



Positive Change Impact Report

Full Year 2022



Investment managers

Risk Factors

The views expressed in this article should not be considered as advice or a recommendation to buy, sell or hold a particular investment. They reflect opinion and should not be taken as statements of fact nor should any reliance be placed on them when making investment decisions.

This communication was produced and approved in July 2023 and has not been updated subsequently. It represents views held at the time of writing and may not reflect current thinking.

Potential for Profit and Loss

All investment strategies have the potential for profit and loss, your or your clients' capital may be at risk. Past performance is not a guide to future returns.

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All information is sourced from Baillie Gifford & Co and is current unless otherwise stated.

The images used in this report are for illustrative purposes only.

Annual past performance to 30 June 2023 (%) US dollars

	2019	2020	2021	2022	2023
Positive Change Composite Net	1.6	47.5	65.7	-38.7	24.3
MSCI ACWI	6.3	2.6	39.9	-15.4	17.1

Annualised returns to 30 June 2023 (%) US dollars

	1 year	2 years	5 years	Since inception*
Positive Change Composite Net	24.3	-12.5	13.7	19.3
MSCI ACWI	17.1	-0.4	8.6	9.9

Source: Baillie Gifford & Co.
Changes in the investment strategies, contributions or withdrawals may materially alter the performance and results of the portfolio. *Inception date 31 January 2017.

Annual past performance to 30 June 2023 (%) Sterling

	2019	2020	2021	2022	2023
Positive Change Composite Net	5.4	51.9	48.2	-29.9	18.7
MSCI ACWI	10.3	5.7	25.1	-3.7	11.9

Annualised returns to 30 June 2023 (%) Sterling

	1 year	2 years	5 years	Since inception*
Positive Change Composite Net	18.7	-8.8	14.6	19.1
MSCI ACWI	11.9	3.8	9.5	9.7

Source: Baillie Gifford & Co. Sterling.
Changes in the investment strategies, contributions or withdrawals may materially alter the performance and results of the portfolio. *Inception date 31 January 2017.

Past performance is not a guide to future returns.

Source: MSCI. MSCI makes no express or implied warranties or representations and shall have no liability whatsoever with respect to any MSCI data contained herein. The MSCI data may not be further redistributed or used as a basis for other indexes or any securities or financial products. This report is not approved, endorsed, reviewed or produced by MSCI. None of the MSCI data is intended to constitute investment advice or a recommendation to make (or refrain from making) any kind of investment decision and may not be relied on as such.

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Executive summary

In this sixth annual impact report, we illustrate companies' contribution over 2022 addressing some of the world's biggest challenges across our four impact themes:

- Social Inclusion and Education,
- Environment and Resource Needs,
- Healthcare and Quality of Life, and
- Base of the Pyramid.

We report on the impact of every company in the portfolio using our Positive Chain: a logic model based on the Theory of Change. For the 20 companies that have been in the portfolio since 2018, we report on their longer-term impact. For example, we can see that Ørsted, the renewable energy generator, has more than trebled its amount of energy generated from wind and solar from 2017 to 2022, or Dexcom, the manufacturer of continuous glucose monitoring systems for diabetics, has expanded its patient population sixfold over the same period.

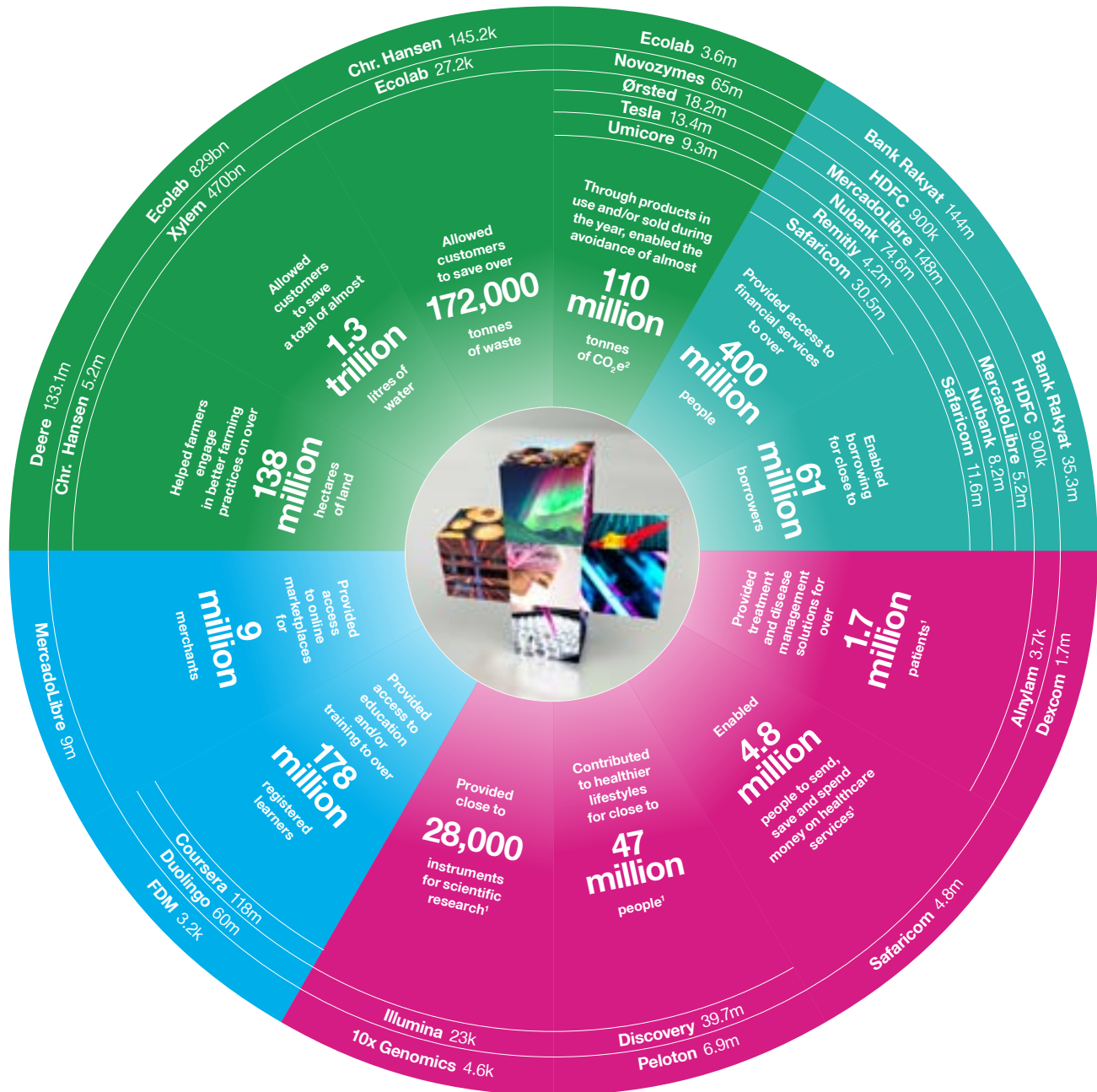
We believe investment returns and impact go hand in hand over the long term. For companies we have invested in for over five years, we share financial metrics on operational performance, such as revenue growth, alongside share price performance. All of these companies have positive revenue growth on a five-year view. For most companies, this has gone alongside strong share price performance, although some companies have seen weaker share price performance for various reasons. We will remain patient shareholders of these companies, providing our conviction in their long-term ability to meet our dual objectives is intact.

In addition to reporting on each company's impact, we aggregate the data to share some overall portfolio-level statistics. We have 12 aggregate statistics to provide a snapshot of the portfolio's impact. For example, companies in the portfolio have allowed customers to save over 1.3 trillion litres of water and provided access to education and training to over 178 million registered learners. We also map the whole portfolio to the UN Sustainable Development Goals according to their products' and services' contribution to meeting the goals.

We welcome the opportunity to share our Impact Report. Every year, we endeavour to improve our reporting and better understand the positive change companies can have in the world. We continue to be inspired by companies' ability to deliver attractive investment returns alongside driving real-world change.

Headline impact wheel

In 2022, in their provision of products and services, companies are estimated to have:



■ Social Inclusion and Education
 ■ Environment and Resource Needs
 ■ Healthcare and Quality of Life
 ■ Base of the Pyramid

¹ Data related to healthcare, is presented to date, covering multiple years.

² Data for CO₂e saved is based on company reporting, either in CO₂ or CO₂e; the aggregate data is presented as CO₂e as this is the most conservative approach.

Introduction

In a year dominated by conflict, natural disasters, and rising inflation and interest rates, our commitment to our dual objectives remains as strong as ever. The volatility and uncertainty that characterised the past year can be unsettling. However, the sense of purpose that our dual objectives provide has acted as our anchor as we navigate these more troubled waters.

If anything, this environment has reaffirmed our belief that those companies that can deliver positive change are critical in helping address environmental and societal challenges. All the more so because many of these have been exacerbated by the past year's events.

We are encouraged that despite this backdrop, companies in the portfolio have continued to harness technological progress and innovation to enable them to grow their businesses and continue to contribute to a more sustainable and inclusive world.

Kate Fox



Since the strategy was seeded in 2017 we have experienced some extreme events such as a global pandemic, the outbreak of war, devastating extreme weather conditions and the rising cost of living. If anything, these events have shone a brighter light on the need for positive change and increase our determination to play a role in enabling positive change. At the same time, our two objectives provide a terrific North Star in times of uncertainty. We know what we are looking for and why – such clarity of purpose is powerful.

Edward Whitten



I think everyone recognises the complexity of the social and environmental challenges facing the world today, such as climate change and social inequalities. To really understand them, navigate them and address them through investment, requires dedicated research, taking into account the perspectives of multiple stakeholders and really understanding the range of available solutions. This is why we place such emphasis on impact analysis, monitoring and reporting.

Lee Qian



I am inspired by the impact delivered by portfolio holdings, from commercialising novel, precision agriculture technologies, to expanding access to financial services for the unbanked. Progresses like these give me optimism that a more prosperous, sustainable and inclusive future is possible.

Michelle O'Keeffe



When the talks failed to reach agreement in Copenhagen in 2009 I was just completing my Masters in climate change and was devastated at the lack of our ability to address what was clearly the biggest challenge of our generation. Now, 14 years later, I have a much more optimistic view: we are seeing entrepreneurs and policy makers getting to work to find the framework and solutions to decarbonise our economy and raising living standards at the same time. It is an enormous task and a huge opportunity; the race is on and I am hugely excited to be part of it.

Thaiha Nguyen



Changes won't happen overnight. It often takes a long time to change consumer behaviours to adopt green solutions like electric cars and plant-based meat or to change the inertia of multiple stakeholders in the education and healthcare sectors. Most investors have limited patience to support such changes. I hope our long-term capital will play a part in enabling companies to deliver on their ambition to contribute positive changes to the world.

Our beliefs

Businesses and investors have the ability – indeed, the responsibility – to help steer our world onto a more sustainable path. Government funding and philanthropic donations, though hugely welcome, will be insufficient: trillions, not billions, worth of investment will be required to address the numerous challenges our world is facing.

We believe that inclusive capitalism is a part of the solution which can improve lives. In our bid to help our clients make attractive investment returns, we seek to harness the beneficial impact of human entrepreneurial spirit, while contributing towards a better world for current and future generations.

Change takes time. Social and environmental challenges such as persistent poverty and climate change cannot be solved with a short-term mindset. If the financial capital required to solve these issues is to be effective, we will need to be patient. By taking a long-term approach to investing we aim to support companies in making decisions and taking actions that will be beneficial for their business, society and the environment in the coming decades. That's why we believe:

- companies whose core business activities are addressing global challenges will experience rising demand for their products and services: they will be growth businesses.
- that a subset of those companies will enjoy sustainable competitive advantages such as loyal customers and motivated employees: they will be high-quality companies.
- that owning shares of exceptional businesses whose products and services are having a positive impact on society is a more effective way of delivering positive change than avoiding those doing harm: we take a positive and proactive approach.

Based on these beliefs, the Positive Change Strategy has two objectives of equal importance:

1. To deliver attractive long-term investment returns (2 per cent per annum ahead of the MSCI ACWI net of fees over rolling five-year periods)³
2. To contribute towards a more sustainable and inclusive world

There are no compromises – each holding must be able to deliver on both objectives. We pursue these objectives in line with the active, long-term growth investment philosophy that has been tried and tested over Baillie Gifford's history since 1908.

Core to our philosophy is a belief that investment returns and impact are complementary, so both are considered throughout our decision-making process.

Over the last six years we have enhanced our process and continue to seek ways to improve, but one thing that won't change is our philosophy. Our team is passionate about our dual objectives and the role that our investment strategy has in helping drive positive change.

³ The performance target is aspirational and is not guaranteed. We don't use it to compile the portfolio and returns will vary. A single performance target may not be appropriate across all vehicles and jurisdictions. We may not meet our investment objectives if, for example, our growth investment style is out of favour, or we misjudge the long-term earnings growth of our holdings.


Our approach and methodology

This report reflects our impact monitoring process, which is ongoing, and is interwoven with our monitoring of the investment case for each company. Of course, a lot more work goes into this than we can fit in this report. We look at company reports and disclosures, engage with management and monitor significant news and the key milestones that we expect a company to reach in order to deliver positive change. Data in this report is based on companies' publicly reported data for the financial year 2022, or what we have collected through company engagement, unless otherwise indicated. We strive to be transparent, conservative and rigorous with our impact reporting. Further detail about how we analyse and report on our data is included under the 'Important Notes' and in our supplementary methodology paper, which forms the Reporting Criteria for the report, which is available on our website.

The **Positive Change hypothesis** outlines how we expect companies' products and services to deliver positive change and why we believe this represents a good investment opportunity.

The **Positive Chain** is a logic model based on the Theory of Change which we use to evidence a company's progress in delivering positive change.

We continue to seek independent limited assurance on some aspects of this report from KPMG LLP. Sections marked with a ▲ are under assurance standard ISAE (UK) 3000 which is the assurance standard for non-financial information. KPMG has issued an unqualified opinion over the selected information. Please refer to the statement on page 62.



First invested November 2017

Positive Change hypothesis

Ørsted is a renewable energy developer and a global leader in offshore wind energy. The continued building of renewable energy infrastructure will be important to tackling climate change and Ørsted can play a significant role. We believe Ørsted's reputation and expertise, managing large projects and working with different stakeholders, will enable it to earn a return on investment. New growth opportunities such as green hydrogen could provide further upside.

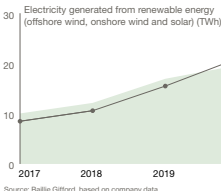
Positive Chain ▲

Input	Activities	Outputs	Outcomes	Impact (SDG target)
R&D US\$306.3m	Ørsted develops, constructs, owns and operates wind farms, solar farms and energy storage facilities and owns and operates bioenergy plants. In addition to its electricity generation activities, Ørsted engages in partnerships and develops projects related to the production of green hydrogen.	By the end of 2022, Ørsted had over 15 gigawatts (GW) in installed renewable capacity and produced 91 per cent of its energy through renewable sources such as wind, solar and biomass. During the year, Ørsted generated over 29.6 terawatt-hours (TWh) of power from wind and solar.	Ørsted's renewable generation avoided 18.2 million tonnes of CO2e emissions in 2022. Ørsted remains the world leader in offshore wind, having developed around one-third of the global installed capacity, excluding mainland China.	SDG 13 CLIMATE ACTION 13
Employees 8,027 (Y/E Dec 2022)				SDG 7 AFFORDABLE AND CLEAN ENERGY 7.2

Long-term progress ▲


Since Positive Change first took a holding in 2017, Ørsted has steadily and consistently increased its renewable energy capacity, thereby increasing the amount of clean energy it generates and ultimately helping to decarbonise energy grids across the world. Ørsted's green energy generation has increased 64 per cent of its total energy generation in 2017 to 91 per cent today, an achievement all the more impressive since the company was ordered by the Danish authorities to delay the phase-out of coal and oil fired power plants in 2022 until June 2024.

Impact objective



Electricity generated from renewable energy (offshore wind, onshore wind and solar) (TWh)

Investment objective




16% revenue growth pa
Share price return (USD)*
80% cumulative 13% pa
*vs 6% pa MSCI ACWI return (USD).
Metrics over five-year time horizon. Past performance is no guarantee of future results.

Source: Baillie Gifford, based on company data.

Real world context ▲

According to the IEA's review of the power sector in 2021, wind remains the primary non-hydro renewable technology, generating 1,870TWh, almost as much as all the others combined. Meeting the IEA's net zero emissions scenario requires continued growth in wind generation over the decade, on average 18 per cent per annum between 2022 and 2030, with offshore wind taking a more extreme trajectory than onshore.



We take a rigorous approach to **UN Sustainable Development Goals (SDGs)** mapping:

- We identify the SDGs that companies contribute through delivering their products and services at the target level.
- We do not consider alignment to the SDGs through business practices as this is not why companies are held in the portfolio.
- We make our assessment of SDG mapping independently from how companies report their own contributions.
- We include our assessment of any negative contributions to the SDGs on page 61.

It's important to think about the companies in the context of the **real-world** challenges that they are helping to solve and what needs to change going forward.

Long-term progress: impact. We believe that impact should be measured over longer periods of time. We only provide long-term progress data for companies held in the portfolio for five years or more as this is a suitable period to assess performance over. We illustrate the best data series we have for the impact of the companies in the portfolio in the period since we first invested. In many cases that tells a story about growing impact but you will also see companies where progress has been slowing.

Long-term progress: investment. Positive Change has two important objectives. We believe that over the long term, impact and investment returns go hand in hand. We include five-year metrics for each company to illustrate fundamental growth of the business alongside share price performance. Revenue growth metrics cover five years to end December 2022 using most recently available sales figures reported prior to the report date. Share price return is calculated 01/01/2018 – 30/12/2022 (or since inception – 30/12/2022). We provide a commentary below these metrics to provide detail on the rationale on why results may be ahead of or behind expectations.



Social Inclusion and Education

Introduction

“Leave no one behind.”

This was the pledge of 193 United Nations member states when they adopted the 2030 Agenda for Sustainable Development. Despite centuries of improvements to living standards, literacy rates and life expectancy, these significant advances have not been experienced by everyone.

That matters. It matters from a moral perspective: we all wish to live in a prosperous, inclusive and peaceful society. It also matters from an economic perspective: if left unaddressed, social exclusion at an individual level can lead to limited education, worse employment outcomes, low lifetime earnings and poor mental and physical health. And at a national level, social exclusion wastes human capital wealth, constrains economic growth and causes distrust, leading to social unrest.



The challenge

The United Nations Development Programme (UNDP) identifies five key factors contributing to social exclusion.

Discrimination

Discrimination can be based on many factors, most commonly gender, religion, age, disability, sexual orientation, ethnicity or migratory status. It's staggering that 129 million girls globally are out of school, and only 49 per cent of countries have achieved gender parity in primary education. It's also striking that in 2021, 19.5 per cent of black people in the United States lived below the poverty line. This compares to 8.2 per cent of white people and 8.1 per cent of Asian people.

Governance

Inclusion suffers when people face ineffective, unjust or unaccountable institutions. Inclusion can suffer if people cannot influence or participate in decisions. While companies clearly cannot address the challenges of global or national governance structures directly, it is vital to recognise the context of operating in different jurisdictions and how governance structures affect social inequality. It's also essential to ensure that a company's business practices are not exacerbating governance challenges.

Geography

Where you live affects your access to public services, transportation, education, health services, the internet and other infrastructure. The chart opposite illustrates various measures of inequality between different countries. Inequality also exists within countries. For example, in 2022, the annual per capita disposable income of rural households in China was around 40 per cent of the income of urban households.

Shocks and fragility

People who suffer from inequality are often more vulnerable to shocks such as climate change, natural disasters, conflict, health emergencies and economic downturns. Unfortunately, we have had many examples of these recently – from the Covid-19 pandemic to the increasing prevalence of wildfires and extreme heatwaves to conflict in countries such as Afghanistan, Syria, Yemen and Ukraine. UN Women estimates that Covid-19 is expected to push an additional 47 million women and girls into extreme poverty and further widen the gender poverty gap.

Socio-economic status

A person's socio-economic status may mean they face deprivation or disadvantages in income, life expectancy and education. They may lack access to health services, educational institutions, sanitation or energy. For example, people in the bottom 40 per cent of income distribution in the UK are almost twice as likely to report poor health as those in the top 20 per cent. The wealthiest 10 per cent of the global population currently takes 52 per cent of global income, whereas the poorest half earns 8.5 per cent.



Geographical inequality

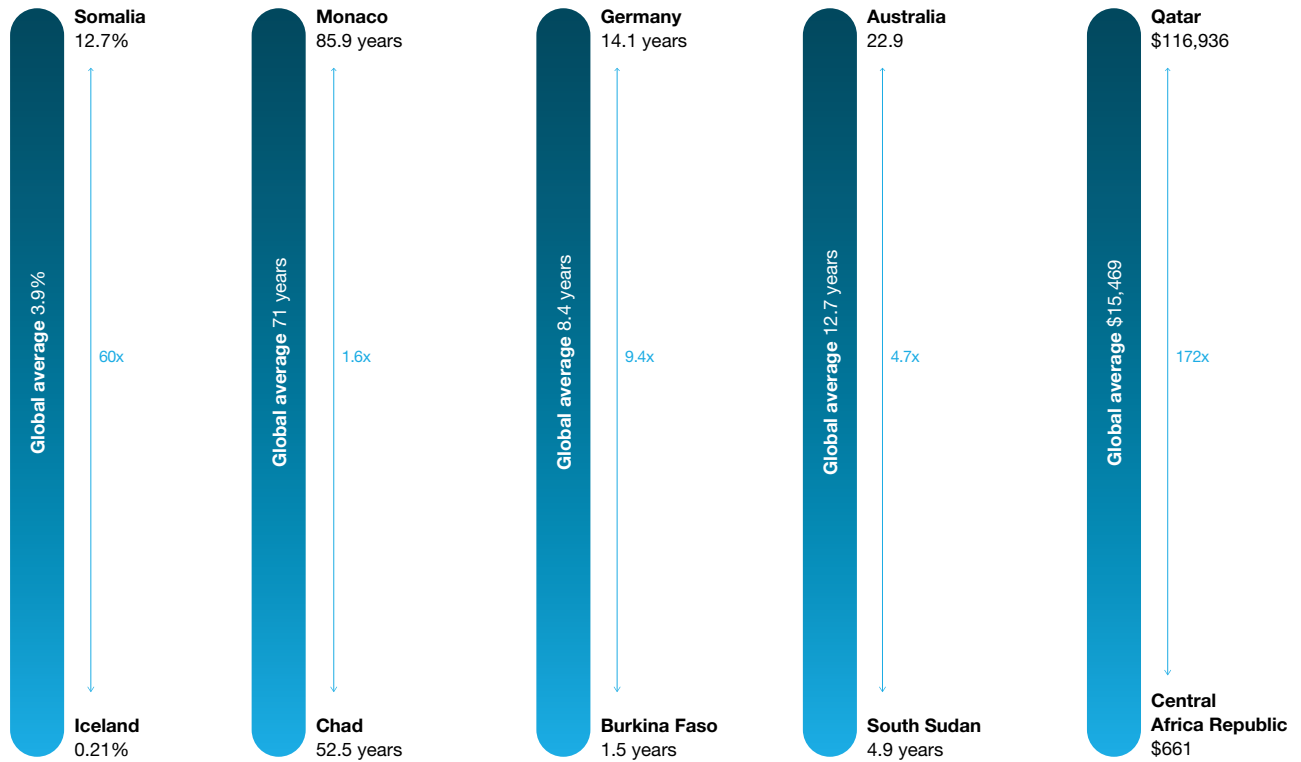
Under-5 mortality rate
2017 data

Life expectancy at birth
2021 data

Mean years of schooling
received by people older than 24. 2017 data.

Expected years of schooling
for a child of school entry age. 2017 data.

Average income
GDP per capita adjusted for price differences between countries. 2017 data.



OurWorldData.org – data and research to make progress on the world's largest problems.
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Positive Change — part of the solution

Improving how people and groups participate in society is a complex task, requiring action from multiple stakeholders, including communities, governments, international agencies and institutions. We have long considered that companies also play an important role in driving social inclusion through their products and services. Ultimately, we are looking to invest in companies that can empower individuals through education and other means to increase their participation in society. We believe Positive Change can make the biggest difference by investing in and engaging with these companies.

Removing barriers: affordable housing, accessible finance

Companies can increase social inclusion by removing the obstacles faced by underserved communities or identity groups.

HDFC, the Indian mortgage lender, serves customers across the income spectrum, but 29 per cent of its loans (by volume) go to economically weaker and lower-income groups. Reducing inequalities in home ownership can make a significant contribution to good health and wellbeing.

Nubank, a Brazilian digital bank, continues to enable financial inclusion. Traditional banks in Brazil create barriers to financial inclusion with high fees and poor customer service. Nubank has broken those barriers, offering its 75 million customers free bank accounts on an efficient digital platform. It has provided nearly 6 million customers with their first credit card or bank account.

MercadoLibre is helping to drive financial inclusion through its Latin American payments ecosystem. The UN believes that financial inclusion is crucial to achieving at least eight of the 17 Sustainable Development Goals, citing its potential positive impact on gender equality, poverty, health and education.

Enabling innovation: democratising access to technology, bridging the digital divide

Technology helps more people access information, services and commerce. Around 5 billion people (63 per cent of the world's population) had access to the internet in 2021. This connectivity is the bedrock that enables our holdings in companies such as **Shopify** and **MercadoLibre** to drive change.

Shopify provides merchants, primarily small and medium enterprises (SMEs), with access to services such as payments, shipping and inventory management. That allows them to compete with larger digital players. MercadoLibre is committed to fostering entrepreneurship and social mobility through its ecommerce platforms, which enable millions of SMEs to reach customers across Latin America.

ASML and **TSMC** are critical enablers. Both companies play a vital role in lowering the cost and increasing the efficiency of semiconductors, which facilitates connectivity and new technologies across various industries. They also enable monumental change in the healthcare sector, where genetics, data and machine learning will help treat and prevent diseases for millions of people worldwide.



Education and training: facilitating low-cost, high-quality, accessible learning

Education can radically transform people’s prospects. Yet according to UNICEF, in 2021, just two-in-three children attended either lower or upper secondary school, and only one-in-two children attended either upper secondary school or higher education.

Positive Change has invested in **FDM Group** since 2018. FDM provides training and work experience placements, offering access to rewarding job opportunities for graduates, veterans and returners-to-work, regardless of background.

Digital education provides increased access to education at a low cost. **Coursera** is an online platform that hosts educational content, including massive open online courses (MOOCs), guided projects, professional certifications and online degrees. Coursera can improve education by lowering costs, increasing accessibility and providing new qualifications relevant to the ever-changing job market.

Duolingo is best known for its language learning app. Its mission is to develop the best education and make it universally available. Learning a language can profoundly alter people’s economic and cultural prospects. Duolingo has also launched literacy and maths apps, helping learners develop more essential skills.

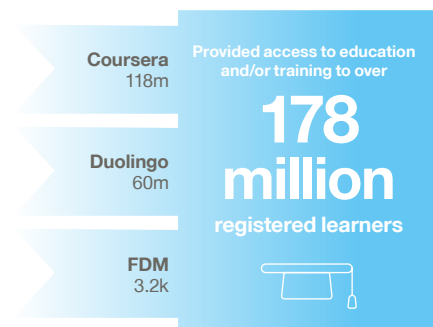


What are we missing?

Given the vast scope of social inequality, and the complexity of the underlying causes, Positive Change will never be able to solve every challenge. But being realistic about our scope does not mean that we limit our ambition, and we continue to seek companies meaningfully contributing to social inclusion.

An ongoing challenge is identifying which groups benefit from the products and services of the companies we analyse. Even when we can determine who benefits from a product or service, the actual long-term effect on their lives is very difficult to measure. However, company reporting is improving, which allows us to assess and identify more companies providing real solutions to reduce inequalities.

We also must remember the 2.9 billion people in the world who do not have internet access. We will continue to look for companies that can bridge the digital divide. We aim to continue investing in companies that are removing barriers, enabling innovation and improving education to help leave no one behind.





First invested January 2017

Positive Change hypothesis

ASML is the world's leading manufacturer of specialist lithography equipment that performs a crucial stage in the manufacturing of semiconductor products. Semiconductors are fundamental to enabling innovations across most, if not all, industries; and many of these innovations will tackle societal challenges. By helping its customers create better-performing, cheaper semiconductor products, ASML is a key enabler of this important and growing industry. When others gave up, ASML persevered in developing the next generation of technology (extreme ultraviolet, or EUV) and will enjoy a monopoly position in helping a growing industry continue to advance for many years to come.

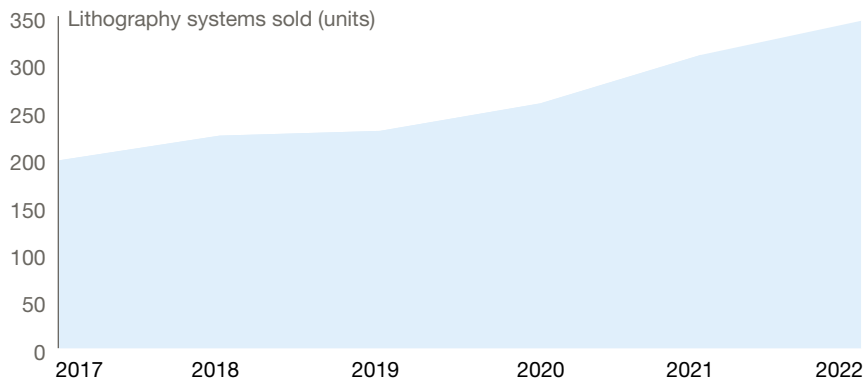
Positive Chain ▲

Input	Activities	Outputs	Outcomes	Impact (SDG target)
R&D US\$3.5bn Employees 39,086 (Y/E Dec 2022)	ASML develops lithography equipment, which is used in the semiconductor manufacturing process. Lithography equipment uses light to print the layout of circuits onto semiconductor wafers.	ASML sold 345 lithography systems in 2022, including 40 EUV systems. In 2022, ASML's installed EUV base had produced 52 million wafers.	By using light of a shorter wavelength, ASML's lithography equipment can print smaller patterns and reduce the size of transistors, helping to create ever smaller, more powerful and energy-efficient semiconductors.	DECENT WORK AND ECONOMIC GROWTH 8.2 INDUSTRY, INNOVATION AND INFRASTRUCTURE 9.5

Long-term progress ▲

ASML maintains its dominant technological and market position in the field of lithography equipment and remains the world's only manufacturer of EUV systems. It has continued to invest heavily in research and development and has started to build the next generation of EUV lithography systems, which offers a higher resolution that enables 1.7 times smaller features and 2.9 times increased density compared to the previous systems.

Impact objective



Source: Baillie Gifford, based on company data.

Investment objective

18%
revenue growth pa

Share price return (USD)*
225% **27%**
cumulative pa

*6% pa MSCI ACWI return (USD).
Metrics over five-year time horizon.
Past performance is no guarantee of future results.

Real world context ▲

As the price of semiconductors has come down over the past decade and performance has increased, semiconductors have become embedded into the fabric of modern society. They have made enabling technologies such as smart phones more accessible in low- and middle-income countries; have powered the next generation of healthcare technologies and drug discovery; and are playing an increasingly important role in the energy transition.



© ASML


Coursera

First invested **March 2021**

Positive Change hypothesis

Coursera is an online learning platform hosting education content including short courses, guided projects, professional certification and online degrees. Coursera will benefit from network effects, as its large user base will help to attract more academic and corporate partners, which in turn attracts more learners. Product innovation should enable Coursera to engage learners and overcome resistance in the slow-moving education market. Success should lead to significant value for society by improving accessibility of education and providing learners with relevant skills for an ever-changing job market.

Positive Chain ▲

Input	Activities	Outputs	Outcomes	Impact (SDG target)
R&D US\$165.1m Employees 1,401 (Y/E Dec 2022)	Coursera partners with leading universities and companies to offer a catalogue of educational content and credentials, including professional certificates, guided projects, and bachelor and master degrees.	In 2022, Coursera had 118 million learners registered, with 39 million course enrolments, 434 million lectures watched, and 70 million completed assessments. Over 18,000 students were enrolled in degree programmes by the end of 2022.	77 per cent of learners globally and 91 per cent of learners in emerging markets report seeing career benefits, such as a promotion or a pay increase, from taking courses on Coursera.	 QUALITY EDUCATION 4.4


Duolingo

First invested **November 2021**

Positive Change hypothesis

Duolingo's mission is to develop the best education in the world and make it universally available. It started with an app that is fun, engaging and effective in helping people learn languages, and has since moved into English language testing, and recently launched separate literacy and maths apps. Through further content and product developments as well as new pricing strategies, it will be able to grow the user base and importantly, increase the paid conversion rate. Duolingo is run by a thoughtful and mission-obsessed founder, Luis von Ahn, who we believe will manage to strike the right balance between delivering on the mission and improving monetisation.

Positive Chain ▲

Input	Activities	Outputs	Outcomes	Impact (SDG target)
R&D US\$150.4m Employees 600 (Y/E Dec 2022)	Duolingo's main product is a language-learning website and mobile app that enables users to practise vocabulary, grammar and pronunciation. The company has also moved into childhood literacy and elementary maths education, and has a vision to expand its offering to other subjects.	Duolingo has 60 million monthly active users, completing over 900 million exercises a day.	The platform's most popular languages are English, Spanish and French which are studied in 119, 34 and 22 countries respectively, primarily in developing countries. The Duolingo English test, which is cheaper and more accessible than conventional English proficiency tests, is accepted by 3,800 higher education programs.	 QUALITY EDUCATION 4.5



First invested May 2018

Positive Change hypothesis

FDM recruits, trains and provides career opportunities to graduates, ex-forces personnel and returners-to-work, placing them with clients who require IT expertise. FDM targets its recruitment efforts in a way that provides opportunities to a cohort of individuals who might not otherwise have access to such opportunities while addressing the mismatch in the supply and demand for IT expertise. Its reputation for developing relevant and targeted courses that meet clients' needs will help it consolidate existing strong relationships; its existing relationships and reputation will enable it to develop its customer base globally; and its focus on diversity, inclusion and equal opportunity will enable it to continue to attract individuals ('consultants') with aptitude and attitude, enabling upward social mobility.

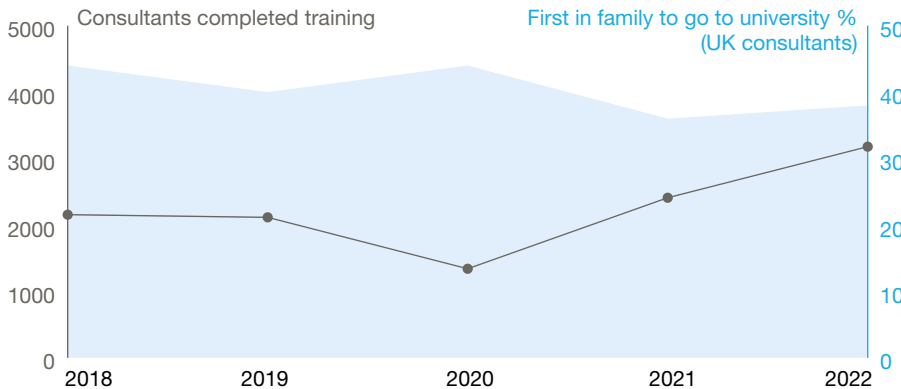
Positive Chain ▲

Input	Activities	Outputs	Outcomes	Impact (SDG target)
R&D N/A Employees 7,223 (Y/E Dec 2022)	FDM provides training and job opportunities for graduates, ex-forces personnel and people returning to the workplace following an extended absence, with a view to promoting social mobility.	3,179 consultants completed training in 2022. Among the UK consultants, at least 66 per cent attended state school and 38 per cent were the first in their family to go to university.	FDM had 4,905 Consultants assigned to clients by the end of 2022.	QUALITY EDUCATION 4.4 DECENT WORK AND ECONOMIC GROWTH 8.5, 8.6

Long-term progress ▲

Over the past five years, FDM has successfully expanded its global presence, establishing large client and consultant bases across North America and Asia Pacific, helping to drive revenue growth over the period. However, investment into this expansion and into paying trainee consultants has reduced margins, contributing to deflated share price returns. Imperfect proxies which we use to track FDM's impact, such as the number of consultants who were the first in their family to attend university, have slightly declined over the holding period. However, these metrics are only captured for UK consultants. Just as the nature of social mobility challenges in each country will differ, so too will FDM's role in addressing this challenge.

Impact objective



Source: Baillie Gifford, based on company data.

Investment objective

6%
revenue growth pa

Share price return (USD)*
-25% **-6%**
 cumulative pa

*6% pa MSCI ACWI return (USD).
 Metrics over period since inception to 31 December 2022.
 Past performance is no guarantee of future results.

Real world context ▲

Social mobility is a complex, multifaceted problem that requires long-term, multifaceted solutions. Measuring social mobility is no easy task, and the UK, FDM's primary market, has earned a reputation as having one of the lowest rates of social mobility among developed countries. While there is some debate over whether the country is improving or not, it can take years, or even decades, to observe the effects of any interventions. FDM's reach is limited, but its commitment to meaningful change has made a substantial and tangible difference in the lives of thousands of Consultants since we first took a holding.





First invested June 2018

Positive Change hypothesis

HDFC provides housing finance products that promote home ownership in India and offers loans for the development of better quality and more affordable housing. Through expanding its customer base, particularly among lower-income households and women, HDFC helps to deliver positive social outcomes that are attributed to stable ownership of safe housing, such as improved health and wellbeing. Government initiatives to encourage house building, financial inclusion and home ownership among India’s growing middle classes will support enduring growth for HDFC, a company with a history of quality lending. HDFC’s group companies, which include a life insurance company and a bank, provide opportunities for expansion into a wider range of financial services, encouraging broader financial inclusion in India.

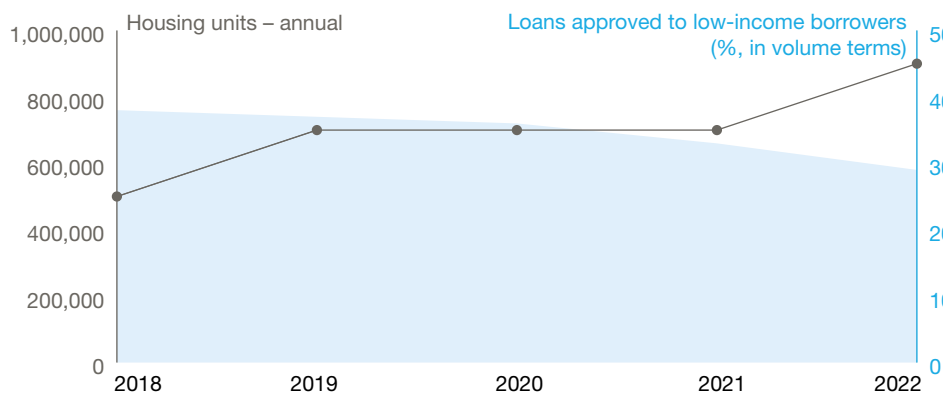
Positive Chain ▲

Input	Activities	Outputs	Outcomes	Impact (SDG target)
R&D N/A Employees 3,599 (Y/E Mar 2022)	HDFC is India’s largest provider of mortgages.	HDFC reports approximately 900,000 housing units financed in FY 2022. For home loans approved, 29 per cent in volume terms and 13 per cent in value terms have been to customers from the economically weaker or low-income segments. To these customers, HDFC approved 10,429 loans monthly.	HDFC enhances the residential housing stock in India through the provision of housing finance and promotes home ownership. Quality home ownership is an important social determinant of individual and community health and wellbeing. In FY 2022, 70 per cent of loans (by value) had women as owners, supporting the protection of women’s property rights in India.	NO POVERTY 1.4 SUSTAINABLE CITIES AND COMMUNITIES 11.1

Long-term progress ▲

While it has retained its industry-leading focus on financing quality housing, on both our investment and impact objectives, HDFC’s progress has been steady. It has cumulatively financed over one million housing units for the economically weaker or low-income segments in the years since we took a holding. This is an important but relatively modest contribution. In 2023, we will be evaluating how HDFC’s proposed merger with HDFC Bank will affect its ability to expand its mortgage lending and retain its focus on delivering a social impact.

Impact objective



Source: Baillie Gifford, based on company data.

Investment objective

12% revenue growth pa

Share price return (USD)*

33% cumulative **6%** pa

*6% pa MSCI ACWI return (USD).
Metrics cover period since inception to end Dec 2022. Past performance is no guarantee of future returns.

Real world context ▲

Demand for affordable homes in India’s cities is extremely high, and is not being matched by supply. The relatively low use of formal home loans in India contributes to the inadequate stock of housing. The gap is particularly high for lower-income earners and women. A recent survey found that 81 per cent of owned households have a man as the sole legal owner. Supported by government schemes and rising incomes, there are some encouraging signs of change.






MercadoLibre

First invested **March 2020**

Positive Change hypothesis

MercadoLibre is Latin America's largest ecommerce platform and is emerging as a leader in the region's financial technology (fintech) industry. Ecommerce penetration is still low in Latin America, which should support high growth for a number of years. MercadoLibre provides a range of online and mobile payment solutions and financial services. These enable small businesses and consumers to transact and access financial services more easily and affordably than before, supporting economic resilience and opportunity. The fintech market is nascent but MercadoLibre has enormous potential to contribute to supporting livelihoods and financial inclusion for millions, and we believe it has a competitive advantage by leveraging its ecommerce business.

Positive Chain ▲

Input	Activities	Outputs	Outcomes	Impact (SDG target)
R&D N/A Employees 40,548 (Y/E Dec 2022)	MercadoLibre operates across 18 countries in Latin America. Its main services include MercadoLibre (ecommerce), Mercado Pago (payments), Mercado Credito (loans) and Mercado Envios (logistics).	In 2022, MercadoLibre had 148 million unique active users across its platforms (6 per cent more than in 2021) and nine million active sellers on the MercadoLibre online marketplace. As of December 2022, Mercado Pago had 64.8 million unique users. In 2022, 5.2 million loans were granted to sellers, of which 49 per cent were women.	Small and medium-sized enterprises (SMEs) are the backbone of the Latin American economy, representing around 60 per cent of employment. MercadoLibre provides SMEs with access to online marketplaces, payment solutions and credit, supporting livelihoods and productivity. In 2022, MercadoLibre's own study found that 70 per cent of its fintech users in Brazil, Argentina and Mexico said that they used less cash and that it had improved their financial situation; 45 per cent were provided access to credit or loans for the first time.	 NO POVERTY 1.4  DECENT WORK AND ECONOMIC GROWTH 8.1, 8.10  INDUSTRY, INNOVATION AND INFRASTRUCTURE 9.3




Nubank

First invested **December 2021**

Positive Change hypothesis

Nubank is a Brazilian neobank that aspires to reshape the Latin American financial system. In Latin America, customers are poorly served, while banks have been able to earn far higher returns than in many markets – a consequence of the historically volatile conditions and a degree of regulatory capture. Nubank has managed to acquire tens of millions of customers across Brazil, Colombia and Mexico through simple but desirable products and importantly at lower costs. Growth will come from continuing to grow its customer base and building deeper relationships with them to extract higher wallet share. We believe that Nubank's long-term and customer-oriented culture, along with durable cost and underwriting advantages, and a highly motivated and experienced leadership team will lead to high growth and profitability in the next five years.

Positive Chain ▲

Input	Activities	Outputs	Outcomes	Impact (SDG target)
R&D N/A Employees 8,049 (Y/E Dec 2022)	Nubank is operating primarily in three countries – Brazil, Mexico and Colombia – and providing a range of financial services, such as credit and debit cards, savings accounts, insurance, payments and loans.	Nubank has 74.6 million customers and 61.2 million monthly active users on its mobile app-based financial services. In addition, Nubank provided 2.5 million SMEs with business accounts in 2022, almost 80 per cent more than in 2021. A survey we commissioned in 2022 found that Nubank was the most used account among members of Brazil's lower-income groups.	Nubank estimated that between July 2021 and July 2022, it provided 5.7 million people with their first credit card and 2.5 million people were able to receive their first loan. Access to financial services promotes economic resilience and opportunity, helping to fight poverty and improve wellbeing.	 NO POVERTY 1.4  DECENT WORK AND ECONOMIC GROWTH 8.3, 8.10  REDUCED INEQUALITIES 10.2




Shopify

First invested **October 2019**

Positive Change hypothesis

Shopify enables small businesses to set up and sell products online by providing a one-stop shop of simple-to-use and low-cost tools including hosting, fulfilment, advertising and payment services. The integration of these tools with each other and across different platforms and channels can enable entrepreneurs from all backgrounds to start businesses and compete and expand quickly, reducing inequalities of opportunity and in turn promoting economic diversity and job creation. The company has grown rapidly in recent years but still appears to be at the very early stages of tapping into the huge opportunity ahead of it.

Positive Chain ▲

Input	Activities	Outputs	Outcomes	Impact (SDG target)
R&D US\$1.5bn Employees 11,600 (Y/E Dec 2022)	Shopify is a global commerce company which provides a variety of services that help small businesses to set up and grow.	Shopify's platform hosts millions of merchants from more than 175 countries, the majority of which are SMEs. In 2022, Shopify facilitated \$197.2bn in gross merchandise volume.	Shopify enables economic growth through its platform, which provides SMEs with the tools to manage their business across an increasingly complicated and fragmented retail environment.	 DECENT WORK AND ECONOMIC GROWTH 8.1, 8.2  INDUSTRY, INNOVATION AND INFRASTRUCTURE 9.3  REDUCED INEQUALITIES 10.2





First invested January 2017

Positive Change hypothesis

TSMC is the world's largest integrated circuit foundry. The company's scale, technology and efficiency will continue to enable price declines for semiconductors, which in turn enable innovation and environmental and social impact across many industries. The capital intensity of the foundry industry is continually increasing and TSMC, being a long-term trusted partner and the largest company, can invest in the latest equipment to maintain its cost advantage. These advantages should enable TSMC to benefit from the long-term growth of the semiconductor industry while generating attractive returns.

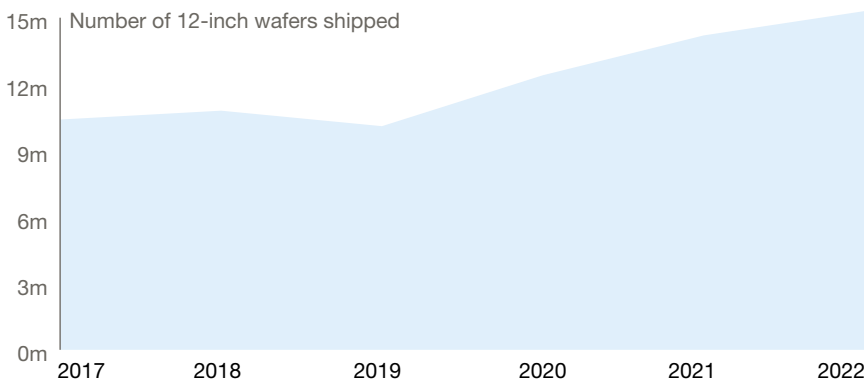
Positive Chain ▲

Input	Activities	Outputs	Outcomes	Impact (SDG target)
R&D US\$5.3bn Employees 73,090 (Y/E Dec 2022)	TSMC manufactures semiconductors for a variety of industries ranging from telecommunication to healthcare. TSMC's scale and innovation have been critical to the continued cost decline of semiconductors.	TSMC manufactures over half of outsourced semiconductors globally. In 2022, the company shipped 15.3 million 12-inch equivalent wafers and supplied millions of power-management integrated circuits, which help to conserve energy.	Cheaper and more powerful semiconductors used in a variety of applications enable greater access to telecommunication (eg access to cheaper mobile devices and access to the internet); new discoveries in healthcare and medicine; and improved energy efficiency.	DECENT WORK AND ECONOMIC GROWTH 8.2 INDUSTRY, INNOVATION AND INFRASTRUCTURE 9.5

Long-term progress ▲

By building out manufacturing capacity and investing in innovation, TSMC has maintained its position as the world's largest semiconductor foundry. Global supply chain disruption has illustrated just how important this company has become to society. TSMC's share price and revenue growth since we took a holding reflect this. A big part of TSMC's business remains manufacturing semiconductors for smart phones, but as a proportion of total revenues this has declined from 59 per cent in 2017 to 39 per cent in 2022 as powerful technologies, such as high-performance computing and the internet of things, become a bigger part of TSMC's offering. In 2022, TSMC began volume production of 3-nanometer chips, marking further improvement in power efficiency.

Impact objective



Source: Baillie Gifford, based on company data.

Investment objective

18%
revenue growth pa

Share price return (USD)*
120% 17%
cumulative pa

*6% pa MSCI ACWI return (USD).

Metrics over five-year time horizon. Past performance is no guarantee of future results.

Real world context ▲

Not all, but many of the environmental and social challenges the world faces today have known and yet-to-be-discovered technological solutions. Indeed, almost all the products and services of companies in the Positive Change strategy rely on the latest semiconductor designs and their accessibility depends on technological price deflation and further innovation. The Global Innovation Index 2022 shows that the key indicators of innovation, such as microchip transistor count and patent filings, have all seen growth since 2017 and remained resilient against global supply chain disruptions.



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Environment and Resource Needs

Introduction

We need to reverse the devastating and far reaching impact that human activity is having on our planet. Greenhouse gas (GHG) emissions continue to grow, fuelling global warming at the same time as the global population expands, putting more stress on earth's systems. It is no longer insightful to state that these are inextricably linked.

While the challenges are vast, we choose not to dwell in eco-anxiety. Human ingenuity fills us with hope and optimism that these challenges can be addressed. Our team is in a privileged position to frequently meet passionate business leaders who are tackling them head on.

The challenge

GHG emissions continue to rise and are now 64 per cent higher than in 1990. In order to meet the Paris Agreement's 1.5 degrees Celsius goal, by 2030, GHG emissions must reduce by 45 per cent from 2022 levels according to the modelled pathways published by the Intergovernmental Panel on Climate Change (IPCC). The Covid-19 pandemic provided a unique lens on the bleak challenge ahead; humanity barely met the IPCC's annual target in 2020 when the world's economic and social activities abruptly halted.

We are thankfully on a path to significant growth of renewable electricity generation. As transport, heating and heavy industry become more electrified, there is a need to balance the sustainability, affordability and reliability of the energy supply. This is known as the energy trilemma which will, given the intermittent nature of renewable power generation, require innovative technological solutions.

All IPCC pathways now depend on carbon removal, which will be a mix of engineered solutions, such as direct air capture, and nature-based solutions. Restoring natural carbon sinks, such as forests, is a cost-effective near-term solution for carbon removal. However, the carbon stored in these ecosystems is vulnerable to disturbances such as wildfires, which release carbon back into the atmosphere. Furthermore, it would require forests five times the size of India to suck up the carbon or, to put it another way, more than all the farmland on the planet.

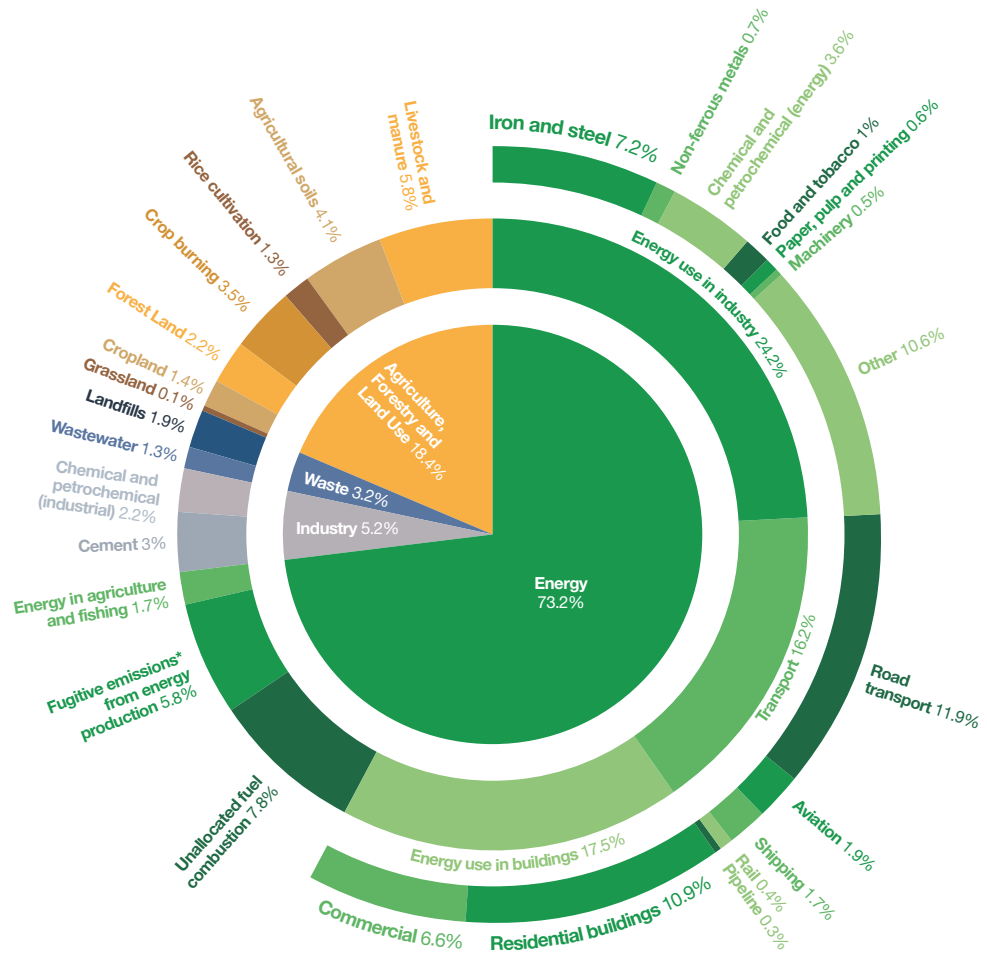
This points to another huge challenge facing humanity and intrinsically linked to our need to decarbonise energy systems – stemming the dangerous impact that human activity is having on nature. The world is experiencing the largest loss of plant and animal life since the dinosaurs. The 2022 UN Biodiversity Conference reached an agreement to protect 30 per cent of the planet by 2030. This was an encouraging development, but one which does not negate the need to find solutions to prevent industrial activities from causing habitat destruction.

Resource efficiency is another critical challenge, and one which is absolutely fundamental to addressing those described above. Our complex modern societies put a great deal of stress on water, food, energy and minerals, the availability of which is critical for sustaining life and socioeconomic progress. We need to promote technological, digital and behavioural solutions which enable resource conservation and preservation to ensure that future generations have the same opportunities as we have.





Greenhouse gas emissions by sector



OurWorldData.org – Research and data to make progress against the world's largest problems.

Source: Climate Watch, the World Resources Institute (2020).

Licensed under CC by the author, Hannah Ritchie (2020).

* Emission not caught by a capture system, often caused by equipment failure, evaporative processes and windblown disturbances.

Positive Change — part of the solution

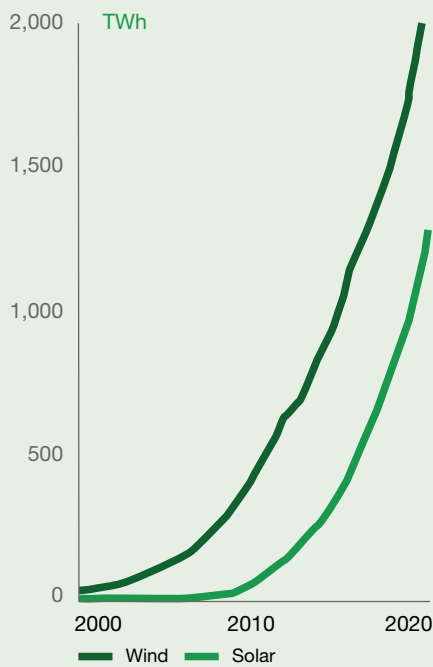
There are three broad ways in which the current holdings in the Positive Change portfolio are addressing the acute environmental and resource challenges facing our planet for present and future generations:

1. The energy transition

We are living through a magnificent decade of innovation driven by renewable technology. Having spluttered into 2020 on fossil fuels and internal combustion engines, we will leave 2030 powered by a vastly different energy mix, with fossil fuels in decline.

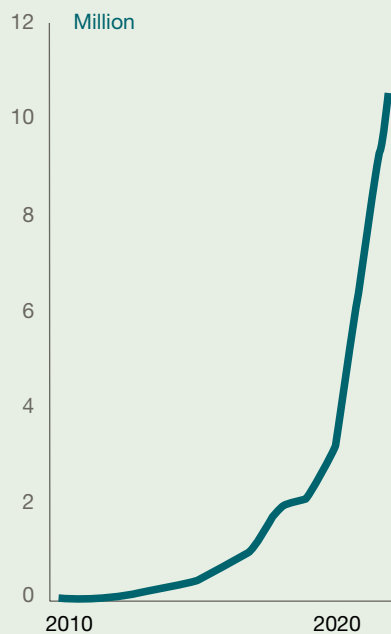
Exponential energy change is all around us

Annual solar and wind generation



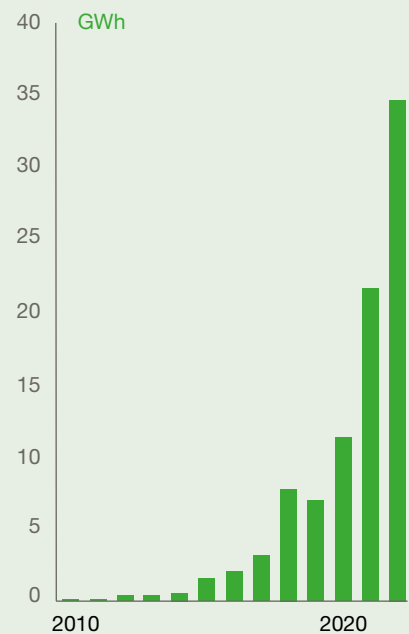
CAGR **15%** **29%**

Annual electric vehicles (EV) sales



CAGR **58%**

Annual battery storage sales



CAGR **54%**

Source: BNEF, BP, Ember. Note: CAGR is the compound annual growth rate 2012–2022. RMI – Energy. Transformed.



The energy transition

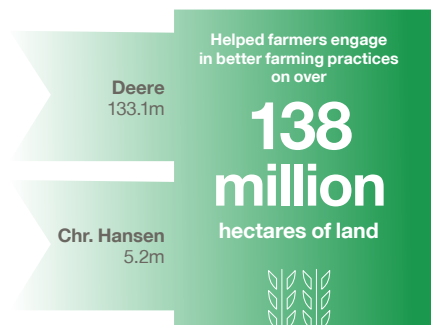
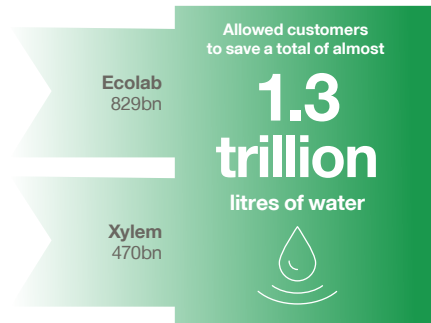
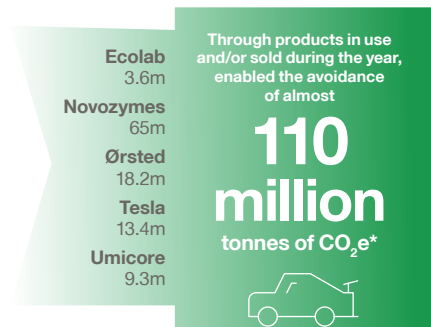
Elon Musk, the CEO of **Tesla**, noted that the three pillars of a sustainable future are EVs, solar and wind energy generation, and batteries to store that energy. Mr Musk concluded, “If you have those three things, you can convert all of Earth to a fully sustainable system many times over.” Steadily improving technologies are profoundly affecting the adoption of renewable technology. There are now more than four million Tesla cars on the road, and its commitment to price reductions is improving the affordability of EVs, driving further adoption.

Beyond vehicles, Tesla is also a leading provider of energy storage systems. The future of renewable energy is reliant on large-scale battery storage to overcome the challenge of renewable energy sources only generating electricity when the conditions are right (intermittency). Tesla’s systems make it possible to store energy for the grid safely and reliably.

Ørsted is the world leader and pioneer of renewable energy generation, from offshore wind to green hydrogen. In 2022, the electricity it generated helped avoid the equivalent annual emissions of four million cars: over 18 million tonnes of carbon dioxide equivalent (CO₂e). **NIBE**, the Swedish heat pump producer, has been well placed to benefit from rising demand for its products over recent years. We are now seeing increased competition in this industry, which seems to be moving beyond the emerging innovation tipping point, where falling costs lead to mass adoption.

Novozymes, the world’s largest manufacturer of industrial enzymes, create biofuels from sugar, which could substantially reduce reliance on petrochemicals.

Autodesk is a leading architecture, construction and engineering design software provider. Autodesk’s software enables engineers and architects to make informed decisions on the energy use and embedded environmental footprint of buildings and infrastructure. Addressing greenhouse gas emissions from the built environment – responsible for 39 per cent of global energy-related carbon emissions – is an enormous challenge.



Positive Change — part of the solution (continued)

There are three broad ways in which the current holdings in the Positive Change portfolio are addressing the acute environmental and resource challenges facing our planet for present and future generations:

2. Sustainable resource use

The over-exploitation of natural resources is well documented, from land minerals to river water. For instance, global water demand will exceed supply by 40 per cent by 2030. Though few of the companies improving water efficiency are household names, their leadership and commitment to innovation are impressive.

Xylem addresses the water challenge by manufacturing equipment that is critical infrastructure for water transportation, treatment and testing. **Ecolab** is a one-stop shop which provides speciality chemical products, such as hand sanitiser, through to wastewater treatment. It has helped its customers improve their operational efficiency by conserving over 829 billion litres of water annually.

Novozymes' biological solutions are reducing resource use in a broad range of products, such as developing enzymes to improve water and energy use in laundry cycles.

We also have exposure to battery material recycling through **Tesla** and **Umicore**. The latter is a leading manufacturer of battery cathodes, a critical component of EVs, which supports the energy transition. It also operates the world's largest precious metals recycling plant and an EV battery recycling plant, building a path to a closed-loop metals system.

Autodesk's products, such as Autodesk Construction Cloud and Fusion 360, empower engineers and designers to do more with less. The use of generative design and predictive analytics means that projects can improve workflows, avoid rework, reduce embodied carbon, and reduce waste and raw material use.

3. Transforming agriculture

Food systems contribute more than a third of total GHG emissions per year globally and are major contributors to biodiversity loss. One element of this conflict between feeding the global population and stabilising the climate is that fertiliser is dramatically over-applied.

Deere is helping the system to increase farmers' yields while cutting its negative environmental impact by promoting the adoption of precision technologies in agriculture. Deere's See & Spray technology helped farmers reduce herbicide use by over two-thirds in 2022.

By 2030, Deere has a target for 75 per cent of the land area using its precision agriculture technology to be farmed using sustainable practices, which include fully autonomous, battery-powered electric tractors. These compact autonomous vehicles will also help address other negative externalities of farming, such as soil compaction.

What are we missing?

Over the coming decades, every sector of the economy will need to decarbonise and rebalance its relationships with nature. We will need to reimagine almost everything that we do.

This will bring enormous opportunities in scaling the emerging technologies of the past decade, revolutionising existing industries and commercialising new ones. Materials science and engineering skills will be needed to rethink our energy, food and water systems and material supply chains. Changes in business models must help to shift behaviours and establish new norms across the globe.

We are entering a period of environmental revolution, which will bring many exciting opportunities.






Autodesk NEW

First invested **December 2022**

Positive Change hypothesis

Autodesk is a leading 3D design software provider. It provides the latest digital design and building information modelling (BIM) tools for the manufacturing and construction industries. Its cloud-based tools can use intelligent generative design to enable architects and engineers to make better, more informed designs in less time and at a reduced cost. In turn, this can reduce the amount of resources needed during the construction and manufacturing stage and the amount of energy consumed during the operational and use phase of an asset.

Positive Chain ▲

Input	Activities	Outputs	Outcomes	Impact (SDG target)
R&D US\$1.2bn Employees 13,700 (Y/E Jan 2023)	Autodesk provides intelligent 3D-design software tools for the architecture, engineering and construction industry and manufacturing industry.	Autodesk has 6.74 million subscribers, who have access to over 80 products, of which two have stand-alone generative design capabilities.	By using the latest intelligent design tools engineers and architects can optimise the design, construction and operational phase of new and retrofitted infrastructure. This can achieve efficiencies and reduce costs, waste, emissions and energy consumption during both the build and the operation, thereby reducing the impact of the built environment on the planet.	 INDUSTRY, INNOVATION AND INFRASTRUCTURE 9.1, 9.4  SUSTAINABLE CITIES AND COMMUNITIES 11.3, 11.6  RESPONSIBLE CONSUMPTION AND PRODUCTION 12.5





Deere

First invested **February 2020**

Positive Change hypothesis

There is an urgent need to address the harmful environmental impact of industrial farming while continuing to increase agricultural output to feed a growing global population. Precision agriculture technologies will be an important solution to this challenge by driving higher farming productivity while reducing the negative environmental impacts of agriculture. As the largest farming equipment manufacturer, Deere will leverage its scale, vertical integration of technology development, and relationship with dealers and farmers to drive adoption of precision agriculture technologies. Deere will emerge as the leader in precision agriculture, which will drive profitable growth and help to improve the sustainability of farming.

Positive Chain ▲

Input	Activities	Outputs	Outcomes	Impact (SDG target)
R&D US\$1.9bn Employees 82,200 (Y/E Oct 2022)	Deere develops and manufactures precision agriculture technologies.	In 2022, Deere's agricultural products were engaged on over 329 million acres (over 133 million hectares) around the world. Of which 151 million acres are classed as 'sustainably engaged' by Deere, meaning they incorporate two or more sustainable technology solutions or sustainable practices over a 12-month period.	Precision technologies reduce inputs, such as agrichemicals and fuel, and increase yields. For example, Deere's ExactShot planting technology can reduce the amount of in-furrow starter fertiliser by 60 per cent.	 ZERO HUNGER 2.4  CLIMATE ACTION 13  LIFE BELOW WATER 14.1  LIFE ON LAND 15.5

Ecolab

First invested **January 2017**

Positive Change hypothesis

Across hundreds of industries, Ecolab's thousands of products help minimise harm to human health from infection, protect local water resources and mitigate climate change. Ecolab is the partner of choice for millions of companies striving to achieve safer, more efficient and more sustainable operations. This trend will continue to be a tailwind for Ecolab's growth for many years, supported by share gains in growing markets, further acquisitions, digitalisation and innovative product lines.

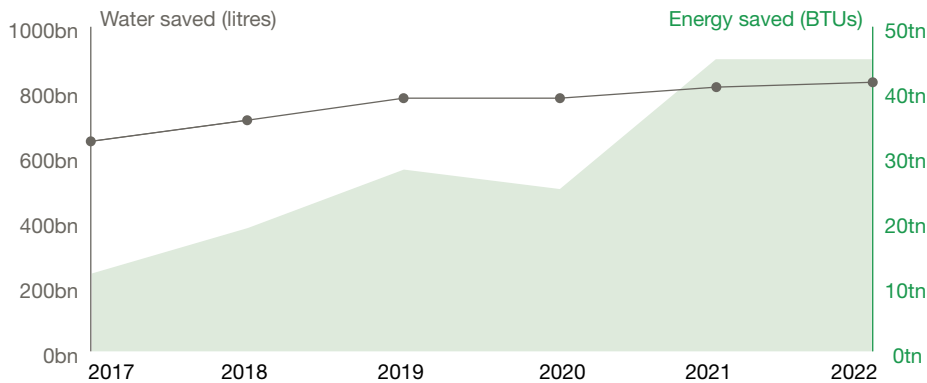
Positive Chain ▲

Input	Activities	Outputs	Outcomes	Impact (SDG target)
R&D US\$190m Employees 47,000 (Y/E Dec 2022)	Ecolab develops, produces and distributes cleaning products and water treatment solutions. It also provides product training and consultancy services to customers.	Every day, Ecolab helps customers address their cleaning, sanitising, food safety, water and energy management needs at nearly three million customer locations around the world.	In 2022 Ecolab helped customers save 219 billion gallons of water (829 billion litres), more than 45 trillion BTUs (British thermal units) of energy, 3.6 million tonnes of carbon dioxide equivalent (CO ₂ e) and more than 60 million pounds of waste (27,216 tonnes).	<ul style="list-style-type: none"> ZERO HUNGER 2.1 GOOD HEALTH AND WELL-BEING 3.3, 3.9 CLEAN WATER AND SANITATION 6.3, 6.4 AFFORDABLE AND CLEAN ENERGY 7.3 RESPONSIBLE CONSUMPTION AND PRODUCTION 12.2, 12.4, 12.5 CLIMATE ACTION 13

Long-term progress ▲

Since we took a holding, Ecolab has maintained the enormous scale of its customer base and has also increased the amount of energy and water it helps them save, making great progress towards its own 2030 targets. This has not yet translated into accelerated growth in revenues or share price, but Ecolab remains very well placed to help companies in their efforts to achieve net zero, a trend which is firmly accelerating across a growing number of sectors.

Impact objective



Source: Baillie Gifford, based on company data.

Investment objective

0.5%
revenue growth pa

Share price return (USD)*
14% **3%**
cumulative pa

*vs 6% pa MSCI ACWI return (USD).
Metrics over five-year time horizon.
Past performance is no guarantee of future results.

Real world context ▲

Between two and three billion people experience water shortages for at least one month each year and global demand for freshwater is expected to outstrip supply by 40 per cent by 2030, which could lead to a humanitarian and economic catastrophe. Industrial use of water accounts for around 19 per cent of all freshwater withdrawals and climate change is an exacerbating factor. Reducing water and energy intensity across all sectors of the economy, particularly in high-income countries, is a critical challenge of our times.



NIBE

First invested **January 2017**
Sold **June 2023**

Positive Change hypothesis

NIBE's primary business is manufacturing ground source heat pumps, a more efficient and less carbon-intensive heating solution than gas boilers. Demand for such solutions will increase through supportive policies and greater consumer awareness as our society becomes more environmentally conscious. NIBE has a superb growth track record which we expect to continue thanks to industry tailwinds and its acquisition strategy.

Positive Chain ▲

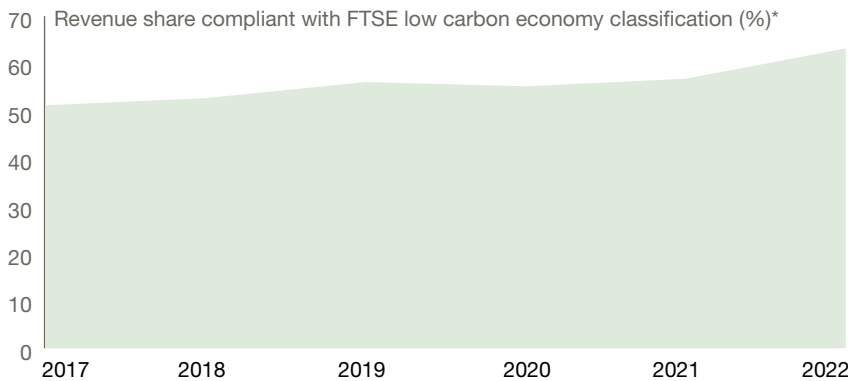
Input	Activities	Outputs	Outcomes	Impact (SDG target)
R&D US\$105.7m Employees 21,300 (Y/E Dec 2022)	NIBE develops and produces renewable energy systems, heating elements and stoves.	63.2 per cent of revenues at NIBE come from products designed for a low carbon economy according to the FTSE LCE (Low Carbon Economy) classification. These include heat pumps, boilers and stoves for burning pellets and wood, PV (photovoltaic) panels, heat exchangers, components for rail, electric and hybrid vehicles and renewable energy production.	The reduction in emissions from the heating systems NIBE's heat pumps replaced in 2021 was 360,000tCO ₂ e.	<ul style="list-style-type: none"> GOOD HEALTH AND WELL-BEING 3.9 AFFORDABLE AND CLEAN ENERGY 7.2, 7.3 INDUSTRY, INNOVATION AND INFRASTRUCTURE 9.4 SUSTAINABLE CITIES AND COMMUNITIES 11.6 CLIMATE ACTION 13

Update: Looking forward, the outlook for adoption of heat pumps is favourable. This is due to growing awareness of the need to transition heating systems away from fossil fuels and the supportive regulatory backdrop. However, despite NIBE's admirable track record and the runway for growth, our analysis points towards a more competitive environment and we feel that, at the current valuation, it will be more challenging for the company to meet our return hurdle from here. We sold the holding in June 2023.

Long-term progress ▲

Over the six-year holding period, NIBE has been a positive contributor to investment performance. It increased the proportion of its sales that comply with the FTSE low carbon economy classification from 51.2 per cent to 63.2 per cent during that time. Over the last three reporting years, the annual emissions avoided from its heating systems have increased by approximately 58 per cent to 360,000tCO₂e. The company has also improved its emissions reporting and has now started reporting the emissions from its sold products, which as of 2021 stood at 41,200,000tCO₂e.

Impact objective



Source: Baillie Gifford, based on company data.
*Since 2019 these have been classified according to the FTSE LCE classification.

Investment objective

12%
revenue growth pa

Share price return (USD)*
303% **32%**
cumulative pa

*vs 6% pa MSCI ACWI return (USD).
Metrics over five-year time horizon.
Past performance is no guarantee of future results.

Real world context ▲

Over the period of the investment, heat pump installation globally has increased from 142 million units installed in 2017 to around 190 million units in 2021, an increase of 33 per cent. Yet, as of 2021, heat pumps only met around 10 per cent of the global heating need in buildings. Furthermore, in the International Energy Agency's net zero emissions 2050 scenario, the number of installed heat pumps is 600 million by 2030, indicating there is significant room for growth.



Novozymes

First invested **January 2017**

Positive Change hypothesis

Novozymes is the world’s largest manufacturer of industrial enzymes. Its products are used across numerous end markets, with the common aim to make products or processes more effective, more efficient, more durable and less resource intensive. Novozymes’ scale, focus and commitment to long-term innovation present substantial hurdles to new market entrants and should support superior performance compared with peers, which are generally divisions of larger organisations. Improved versions of existing products and new applications for enzyme technology mean that Novozymes’ products can continue to make the world a better place while growing revenues and profits at an attractive rate.

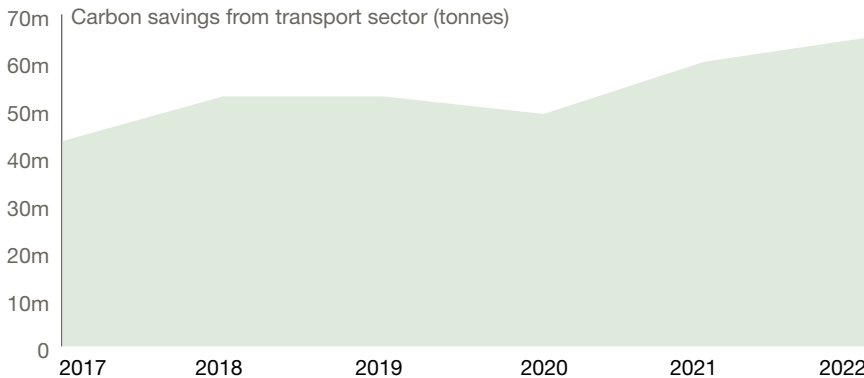
Positive Chain ▲

Input	Activities	Outputs	Outcomes	Impact (SDG target)
R&D US\$287.2m Employees 6,781 (Y/E Dec 2022)	Novozymes produces enzymes and microbial yeast within the biotech space for a wide range of consumer, agricultural and industrial applications.	Novozymes’ solutions help its diverse range of customers do more with less and replace the use of chemicals.	In 2022, Novozymes enabled savings of 65 million tonnes of CO ₂ in global transport through its bioenergy solutions.	<ul style="list-style-type: none"> ZERO HUNGER 2.4 CLEAN WATER AND SANITATION 6.3 AFFORDABLE AND CLEAN ENERGY 7.2 RESPONSIBLE CONSUMPTION AND PRODUCTION 12.2 CLIMATE ACTION 13

Long-term progress ▲

Over the past six years, the company has maintained its position as a global leader in the enzyme industry, and continued to invest in new products and solutions designed to meet the needs of its diverse customer base. Following the impact of the Covid-19 pandemic on the company’s performance, Novozymes made a robust recovery in 2022, largely driven by a resurgence in US ethanol production. The company is now well positioned to benefit from growing demand for more sustainable fuel, plant-based food, bio-health and sustainable agriculture.

Impact objective



Source: Baillie Gifford, based on company data.

Investment objective

3%
revenue growth pa

Share price return (USD)*
-5% **-1%**
cumulative pa

*vs 6% pa MSCI ACWI return (USD).

Metrics over five-year time horizon. Past performance is no guarantee of future results.

Real world context ▲

In 2022, global CO₂ emissions from transportation reached nearly 8 gigatonnes (Gt), an increase from 7.1Gt in 2020 amid the pandemic. According to the International Energy Agency’s (IEA) net zero scenario, biofuels need to account for 15 per cent of the transport sector’s energy requirements, which signifies a fourfold expansion in consumption compared to 2021. At the same time, it is essential to produce biofuels more sustainably to avoid competition with food crops and nature. This challenge presents several opportunities for Novozymes to enhance industrial efficiency while minimising environmental impacts.



© Novozymes



First invested **November 2017**

Positive Change hypothesis

Ørsted is a renewable energy developer and a global leader in offshore wind energy. The continued building of renewable energy infrastructure will be important to tackling climate change and Ørsted can play a significant role. We believe Ørsted's reputation and expertise, managing large projects and working with different stakeholders, will enable it to earn a return on investment. New growth opportunities such as green hydrogen could provide further upside.

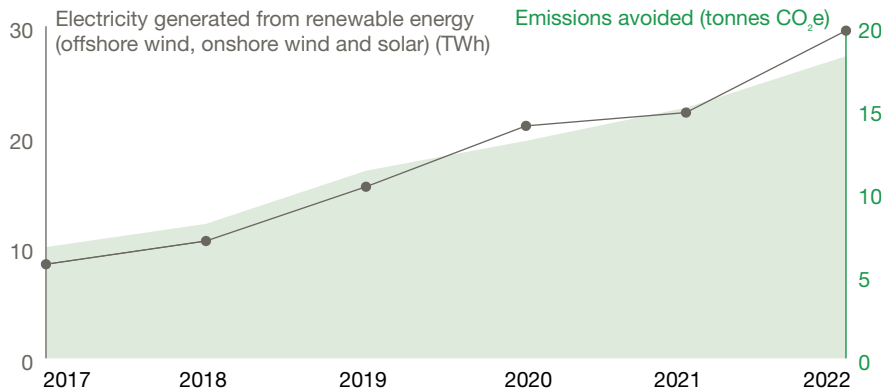
Positive Chain ▲

Input	Activities	Outputs	Outcomes	Impact (SDG target)
R&D US\$306.3m Employees 8,027 (Y/E Dec 2022)	Ørsted develops, constructs, owns and operates wind farms, solar farms and energy storage facilities and owns and operates bioenergy plants. In addition to its electricity generation activities, Ørsted engages in partnerships and develops projects related to the production of green hydrogen.	By the end of 2022, Ørsted had over 15 gigawatts (GW) in installed renewable capacity and produced 91 per cent of its energy through renewable sources such as wind, solar and biomass. During the year, Ørsted generated over 29.6 terawatt-hours (TWh) of power from wind and solar.	Ørsted's renewable generation avoided 18.2 million tonnes of CO ₂ e emissions in 2022. Ørsted remains the world leader in offshore wind, having developed around one-third of the global installed capacity, excluding mainland China.	 GOOD HEALTH AND WELL-BEING 3.9 AFFORDABLE AND CLEAN ENERGY 7.2 INDUSTRY, INNOVATION AND INFRASTRUCTURE 9.4 CLIMATE ACTION 13

Long-term progress ▲

Since Positive Change first took a holding in 2017, Ørsted has steadily and consistently increased its renewable energy capacity, thereby increasing the amount of clean energy it generates and ultimately helping to decarbonise energy grids across the world. Ørsted's green energy generation has increased 64 per cent of its total energy generation in 2017 to 91 per cent today, an achievement all the more impressive since the company was ordered by the Danish authorities to delay the phase-out of coal and oil fired power plants in 2022 until June 2024.

Impact objective



Source: Baillie Gifford, based on company data.

Investment objective

16% revenue growth pa

Share price return (USD)*

80% cumulative **13%** pa

*vs 6% pa MSCI ACWI return (USD).

Metrics over five-year time horizon. Past performance is no guarantee of future results.

Real world context ▲

According to the IEA's review of the power sector in 2021, wind remains the primary non-hydro renewable technology, generating 1,870TWh, almost as much as all the others combined. Meeting the IEA's net zero emissions scenario requires continued growth in wind generation over the decade, on average 18 per cent per annum between 2022 and 2030, with offshore wind taking a more extreme trajectory than onshore.



© Ørsted



First invested **January 2017**

Positive Change hypothesis

Tesla aims to accelerate the transition towards a sustainable energy system by developing and commercialising EVs, solar and storage products. The adoption of EVs is rising, driven by decreasing costs, an improved driving experience, regulatory support and consumer awareness of climate change. Similarly, solar energy generation and storage is being driven by technological improvements and economics. We believe Tesla has strong competitive advantages which will enable it to emerge as a winner in the energy transition and generate shareholder value along the way.

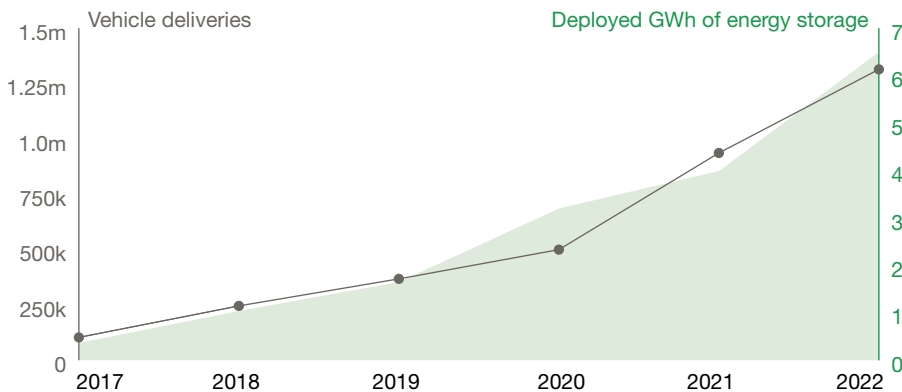
Positive Chain ▲

Input	Activities	Outputs	Outcomes	Impact (SDG target)
R&D US\$3.1bn Employees 127,855 (Y/E Dec 2022)	Tesla designs, develops, manufactures, leases and sells high-performance fully electric vehicles, solar energy generation systems and energy storage products.	During 2022, Tesla delivered 1,313,851 electric vehicles, deployed 6.5 gigawatt-hours (GWh) of energy storage products and 348 megawatts (MW) of solar energy systems.	In 2022, the global fleet of Tesla vehicles, energy storage and solar panels enabled its customers to avoid emitting 13.4 million tonnes of CO ₂ , up from 8.4 million tCO ₂ e in 2021.	<ul style="list-style-type: none"> GOOD HEALTH AND WELL-BEING 3.9 AFFORDABLE AND CLEAN ENERGY 7.2, 7.3 SUSTAINABLE CITIES AND COMMUNITIES 11.6 CLIMATE ACTION 13

Long-term progress ▲

For a relatively young company in a complex and well-established industry, Tesla’s operational progress has been impressive. Since we took a holding, we have seen an increase in vehicles delivered from around 100,000 in 2017 to over 1.3 million vehicles delivered in 2022. There has been more than an 18-fold increase in deployment of energy storage solutions in the same period. Solar deployment has slowed over the time period (around -33 per cent), but remains an area of future growth potential and a key part of the complete solution to renewable power and automation that Tesla provides. The company has continued to innovate around its core products and its high level of vertical integration ensures it is a key driver of innovation and change within the industry more broadly.

Impact objective



Source: Baillie Gifford, based on company data.

Investment objective

47%
revenue growth pa

Share price return (USD)*
493% **43%**
 cumulative pa

*vs 6% pa MSCI ACWI return (USD).
 Metrics over five-year time horizon.
 Past performance is no guarantee of future results.

Real world context ▲

There has been significant growth in electric car sales globally, from 1.2 million new registrations in 2017, representing 1.4 per cent of new vehicle registrations, to over 10 million in 2022, representing around 14 per cent of global car sales. There is still much to do, but electrification of the transport system is clearly underway. Capacity additions in battery storage are increasing globally; 1GW of additions were made in 2017 compared to 16GW in 2021. Yet more is needed to support an economy that relies on intermittent renewable power. The IEA estimates a 44-fold increase in grid-scale battery storage to 680GW by 2030 will be required, with nearly 140GW being added in 2030 alone.



© Tesla


Umicore

First invested **January 2017**

Positive Change hypothesis

Umicore is one of the world’s largest manufacturers of automotive catalysts and lithium-ion battery cathodes which are essential for reducing the negative impacts of poor air quality and electrification of the transport sector. The rising adoption of electric vehicles will support significant growth in demand for cathode materials. Process know-how and relationships with automotive manufacturers should enable Umicore to earn a return in this growing market. This will more than offset a longer-term decline in the automotive catalysts business, with metal recycling and opportunities in hydrogen fuel cells – both critical enablers of the energy transition – providing additional upside in investment returns and climate impact.

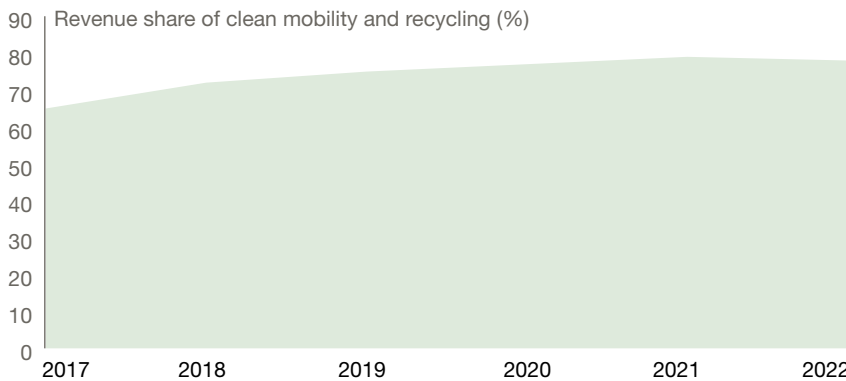
Positive Chain ▲

Input	Activities	Outputs	Outcomes	Impact (SDG target)
R&D US\$337.3m Employees 11,565 (Y/E Dec 2022)	Umicore operates 44 production sites manufacturing, refining and recycling materials with multiple industrial applications. Umicore operates the world’s largest precious metal recycling plant, capable of processing 200 types of complex waste streams and recovering over 17 metals.	Umicore sells catalysts, filters, battery cathode materials and recycled and refined metals to customers in 99 countries. In 2022, clean mobility and recycling accounted for 78 per cent of Umicore’s revenues and 55 per cent of materials used by Umicore were from end-of-life or secondary origin.	In 2022, Umicore estimates that it enabled the avoidance of 9.3 million tonnes of GHG emissions from its recycling activities (1.5 million), its electric mobility products (7.7 million) and its fuel cell products (0.13 million). In addition, its catalysts sold in 2022 helped to avoid 2.8 million tons of nitrogen oxide emissions over their lifetime, helping to improve air quality and to protect human health.	 <ul style="list-style-type: none"> FOOD HEALTH AND WELL-BEING 3.9 SUSTAINABLE CITIES AND COMMUNITIES 11.6 RESPONSIBLE CONSUMPTION AND PRODUCTION 12.4, 12.5 CLIMATE ACTION 13

Long-term progress ▲

Clean mobility and recycling constitute a greater share of Umicore’s revenues than they did in 2017, evidence of the company’s increasingly important role in the electric vehicle value chain. Umicore’s commitment to ethical and sustainable sourcing and focus on quality supports its enduring relationships with customers such as Tesla and VW. Commodity prices and supply chain disruption have affected the share price, but revenues have continued to grow robustly at 16 per cent per annum.

Impact objective



Source: Baillie Gifford, based on company data.

Investment objective

16%
revenue growth pa

Share price return (USD)*
-18% **-4%**
cumulative pa

*vs 6% pa MSCI ACWI return (USD).

Metrics over five-year time horizon.
Past performance is no guarantee of future results.

Real world context ▲

Almost 99 per cent of the world’s population live in areas that exceed the World Health Organisation’s air quality limits, leading to over seven million premature deaths per year and countless health problems. With more cars on the road, catalytic converters have limited harm and delivered air quality improvements in certain cities. A far more fundamental solution, though, is replacement with alternative fuel vehicles. Under the IEA’s net zero scenario, transport emissions must fall by 20 per cent by 2030, yet they are still growing. Accompanying this transition will be an unprecedented demand for battery metals. The World Economic Forum estimates that battery recycling capacity needs to grow 25-fold from 2019 to 2030.



© Umicore


Xylem

First invested **January 2017**

Positive Change hypothesis

Xylem manufactures pumps, filters, and treatment and testing equipment for modern water infrastructure. As a very large water company, Xylem's scale in distribution, research and development, and reputation should give the company an advantage as utilities and governments look for more efficient ways to address water challenges. The need to improve access to clean sanitation, reduce water pollution and upgrade aging infrastructure should support attractive long-term growth prospects for Xylem.

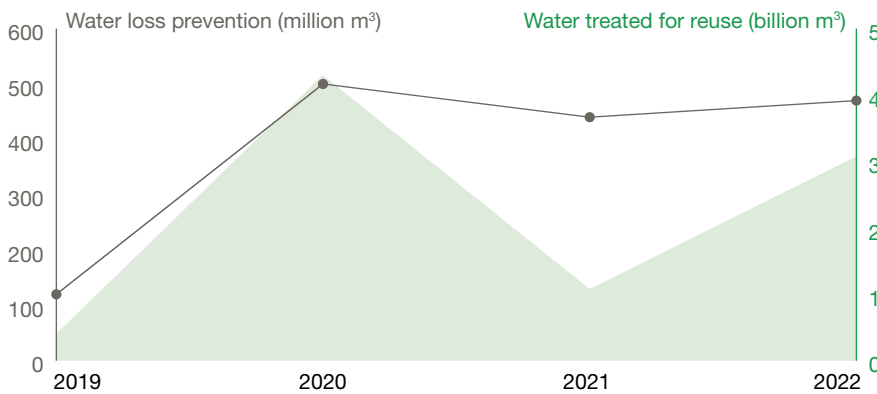
Positive Chain ▲

Input	Activities	Outputs	Outcomes	Impact (SDG target)
R&D US\$206m Employees 17,800 (Y/E Dec 2022)	Xylem is a global water technology company which produces equipment and digital solutions to deliver, manage and treat water.	Most of Xylem's revenue comes from the provision of water equipment and solutions, which are critical to modern water infrastructure and bring clean, safe and affordable drinking water to citizens. The company offers a range of products which help its utility customers to digitalise their operations, enabling efficiencies which have enormous sustainability outcomes.	In 2022, Xylem's products helped its customers reduce water loss by 470 million cubic metres (470 billion litres), treated over 3.08 billion cubic metres of water for reuse, reduced its customers' carbon footprint by 1.05m tonnes of CO ₂ e, and provided access to clean water and sanitation to 2.4 million people at the bottom of the economic pyramid.	 CLEAN WATER AND SANITATION 6.1, 6.3, 6.4 INDUSTRY, INNOVATION AND INFRASTRUCTURE 9.1, 9.4 RESPONSIBLE CONSUMPTION AND PRODUCTION 12.2

Long-term progress ▲

Xylem has continued to invest in research and development and its business lines have grown to include an enhanced digital package, the key to unlocking more value for customers. Xylem's targeting and monitoring of its societal and environmental impact have matured, with greater ambition to provide the base of the pyramid with access to clean water and sanitation.

Impact objective



Source: Baillie Gifford, based on company data. (Data not available for 2017 or 2018).

Investment objective

3%
revenue growth pa

Share price return (USD)*
72% **11%**
cumulative pa

*vs 6% pa MSCI ACWI return (USD).

Metrics over five-year time horizon.
Past performance is no guarantee of future results.

Real world context ▲

By 2030, almost half of the world's population will be living in areas of high water stress, resulting in devastating effects on public health and economic development. While progress is being made on water-use efficiency globally, efforts need to accelerate across all parts of the economy and especially in areas prone to water stress.





Healthcare and Quality of Life

Introduction

The Covid-19 pandemic feels more distant by the day. Economies have opened up, and supply chains are recovering following unprecedented disruption. That we are here now, looking back on the pandemic, is a testament to the importance of innovation in healthcare.

The pandemic underlined the importance of continuing to look for and support the companies driving positive change in global health. Although we are optimistic about the future, huge challenges remain.

The challenge

Lifestyle and aged-related diseases

While advances in medicine have contributed to improved quality and length of life, new challenges have arisen. Urbanisation and globalisation are contributing to the greater spread of disease. Chronic conditions associated with unhealthy lifestyles, such as type 2 diabetes and hypertension, are increasing globally. According to World Health Organisation (WHO) data, 17 million people a year die from non-communicable diseases before age 70. Their research also found that 86 per cent of the premature deaths occur in low- and middle-income countries. Cardiovascular diseases account for most of these deaths, with respiratory conditions and diabetes also major contributors. Noncommunicable diseases have a socioeconomic impact and have been identified as a threat to progress towards the SDGs.

Healthcare system complexity

Healthcare is a system that faces huge efficiency challenges due to its complexity and often a misalignment of interests. The challenge is particularly acute in the US, where biopharma companies, insurers, regulators, hospitals, governments, pharmacies and pharmacy benefit managers are just some of the players who determine the economics and availability of a drug or treatment. Antimicrobial resistance – declared one of the top 10 public health threats by the WHO – is a prime example. Infections are becoming harder to treat as antibiotics and other antimicrobial medicines become less effective. Part of the problem is their over prescription, misuse and improper disposal, but the challenge is also a lack of innovation. There are many actors involved in exacerbating these problems, but few incentives for coordinating to address them.





Climate change

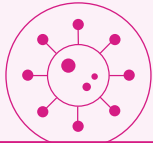
Climate change is resulting in more frequent and intense droughts, storms and heat waves. These wreak havoc on people's livelihoods, disrupting food systems and contributing to the spread of disease. Warmer temperatures are causing rising sea levels and contributing to changes in animal habitats, increasing the risk of zoonotic diseases such as coronaviruses and zoonotic influenza. Between 2030 and 2050, climate change is expected to cause around 250,000 additional deaths per year from malnutrition, malaria, diarrhoea and heat stress. Areas with weak health infrastructure, mostly in low- and middle-income countries, will be the least able to prepare and respond.

Rising costs and inequality

In addition to ageing populations and unhealthy lifestyles, rising labour and technology costs, and a misalignment of interests have contributed to inflationary pressures in healthcare systems all over the world. This has led to huge inequalities in access to quality healthcare. The inequitable distribution of Covid-19 vaccinations provides a stark illustration of how health inequalities persist within countries and at a global level. Even in middle- to high-income economies, around half of patients with chronic diseases do not take their medicine as prescribed due to cost, leading to complications, premature death and higher costs for healthcare systems.

Positive Change — part of the solution

Positive Change addresses healthcare challenges through five major themes – understanding of diseases, diagnostics, treatment, prevention and efficiency. Our holdings contribute to the prevention and treatment of five of the top 10 global causes of death, which collectively accounted for around 40 million deaths in 2019.



1. Understanding diseases

A convergence of technologies is ushering in a new era. We can now explore our biology in incredible detail. Single-cell analysis platforms, advances in imaging and the advent of widely applied artificial intelligence have shifted our conception of what is possible. Drug discovery and development have benefited and changed immensely. What once took 5–10 years can be done in one. We invest in **Illumina**, whose genome sequencing technology has enabled the identification and, in some cases, preventative or targeted treatment of many diseases, including rare cancers. We also invest in **10x Genomics**, which builds on Illumina's technology, providing a more detailed analysis of single cells than previously possible.



2. Diagnostics

Our improving understanding of biology enables earlier diagnosis and treatment of disease causes, rather than the symptoms of late-stage disease. Not only is this better for patients, it can also save costs for the system. We currently have exposure to this area through **Illumina** which provides a test that can detect over 50 types of cancer at an early stage.



3. Treatment

Treatments should either lead to a cure or substantially improve patient outcomes without compromising life quality. Historically, a drug takes around 10 years and costs US \$1bn to develop, with only a 9 per cent chance of success; the process starting again for the next drug. Young, agile companies herald a new era of healthcare with technologies that take advantage of our deeper understanding of biology.

This can be seen with **Alnylam**, whose RNA-interference-based drugs identify and silence faulty genes and have enjoyed a 60 per cent track record of success. With the use of mRNA technology, **Moderna** will help drive personalised therapies to ultimately treat and prevent multiple diseases for years to come. **AbCellera's** portfolio of technology and services is helping to discover better antibody-based medicines and bring them to patients faster.

Effective treatments come in many different forms, and innovative medical devices are another area of exposure in the portfolio. We invest in **Dexcom**, whose continuous glucose monitoring device enables diabetic patients to manage their glucose levels better, reducing the risk of complications.





4. Prevention

Disease prevention rather than cure is better for individuals and society at large. A healthy diet and exercise are essential for good health. **Discovery** provides shared value insurance products which incentivise healthy behaviours, such as exercising, healthy eating and moderating alcohol consumption, thereby helping prevent illness. **Peloton** is a virtual fitness company lowering the friction to exercise by providing engaging content and fitness equipment for home use.



5. Efficiency (system enablers)

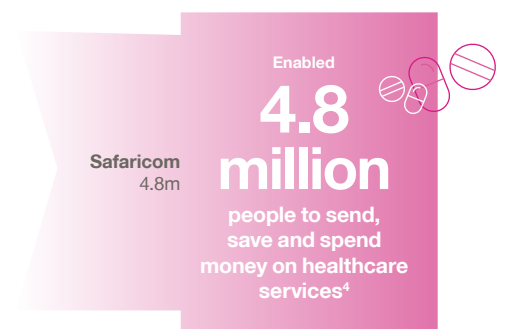
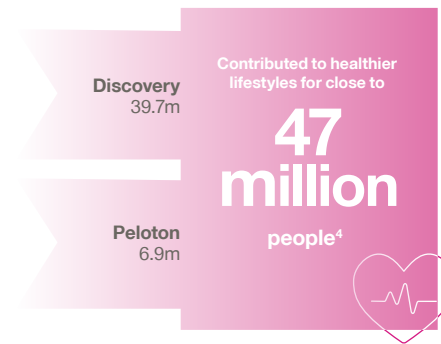
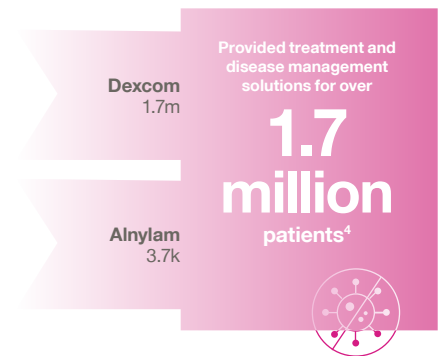
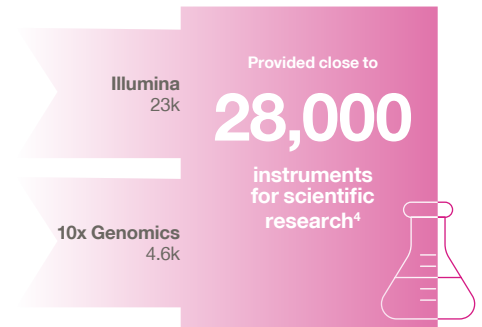
As the global population ages, healthcare systems must adapt to rising demand while containing costs. There are many systemic inefficiencies, including lengthy drug development, ineffective treatments leading to severe side effects, misdiagnosis, operational complexity and long waiting times for treatments.

M3 provides technology that improves healthcare system efficiency. M3 played a key role in pivoting healthcare services to digital provision during the Covid-19 pandemic, which accelerated the shift towards digital healthcare, a trend we expect to endure. M3 also provides telemedicine alongside technologies that improve the efficiency of information sharing in the medical community. Its technology also supports faster recruitment to clinical trials that could speed up drug development.

Meanwhile, **Sartorius** provides single-use equipment for manufacturing biological products such as antibodies and vaccines. It enables the biotech industry to operate with greater flexibility, lower costs and a lower environmental impact.

What are we missing?

We expect to see continued advancement in drug development technologies that significantly change how diseases are diagnosed and treated. We are conscious that healthcare breakthroughs tend to be more accessible in high-income populations and that change is needed for the benefit to be felt more widely over time. We expect that portfolio companies will expand their reach to help address health inequalities, and we aspire to find new companies that can close the gap.



⁴Data related to healthcare and quality of life is presented to date, covering multiple years.



10x Genomics

First invested **September 2020**

Positive Change hypothesis

10x Genomics develops tools for single-cell analysis, which when combined with next generation sequencing, provide a far more granular view of biology by enabling researchers to measure and interpret differences between individual cells in a sample. We believe that single-cell analysis will be increasingly adopted by researchers and we are in the early phases of this adoption. This should support high top-line growth (in the region of 25–40 per cent per annum) for a number of years to come. Competitive advantage comes from microfluidic, engineering and software expertise and a culture that emphasises a multidisciplinary approach and closeness to customers. As the company scales, the financial characteristic should be very attractive given most revenues come from high-margin consumables.

Positive Chain ▲

Input	Activities	Outputs	Outcomes	Impact (SDG target)
R&D US\$265.7m Employees 1,243 (Y/E Dec 2022)	10x Genomics develops machines and software which enable scientists to gain a better understanding of biology through single-cell analysis.	By December 2022, 10x Genomics had sold 4,630 instruments to researchers around the world. Its customers include all of the top 100 global research institutions as ranked by <i>Nature</i> in 2021, and the top 20 global biopharmaceutical companies by 2021 research and development expenditure.	The information gained using 10x Genomics' products has already expanded our understanding of biology. To date, more than 4,500 peer-reviewed articles have been published using data generated by the company's technology.	 GOOD HEALTH AND WELL-BEING 3.3, 3.4  INDUSTRY, INNOVATION AND INFRASTRUCTURE 9.5


AbCellera

First invested **March 2021**

Positive Change hypothesis

AbCellera performs antibody discovery services for pharmaceutical and biotech partners. The company has a differentiated technology stack, which consists of proprietary immunisation methods, single-cell screening, bi-specific engineering, continuous process improvements, and the use of data and software. This enables AbCellera to speed up the discovery process and to develop drugs which have proved hard to develop using traditional methods. The global antibody therapeutics market is expected to reach \$250–300bn by 2025. As AbCellera monetises, mainly through high-margin milestone and royalty payments, a meaningful share of the antibodies therapeutic market could lead to a very attractive investment outcome.

Positive Chain ▲

Input	Activities	Outputs	Outcomes	Impact (SDG target)
R&D US\$107.9m Employees 495 (Y/E Dec 2022)	AbCellera's artificial intelligence-powered services include technologies that source, search, decode, analyse and engineer antibodies.	AbCellera has had 174 antibody discovery programmes that are either completed, in progress or under contract with 40 partner companies. This has resulted in eight molecules being discovered using AbCellera's technology that are either available to patients today or in clinical trials.	Antibody therapeutics have the potential to treat a huge number of diseases that affect human and animal health. In addition to discovery of an antibody used to treat Covid-19, the therapeutic areas of AbCellera's programmes include oncology, neurology and other infectious diseases.	 GOOD HEALTH AND WELL-BEING 3.3, 3.4



© AbCellera


Anylam Pharmaceuticals

First invested **January 2017**

Positive Change hypothesis

Anylam is an early-stage biotechnology company. It is developing a new class of highly innovative drugs based on a breakthrough biological discovery known as RNA interference (RNAi). In addition to developing its own RNAi drugs, Anylam has built up extensive technology and patents which it licenses out to other pharmaceutical companies. The cash associated with these upfront license payments is being used to fund Anylam's pipeline of new treatments. Early proof of concept data regarding RNAi drugs has been encouraging and significant upside might exist in Anylam shares if this can be extended into the therapeutic setting.

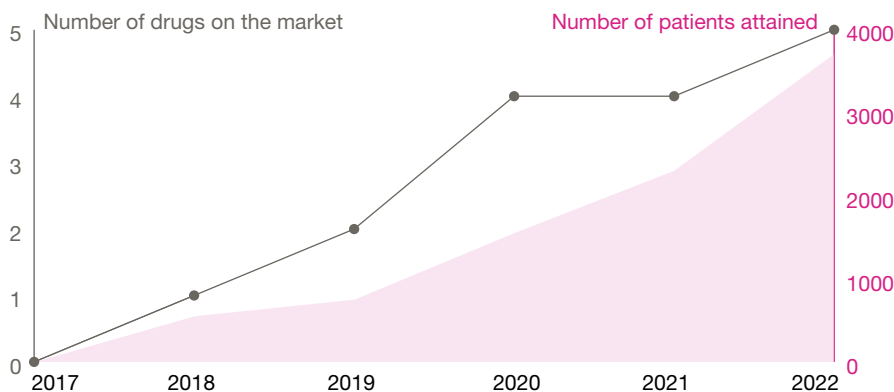
Positive Chain ▲

Input	Activities	Outputs	Outcomes	Impact (SDG target)
R&D US\$883m Employees 2,002 (Y/E Dec 2022)	Anylam produces and develops therapeutics to treat rare chronic diseases using a technique that switches off the faulty proteins that cause diseases.	As of 2022, Anylam has five drugs on the market, treating over 3,700 patients.	Anylam's drugs have been proven to prevent the symptoms of rare diseases, improving quality of life for patients.	 GOOD HEALTH AND WELL-BEING 3.3, 3.4

Long-term progress ▲

Anylam has been significantly de-risked since we first took a holding in 2017, achieving impressive revenue growth. The company now has five approved RNAi therapeutics on the market compared to none in 2017. With three of the five in late-stage clinical trials, the company is expanding its drug development efforts beyond genetic diseases and into much more common diseases such as hypertension and Alzheimer's disease. This should expand Anylam's breadth of impact over time, compared to the relatively low numbers of patients its drugs have treated to date.

Impact objective



Source: Baillie Gifford, based on company data.

Investment objective

69%
revenue growth pa

Share price return (USD)*
87% cumulative **13%** pa

*vs 6% pa MSCI ACWI return (USD).

Metrics over five-year time horizon. Past performance is no guarantee of future results.

Real world context ▲

Today, Anylam's commercial products are treating rare genetic conditions, the symptoms of these diseases are severely life-inhibiting, and there are very few treatments available for patients. RNAi therapeutics have shown a huge amount of promise to help sufferers of many rare and more common diseases live healthier lives. Since 2018 the company's pipeline totals seventeen therapeutics, five of which have been approved by the U.S. Food and Drug Administration.




Chr. Hansen

First invested **January 2017**

Positive Change hypothesis

Chr. Hansen is a life sciences business which develops and produces nature-based solutions (such as cultures, enzymes and probiotics) used to improve the food we eat, our health (human and animal) and agricultural productivity. We expect growing demand for products that improve the nutritional content and expand the shelf life of food, reduce our dependence on antibiotics and the associated increase in antimicrobial resistance, and that enable us to grow more food while using fewer and better inputs. Chr. Hansen has a huge library of microbial strains from which it can identify and develop products; and with over 145 years of experience, it is able to optimise production and manufacture at scale in a consistent fashion, earning the company a strong reputation and loyal customers.

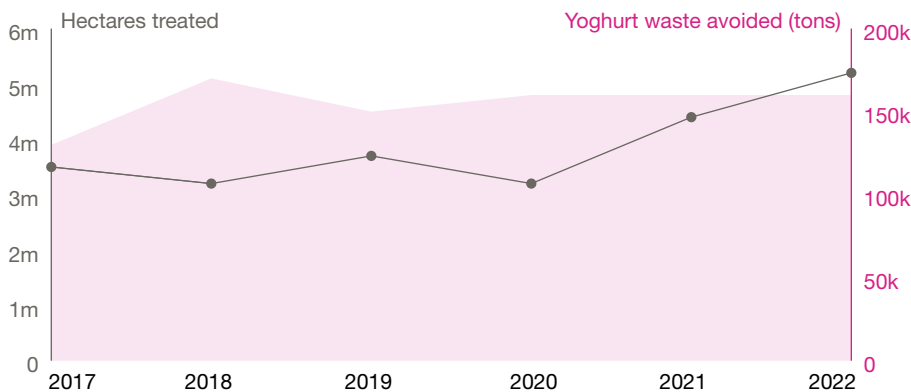
Positive Chain ▲

Input	Activities	Outputs	Outcomes	Impact (SDG target)
R&D US\$103.3m Employees 3,800 (Y/E Aug 2022)	Chr. Hansen develops and produces cultures, enzymes and probiotics used for the food, nutritional, pharmaceutical and agricultural industries. The company owns one of the world's largest commercial collections of bacteria with around 40,000 strains.	Chr. Hansen's wide range of products help to promote good health, more sustainable farming and less food waste. More than one billion people consume a product with Chr. Hansen ingredients every day.	In 2021/2022, the company's range of natural plant solutions were applied on 5.2 million hectares of land; its cultures reduced 160,000 tons (145,150 tonnes) of yoghurt waste; and 195 million people around the world consumed its probiotic solutions.	 ZERO HUNGER 2.4 GOOD HEALTH AND WELL-BEING 3.4 RESPONSIBLE CONSUMPTION AND PRODUCTION 12.3, 12.4

Long-term progress ▲

Since we first took a holding, Chr. Hansen has significantly expanded its product range. Now encompassing plant health, bioprotection and human microbiome segments, its offering also includes plant-based foods and human milk oligosaccharides, an important group of sugars in breast milk which can be added to infant formula. This year, the company achieved a major milestone with Bacthera – its joint venture with Lonza – by entering into a collaboration with Seres Therapeutics to develop and manufacture a treatment for *Clostridioides difficile* infection, a bacterial infection that leads to over 170,000 hospitalisations in the US annually.

Impact objective



Investment objective

3%
revenue growth pa

Share price return (USD)*

-17% **-4%**
cumulative pa

*vs 6% pa MSCI ACWI return (USD).
Metrics over five-year time horizon. Past performance is no guarantee of future results.

Source: Baillie Gifford, based on company data.

*Chr. Hansen's reporting of its products' impact on human health is in its early stages. As such we include environmental figures here only.

Real world context ▲

There is increasing evidence linking gut health to many diseases and health conditions including increasingly common diseases such as diabetes, obesity, cancer and anxiety and depression, reinforcing the importance of probiotic solutions for preventative healthcare. Chr. Hansen's food cultures help prevent food waste, a global scourge which is estimated to cause 8–10 per cent of global greenhouse gas emissions. In the EU, 17 per cent of all yoghurt is wasted every year, the majority of which is in the household.



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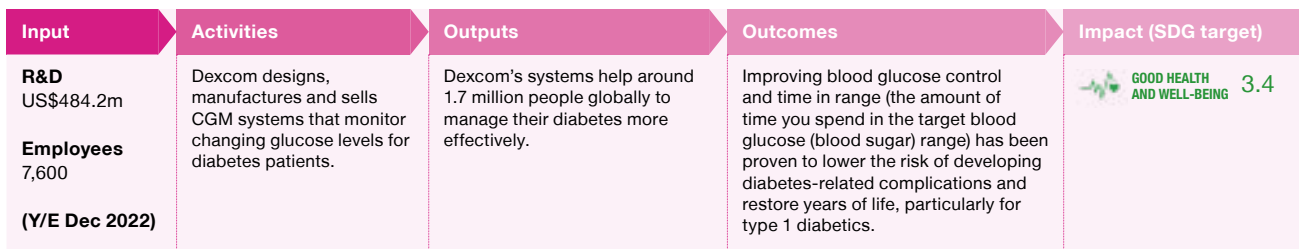
Dexcom

First invested **January 2017**

Positive Change hypothesis

Dexcom's continuous glucose monitoring systems (CGMs) empower diabetic patients, particularly type 1, to manage their condition themselves. Diabetes is a chronic and life-threatening condition that millions of people around the world suffer from. By helping patients manage their glucose levels more effectively than traditional finger prick tests allow, Dexcom is both improving patient lives and helping lower the cost of treating the disease and its associated health complications. We expect CGMs to become the standard of care for insulin-intensive patients and believe that they could also play an important role in the prevention of the onset of type 2 diabetes. Greater penetration of existing patient cohorts globally and expansion into other patient cohorts provide a terrific growth opportunity for the company. This is a competitive market, but we believe Dexcom's technological leadership, distribution capabilities and growing brand awareness provide an edge.

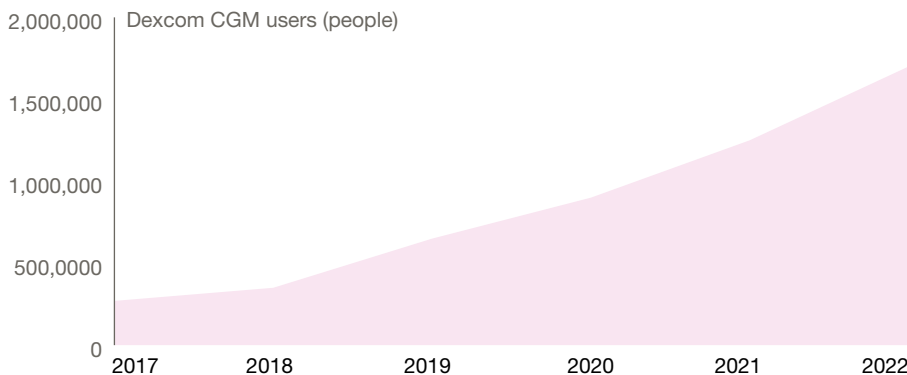
Positive Chain ▲



Long-term progress ▲

Since 2017, the company has continued to make its devices smaller, lighter and more accurate, helping to improve health outcomes for users. As a result of an increased product offering and expansion in markets outside of the US, revenues have tripled in the past five years. Dexcom continues to serve type 1 users, while at the same time expanding into both type 2 intensive and type 2 non-intensive insulin therapy users. By also supporting pre-diabetics, Dexcom's impact on society and healthcare systems could grow considerably.

Impact objective



Source: Baillie Gifford, based on company data.

Investment objective

33%
revenue growth pa

Share price return (USD)*
689% **51%**
cumulative pa

*vs 6% pa MSCI ACWI return (USD).
Metrics over five-year time horizon.
Past performance is no guarantee of future results.

Real world context ▲

There are an estimated 422 million people diagnosed with diabetes worldwide. 1.5 million deaths are directly attributed to diabetes each year and as of 2021, the global diabetes related health expenditure is US\$966bn. Many of the global population of diabetes patients are in low- and middle-income countries, which Dexcom has little exposure to. Studies have found that on average, globally, a type 1 diabetic loses around 32 years of healthy life when their diabetes is not managed, and in the United States around 7.3 healthy years can be restored if type 1 diabetics have access to diabetes management systems with a CGM.



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Discovery

First invested **January 2017**

Positive Change hypothesis

Discovery provides shared-value insurance policies, where the insured is rewarded for healthy behaviours. This should incentivise behaviours that lead to better wellbeing and improved health outcomes for customers, lower claim expenses for Discovery and reduced pressure on healthcare systems. As more people pay attention to their health, demand for Discovery's policies should grow. In addition to selling policies in South Africa, the UK and China (in partnership with Ping An), Discovery also licenses its shared-valued platform to insurance companies globally, resulting in high-margin fee income.

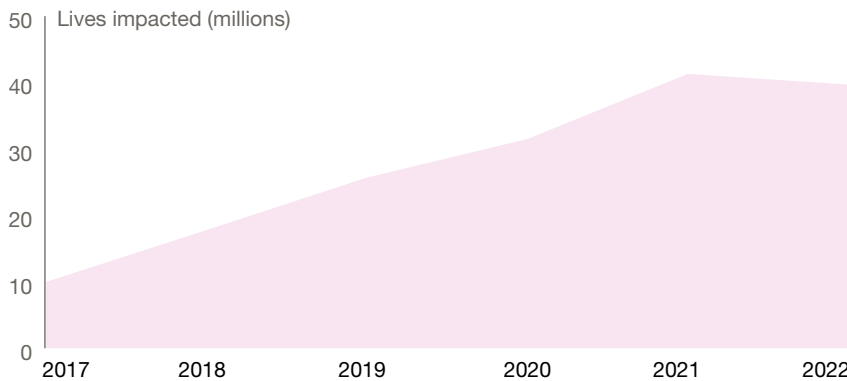
Positive Chain ▲

Input	Activities	Outputs	Outcomes	Impact (SDG target)
R&D N/A Employees 13,450 (Y/E Jun 2022)	Discovery offers medical, health, motor and life insurance products across 35 countries, including South Africa and the UK.	Discovery's products impact 39.7 million lives around the world. Of these, 32 million are members of the shared value range of products, called Vitality.	Discovery reports highly engaged members live longer, experience fewer lifestyle diseases and claim less. Discovery has a goal of impacting 50 million lives, and, with its partners, aims to make 100 million people 20 per cent more active by 2025.	 GOOD HEALTH AND WELL-BEING 3.4, 3.8

Long-term progress ▲

Since 2017, Discovery has expanded to 19 new countries and grown its membership by almost 300 per cent with the help of a growing number of successful partnerships, particularly in Asia. Revenues have grown on average 8 per cent each year. While the share price was dealt a blow by the pandemic, it has not performed as expected (million) despite Discovery's expanding impact. However, we believe that its value and that of its Vitality brand will be realised in the coming years.

Impact objective



Source: Baillie Gifford, based on company data.

Investment objective

8%
revenue growth pa

Share price return (USD)*

-50% **-13%**
cumulative pa

*vs 6% pa MSCI ACWI return (USD).

Metrics over five-year time horizon. Past performance is no guarantee of future results.

Real world context ▲

Since taking a holding in Discovery, our conviction in incentive-based insurance schemes has been supported by encouraging research in this area. Over the past six years, the prevalence of non-communicable diseases, such as type 2 diabetes, obesity and cancer, have been rising in almost all countries, partly caused by increasingly unhealthy lifestyles. This is troubling, but only makes the need for business models to stem this trend more stark.




illumina

First invested **January 2017**

Positive Change hypothesis

illumina sits at the centre of the genomics revolution. We believe the company's products are transitioning from being used primarily as research tools to being the foundation that supports the development of a whole host of new clinical applications. These include disease surveillance, therapy selection, pre-natal and genetic disease testing, and cancer screening. Through innovation, the price of sequencing will continue to fall, albeit at a measured pace. This will unlock future demand for genomic testing, especially as our understanding of the human genome improves.

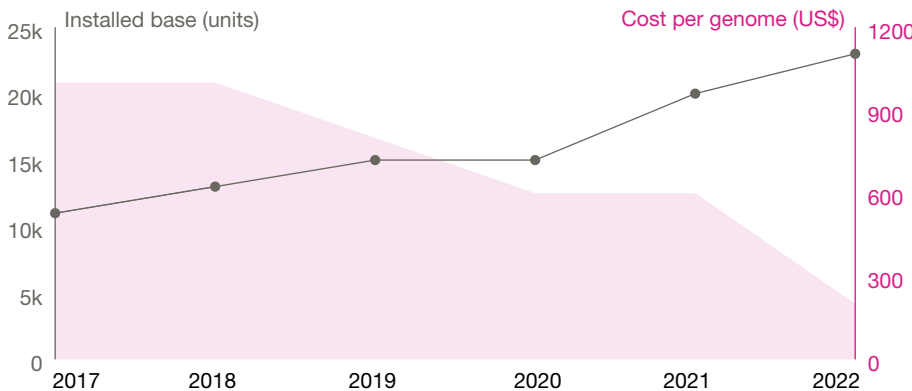
Positive Chain ▲

Input	Activities	Outputs	Outcomes	Impact (SDG target)
R&D US\$1.3bn Employees 10,200 (Y/E Dec 2022)	illumina designs, manufactures and markets gene sequencing machines for genetic and genomic analysis which are used for a variety of applications including healthcare and agriculture.	Through partnerships and collaborations, illumina is advancing personalised medicine and early cancer detection. illumina has an installed base of more than 23,000 gene sequencing machines.	illumina has been instrumental to the reduction in the cost of gene sequencing which helps to improve our understanding of genetics, enables more accurate diagnosis of diseases, and facilitates research into new therapeutics.	 ZERO HUNGER 2.4 GOOD HEALTH AND WELL-BEING 3.3, 3.4 INDUSTRY, INNOVATION AND INFRASTRUCTURE 9.5

Long-term progress ▲

illumina has steadily increased its installed base of machines over the past six years, while reducing sequencing costs. While revenue growth has been relatively strong, this is not reflected in the share price which has underwhelmed over our holding period. New products announced recently with increased throughput, integrated software, and a new sequencing chemistry promise to lower the cost of sequencing even more, and help illumina achieve its 2030 target for a US\$100 genome.

Impact objective



Source: Baillie Gifford, based on company data.

Investment objective

13%
revenue growth pa

Share price return (USD)*
-7% **-2%**
cumulative pa

*vs 6% pa MSCI ACWI return (USD).
Metrics over five-year time horizon.
Past performance is no guarantee of future results.

Real world context ▲

illumina has been instrumental to the reduction in the cost of gene sequencing which has fallen from US\$100 million per human genome in 2001 to around US\$200 per human genome in 2022. As the cost of sequencing decreases, it makes the technology more accessible and unlocks new opportunities for research and clinical applications. Genomic sequencing played a crucial role in enabling the rapid development of vaccines for Covid-19.




M3

First invested **January 2017**

Positive Change hypothesis

M3 is an innovative Japanese company that leverages digital channels to bring efficiencies to healthcare systems. The company’s dynamic offering includes a knowledge exchange platform, a telemedicine service, electronic health record management and outsourced services for pharmaceutical companies such as recruitment for clinical trials. M3 exists at the nexus between pharmaceutical companies and millions of physicians and patients, enabling the company to provide services that have a long opportunity for growth, especially as pharmaceutical companies continue to shift their marketing online.

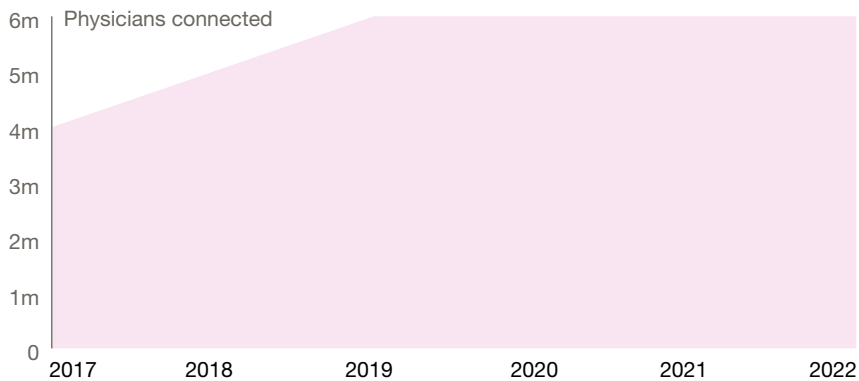
Positive Chain ▲

Input	Activities	Outputs	Outcomes	Impact (SDG target)
R&D N/A Employees 574 (Y/E Mar 2022)	M3 operates medical portals predominantly in Japan, the US, China and India. These include knowledge and marketing platforms (MRKun), a clinical trial recruitment tool (Mr. Finder), a disease awareness platform (AskDoctors), telemedicine (LINE Healthcare), and other services.	M3 portals connect over 6 million physicians globally, and over 310,000 in Japan. By November 2022, M3’s medical health record platform was used at over 4,750 health institutions.	By leveraging technology, M3 improves awareness of new medical devices and drugs, and improves cost and time efficiency within the healthcare industry and ultimately for patients too. M3 also supports and invests in early-stage technologies such as regenerative medicine and cancer tests.	 INDUSTRY, INNOVATION AND INFRASTRUCTURE 9.5

Long-term progress ▲

While limited disclosure is a challenge when assessing M3’s impact, it has undoubtedly grown since we took a holding. M3 has repeatedly demonstrated its expertise in product innovation, with reducing friction for its customers, physicians and patients always in mind. In addition, supported by acquisitions, M3 has expanded its reach from 8 to 17 countries since 2015, most notably in China where its listed subsidiary MedLive had 6.2 million registered users at the end of 2022.

Impact objective



Source: Baillie Gifford, based on company data.

Investment objective

18%
revenue growth pa

Share price return (USD)*
56% **9%**
cumulative pa

*vs 6% pa MSCI ACWI return (USD).
Metrics over five-year time horizon.
Past performance is no guarantee of future results.

Real world context ▲

In most parts of the world, healthcare systems are under strain. Costs have been rising faster than incomes for decades, wait times remain stubbornly high in higher-income countries, and many lower-income countries have been unable to expand access to modern medicine. There are a multitude of complex reasons for this, including ageing and growing populations, but digitalisation shows promise to take costs out of systems and relieve pressure on healthcare facilities.




Moderna

First invested **December 2018**

Positive Change hypothesis

Moderna is creating a new category of medicines by harnessing the power of mRNA technologies. mRNA molecules can teach the body how to make a specific protein to help our immune systems prevent or treat certain diseases. Moderna's coronavirus vaccine has proven that mRNA is a safe and effective way of providing protection against disease, de-risking the technology and providing significant cash flows that can be used to continue investing in the company's platform. Through harnessing the programmability of mRNA, Moderna is investing in its technology platform to develop vaccines and treatments for a wide range of viruses and diseases, from influenza to cancer. Moderna has the potential to improve human health outcomes globally through this new category of medicine.

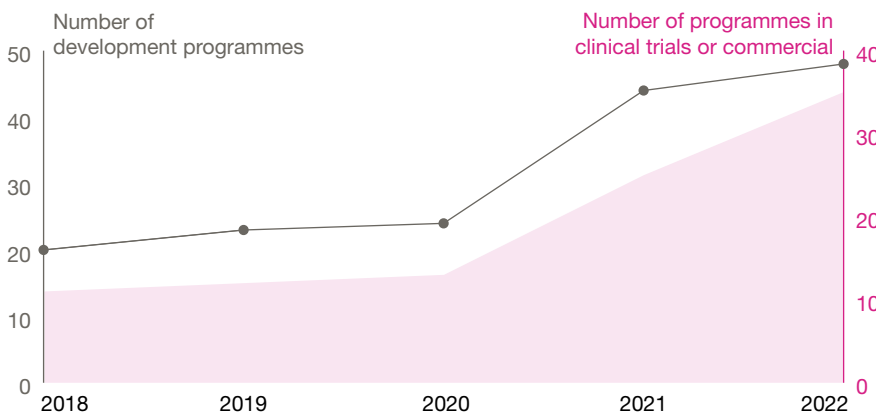
Positive Chain ▲

Input	Activities	Outputs	Outcomes	Impact (SDG target)
R&D US\$3.3bn Employees 3,900 (Y/E Dec 2022)	Moderna's drug development pipeline spans five therapeutic areas: infectious diseases, immuno-oncology, rare diseases, cardiovascular diseases and autoimmune diseases. It uses a technique which synthesises molecules that can be injected into patients to help their bodies create their own therapies.	Moderna has 48 development programmes, of which 35 have entered clinical studies, five of which are at a commercial stage. In 2021 and 2022, Moderna shipped over one billion doses of its vaccine for Covid-19, its first commercial vaccine.	Moderna's drugs have the potential to prevent the symptoms of diseases, improving the quality of life of patients as well as reducing the costs associated with treating diseases. Many of its programmes have the potential to target diseases where there are no treatments currently available.	 GOOD HEALTH AND WELL-BEING 3.3, 3.4

Long-term progress ▲

At the time of investing, we could not have foreseen that Moderna's mRNA platform would be at the centre of the fight against a global pandemic. Hundreds of millions have benefited, and many lives have been saved by Moderna's first commercial drug – its Covid-19 vaccine – which propelled the company from US\$0 to US\$18bn in revenues in the space of 18 months. The boost to its balance sheet has allowed Moderna to double down on research and development, to expand and develop more drug candidates into clinical trials and to launch an ambitious strategy to tackle global health challenges.

Impact objective



Source: Baillie Gifford, based on company data.

Investment objective

141%
revenue growth pa

Share price return (USD)*
866% **75%**
cumulative pa

*vs 9% pa MSCI ACWI return (USD).

Metrics cover period since inception to end Dec 2022. Past performance is no guarantee of future returns.

Real world context ▲

The Covid-19 pandemic drew the world's attention as never before to the unmet need in preventing viral and bacterial infections, the impacts of which may be exacerbated by ageing, more vulnerable populations and the pathogenic risks arising from climate change. There are 220 viruses known to infect humans, only 18 of which have available vaccines today. Diseases such as RSV, influenza and HIV cause millions of deaths each year, and are a huge cost to health systems and society.



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Peloton

First invested **March 2021**
Sold **May 2023**

Positive Change hypothesis

Peloton is transforming how people can get and stay fit. It is a pioneer of interactive connected fitness equipment and content for use at home. Peloton is reducing the friction of getting and staying fit by providing a means to exercise that is convenient, enjoyable and effective. Improved fitness lowers the risk of heart disease, stroke, type 2 diabetes, depression, dementia and certain types of cancer. The connected fitness market is in its infancy and Peloton is well placed to capitalise on the significant opportunity for growth.

Positive Chain ▲

Input	Activities	Outputs	Outcomes	Impact (SDG target)
R&D US\$359.5m Employees 6,195 (Y/E Jun 2022)	Peloton produces exercise equipment, such as static bikes and treadmills. It also produces digital exercise content that can be streamed to the exercise equipment via its interactive software platform.	Peloton promotes cardiovascular exercise to a community of over 6.9 million individual members.	It is well established that regular exercise provides a variety of health benefits. Peloton has 2.97 million Connected Fitness subscriptions that have, on average, 16.4 monthly workouts.	 GOOD HEALTH AND WELL-BEING 3.4

Update: We sold Peloton in May 2023. We believe the long-term opportunity in digital fitness remains exciting, and the company maintains market leadership in its category. However, the previous management team at Peloton made execution missteps against a difficult operating backdrop. While the new management has made admirable progress in recapitalising the business and reducing the rate of cash burn, we believe growth and cash management will be at odds for the foreseeable future. Overall, we no longer have sufficient conviction that Peloton will meet our dual objectives over the long term.


Sartorius

First invested **October 2019**

Positive Change hypothesis

Sartorius supplies single-use equipment to biopharmaceutical companies and research laboratories, ranging from bioreactors to storage bags. The company will benefit from growth in the biotech industry (across an increasing number of new types of medicines) and greater adoption of single-use products within that. Single-use products lower the upfront capital costs for biotech businesses, bring productivity gains (shorter set-up times) and require less resources (eg energy and water) than stainless steel products. Sartorius is a leading player due to its deep understanding of customer needs and willingness to invest (both organically and through mergers and acquisitions) to make sure it is innovating to meet customer needs. Sartorius is an enabler of the biology revolution.

Positive Chain ▲

Input	Activities	Outputs	Outcomes	Impact (SDG target)
R&D US\$189.8m Employees 15,942 (Y/E Dec 2022)	Sartorius is an international pharmaceutical and laboratory equipment supplier. It operates a bioprocessing division, and a laboratory and services division.	Sartorius's portfolio of single-use technologies, which accounts for approximately 60 per cent of revenues, includes a wide selection of equipment ranging from large bioreactor storage bags to small pipette tips.	Single-use technologies continue to gain adoption in the industry due to the cost advantages and greater flexibility compared to reusable technologies.	 GOOD HEALTH AND WELL-BEING 3.4, 3.b


Teladoc

First invested **October 2019**
Sold **April 2023**

Positive Change hypothesis

Teladoc has developed scale and a leadership position in virtual care in the US. Virtual care has great potential to bring efficiency, cost savings and better quality of care to all parties in the system from patients and payers to providers. Covid-19 was a watershed moment for the industry as it has helped accelerate the adoption of virtual care. While the current adoption is still modest, we believe it will improve significantly as Teladoc continues to expand its service offering. In-house developments, acquisitions and partnerships should help to build a broad virtual care platform encompassing all patients' needs and acting as a gateway to the healthcare system.

Positive Chain ▲

Input	Activities	Outputs	Outcomes	Impact (SDG target)
R&D US\$106.9m Employees 5,600 (Y/E Dec 2022)	Teladoc is a large US telemedicine company, providing hundreds of medical services, such as primary care appointments, expert second opinions, behavioural health support and chronic care management via phone, online and through apps.	Teladoc completed approximately 18.5 million telehealth visits in 2022, an increase of 20 per cent from 2021. Over 80 million people in the US have access to a Teladoc health service or product.	By providing remote healthcare services Teladoc increases accessibility to healthcare and helps lower costs. More than half of its active users of its chronic care solution live in vulnerable communities, and 900,000 online visits in 2022 were for people who otherwise would not have received treatment.	 GOOD HEALTH AND WELL-BEING 3.8

Update: We sold Teladoc in April 2023. We believe that virtual care has great potential to bring efficiency, cost savings and a better quality of care to all parties in the system, from patients and payers to providers. During the Covid-19 pandemic demand for virtual healthcare accelerated and benefited Teladoc. However, in more recent years Teladoc has made underwhelming progress in growing its business. Overall, we no longer have sufficient conviction that Teladoc will meet our dual objectives over the long term.



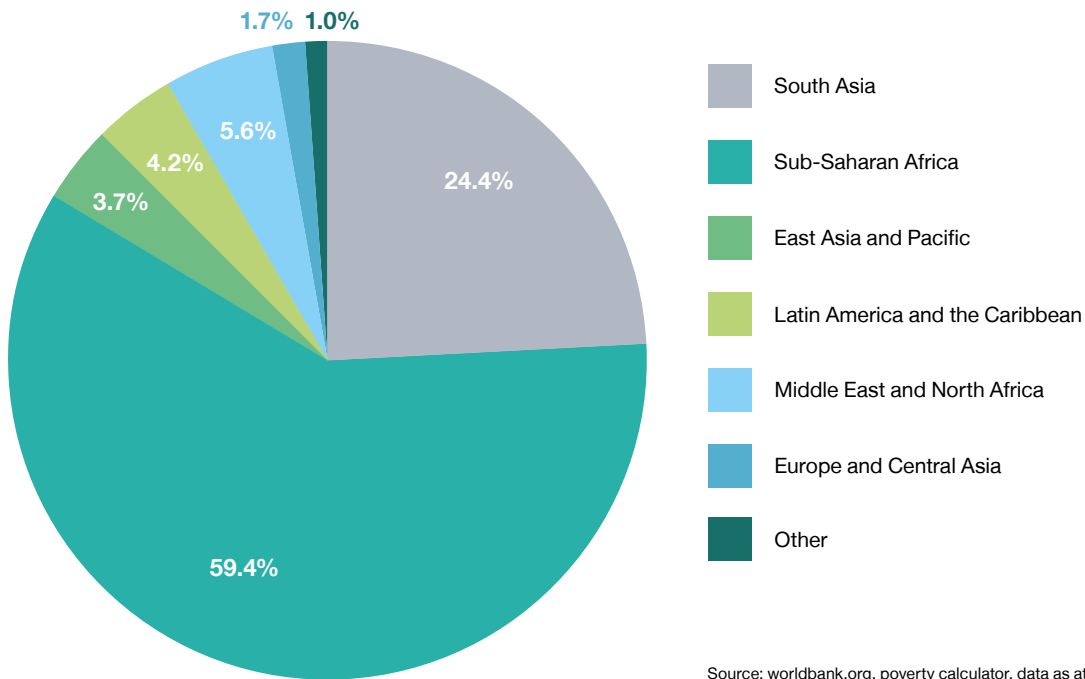
Base of the Pyramid

Introduction

“At the most basic level, the key to ending extreme poverty is to enable the poorest of the poor to get their foot on the ladder of development.”
– Jeffrey D Sachs, Professor, Columbia University

Over the past 200 years, the percentage of the world’s population living in extreme poverty has declined significantly. Yet progress has slowed in recent years and is at further risk due to the health and economic shocks caused by the Covid-19 pandemic, our changing climate and ongoing human conflicts. It is estimated that around four billion people, more than half of the world’s population, live on an income of less than \$3,000 per year when measured using purchasing power parity (PPP). This cohort forms a category frequently defined as the base of the pyramid. Improving the prospects of these people is vital to building a prosperous and inclusive world.

Where do the base of the pyramid live?



Source: worldbank.org, poverty calculator, data as at 2019.

The challenge

The challenges facing the least fortunate are numerous and complex. Many – but by no means all – of those on lower incomes live in countries lacking socio-economic development.

Although economic growth might not be an end in itself, “it makes it possible to achieve other important objectives of individuals and societies. It can spare people en masse from poverty and drudgery,” says the Yale Centre for the Study of Globalisation. Nowhere is this more clearly illustrated than in China, where economic growth has helped to lift 800 million people out of poverty since the country launched its economic reforms and began opening up in 1978.

In contrast, countries with persistent poverty often fail to achieve socio-economic progress. The reasons for slow economic growth include poor governance, lack of basic infrastructure such as roads and telecommunications, limited financial

inclusion, barriers to education and poor access to healthcare. Global economic growth has slowed over the past three years partly due to Covid-19, which has had a disproportionate effect on people with low incomes through job losses, loss of remittances, rising prices and disruption of already lacking services.

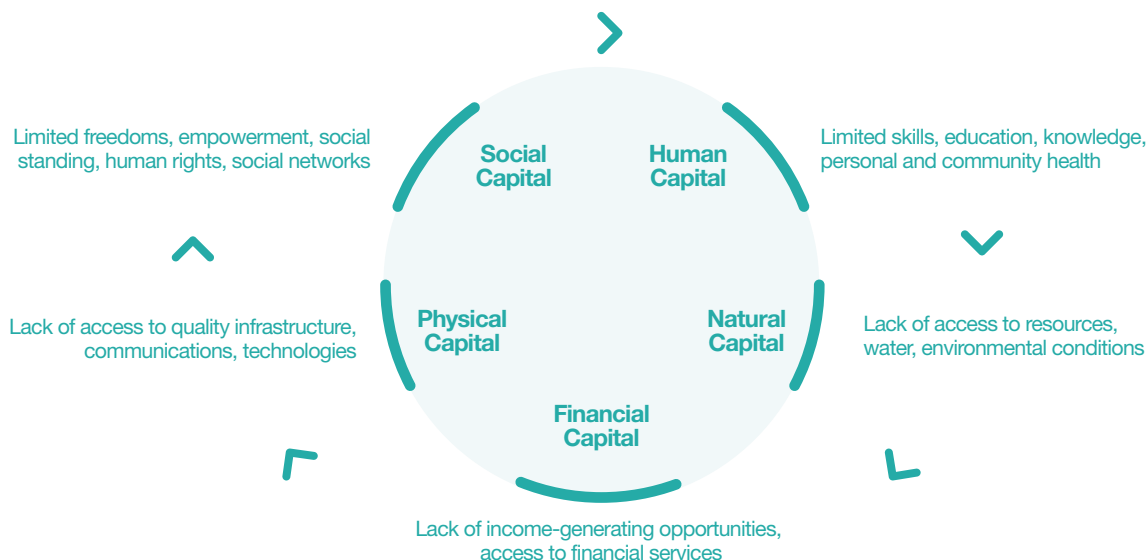
Many researchers have recognised the relationship between geography, environmental conditions and development. In the 21st century, a new dynamic is added: climate change. The impact of rising temperatures and the increased frequency of extreme weather events, such as droughts and floods, will be felt most severely by low-income populations who lack the resources to prepare for such shocks. The 2022 IPCC report states, “Regions and people with considerable development constraints have high vulnerability to climatic hazards... vulnerability is higher in locations with

poverty, governance challenges and limited access to basic services and resources, violent conflict and high levels of climate-sensitive livelihoods (eg, smallholder farmers, pastoralists, fishing communities).”

Although we define the base of the pyramid by income level, the experience of poverty is more multi-dimensional. Those affected often face several deprivations of basic needs – for example, poor health, lack of education and inadequate living conditions – and are often trapped in an intractable and self-reinforcing cycle. Author James Baldwin wrote, “Anyone who has ever struggled with poverty knows how extremely expensive it is to be poor.” This refers to one of the greatest injustices in society – that people on a low income pay more to access basic resources and services. For example, people on a low income often face higher credit costs as banks deem them to be riskier, or they need to rely on loan sharks.

Self-reinforcing cycle of poverty

It is the deprivation in each area of the cycle which is important and self-reinforcing.



We acknowledge our difficulty in identifying investible opportunities to break this cycle. While we were pleased to invest in an additional base of the pyramid company in 2022, **Remitly**, we recognise that the number of companies in the portfolio classified in this impact theme is relatively low. Some of our investments such as **Nubank**, **HDFC**, **Duolingo** and **Coursera** do benefit the base of the pyramid, but these customers may not be their core customers so we conservatively classify them under Social Inclusion and Education. However, our ambition to invest in companies helping to break the cycle of poverty remains undimmed and our search for ideas which can meet our dual objectives continues.

Positive Change – part of the solution

In this theme we categorise companies whose core mission is to address challenges for the base of the pyramid, but other companies in the portfolio are also contributing to improving the lives of this population. Below we include examples of companies in this theme and across the other themes in the portfolio. They address the base of the pyramid in the following ways.

Remittances

It is estimated that over a billion people receive remittances worldwide, with around \$800 billion being sent by family members who have migrated to work. At the end of 2022, we took a holding in **Remitly**, an online remittance company which enables money transfers in over 170 countries.

On average, remitters send around 15 per cent of their earnings, making payments of \$200-300 several times per year. Recipients spend about 75 per cent of what they receive on essential costs – food, healthcare and utility bills. A large body of research explores how increasing the value of remittances can achieve positive change and promote social and financial inclusion. Remittances are surprisingly resilient to global crises, falling only 2 per cent in 2020, and play a vital role in households' recovery from natural disasters or other economic shocks.

At a macro level, remittances help stabilise household consumption, and correlations have been identified with increased economic growth, and reduced poverty and income inequality. For the first time in 2019, global remittances were higher than international aid and foreign direct investment. They are a vital source of income and wealth transfer for many developing economies. For the Philippines, for example, remittances comprise almost 10 per cent of its GDP.

The importance of these vital flows of wealth is recognised in Sustainable Development Goal 10.c: "By 2030, reduce to less than 3 per cent the transaction costs of migrant remittances and eliminate remittance corridors with costs higher than 5 per cent." Reducing fees is important and ultimately will enable remittance recipients to receive more money. However, other challenges limit how many remittances are sent overseas: non-transparent fees, slow payments, inconvenient methods and insecure transactions.

Remitly aims to solve these challenges for its customers and to offer a comprehensive and convenient remittance service. While customers send money digitally via Remitly's app, it can be received in bank accounts, mobile money accounts or cash. In 2022, over 90 per cent of Remitly's transactions occurred within one hour. While we do not have specific socio-economic data for recipients of remittances through Remitly, we are excited to add the company to our Base of the Pyramid theme because most remittances are sent from high-income to low- and middle-income countries, and recipient households are likely to be on very low incomes.

Financial resilience

Poverty is not a hard line. Alongside those who suffer from persistent poverty, some suffer occasional poverty due to unexpected shocks – either personal, such as ill-health or job loss, or more widespread shocks such as recessions or pandemics. Some people can be cyclically poor, for example, smallholder farmers.

Resilience is enhanced with access to resources such as credit, savings and health insurance. **Bank Rakyat** is the largest microfinance provider in Indonesia, where half of adults remain unbanked. It provides saving, borrowing, insurance and payment services to millions of low-income individuals at a reasonable cost and interest rate. **Safaricom** offers M-Tiba, a service that allows low-income users to save for healthcare costs.



Financial inclusion



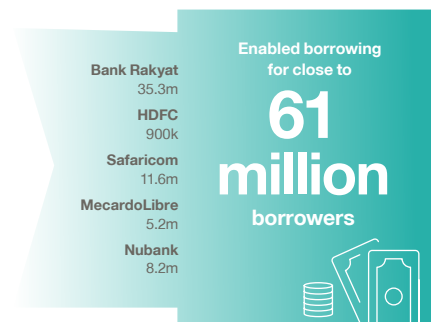
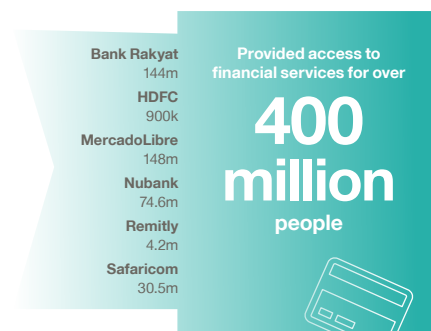
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Financial inclusion, or the ability of individuals and businesses to access appropriate, affordable and timely financial products, is critical. The World Bank Group considers financial inclusion a key enabler for reducing poverty and boosting shared prosperity. Financial inclusion has been identified as an enabler for eight of the 17 UN Sustainable Development Goals.

Internet connectivity and access to mobile phones will be part of the solution, providing first-time access and expanding the range of financial services available to those living on low incomes. Huge gaps remain in digital access, affordability and skills around the world. Influencing many of these barriers may be out of our scope, but supporting companies that design inclusive products is central to our ambition to see digital financial services working for all.

Companies in the Positive Change portfolio which are contributing towards improved financial inclusion are:

- **Safaricom**, Kenya's largest telecoms provider. Its mobile money ecosystem M-Pesa allows around 30 million customers to send and receive money globally.
- **MercadoLibre**, in the Social Inclusion and Education theme, enables access to financial services that facilitate transactions, savings and access to credit, creating opportunities for those living at the base of the pyramid.
- **HDFC** in the Social Inclusion and Education theme, provides affordable mortgages in India. Around one-third of its loans by volume are to low-income and economically weaker customers.
- **Nubank**, the Brazilian digital bank, has brought six million Brazilians into the financial system for the first time. Its starter credit card has a low initial spending limit that is gradually increased, allowing customers to build their credit history responsibly.



Access to basic services

Many basic services we take for granted in higher-income countries remain inaccessible or too costly for low-income populations. Companies are improving access to these services through new technologies and business models.

Xylem, in the Environment and Resource Needs theme, manufactures pumps, filters and testing equipment used in modern water infrastructure in low-income countries. It has a specific goal to provide access to clean water and sanitation for at least 20 million people living at the base of the global economic pyramid by 2025.

Moderna, in the Healthcare and Quality of Life theme, aims to provide treatments and vaccines for diseases that disproportionately affect people experiencing poverty, such as Zika and HIV. It is building a state-of-the-art manufacturing facility in Kenya to enable access to manufactured mRNA vaccines for Kenya and the African continent.

Coursera and **Duolingo**, in the Social Inclusion and Education theme, have ambitions to provide universal access to high-quality, low-cost education. Access to education is one of the key levers that can break the cycle of poverty by providing individuals with the skills they need to improve their employment prospects and increase their economic participation.



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What are we missing?

We continue to look for more investment opportunities in the Base of the Pyramid theme. Many facets of people's lives at the base of the pyramid affect stability, security, safety and quality of life. The cycle of poverty is about more than financials, and we are missing a wider range of companies which break this cycle.

Identifying companies whose core business is serving those at the base of the pyramid remains a challenge. We also need conviction that companies can build a strong and defensible business: we are uncompromising in adhering to our dual objectives.

Some regions remain too challenging for us to find investment opportunities. For example, they may be too fragile, affected by conflict or simply lack publicly listed companies which we can access. Indeed, some of the most interesting opportunities we see are emerging in the private space, and we will continue to build our understanding of these companies should they enter the publicly listed domain. Our search for base of the pyramid companies continues in areas such as facilitating entrepreneurship in low-income countries, improving infrastructure in Africa and supporting financial inclusion in India.


Bank Rakyat Indonesia

First invested January 2017

Positive Change hypothesis

Bank Rakyat Indonesia (BRI) offers microfinance in Indonesia, a country where roughly half of the adult population remains unbanked. BRI's competitive advantage in microfinance stems from its vast network of rural branches, and increasingly its investment in mobile and agent-based banking, which enables it to build trust and relationships with customers and provide financial services at low cost. Financial services, which can have a transformative effect on social outcomes, are underpenetrated in Indonesia, offering a very long runway for growth and impact.

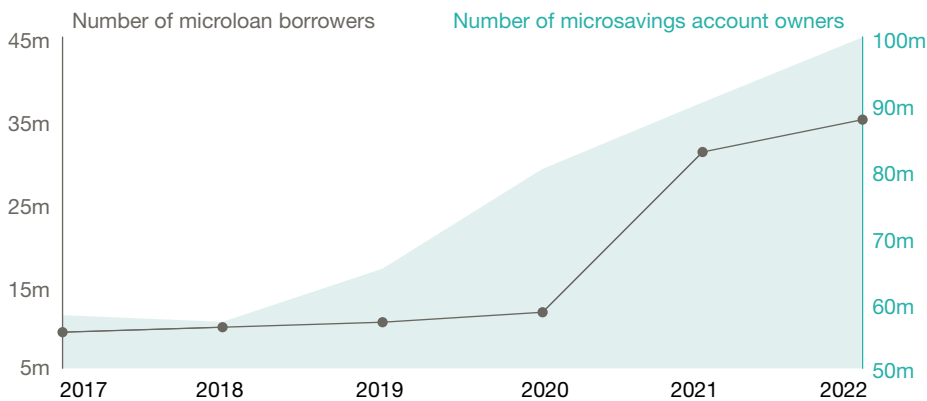
Positive Chain ▲

Input	Activities	Outputs	Outcomes	Impact (SDG target)
R&D US\$17.9m Employees 74,735 (Y/E Dec 2022)	BRI provides more than 144 million customers with access to saving, lending, insurance and payment services. Around 82 per cent of its loans are provided to Indonesian micro, small and medium-sized (MSME) enterprises.	In 2022, Bank Rakyat provided microloans and ultra-micro loans to 35.3 million borrowers and microsavings accounts to ~100 million savers. It provided microinsurance to 35.6 million insurers. BRILink processed 1 billion transactions, worth IDR1,297 trillion (US\$83.4bn), and IDR849.2 trillion (US\$54.5bn) worth of MSME loans were underwritten.	Expanding access to affordable financial services helps more people build financial resilience and capture livelihood opportunities. We are confident that BRI's practices enable this, evidenced by its online/offline approach, its low fees and relatively low nonperforming loan rate for the micro segment of 1.7 per cent.	 NO POVERTY 1.4, 1.5 INDUSTRY, INNOVATION AND INFRASTRUCTURE 9.3 REDUCED INEQUALITIES 10.2

Long-term progress ▲

Since we took a holding Bank Rakyat has expanded its range of services and has increasingly focused on serving lower-income consumers and micro enterprises. Bank Rakyat has expanded its microloan borrowers by 270 per cent in this time, supported by acquisitions. To enable greater penetration in rural areas and to support the roll-out of its digital services, Bank Rakyat has expanded its agent network to over 627,000 and remains the largest microfinance provider in Indonesia.

Impact objective



Source: Baillie Gifford, based on company data.

Investment objective

14%
revenue growth pa

Share price return (USD)*
43% cumulative **7%** pa

*6% pa MSCI ACWI return (USD).
Metrics over five-year time horizon.
Past performance is no guarantee of future results.

Real world context ▲

Bank Rakyat's growth has been accompanied by improvements in several important social development indicators in Indonesia; for example, falling poverty rates. At the same time, the financial inclusion gap has been closing and financial literacy improving. While we cannot attribute these developments to one company, it provides us with evidence that Bank Rakyat is supporting positive social change in Indonesia. Despite this, income inequality has been rising and is something we and BRI must continue to monitor.



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Remitly NEW

First invested **December 2022**

Positive Change hypothesis

Remitly provides mobile-based remittance services for migrants. The global remittance market is large and rapidly moving online. Remitly can provide superior services by leveraging mobile technologies, offering peace of mind and contributing to lowering fees. As an early mover in mobile remittances and with a strong operational track record, Remitly has been quickly gaining market share. Remitly plans to expand to more remittance corridors over the coming years and build out financial services beyond remittances, helping the company to serve more customers and drive strong revenue growth.

Positive Chain ▲

Input	Activities	Outputs	Outcomes	Impact (SDG target)
R&D N/A Employees 2,700 (Y/E Dec 2022)	Remitly enables its 4.2 million quarterly active customers to make person-to-person money transfers in more than 170 countries around the world and between over 4,500 transfer corridors.	Remitly allows money to be sent securely to approximately four billion bank accounts, approximately 1.2 billion mobile wallets and over 445,000 cash pick-up locations.	In 2022, Remitly enabled the transfer of US\$28.6 billion, over 90 per cent of which was dispersed within one hour.	 NO POVERTY 1.4, 1.5 REDUCED INEQUALITIES 10.b, 10.c




Safaricom

First invested August 2017

Positive Change hypothesis

Safaricom is contributing to improving lives in East Africa. First, through its construction and provision of mobile networks in Kenya, providing access to information services; second, through the provision of M-Pesa which promotes financial inclusion; and finally, through the development and provision of complementary services to M-Pesa and Safaricom’s data package, such as microcredit and online commerce. Safaricom has an impressive record of designing financial products that work for its customers, supporting its strong brand, making it uniquely placed to grow in a region with a huge opportunity for rapid digitisation.

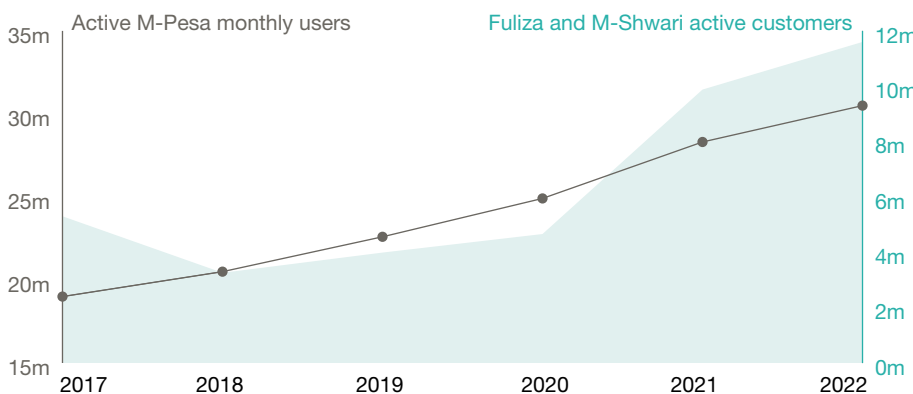
Positive Chain ▲

Input	Activities	Outputs	Outcomes	Impact (SDG target)
R&D N/A Employees 4,411 (Y/E Mar 2022)	Safaricom is the largest telecommunication company in Kenya and provides various mobile, financing and connectivity services, with the most well-known being M-Pesa, a mobile money ecosystem. In 2022, Safaricom launched its network service in Ethiopia.	In FY2022, Safaricom had 42.4 million mobile customers, and provided 4G coverage to 97 per cent of Kenya’s population. M-Pesa had 30.5 million monthly users and 492,772 merchants were using Lipa Na M-Pesa, a cashless secure and convenient payment service for customers. 6.9 million people had access to loans through Fuliza and 4.7 million from M-Shwari; there were 4.8 million savers on M-Tiba and 117,000 farmers active on DigiFarm.	In addition to the benefits of mobile connectivity, Safaricom’s array of products and services contribute to greater financial inclusion in Kenya for individuals and merchants. Using KPMG’s True Value Assessment, Safaricom estimates that its impact on society in FY2022 was 10.4x its profit, contributing 5.3 per cent to Kenyan GDP and sustaining 1,135,588 jobs.	 <ul style="list-style-type: none"> NO POVERTY 1.1, 1.4, 1.5 GOOD HEALTH AND WELL-BEING 3.3 QUALITY EDUCATION 4.6 GENDER EQUALITY 5.b INDUSTRY, INNOVATION AND INFRASTRUCTURE 9.3, 9.c REDUCED INEQUALITIES 10.1, 10.2, 10.c

Long-term progress ▲

Amid a challenging backdrop that included a pandemic, political instability and several natural disasters, Safaricom has executed well on its strategy, maintaining its dominance in traditional telecommunications and growing other revenue streams profitably. Its impact on society has been growing with increasing usage of its digital products to more people every year, and the introduction of new products for farmers and small businesses. More avenues for accelerated growth are emerging, such as Ethiopia, the M-Pesa app and its digital ecosystem, but there is currently a tough macroeconomic and currency backdrop, which has suppressed the share price in recent months.

Impact objective



Source: Baillie Gifford, based on company data.

Investment objective

3% revenue growth pa

Share price return (USD)*

-4% cumulative **-1%** pa

*6% pa MSCI ACWI return (USD).
Metrics over five-year time horizon. Past performance is no guarantee of future results.

Real world context ▲

Since the introduction of M-Pesa in 2007, the percentage of Kenyans with access to formal financial services has increased from 27 per cent to 84 per cent in 2021, and the access gap between genders has also fallen. Poverty rates remain persistently high but increased digital and financial inclusion has been accompanied by a slight decrease in poverty. Over the past four years there has been a worrying decline in financial health and an increase in economic shocks for Kenya’s population, a trend which Safaricom is pivoting its focus to help reverse.



© Getty Images.

Portfolio Snapshots: headline impact wheel ▲

In portfolio snapshots, we present aggregated data for the portfolio in two ways:

Headline impact wheel

For those companies that report the impact of their products and services (either through company reports or via our engagement), we have aggregated data to illustrate how the portfolio holdings are contributing towards delivering positive change.

Significant SDG contributions

Overleaf, we show which companies in our portfolio contribute to the UN Sustainable Development Goals.

Important notes

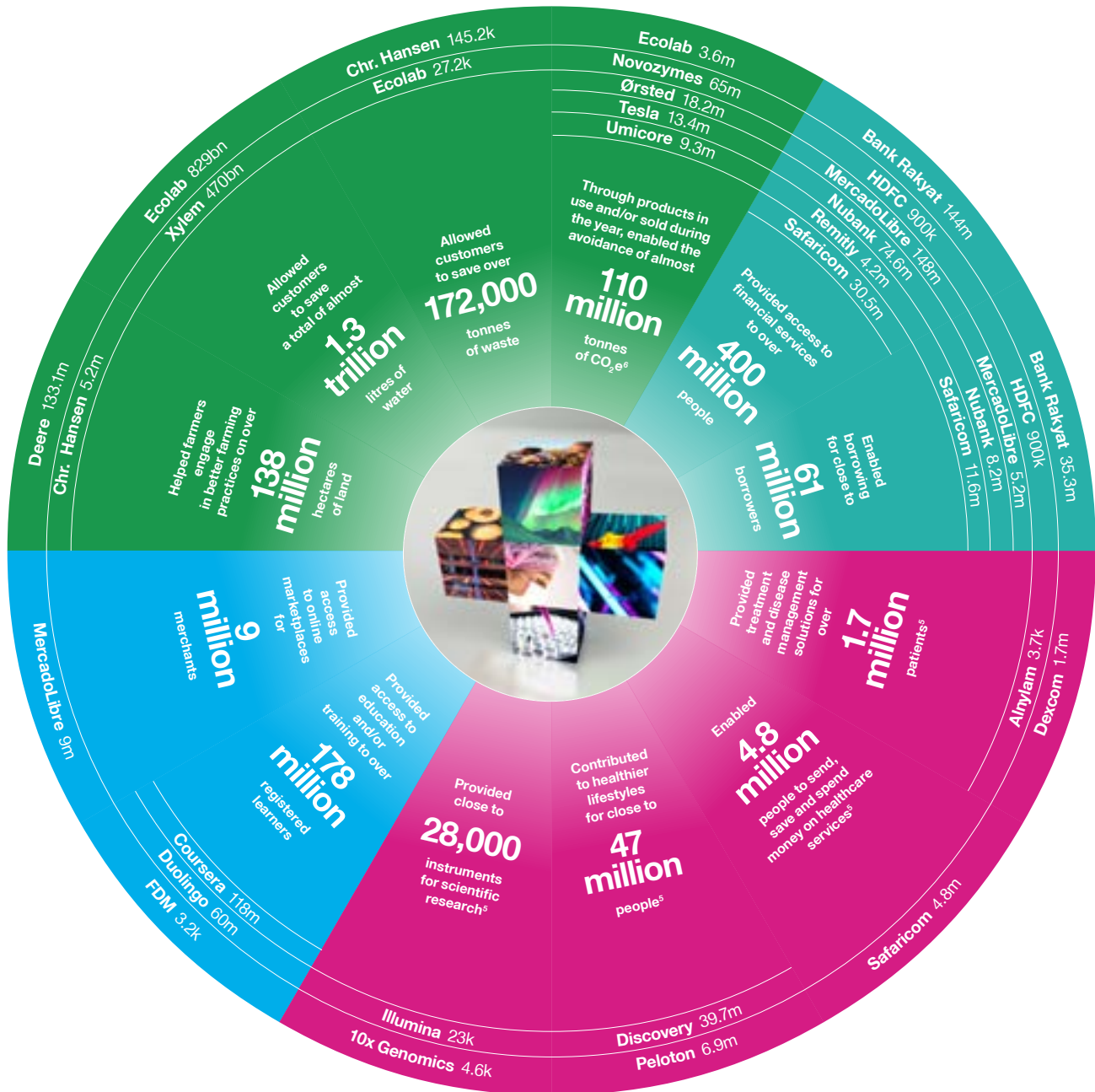
Contributions are based on the full-year impact of portfolio holdings as at 31 December 2022. For those holdings not held for the entire year, no attempt has been made to pro-rate the contribution. Where this applies, it is indicated in the Positive Chains. However, as we have a long time horizon and aim to invest in our holdings for 5–10 years or longer, portfolio turnover will be low; it has been under 25 per cent per annum since inception.

Headline Impact Data, while providing an indication of the impact of the portfolio holdings, is vulnerable to inconsistencies. These can be caused by underlying assumptions. How companies measure and report is not always uniform and, in some cases, requires conversion to allow for aggregation across the portfolio.

Where information is unavailable, we do not include a company's contribution within the Headline Impact Data snapshot; as such, we believe this provides a conservative estimate. In time we hope to be able to encourage companies to increase their reporting.

Headline impact wheel

In 2022, in their provision of products and services, companies are estimated to have:



■ Social Inclusion and Education
 ■ Environment and Resource Needs
 ■ Healthcare and Quality of Life
 ■ Base of the Pyramid

⁵ Data related to healthcare, is presented to date, covering multiple years.

⁶ Data for CO₂e saved is based on company reporting, either in CO₂ or CO₂e; the aggregate data is presented as CO₂e as this is the most conservative approach.

Portfolio Snapshots: significant SDG contributions ▲

We analyse each holding in the portfolio and map significant contributions from products and services to the UN SDGs. This allows us to represent the overall contribution of the portfolio to the SDGs.

Positive contributions



Negative contributions

Autodesk

A proportion of Autodesk's revenue comes from industries with a negative environmental impact such as the fossil fuel industry. By providing industry-leading software to these companies, Autodesk can help them develop and implement the latest technologies to improve their efficiency and profitability. It can therefore be argued that Autodesk has a negative contribution to climate change. We believe that the potential for positive environmental impact enabled by Autodesk's products within the construction and building management industries outweighs its negative impacts.



Ørsted

While the forward-looking goals of the business are wholly positive, Ørsted currently still operates some fossil fuel facilities as its transition to renewable power is underway. The green share of energy generation is now at 91 per cent, and Ørsted has a target to eliminate coal-fired power generation by end 2023. At this point, its green share of energy generation will be equal to or above 95 per cent of generation. Given the progress that Ørsted has already made, its strong targets for decarbonisation of its energy generation, and the small contribution to revenues that fossil-fuel power generation makes, we are comfortable that Ørsted's overall contribution to the SDGs is positive.



NIBE

NIBE Industrier's Stoves segment, which accounts for around 10 per cent of revenue, sells wood and gas-fired stoves for residential and commercial properties. Gas is a fossil fuel, and wood, although renewable, does contribute to particulate pollution. NIBE claims that its good combustion technology limits these emissions. It has state-of-the-art technology producing optimum combustion and its stoves products already met the latest eco-design requirements introduced in 2022. Overall, we are confident that the negative aspects of wood and gas-fired stoves are not sufficiently significant to detract from the positive change case of the other, much larger business segments that are providing a positive contribution to addressing climate change through sustainable energy products.



Ecolab

Ecolab no longer provides services for customers in energy exploration and production or any other upstream hydrocarbon processes. However, a proportion of Ecolab's revenues come from its Global Industrial segment, which includes serving customers in the downstream energy, refining and petrochemical industries. In many cases, Ecolab's contribution to these industries is to improve energy, water management and sustainability, and minimise pollution, therefore providing a positive environmental contribution. In some cases, products are process aids that enable customers to refine fuels and process petrochemicals profitably and reliably. It can therefore be argued as having a negative contribution to climate change by supporting the fossil-fuel industry. The breadth of the positive impact that Ecolab has across the remainder of industries that it works with is considered to more than compensate for the proportion of activities within the energy industry that could be regarded as negative.



Bank Rakyat

Bank Rakyat has been criticised by NGOs in recent years for its involvement in financing palm oil plantations and coal-fired power plants. However, it must be acknowledged that the extractives and agricultural sectors in Indonesia are extremely large, and it is therefore unrealistic to expect that it would not have any exposure given its role as a state-owned enterprise. We have engaged with Bank Rakyat regarding its approach to environmental and social due diligence. It has confirmed that it follows government guidelines on sustainable banking, which include avoiding companies that are on various government black lists, ensuring environmental permitting is in place, and ensuring companies engaged in palm-oil activities have an Indonesian Sustainable Palm Oil or a 'Round table' on Sustainable Palm Oil certificate. The amount the bank loans to large corporates is much smaller than the micro loans it provides for lower-income customers, and it is the latter that drives the positive change case for the company.



Deere

Modern agricultural practices have been linked to climate change and biodiversity loss through chemical fertilisers, pesticides and equipment emissions. Deere is complicit in enabling these impacts as a producer of agricultural equipment. However, industrial agricultural systems are central to feeding the world. We acknowledge the positive change Deere is bringing through its new technologies, which limit these impacts, and commend the company for the direction it is taking.



Sartorius

Most of Sartorius's products are single-use and used within the pharmaceutical and laboratory industries. These products are produced with polymers and plastics typically derived from oil. To prevent cross-contamination, normally single-use products are incinerated, emitting pollutants into the atmosphere that can contribute to climate change. We believe that the benefits from the improvements in drug development and reductions in emissions, energy and water outweigh the negative impacts from the end-of-life processes.



Important notes

- Our SDG mapping is underpinned using the 169 targets below the 17 SDGs. SDG mapping is the output of our philosophy and process and will change as the composition of the portfolio changes. We assess that portfolio companies' products materially address 15 SDGs.
- Our SDG mapping incorporates significant contributions that companies are making via their products and services only. It does not encompass the business practices of our holdings.
- Our aim is to identify and hold companies for their positive contributions. Accordingly, the number of holdings we found to be making a significant negative contribution to the SDGs through their products and services is less than those holdings making positive contributions.

Independent Limited Assurance Report of KPMG LLP to Baillie Gifford & Co

KPMG LLP (“KPMG” or “we”) were engaged by Baillie Gifford & Co (“Baillie Gifford”) to provide limited assurance over the Selected Information described below for the year ended 31 December 2022.

Our conclusion

Based on the work we have performed and the evidence we have obtained, nothing has come to our attention that causes us to believe that the Selected Information has not been properly prepared, in all material respects, in accordance with the Reporting Criteria.

This conclusion is to be read in the context of the remainder of this report, in particular the inherent limitations explained below and this report’s intended use.

Selected Information

The scope of our work includes only the information included within the Baillie Gifford Positive Change Impact Report (“the Report”) for the year ended 31 December 2022, and consists of the ‘Portfolio Snapshots: Headline Impact Wheel’ section, the ‘Portfolio Snapshots: Significant SDG Contributions’ sections, the ‘Positive Chain’ sections ‘Long Term Progress’ sections and the ‘Real World Context’ sections (collectively ‘the Selected Information’). These sections are marked with the symbol Δ within the Report. For the avoidance of doubt the Selected Information does not include any of the ‘Positive Change Hypothesis’ sections or any statements of a subjective nature

We have not performed any work, and do not express any conclusion, over any other information that may be included in the Report or displayed elsewhere on Baillie Gifford’s website for the current year or for previous periods unless otherwise indicated.

Reporting Criteria

The Reporting Criteria we used to form our judgements are Baillie Gifford’s Positive Change Fund Impact Measurement Methodology as set out at <https://www.bailliegifford.com/en/uk/individual-investors/literature-library/funds/oeics/positive-change-fund/positive-change-fund-impact-measurement-methodology/> (“the Reporting Criteria”). The Selected Information needs to be read together with the Reporting Criteria.

Inherent limitations

The nature of non-financial information; the absence of a significant body of established practice on which to draw; and the methods and precision used to determine non-financial information, allow for different, but acceptable evaluation and measurement techniques and can result in materially different measurements, affecting comparability between entities and over time. The Reporting Criteria has been developed to assist Baillie Gifford in producing its Positive Change Impact Report as a result, the Selected Information may not be suitable for another purpose.

Partners’ responsibilities

The Partners of Baillie Gifford are responsible for:

- designing, operating and maintaining internal controls relevant to the preparation and presentation of the Selected Information that is free from material misstatement, whether due to fraud or error;
- selecting and/or developing objective Reporting Criteria;
- measuring and reporting the Selected Information in accordance with the Reporting Criteria; and
- the contents and statements contained within the Report and the Reporting Criteria.

Our responsibilities

Our responsibility is to plan and perform our work to obtain limited assurance about whether the Selected Information has been properly prepared, in all material respects, in accordance with the Reporting Criteria and to report to Baillie Gifford in the form of an independent limited assurance conclusion based on the work performed and the evidence obtained.

Assurance standards applied

We conducted our work in accordance with International Standard on Assurance Engagements (UK) 3000 *Assurance Engagements other than Audits or Reviews of Historical Financial Information* (“ISAE (UK) 3000”) issued by the Financial Reporting Council. That standard requires that we obtain sufficient, appropriate evidence on which to base our conclusion.

Independence, professional standards and quality management

We comply with the Institute of Chartered Accountants in England and Wales (“ICAEW”) Code of Ethics, which includes independence, and other requirements founded on fundamental principles of integrity, objectivity, professional competence and due care, confidentiality and professional behaviour, that are at least as demanding as the applicable provisions of the IESBA Code of Ethics. The firm applies International Standard on Quality Management 1 *Quality Management for Firms that*

Perform Audits or Reviews of Financial Statements, or Other Assurance or Related Services Engagements which requires the firm to design, implement and operate a system of quality management including policies or procedures regarding compliance with ethical requirements, professional standards and applicable legal and regulatory requirements.

Summary of work performed

A limited assurance engagement involves planning and performing procedures to obtain sufficient appropriate evidence to obtain a meaningful level of assurance over the Selected Information as a basis for our limited assurance conclusion. Planning the engagement involves assessing whether the Reporting Criteria are suitable for the purposes of our limited assurance engagement. The procedures selected depend on our judgement, on our understanding of the Selected Information and other engagement circumstances, and our consideration of areas where material misstatements are likely to arise.

The procedures performed included:

- Assessing whether the Selected Information has been collected and reported in accordance with the applicable Reporting Criteria
- conducting interviews with Baillie Gifford’s management to obtain an understanding of the key processes, systems and controls in place over the preparation of the Selected Information;
- agreeing all of the Selected Information against the corresponding source documentation, including but not limited to, the annual reports and sustainability reports of the underlying portfolio holdings;
- reperforming all of the manual calculations over the Selected Information including whether the formulae (including unit and conversion factors) used were in accordance with the Reporting Criteria.
- performing analytical procedures over the aggregated Selected Information, including a comparison to the prior year amounts having due regard to changes in business volume and the business portfolio; and
- reading the narrative within the Report with regard to the Reporting Criteria, and for consistency with our findings.

The work performed in a limited assurance engagement varies in nature and timing from, and is less in extent than for, a reasonable assurance engagement. Consequently, the level of assurance obtained in a limited assurance engagement is substantially lower than the assurance that would have been obtained had a reasonable assurance engagement been performed.

This report’s intended use

Our report has been prepared for Baillie Gifford solely in accordance with the terms of our engagement letter with Baillie Gifford. We have consented to the publication of our report in the Baillie Gifford Positive Change Impact Report for the purpose of Baillie Gifford showing that it has obtained an independent assurance report in connection with the Selected Information.

Our report was designed to meet the agreed requirements of Baillie Gifford determined by Baillie Gifford’s needs at the time. Our report should not therefore be regarded as suitable to be used or relied on by any party wishing to acquire rights against us other than Baillie Gifford and its relevant group companies for any purpose or in any context. Any party other than such Baillie Gifford entities who obtains access to our report or a copy and chooses to rely on our report (or any part of it) will do so at its own risk. To the fullest extent permitted by law, KPMG LLP will accept no responsibility or liability in respect of our report to any other party.

KPMG LLP

KPMG LLP

Chartered Accountants

15 Canada Square

London

E14 5GL

20 July 2023

The maintenance and integrity of Baillie Gifford’s website is the responsibility of the Partners of Baillie Gifford; the work carried out by us does not involve consideration of these matters and, accordingly, we accept no responsibility for any changes that may have occurred to the reported Selected Information, Reporting Criteria or Report presented on Baillie Gifford’s website since the date of our report.



Important Information

Baillie Gifford & Co and Baillie Gifford & Co Limited are authorised and regulated by the Financial Conduct Authority (FCA). Baillie Gifford & Co Limited is an Authorised Corporate Director of OEICs.

Baillie Gifford Overseas Limited provides investment management and advisory services to non-UK Professional/ Institutional clients only. Baillie Gifford Overseas Limited is wholly owned by Baillie Gifford & Co. Baillie Gifford & Co and Baillie Gifford Overseas Limited are authorised and regulated by the FCA in the UK.

Persons resident or domiciled outside the UK should consult with their professional advisers as to whether they require any governmental or other consents in order to enable them to invest, and with their tax advisers for advice relevant to their own particular circumstances.

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South Korea

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Japan

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Australia

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Canada

Baillie Gifford International LLC is wholly owned by Baillie Gifford Overseas Limited; it was formed in Delaware in 2005 and is registered with the SEC. It is the legal entity through which Baillie Gifford Overseas Limited provides client service and marketing functions in North America. Baillie Gifford Overseas Limited is registered with the SEC in the United States of America.

The Manager is not resident in Canada, its head office and principal place of business is in Edinburgh, Scotland. Baillie Gifford Overseas Limited is regulated in Canada as a portfolio manager and exempt market dealer with the Ontario Securities Commission ('OSC'). Its portfolio manager licence is currently passported into Alberta, Quebec, Saskatchewan, Manitoba and Newfoundland & Labrador whereas the exempt market dealer licence is passported across all Canadian provinces and territories. Baillie Gifford International LLC is regulated by the OSC as an exempt market and its licence is passported across all Canadian provinces and territories. Baillie Gifford Investment Management (Europe) Limited ('BGE') relies on the International Investment Fund Manager Exemption in the provinces of Ontario and Quebec.

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Baillie Gifford Overseas is not licensed under Israel's Regulation of Investment Advising, Investment Marketing and Portfolio Management Law, 5755-1995 (the Advice Law) and does not carry insurance pursuant to the Advice Law. This material is only intended for those categories of Israeli residents who are qualified clients listed on the First Addendum to the Advice Law.

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