TCFD), the UN Sustainable Development Goals (SDGs) and the Principles for Responsible Investment (PRI).

The Investment Manager's ESG team works closely with the in-house commercial, construction, and asset management team to regularly review and implement the Company's sustainability strategy. Through this multi-teamed approach, the Investment Manager can implement more impactful policies and risk mitigation strategies for pre-operational and operational assets as well as pre-investment due diligence on pipeline opportunities. The Investment Manager also employs advisors who support the Company's ESG agenda and provide guidance on its approach to sustainability.

Additionally, the Investment Manager is responsible for ensuring the Company's assets are optimally managed and available to provide a range of services to the grid that enable the integration of higher proportions of variable, renewable energy. This activity plays a vital role in transitioning to a low-carbon economy and is a central component of the Company's sustainability strategy.

Strategy

The Company recognises the potential impact of climate-related risks and opportunities on its operations. It has, therefore, adopted the recommendations by the TCFD to effectively identify and manage its risk exposure and explore climate-related opportunities.

Climate-related risks and opportunities can be classified as transitional and physical. Transitional risks and opportunities arise from the transition to a low-carbon economy and can relate to changes in policy and legal frameworks, new technologies, market responses, and reputational considerations. Physical risks refer to the impact of acute climate-driven events, such as extreme weather, as well as long-term shifts in temperatures, precipitation patterns and variability in weather patterns.

The table below provides an overview of climate-related risks and opportunities applicable to the Company's business.

Figure 3: Identified climate-related risks and opportunities

Category	Overview	Climate factor	Risk/Opportunity
Transitional risk	The risk to the Company from the transition to a lower carbon economy.	Regulation	Policy and legal – differences in local, national and global requirements.
		Investor preference	Market – new dynamics and non-linear relationships affecting the size of the supply, demand and costs.
		Investor preference	Reputation – shifts in societal awareness, interconnected issues driving impacts and actions, often enabled by the internet.
Transitional opportunity	Changes in the business landscape from the transition to a net zero society.	Sustainable financing	Access to capital – potential future reduction in debt financing due to the fund's eligibility for green financing.
		Valuation	Increase in the Company's share price – increased market capitalisation due to investor appetite for companies contributing to the energy transition.
Physical risk	The risk to the Company from the physical impacts of climate change linked to extreme weather events.	Regulatory policy and legislation	Environmental pollution – caused by an inability to recycle batteries at the end of life, irresponsible use of natural resources used as raw materials, biodiversity disruption at battery energy storage sites, uncontrolled and excessive emissions from the facility.
		Exposure to extreme weather conditions and changes in climate and weather patterns	Location – number of Special Purpose Vehicles (SPVs) exposed or affected, projected loss or damage to project infrastructure or supply chain; projected or identified cost of business interruption, insurance costs.
		Exposure to extreme weather conditions and changes in climate and weather patterns	Financial – projected or identified impact on revenues and expenditures, change in operating and capital costs, and insurance costs.
		Exposure to extreme weather conditions and changes in climate and weather patterns	Reputation – environmental impacts could trigger opposition from local communities and associations.
		Exposure to extreme weather conditions and changes in climate and weather patterns	Health & Safety – incidents of injury caused by natural disasters at a site.
		Exposure to extreme weather conditions and changes in climate and weather patterns	Delayed commissioning – delays in construction, permitting etc. caused by natural disasters at a site.
		Exposure to extreme weather conditions and changes in climate and weather patterns	Total or partial damage to assets – caused by natural disasters at a site.

Transitional opportunities have emerged due to increasingly ambitious climate policies and emissions reduction targets, strong growth of low-carbon sectors and the proliferation of green technologies. Since the Company acquired its first assets in 2018, the share of electricity generated from wind and solar in the UK has grown from 21% to almost 29%²⁶. Globally, total renewable electricity capacity is projected to increase by 2,400 GW between 2022 and 2027²⁷, reaching 38.1% of total electricity output in 2027.

The rapid deployment of renewable energy generators increases volatility and instability in traditional power systems, posing huge challenges to grid operators. This creates additional demand for energy storage systems, such as the Company's, that can receive, store and deliver energy when needed while providing grid-stabilising ancillary services. Transitional climate-related considerations are, therefore, key to the Company's overall strategy.

26 Ember: <https://ember-climate.org/countries-and-regions/countries/united-kingdom/>

27 International Energy Agency: <https://www.iea.org/reports/renewables-2022/renewable-electricity>

Physical risk assessment

In 2022, the Company conducted its first climate risk assessment, covering investments across the US, GB, Ireland, and Germany. Supported by an external ESG advisor, the Company identified the ten assets that are most exposed to various climate-related risks and representative of the locations in the portfolio. For this report, the Company conducted another risk assessment for its newest asset in California – the Company’s largest project to date and its first in the state. Based on the assessment, the asset was added to the list of high-risk locations, which are depicted in figure 4.

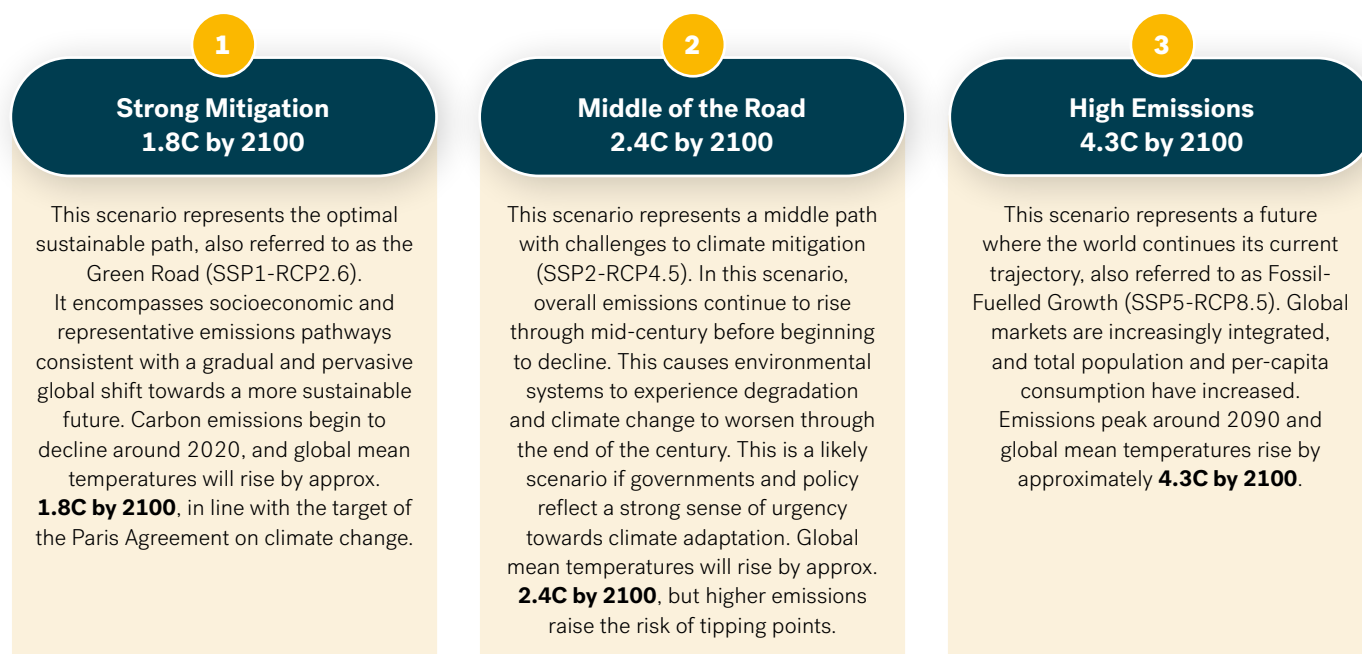
Figure 4: The Company’s 10 assets most exposed to various climate risks and representative of the locations in the portfolio

Site	Location	Relevant climate risk
Big Rock	California, US	Baseline water stress ²⁸ , drought ²⁹ , extreme heat
Snyder	Texas, US	Baseline water stress, drought, extreme heat, wildfire
Mineral Wells	Texas, US	Drought, extreme heat, wildfire
Sweetwater	Texas, US	Baseline water stress, drought, extreme heat, wildfire
Brook Hall	Wiltshire, UK	Coastal flooding, drought
Boulby	North Yorkshire, UK	Coastal flooding, drought
Cenin	Bridgend, UK	Coastal flooding, drought
Lower Road	Essex, UK	Coastal flooding, drought
Porterstown	County Kildare, Ireland	Drought
Cremzow	Cremzow-Wallmow, Germany	Riverine flooding, drought

Climate change scenario analysis

Climate change scenarios are used to assess possible climate impacts on a firm’s business, helping it to better align its strategy. Three scenarios have been considered for the Company’s ten most at-risk assets listed in figure 4.

Figure 5: Climate change scenarios



The scenarios were modelled over a 30-year timespan under three different global warming pathways in line with TCFD recommendations. The analysis evaluated the assets’ exposure to the following hazards: water stress, heatwaves, wildfire, sea-level rise, flooding, and tropical cyclones.

²⁸ Baseline water stress refers to the ratio of total water withdrawals to renewable surface and groundwater supplies.

²⁹ Drought risk is defined by the severity and probability of a certain drought event, the population and assets exposed, and their coping capacity.

Hazard findings

Wildfires and heatwaves were found to pose the greatest threat to the Company’s assets. Although the analysis found a significant risk of water stress across the portfolio, it is not expected to have a material impact on operations due to negligible levels of water consumed on site. On average, exposure to sea-level rise, flooding, and tropical cyclones was low across the three different scenarios.

Figure 6: Exposure to different climate risks by region under three climate change scenarios

Hazard	Scenario	United States	Great Britain	Ireland	Germany
Water stress	1	High	Low	Medium	Medium
	2	High	Low	Medium	Medium
	3	High	Medium	High	Medium
Heatwaves	1	Medium	Low	Low	Low
	2	Medium	Low	Low	Low
	3	High	Medium	Medium	Medium
Wildfire	1	Medium	Low	Low	Low
	2	Medium	Low	Low	Low
	3	Medium	Low	Low	Low
Sea-level rise	1	Low	Low	Low	Low
	2	Low	Low	Low	Low
	3	Low	Low	Low	Low
Flooding	1	Low	Low	Low	Low
	2	Low	Low	Low	Low
	3	Low	Low	Low	Low
Tropical storms	1	Low	Low	Low	Low
	2	Low	Low	Low	Low
	3	Low	Low	Low	Low

Impact: Heatwaves

High temperatures caused by heatwaves can reduce the operational lifespan of energy storage assets, as it can increase the rate at which the assets degrade. The Company’s assets are designed considering the specific environmental conditions of each location, encompassing considerations for climate change and realistic extremes of both high and low temperatures. Since the Company’s fleet includes a range of geographic areas, its assets are designed to operate in temperatures varying from -20C to 40C, with headroom and footroom factored in.

Risk Management

Climate-related risks are a distinct category within the Company's risk policy. The identified climate-related risks have been integrated into relevant subsections of other risk categories, such as operational and credit risks. This section of the report outlines the steps taken by the Company to identify, analyse, evaluate, treat, and communicate climate-related risks within its operations.

Identification

The Company employs various methods to identify climate-related risks, including technical due diligence before investment into pipeline opportunities, the Invitation to Tender process for Engineering, Procurement, and Construction (EPC) contracts, sustainability workshops conducted with partners and contractors, regular discussions within the Investment Manager's teams, as well as through seeking advice from specialist consultants well-versed in industry best practices and climate change risk assessment.

Analysis

The Company assesses the likelihood and impact of each identified risk and opportunity, determining a risk rating of high, medium, or low. As part of this process, the Company engaged an external consultant to conduct a climate change risk assessment covering assets in various locations. The assessment findings helped identify and categorise the portfolio's vulnerability to specific climate hazards and estimate the probability of those hazards occurring.

Evaluation

The Company aims to benchmark climate change risk ratings and assessment findings against its internal risk criteria, ensuring a comprehensive evaluation of risks.

Risk Treatment

Once climate-related risks are identified, assessed, and evaluated, the Company's risk management framework mandates the implementation of climate change mitigation controls. This includes assigning a designated risk owner responsible for developing and executing the controls to manage these risks effectively.

Recording and Reporting

As part of the Company's risk management framework, climate-related risks are recorded within a dedicated risk register. These risks are reported to the Board, the Investment Manager's internal teams and external stakeholders. By documenting and sharing this information, the Company ensures transparency and accountability in addressing climate-related risks.

Communication and Consultation

Effective communication with key stakeholders is crucial for creating a culture of risk awareness, understanding, and continuous improvement. Risk managers are required to engage in regular communication with stakeholders, fostering a sense of inclusion and promoting alignment with business goals and objectives. This also helps individuals understand their roles in the day-to-day risk management process.

Integration into Operations

Recognising the importance of climate change, the Company has integrated climate-related considerations into its EPC Invitation-to-Tender process. Additionally, the Company requests operational and maintenance (O&M) contractors to provide data that enables measuring and monitoring of climate-related risks.

By embedding climate-related risks within the Company's risk management framework, the Company aims to address the potential challenges posed by climate change proactively. Through a comprehensive risk assessment process, effective risk treatment, and transparent communication, the Company aims to build resilience, align its operations with sustainability goals, and mitigate the adverse impacts of climate change.

Metrics & Targets

The Company’s climate-related risks and opportunities are primarily assessed using the following metrics:

- Renewable energy stored
- Net CO₂ emissions avoided
- Greenhouse gas emissions
- The metrics were calculated by external sustainability consultants and are identical to the metrics in the Company’s SFDR report (for more detail on the data collection process, please refer to page 23).

Renewable energy stored

The Company was launched in May 2018 to support the energy transition through the deployment of energy storage systems. The technology is considered crucial to the decarbonisation of global grid systems by facilitating the integration of variable renewable energy generation. In deploying energy storage capacity, the Company’s portfolio is able to store this power and discharge it when needed to support the balancing of energy supply and demand (figure 7). In doing so, the energy storage assets also support national climate targets and the decarbonisation goals of grid operators.

To help quantify the benefits of its assets, the Company has chosen to measure and disclose the amount of renewable electricity they store. During the 2022/23 fiscal year, the Company’s assets stored 9,054 MWh of renewable electricity, enough to meet the annual electricity needs of over 3,000³⁰ homes in Great Britain.

Share of non-renewable electricity stored

While the Company’s assets are key to supporting global targets for increasing integration of renewable energy, they can

operate in grid systems that continue to use high levels of non-renewable electricity.

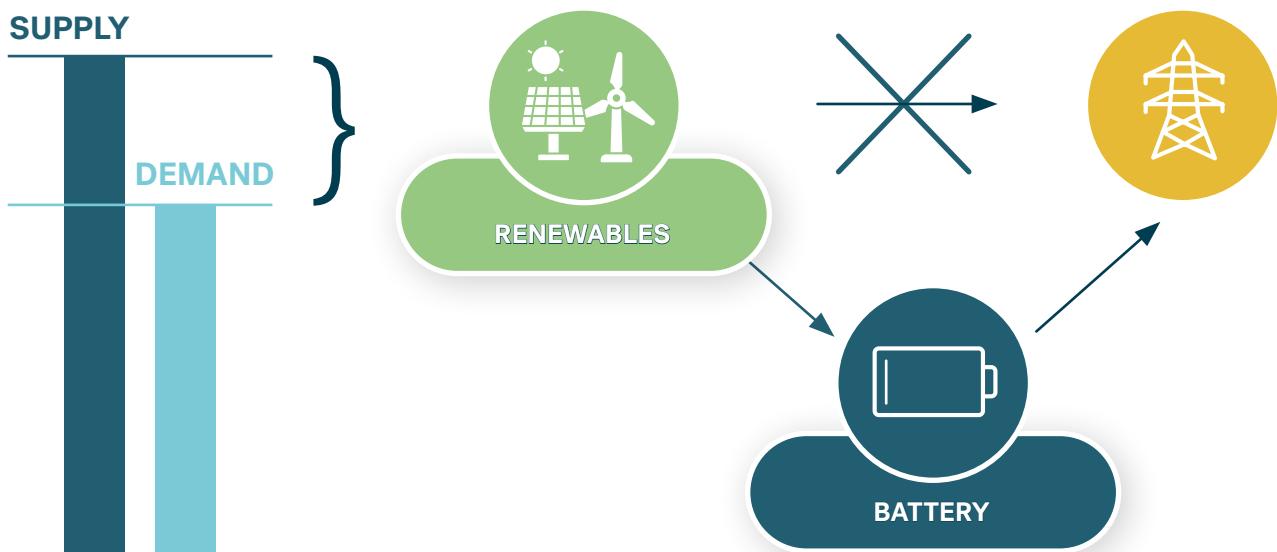
The 2022/23 fiscal year represented the first full reporting period in which the Company operated assets within the ERCOT grid in Texas. The state uses more natural gas for electricity generation than any other, with gas-fired power plants supplying about half the electricity generated in Texas in the 2022 calendar year. While Texas hosts the largest fleet of wind turbines in the country, renewables provided around 25% of the state’s electricity in the same year³¹.

The Company’s entry into the ERCOT market was motivated in part by the need for energy storage to integrate existing and future renewable capacity, but the current energy mix means the Company’s operational assets are exposed to high levels of non-renewable electricity. This means the share of non-renewable electricity stored by the entire portfolio is increased.

Hourly, half-hourly and quarter-hourly battery charging data and transmission system data on the percentage of renewables in the electricity generation mix were used to determine that 72.1% of the electricity consumed by the operational portfolio came from non-renewable sources.

This represents an increase on the previous 12 months when taken alongside recalculations to the previous reporting period’s share of non-renewable electricity stored using an improved methodology. This increase is expected as part of the Company’s ongoing work to facilitate the integration of renewables using energy storage and contribute to a reduction in non-renewable electricity. The Company, therefore, expects to see this share of stored electricity fall over time as thermal generators are retired and more renewables are added to the energy mix.

Figure 7: How batteries help to balance electricity demand and supply



30 Based on 2.9 MWh Ofgem estimate of annual typical household electricity usage: <https://www.ofgem.gov.uk/information-consumers/energy-advice-households/average-gas-and-electricity-use-explained>

31 US Energy Information Administration: <https://www.eia.gov/state/analysis.php?sid=TX#111>

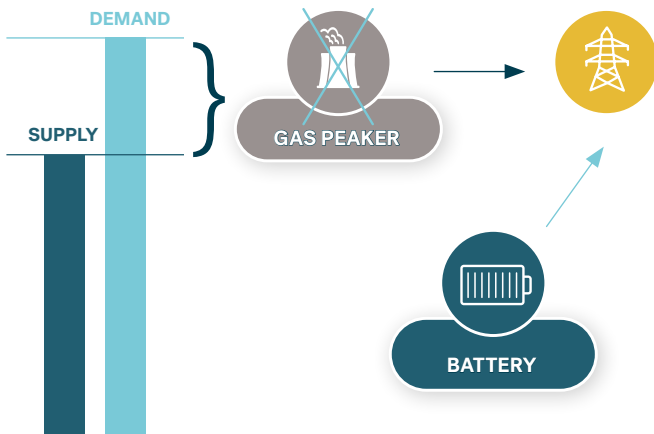
Net CO₂ emissions avoided

The methodology used to calculate avoided emissions is based on the difference between using the Company’s operational assets to deliver power compared to conventional generation. The first scenario assumes batteries are used to import electricity when generation exceeds demand before later exporting to the grid when the inverse scenario occurs, while the second scenario substitutes this function with fossil fuel-based peaking capacity.

The assessment was based on hourly, half-hourly and quarter-hourly battery charging data from the Company’s assets and information on the corresponding grid carbon emissions factors obtained from the electricity transmission system operators in Great Britain (GB), Northern Ireland (NI), Ireland (IE), Germany (DE) and the United States (Texas), respectively.

For most of the Company’s assets, the results were compared to a reference scenario with the corresponding emissions that would occur if all exported electricity was supplied by a natural gas-fired peaking plant. The average carbon emissions intensity of gas-fired peaking plants in Europe is specified by the European Commission. An illustration of this can be found in figure 8.

Figure 8: The role of batteries in replacing fossil fuel-fired peaking plants



In the case of Texas, the assessment was compared to a reference scenario using emissions factors that reflect grid emissions rates during non-baseload periods in which a mix of non-baseload generation plants (e.g. gas-fired and coal-fired peaking plants) is deployed to support peak demand, as the US has these emissions factors publicly available.

The Company’s external sustainability consultants used an updated methodology to account for the efficiency losses occurring between the charge and discharge of battery storage assets. This reduced the amount of net CO₂ emissions avoided last year to 441.92 tCO₂e. In 2022/23, the Company’s net CO₂ emissions avoided amounted to 3,589.48 tCO₂e, a significant increase due to more operational assets in the portfolio, higher volumes of exported electricity, and decarbonisation progress in the UK.

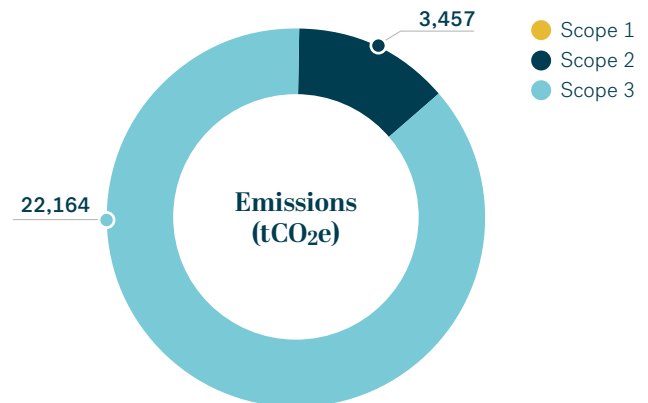
Despite being aligned with the EU methodology for assessing avoided emissions from generators and following guidance from the Greenhouse Gas Protocol, the Company believes the approach falls short of capturing the true value added to the grid by battery energy storage systems, which includes ancillary services such as frequency response. The Company continues to monitor industry efforts to refine the methodology for avoided emissions and remains open to the use of alternative metrics offering a better reflection of battery storage’s contribution to the energy transition in the future.

Greenhouse gas emissions

The Company’s total greenhouse gas emissions were calculated following guidance from the Greenhouse Gas Protocol. During the reporting period, GSF’s assets emitted 25,621 tCO₂e, equivalent to the annual emissions of 2,033 UK households³². This represents a significant rise due to an increase in construction activity in the portfolio – in 2022/23, the Company had two facilities with a capacity of 128.8 MW under construction compared to just one 30 MW facility in the previous reporting period³³.

Scope 1 emissions were negligible³⁴ while Scope 2 emissions, stemming from the consumption of electricity, totalled 3,457 tCO₂e. Scope 3 emissions constituted the largest share of total GHG emissions – 22,164 tCO₂e – primarily caused by construction activities, the acquisition of batteries, and the impact of electricity commercialised downstream.

Figure 9: Breakdown of GSF’s greenhouse gas emissions



32 Consequence: <https://www.consequence.world/climate-bible/what-is-your-carbon-footprint-for-uk-household>

33 2022/23: Stony and Ferrymuir. 2021/22: Porterstown

34 The Company’s only source of Scope 1 emissions are fugitive emissions from refrigerants on site. As data on leakages was not available for the 2022/23 reporting period, this represents an estimate based on last year’s results.

Reported metrics for the 2022/23 financial year

Figure 10: Performance measured against the Company's metrics during the 2022/23 reporting period

Metric Category	Metrics	2022/23 Performance	2021/22 Performance
GHG Emissions	Scope 1 emissions	- tCO ₂ e*	35 tCO ₂ e
	Scope 2 emissions	3,457 tCO ₂ e	4,340 tCO ₂ e
	Scope 3 emissions	22,164 tCO ₂ e	13,814 tCO ₂ e
	Total Emissions	25,621 tCO ₂ e	18,180 tCO ₂ e
	Carbon Footprint	106.58 tCO ₂ e / M€	138.74 tCO ₂ e / M€**
	Weighted average carbon intensity	185.26 tCO ₂ e / M€	266.42 tCO ₂ e / M€**
Transition Risks	Exposure to companies active in the fossil fuel sector	No exposure	No exposure
	Share of non-renewable energy consumption and production	72.1%	69.9%**
	Energy consumption intensity per high-impact climate sector	0.31 GWh / M€	0.31 GWh / M€
Climate-Related Opportunities	Net CO ₂ emissions avoided	3,589.48 tCO ₂ e	441.92 tCO ₂ e**
	Total renewable electricity stored	9,054.53 MWh	7,885 MWh

*The Company's Scope 1 emissions comprise fugitive emissions from refrigerants on site. Data on leakages was not available for the 2022/23 reporting period.

**Last year's results have been recalculated by the Company's third-party sustainability consultant using an improved methodology that captures the Company's impact more accurately.

Targets used to manage climate-related risks and opportunities

This table provides an update on the Company's progress during the 2022/23 reporting period towards the targets set out in its first TCFD report published in 2022.

Figure 11: Progress on climate-related targets

Targets	Progress	Outlook
1 Continue to evaluate the data disclosed within the report and expand reporting to cover other cross-industry metric categories.	The Company expanded the scope of its emissions reporting to include operational assets in Germany and Texas, while the climate risk assessment featured a new asset in California. The Company also worked with external sustainability consultants to improve the data sources and methodology of some of its ESG metrics, including net CO ₂ emissions avoided and share of non-renewable electricity stored.	The Company will continue to monitor industry efforts to improve the net CO ₂ emissions avoided methodology or find alternative metrics to capture the full value added to the grid by battery energy storage systems.
2 Evaluate and set appropriate, quantitative targets for metrics in line with the strategy of the Company.	The Company continued to work with its ESG advisers to develop climate-related targets.	The Company will publish its climate-related targets once finalised.
3 Contribute to a greater reduction of the share of non-renewable electricity consumed in the grids that the Company operates in.	The Company continued to invest in battery energy storage systems which allow renewable energy sources to contribute a greater proportion of electricity ³⁵ . The amount of total renewable electricity stored by the Company's fleet increased by 15% YoY.	The Company will continue to invest in utility-scale energy storage systems to support the green energy transition.
4 Increase research and development investment to improve the methodology of calculating emissions associated with energy battery storage.	The Company worked with external sustainability consultants to improve the methodology of calculating its net CO ₂ emissions avoided.	The Company will continue to monitor industry efforts to improve the net CO ₂ emissions avoided methodology or find alternative metrics to measure the full value added to the grid by battery energy storage systems.

35 For more information on the Company's contribution to the energy transition, please refer to page 11.

Additional frameworks and initiatives



United Nations Principles for Responsible Investment (UN PRI)

The Principles for Responsible Investment (PRI) is a UN-supported international framework outlining possible actions to incorporate ESG issues into investment practice. The implementation of the six principles supports the development of a more sustainable global financial system. As a signatory of the PRI, the Company is required to report against the principles from 2024. To identify opportunities for closer alignment ahead of the mandatory reporting cycle, the Company plans to submit a voluntary report in 2023.



Global Impact Investing Network

The Company is also a member of the Global Impact Investing Network (GIIN) and is aligned with the GIIN's mission of reducing barriers to impact investment and supporting the allocation of capital to fund solutions to the world's most intractable challenges.



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