

Keystone Positive Change Investment Trust Impact Report

2021



Investment managers

Risk Factors

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

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As with any investment, capital is at risk.

The Trust invests in companies whose products or behaviour make a positive impact on society and/or the environment. This means the Trust will not invest in certain sectors and companies and the universe of investments available to the Trust will be more limited than other funds that do not apply such criteria. The Trust therefore may have different returns than a fund which has no such restrictions.

The Trust invests in overseas securities. Changes in the rates of exchange may also cause the value of your investment (and any income it may pay) to go down or up. The Trust invests in emerging markets where difficulties in dealing, settlement and custody could arise, resulting in a negative impact on the value of your investment.

The Trust's risk could be increased by its investment in private companies. These assets may be more difficult to buy or sell, so changes in their prices may be greater.

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For a Key Information Document for the Keystone Positive Change Investment Trust, please visit our website at bailliegifford.com

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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 part of the solution, and that it 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, it 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.

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.

We believe that a subset of those companies will enjoy sustainable competitive advantages such as loyal customers and motivated employees: they will be high-quality companies.

We believe 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)*
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 five 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.

*The performance target stated is aspirational and in no way guaranteed, nor is it intended to be precise, and is not used for the purpose of determining or constraining the composition of the Trust's portfolio. We believe it to be a reasonable estimate of the amount by which we can outperform the relevant benchmark in the long term through the consistent application of our investment process, taking into account the opportunity set and the characteristics of the markets in which the strategy invests. Factors that may lead to Baillie Gifford failing to meet our investment performance objectives in future include a significant change in market characteristics such that our growth investment style is unrewarded for a period of time; or misjudgement of the prospects for long-term earnings growth for a significant number of individual stocks in which we invest.

Introduction

We welcome readers to the inaugural annual impact report of the Keystone Positive Change Investment Trust. Baillie Gifford was appointed as manager of the company in February 2021 and is delighted to publish this impact report which focuses on the second – and equally important – objective of Keystone Positive Change. In this report, we seek to illustrate how we monitor investee companies' progress towards addressing some of the world's greatest challenges.

Overall, 2021 was a tumultuous year. The global pandemic has dragged on, with its disruptive effects compounded by geopolitical rivalries, conflicts and natural disasters. These have resulted in short-term investment volatility but our focus, and that of the companies in the portfolio, remains firmly on finding solutions to enduring problems. In fact, amid a backdrop of uncertainty, we believe that investing for positive change is more important and more powerful now than ever.

We believe that monitoring, measuring and reporting on the impact of companies in the portfolio is a fundamental requirement of being impact investors. This report reflects our impact monitoring process, which is ongoing and 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 alongside the key milestones 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 2021 or what we have collected through company engagement, unless indicated otherwise. We strive to be transparent, conservative and consistent with our reporting on impact. 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 further information on our methodology for analysing and reporting positive change [click here](#). We have detailed our Investment and Impact Analysis process in the appendix.

We seek independent limited assurance over aspects of this report from KPMG LLP, marked with a ▲ under assurance standard ISAE (UK) 3000. ISAE(UK)3000 is the assurance standard for non-financial information. KPMG has issued an unqualified opinion over the selected information. Please refer to its statement on page 76.





What is in the report?

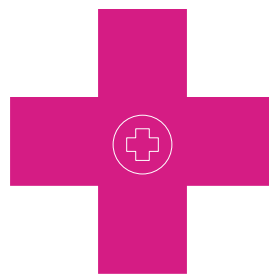
Companies in the portfolio are organised into four interrelated themes that represent key global challenges. In this impact report, we highlight the key challenges and opportunities associated with each theme and demonstrate how each company in the portfolio is addressing these. The themes are:



Social Inclusion and Education



Environment and Resource Needs



Healthcare and Quality of Life



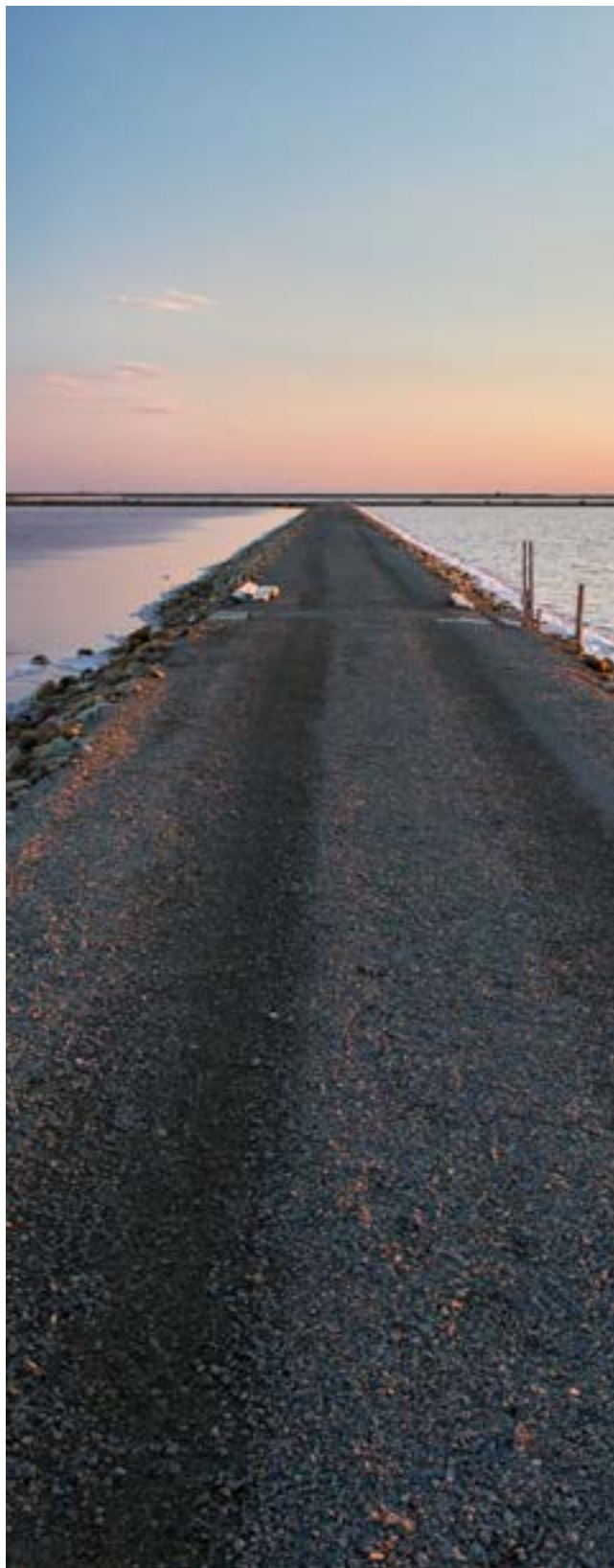
Base of the Pyramid

The report provides information on every company in the portfolio and showcases how we are monitoring and measuring the impact that their products and services are having on society and the environment. For each company we have included:

- Our Positive Change Hypothesis. This outlines how we expect companies’ products and services to deliver positive change, and why we believe this represents a good investment opportunity. Please note the Positive Change Hypothesis is not included in the KPMG assurance on page 76 as it reflects the views of Baillie Gifford.
- Positive Chains. These are based on the Theory of Change and evidence each company’s progress in delivering positive change.

The indicators we track for each company are not always the ideal metrics to demonstrate end-impact. To a large degree we are constrained by what each company makes publicly available. In some instances, we are able to monitor more direct impacts, such as patients treated and carbon emissions avoided, but in others we are restricted to product sales or proportions of revenue with a social or environmental benefit. In all cases, though, this report showcases some of the things that we track as evidence to monitor whether companies in the portfolio are having the positive impact we hope they will.

Metrics are a particular challenge for the private companies we hold in the portfolio both in terms of availability and the data points that can be publicly disclosed. Given these constraints, within the Positive Chains for private companies we have combined the ‘outputs’ and ‘outcomes’ sections. Please note that a lack of metrics does not equate to a lack of impact. We continue to have high conviction in the impact potential of the private companies held.



At the end of the report we include portfolio snapshots illustrating the aggregated impact of portfolio listed companies across some key metrics that we monitor annually. We also include our assessment of the companies' positive and negative contributions to the UN Sustainable Development Goals (SDGs) based on our holdings at the end of 2021.

All companies in the Keystone Positive Change Investment Trust contribute to the SDGs. We take a rigorous approach to SDG mapping, identifying the SDGs that companies contribute to through the delivery of their products and services at the target level. This ensures that companies are genuinely addressing the changes needed to deliver the goals, rather than merely aligning with a theme at a superficial level.

We do not consider alignment to the goals through business practices, as this is not the reason companies are held in the portfolio. For robustness and consistency, we make our assessment of SDG mapping independently from how companies report their contributions, and include our assessment of the material negative contributions made by companies in the portfolio. The linkage between each company's impact and the SDGs is shown in the Positive Chains, and at an aggregate level across the whole portfolio in the portfolio snapshots.

This report is complemented by our annual publication of Positive Conversations, a report focusing on the business practices (ESG factors) of the companies in which we invest. It also details our engagement, or positive conversations, with management teams as we seek to support and influence companies over the long term. The Keystone Positive Change Investment Trust Positive Conversations document is available on the Keystone website.

We hope our impact reporting will encourage our industry to deepen and be more transparent about how it measures, monitors and reports on the impact of companies' products and services. We are encouraged to see more and more companies publish data on their impact but are also concerned that this is often lost in efforts to report on operational ESG metrics. We remain on a journey to improve this and better understand the positive change that companies can have in the world. Fundamentally, we believe this will make us better impact investors.



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 the significant advances that society has made over the past few hundred years, such as dramatically improving living standards, prosperity, literacy and longevity, these are not development gains that have been experienced universally.

This 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, poor employment outcomes, low lifetime earnings and poor mental and physical health. And at a national level, social exclusion squanders human capital wealth and leads to constrained economic growth and distrust, leading to social unrest.

The challenge – who is being left behind?

The United Nations Development Programme (UNDP)¹ identifies five key factors that contribute to social exclusion.

Discrimination

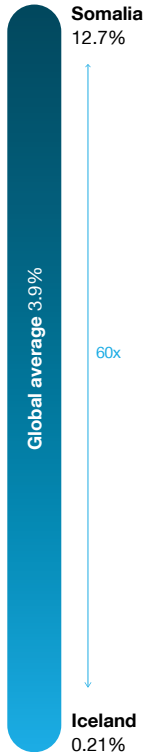
This may occur on the basis of factors such as gender, religion, age, disability, sexual orientation, ethnicity or migratory status. Certainly, it's staggering that nearly one in four girls globally between the ages of 15 and 19 are neither employed nor in education or training – compared to one in 10 boys.² It's also striking that in 2020, 19.5 per cent of Black people living in the United States were living below the poverty line. This is compared to 8.2 per cent of White people, and 8.1 per cent of Asian people.³

Geography

Where people live affects access to public services, transportation, education, health services, the internet and other infrastructure. Geographical inequality can be considered in terms of country of residence. The chart below illustrates various measures of inequality⁴ between countries. Inequality also exists within countries. For example, in China the annual per capita disposable income of rural households was around 40 per cent of the income of urban households in 2021.⁵

Under-5 mortality rate

2017 data



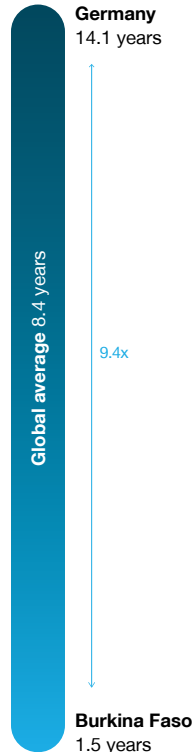
Life expectancy at birth

2017 data



Mean years of schooling

received by people older than 24. 2017 data.



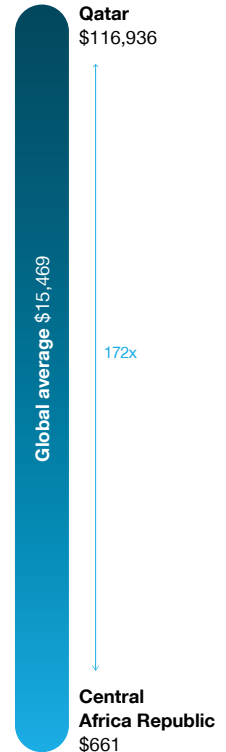
Expected years of schooling

for a child of school entry age. 2017 data.



Average income

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





Socio-economic status

An individual's socio-economic status may mean they face deprivation or disadvantages in terms of income, life expectancy and educational attainment. 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.⁷

Governance

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

Shocks and fragility

Here we can think of inequality as vulnerability to setbacks due to the impact of shocks such as climate change, natural disasters, conflict, health emergencies and economic downturns. Unfortunately, we have had many examples of these in recent years – 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 is expected to push 47 million additional women and girls into extreme poverty and further widen the gender poverty gap.⁸

Positive Change — part of the solution

Improving the terms on which individuals and groups take part in society is a complex task which requires 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. It is through investing in and engaging with these companies that we believe Positive Change can make the biggest difference.

Removing barriers

Affordable housing, accessible finance

Inclusion happens when you start to break down barriers. By removing some of the obstacles that underserved communities face you can start to foster greater social inclusion.

A more recent addition to the portfolio is **Nu**, a Brazilian digital bank. Traditional banks in Brazil create barriers to financial inclusion including high fees and poor customer service.

Nu has broken those barriers, offering its 40 million customers free bank accounts on an efficient digital platform. For almost 6 million of its customers it has been their first credit card or bank account.

MercadoLibre, through its Latin American payments ecosystem, and also **Alibaba**, through China's largest digital payment platform Alipay, are helping to drive financial inclusion in their respective regions.

The UN believes that financial inclusion is crucial to achieving at least eight out of the 17 Sustainable Development Goals, citing its potential positive impact on gender equality, poverty, health and education.⁹

Enabling innovation

Democratising technology, bridging the digital divide

Technology can help democratise access to 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**, **MercadoLibre** and **Alibaba** to drive change.

Shopify provides merchants of all sizes, mostly small and medium enterprises (SMEs), access to services such as payments, shipping and inventory management that allow them to compete with bigger players in the increasingly digital environment.

MercadoLibre and **Alibaba** are also committed to fostering entrepreneurship and social mobility through their ecommerce platforms, which enable millions of SMEs to reach customers.

ASML and **TSMC** are critical enablers. Both companies play a vital role in lowering the cost and increasing the efficiency of semiconductors and in turn facilitating connectivity and new technologies across a variety of industries. They are enablers of the energy transition, electrification and monumental change in the healthcare sector, where genomics, data and machine learning will help enable the treatment and prevention of diseases which affect millions of people across the world.

In 2021 we took a holding in private company **PsiQuantum**. PsiQuantum develops componentry and technologies that help develop the production of quantum computers. Quantum computers can help solve complex problems that were previously limited by the computational speed of traditional computer systems. In turn, this will help develop digital infrastructure and enable innovation, while at the same time make technology more affordable.

Education & training

Facilitating low cost, accessible, high quality learning

Education is a powerful transformer of people's prospects. A stark statistic is that, according to UNICEF in 2019, 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.

FDM looks to capture the transformative effect of tertiary education by delivering access to rewarding employment opportunities through training and work experience placements regardless of background.

In 2021 we were pleased to invest in **Coursera** and **Duolingo**. Coursera is an online learning platform hosting education content including massive open online courses (MOOCs) guided projects, professional certification and online degrees. Coursera has the potential to improve education by lowering costs, improving accessibility and providing accredited qualifications relevant to the ever changing job market.

Best known for its language learning app, Duolingo's mission is to develop the best education in the world and make it universally available. Learning a language can profoundly alter people's economic and cultural prospects. Duolingo aims to expand into literacy and basic maths.

What are we missing?

Given the vast scope of social inequality and the complexity of the underlying causes we will never be able to solve its challenges within a portfolio context. But being realistic about our scope does not mean that we limit our ambition, and we continue to seek companies that are meaningfully contributing to social inclusion.

An ongoing challenge for us is identifying exactly which groups are benefiting from the products and services of the companies we analyse. Even when we can identify who is benefiting from a product or service, the true effect on their lives over the long term 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 cannot forget about the 2 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 which are removing barriers, enabling innovation and improving education in order to help leave no one behind.

1. [UNDP \(United Nations Development Programme\) What Does it Mean to Leave No-One Behind? A UNDP Discussion Paper and Framework for Implementation.](#)
2. [Gender Equality | UNICEF](#)
3. [U.S. Poverty Rate, by ethnicity 2020 | Statista](#)
4. [Global Economic Inequality | Our World in Data](#)
5. [China: Per Capita Disposable Income of Urban and Rural Households 2021](#)
6. 2017 data is the most recent available data for these metrics
7. [Living in Poverty Was Bad for Your Health Long Before COVID-19 | The Health Foundation](#)
8. [COVID-19: Rebuilding for Resilience | UN Women – Headquarters](#)
9. [UNCDF | Impact Pathways](#)






Alibaba

First invested February 2021

Positive Change hypothesis

The Alibaba Group continues to play a very important role in the wider Chinese society. Its ecommerce business provides an efficient and transparent way for buyers and sellers to interact, and still has a large runway for growth, driven by increasing online penetration in many product categories as well as rising consumption of China's 500 million consumers in lower-tier regions. Alibaba also has a dominant position in cloud computing, an industry with multi-decade growth potential driven by China's digitisation of its economy, vital for the country to meet its environmental and social objectives. Finally, Alibaba helps foster financial inclusion via Ant Group, which provides basic financial services and facilitates credit to underserved segments of the Chinese population.

Positive Chain ▲

Input	Activities	Outputs	Outcomes	Impact (SDG Target)
<p>Research and Development (R&D) US\$8.7bn</p> <p>Employees 251,462 (Y/E Sep 2021)</p>	<p>Alibaba is a technology company that provides businesses with access to online marketplaces, inclusive financial products and cloud technologies. While the majority of its activities are in China, Alibaba operates in over 190 countries.</p>	<p>In financial year 2021, Alibaba's marketplace ecosystem had 891 million active consumers in China and 240 million outside of China. By March 2021, there were >1 billion users and more than 80 million small and micro businesses on Alibaba's financial services platform.</p>	<p>Alibaba's ecosystem enables development in China's rural and underserved regions. Alibaba has goals of creating 100 million jobs, enabling 10 million small businesses to be profitable and serving 2 billion consumers by 2036. Through subsidiaries such as MYBank and Ant Group, Alibaba promotes financial inclusion, and through AliCloud, Alibaba is helping to modernise traditional industries, helping to create efficiencies, both economic and environmental.</p>	 <p>8 DECENT WORK AND ECONOMIC GROWTH, 9 INDUSTRY, INNOVATION AND INFRASTRUCTURE, 11 SUSTAINABLE CITIES AND COMMUNITIES, 17 PARTNERSHIPS FOR THE GOALS</p>
				8.1, 8.2, 8.3, 9.3, 9.4, 11.3, 17.10



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ASML

First invested **February 2021**

Positive Change hypothesis

ASML is the world’s leading manufacturer of specialist lithography equipment that performs a crucial stage in the manufacturing of semiconductors. 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 semiconductors, ASML is a key enabler of this important and growing industry. When others gave up, ASML persevered in developing the next generation of technology (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\$2.8bn Employees 32,016 (Y/E Dec 2021)	ASML develops lithography equipment, which is used in the semiconductor manufacturing process. Lithography equipment uses light to print the layout of semiconductors onto semiconductor wafers.	ASML sold 309 lithography systems in 2021, including 42 EUV systems. By the end of 2021, ASML’s installed EUV base had produced more than 59 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.	 8 DECENT WORK AND ECONOMIC GROWTH 9 INDUSTRY, INNOVATION AND INFRASTRUCTURE
				8.2, 9.5


Coursera

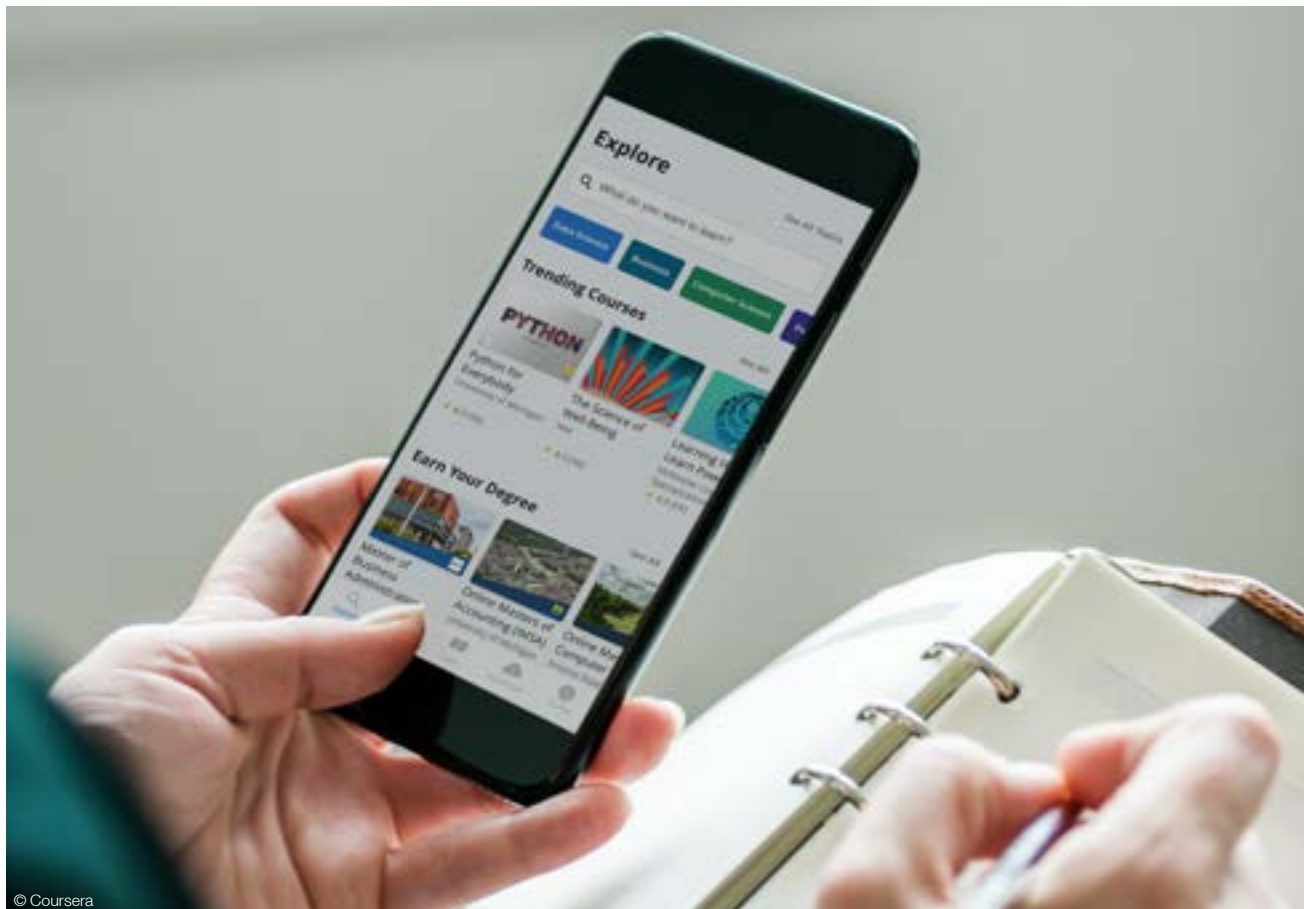
First invested March 2021

Positive Change hypothesis

Coursera is an online learning platform hosting education content including Massive Open Online Courses (MOOCs), guided projects, professional certification, and online degrees. Its scale, with 97 million registered learners, helps to attract academic and corporate partners to produce content for Coursera, which in turn attracts more learners. Coursera has the potential to improve education by lowering costs, improving accessibility, and providing accredited qualifications relevant to the ever changing job market. The global education market is worth US\$2 trillion and it's increasingly moving online. We believe this offers a long and exciting growth runway for Coursera.

Positive Chain ▲

Input	Activities	Outputs	Outcomes	Impact (SDG Target)
R&D US\$135.4m Employees 1,138 (Y/E Dec 2021)	Coursera partners with leading universities and companies to offer a catalogue of educational content and credentials, including professional certificates, guided projects, and bachelors and masters degrees.	In 2021 Coursera had 97 million learners registered, 37 million course enrolments, 372 million lectures watched and had 63 million completed assessments. Over 16,000 students were enrolled in degree programmes by the end of 2021.	71 per cent of learners globally and 81 per cent of learners in emerging markets report seeing career benefits, such as a promotion or a pay increase, from taking courses on Coursera.	 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 building an app that is fun, engaging and effective in helping people learn languages, and has since moved into English language testing and released an app for English literacy. Through further content and product developments as well as new pricing strategies, sales channels and better targeted advertising, they will be able to grow subscribing individuals and organisations at a steady rate. Learning a new language, particularly English, can have a profound impact on people's lives, opening up new cultural and economic opportunities. It 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

Input	Activities	Outputs	Outcomes	Impact (SDG Target)
R&D US\$103.8m Employees >500 (Y/E Dec 2021)	Duolingo is a language-learning website and mobile app that enables users to practise vocabulary, grammar and pronunciation. The company's vision is to expand its offering to other subjects such as maths and science.	Duolingo is used by over 500 million learners, with 40.5 million monthly active users completing over 500 million exercises a day. Duolingo is offered free of charge in over 100 countries and has courses in 41 languages.	The platform's most popular languages are English, Spanish, and French which are studied in 120, 31, and 24 countries respectively, primarily in developing countries. The Duolingo English Test, which is cheaper and more accessible than conventional English proficiency tests, is accepted by 3,000 higher education programmes.	 4.5



Positive Chain ▲

FDM

First invested **February 2021**

Positive Change hypothesis

FDM recruits, trains and provides career opportunities to graduates and returners-to-work, placing them with clients who require IT expertise. FDM's services address the mismatch in the supply and demand for IT expertise while providing opportunities to a cohort of individuals who might not otherwise have access to such opportunities. 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 the customer base globally; its focus on diversity, inclusion and equal opportunity will enable it to continue to attract individuals ("Mounties") with aptitude and attitude, enabling upward social mobility.

Input	Activities	Outputs	Outcomes	Impact (SDG Target)
R&D N/A Employees >5,500 (Y/E Dec 2021)	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. Their recruits are called Mounties.	2,410 Mounties completed training in 2021. Of the UK intake, 91 per cent attended a state school and 36 per cent were the first in their family to go to university.	FDM had 4,033 Mounties assigned to clients by the end of 2021.	  4.4, 8.5, 8.6

Positive Chain ▲

MercadoLibre

First invested February 2021

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. On FinTech, 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 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 29,957 (Y/E Dec 2021)	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 2021, MercadoLibre had 139.5 million unique active users across its platforms and 12 million active sellers on its online marketplace. As of December 2021, US\$1.26 billion in loans had been granted through Mercado Credito. Since the launch of Mercado Credito in 2016, it has helped millions of buyers, entrepreneurs, SMEs and businesses from Argentina, Brazil and Mexico to invest in their livelihoods.	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. A 2021 study found that 40 per cent of SMEs received their first credit offer from MercadoLibre and that it is the main source of income for over 900,000 households.	 1.4, 8.1, 8.10, 9.3





Nu Holdings

First invested **December 2021**

Positive Change hypothesis

Nu Holdings has tens of millions of users of its mobile app-based financial services, which are more affordable and accessible for Latin America’s large underbanked and unbanked population than the traditional banking ecosystems. Nu can deliver positive change by promoting financial inclusion, and by fostering innovation and competition in the region’s financial markets as the infrastructure of a more equitable financial system emerges. Nu is run by an ambitious management team who we believe will successfully manage the balance between growing profitably and delivering positive social outcomes for millions of economically vulnerable people.

Positive Chain ▲

Input	Activities	Outputs	Outcomes	Impact (SDG Target)
R&D N/A Employees 6,068 (Y/E Dec 2021)	Nu 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.	Nu has 53.9 million customers and 41.1 million monthly active users of its mobile app-based financial services. In addition, Nu provides almost 1.4 million SMEs with business accounts.	Nu estimates that it has provided 5.6 million people with their first credit card or bank account. Access to financial services promotes economic resilience and opportunity, helping to fight poverty and improve well-being. In 2021, Nu data showed that 80 per cent of customers reported they could overcome unforeseen financial issues as a result of access to its credit products.	 1.4, 8.3, 8.10, 10.2


PsiQuantum

Private
First invested May 2021

Positive Change hypothesis

PsiQuantum’s goal is to build a large-scale, error-corrected, general-purpose quantum computer using conventional silicon chips. This approach, although it may be initially harder to develop than the other quantum computing technologies being explored, holds more promise in terms of performance and manufacturing scalability. If successful, the unparalleled power of quantum computing has the potential to transform every aspect of modern technology by running models which are currently too complex for conventional computers, leading to breakthrough applications such as green fertilisers, large protein folding and in-silico drug development.

Positive Chain ▲

Input	Activities	Outputs/Outcomes	Impact (SDG Target)
R&D N/A Employees <200	PsiQuantum is a computing company developing the componentry and technologies for quantum computers.	PsiQuantum aims to mass produce all its components through existing Tier 1 semiconductor foundries. Doing so means PsiQuantum can manufacture quantum computers at scale, providing state-of-the-art control electronics, which require less cooling or complicated connectors. This is not the case with other quantum technologies. These computers will help solve problems previously considered impossible, across areas as diverse as climate, energy, privacy, healthcare, industry and high-tech.	 9.5


Shopify

First invested February 2021

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, 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\$854.4m Employees >10,000 (Y/E Dec 2021)	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 2,063,000 merchants in approximately 175 countries, the majority of which are SMEs. In 2021, Shopify merchants in developing countries generated US\$6.5 billion in revenue.	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.	 8.1, 8.2


TSMC

First invested February 2021

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\$4.5bn Employees 65,152 (Y/E Dec 2021)	TSMC manufactures semiconductors for a variety of industries ranging from telecommunications 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 2021, the company shipped 14.2 million 12-inch equivalent wafers, as well as millions of 8-inch equivalent wafers using TSMC's HV/Power management technologies.	Cheaper and more powerful semiconductors used in a variety of applications enable greater access to telecommunications (e.g. access to cheaper mobile devices and access to the internet); new discoveries in healthcare and medicine; and improved energy efficiency.	 8.2, 9.5



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Environment and Resource Needs



Introduction



Last autumn, an hour due west of our Edinburgh office, 25,000 delegates from nearly 200 countries attended the 2021 United Nations Climate Change Conference, or COP 26, in Glasgow.

While there may have been some disappointment with certain outcomes from Glasgow, there are reasons to be optimistic about announcements on deforestation, methane, and the phasing out of coal and oil production.

More recently, the latest paper from the Intergovernmental Panel on Climate Change (IPCC) on climate change mitigation has made clear that holding the global temperature rise to 1.5 degrees Celsius is still possible, but only if we act immediately to address the climate emergency.

The challenge

Greenhouse gas (GHG) emissions continue to rise and are now 54 per cent higher than in 1990.¹ Under the modelled pathways that hold global warming to the Paris Agreement's 1.5 degrees Celsius goal, GHG emissions must fall by almost 8 per cent every year for the rest of the decade. The Covid-19 pandemic provided a unique lens on the bleak challenge ahead; we barely met this target in 2020 when our economic and social activities came to an abrupt halt across the world. All pathways now depend on carbon removal, which the IPCC clearly states must be a mix of engineered and nature-based solutions.

Restoring natural carbon sinks like forests is a cost-effective near-term solution for carbon removal, but the carbon stored in these ecosystems is vulnerable to disturbances like 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 more than all the farmland on the planet.²

Engineered solutions, such as Direct Air Capture (DAC), must therefore rise to the ambitious challenge ahead if we hope to keep the pathway of 1.5°C alive.

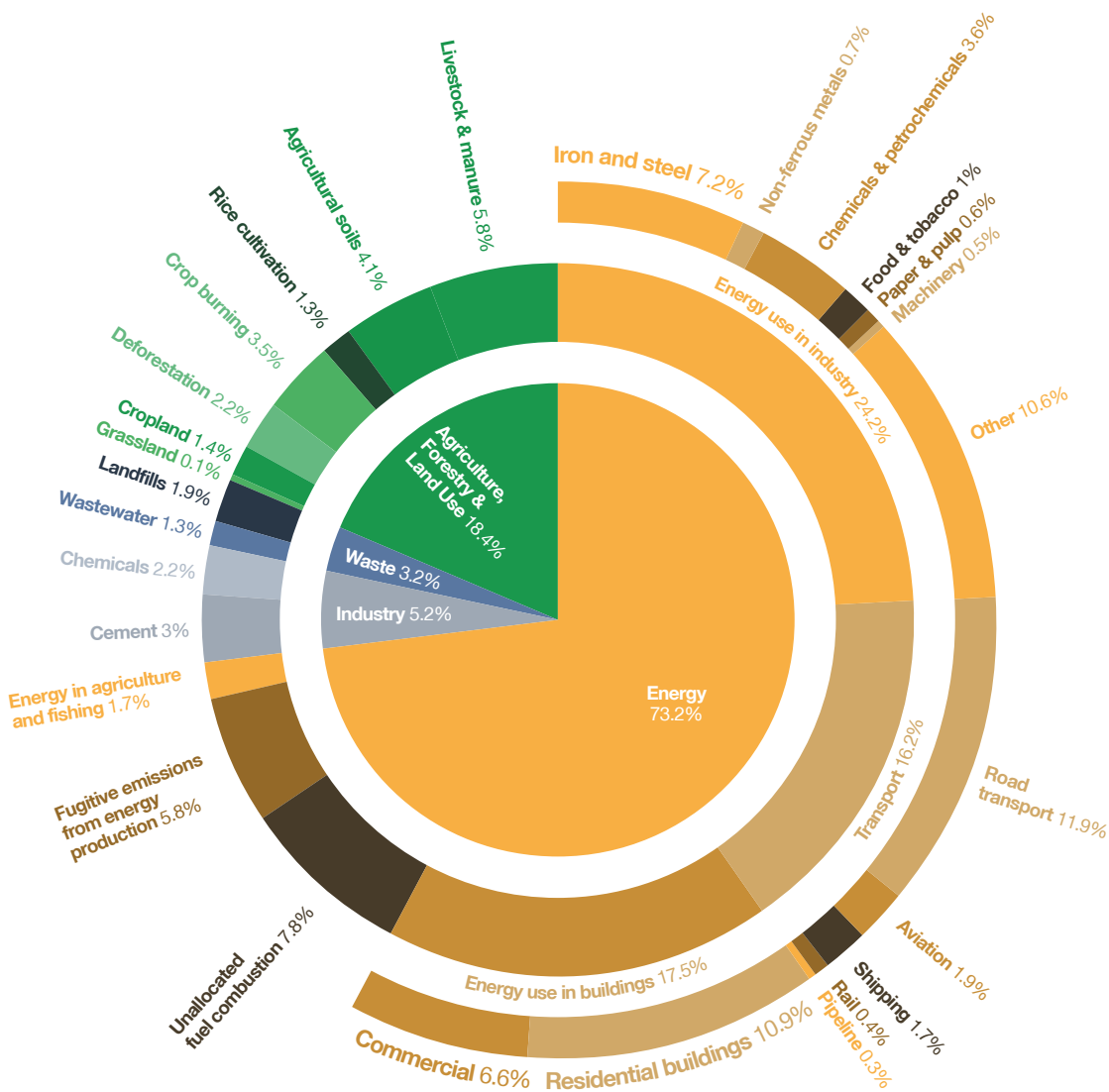
The loss of biodiversity, the term used to describe the enormous variety of living species on the planet, poses as much danger to life on Earth as climate change does.

It is estimated we will lose more than one million species through biodiversity loss and further extinctions if we are unable to curb human activities over the coming decades.

Later this year, the focus will be on Montreal for the UN Biodiversity Conference (COP 15). With 2.7 billion people highly dependant on nature for at least one of their basic needs and half of the World's GDP moderately or highly dependent on nature, this conference will have global ramifications for human development, the economy, and the well-being of future generations³.

For the Positive Change strategy, the complexity and interlinked nature of these challenges requires a truly holistic view of the impact a company is making: our in-depth impact analysis is a crucial part of our investment process.

Greenhouse gas emissions by sector ⁴



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 by the author Hannah Ritchie (2020)

Positive Change — part of the solution

There are three broad ways in which the current holdings in the Positive Change strategy are addressing the acute environmental and resource challenges facing our planet.



Agricultural solutions

Food systems contribute more than a third of total GHG emissions per year globally⁵ 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 & Co is helping the system to improve by promoting the adoption of precision agriculture, increasing farmers' yields while cutting environmental impacts by reducing fertiliser and pesticide usage by up to 80 per cent.

Deere is targeting 500 million engaged acres by 2026 (currently 315 million) and aiming to ensure that 75 per cent of the engaged acres are sustainably farmed by 2030, along with planning to deliver fully autonomous, battery-powered electric tractors. These compact autonomous vehicles will help to address further negative effects of farming, such as the impact of soil compaction.⁶

Beef production is a major source of food-related emissions. Shifting diets with high beef content towards plant-based alternatives is a critical way to reduce the associated emissions.

The meat industry is tremendously inefficient. For instance, the American livestock industry only converts a mere 7 per cent from feed inputs such as corn, hay and pasture into edible animal products annually.⁷

Beyond Meat is leading the development of healthy, plant-based meat alternatives that mimic the taste and sensory experience of animal meat but have a far lower environmental impact. While plant-based products have mainly targeted vegans and vegetarians in the past, Beyond Meat aims to appeal to meat eaters.



The energy transition

According to the IPCC, the secret silent miracle of human progress as the late Hans Rosling put it, continues at pace. Steadily improving technologies are having a profound effect on the adoption of renewable energy and electric vehicles (EVs) as they become cost competitive with fossil fuels and internal combustion engines.

Economies of scale are playing out, with the cost of solar photovoltaics down 85 per cent,⁸ lithium-ion batteries down 85 per cent and wind energy down 55 per cent between 2010 and 2020.⁹

Global momentum towards zero-emissions transportation has accelerated significantly¹⁰, with EVs now representing more than 7 per cent of the global passenger vehicle market, up from 2.6 per cent in 2019.

This year, we took holdings in two private companies that also promise to help transform the transport sector. **Joby** is developing electric vertical take-off and landing (eVTOL) aircraft that will provide an entirely new, clean, way to travel, and **Northvolt** who will use renewable energy and recycled

and sustainability-sourced materials to produce batteries in Europe, with applications in transport, grid balancing and industry. However, the full impacts of these companies and changes will only be fully realised when the energy inputs change too.

In China during 2021, total plug-in EV registrations increased by more than 150 per cent to over 3.2 million¹¹. **Tesla** continues to be a major driver of this transformation in transport, and a beneficiary of the tailwind through continued operational success in EVs, solar and, more recently, battery recycling.

Renewable energy sources, such as offshore wind farms constructed and managed by **Ørsted** and heat pumps manufactured by **NIBE**, are already contributing to a reduction in our reliance on fossil fuels and driving change in their industries.



Sustainable resource use

The over-exploitation of natural resources is well documented. For instance, demand for water is expected to exceed supply by 40 per cent by 2030.¹² The innovators providing solutions to this challenge may not be household names, but their leadership and commitment to delivering results is impressive.

Xylem efficiently addresses this water challenge by manufacturing critical infrastructure for the transportation, treatment and testing of water. **Ecolab**, the one-stop shop which provides special chemical products from hand sanitiser through to wastewater treatment, has helped its customers improve their operational and energy efficiency by conserving over 200 billion gallons of water per year.

However, water is just one of many natural resources that are being unsustainably exploited. Land and soils are increasingly being degraded as a result of poor management practices and a changing climate. The FAO estimates that 90 per cent of the Earth's topsoil is likely to be at risk by 2050¹³. Helping to address this is Spiber, a private synthetic biology company sustainably producing alternatives for animal-derived materials, such as cashmere whose production a leading cause of land degradation in Mongolia.¹⁴

What are we missing?

Our research pipeline is blossoming with hope for 2050, leaving us more optimistic about meeting the challenges ahead.

Many of the opportunities for environmental and resource needs are operating in nascent industries. These include non-nature-based solutions to capture carbon, commercialised production of green steel, emerging battery technology to increase energy density and the ability to fully recycle EV batteries, creating a closed loop and reducing the impact of mineral mining on the biosphere.

According to the International Energy Agency (IEA)¹⁵, many of the technologies available today can reduce emissions in line with the net zero pathways between now and 2030, but by 2050 almost half of the reductions will need to come from technologies in emerging industries.

The huge challenge of rapidly transitioning to a net zero energy system is also an enormous opportunity for patient investors with multi-year time horizons. We seek to deploy capital thoughtfully to innovative companies and support them as they look to solve global society's biggest challenges. These are naturally growth businesses, and this can be a powerful mechanism for change.

1. [AR6 Climate Change 2022: Mitigation of Climate Change — IPCC](#)
2. [‘Net zero’ carbon targets are dangerous distractions from the priority of cutting emissions says new Oxfam report | Oxfam International](#)
3. [Nature-dependent people: Mapping human direct use of nature for basic needs across the tropics](#)
4. [Emissions by sector – Our World in Data](#)
5. [Food systems are responsible for a third of global anthropogenic GHG emissions | Nature Food](#)
6. [Soil compaction may be cutting into your yield | Integrated Crop Management \(iastate.edu\)](#)
7. [Energy and protein feed-to-food conversion efficiencies in the US and potential food security gains from dietary changes - IOPscience](#)
8. [Renewable Power Generation Costs in 2020 \(irena.org\)](#)
9. [AR6 Climate Change 2022: Mitigation of Climate Change — IPCC](#)
10. [Zero Emission Vehicles Factbook | Bloomberg Professional Services](#)
11. [China: Plug-In Electric Car Sales More Than Doubled In March 2022 \(insideevs.com\)](#)
12. [We're helping to close the gap between global water demand and supply | World Economic Forum \(weforum.org\)](#)
13. [FAO warns 90 per cent of Earth's topsoil at risk by 2050](#)
14. [Cashmere and climate change threaten nomadic life](#)
15. [Pathway to critical and formidable goal of net-zero emissions by 2050 is narrow but brings huge benefits, according to IEA special report - News - IEA](#)

Beyond Meat

First invested February 2021

Positive Change hypothesis

Beyond Meat makes plant-based products that mimic the sensory experience of animal meat. With increasing focus on sustainability and health, the demand for plant-based meat should grow significantly over the long term. Beyond Meat’s focus on taste and texture and its aim to drive down cost from scale and operating efficiency should help the company to unlock demand from traditional meat eaters. Shifting diets away from meat and towards plant-based foods will lead to less meat being produced, resulting in enormous environmental benefits as well as benefits to public health through lowering the use of antibiotics and reducing the likelihood of zoonotic diseases emerging. Competitive advantage comes from a combination of brand, innovation and scale, which should help Beyond Meat to defend its position in this growing market.

Input	Activities	Outputs	Outcomes	Impact (SDG Target)
R&D US\$66.9m Employees 1,419 (Y/E Dec 2021)	Beyond Meat is one of the leading brands pioneering plant-based meat alternatives.	Beyond Meat has developed plant-based meat alternatives for pork, poultry and beef products, including their flagship Beyond Burger. In 2021, they sold over 84.6 million pounds of products through their presence in 130,000 outlets in more than 90 countries.	A life-cycle assessment undertaken by the company found that a Beyond Burger used 99 per cent less water, 93 per cent less land, and emitted 90 per cent fewer greenhouse gas emissions than a US-produced beef burger. A study by the Stanford Prevention Research Centre found that the consumption of Beyond Meat’s products instead of animal meat improved several cardiovascular disease risk factors.	 2.4, 3.4, 6.3, 6.6, 13, 14.1, 15.3, 15.5

Positive Chain ▲

Deere & Co

First invested February 2021

Positive Change hypothesis

There is an urgent need to address the harmful environmental impact of industrial farming. Precision technologies can reduce the input of chemicals, helping to lessen environmental damage such as greenhouse gas emissions and nitrogen runoff. Through automation and data, precision agriculture also enhances decision making and helps farmers increase yield. Due to its scale, its relationships with dealers and farmers, and clear management intent, Deere should emerge as the leader in precision agriculture.

Input	Activities	Outputs	Outcomes	Impact (SDG Target)
R&D US\$1.6bn Employees 75,600 (Y/E Nov 2021)	Deere & Co develops and manufactures precision agriculture technologies.	In 2021, Deere’s agricultural products were engaged on over 315 million acres around the world.	Precision technologies reduce inputs, such as agrichemicals and fuel, and increase yields. For example, Deere’s precision See & Spray Select System can reduce herbicide usage by 77 per cent.	 2.4, 13, 14.1, 15.5


Positive Chain ▲

Ecolab

First invested **February 2021**

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 and innovative product lines.

Input	Activities	Outputs	Outcomes	Impact (SDG Target)
R&D US\$186m Employees 47,000 (Y/E Dec 2021)	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 3 million customer locations around the world.	In 2021 Ecolab helped customers save 215 billion gallons of water (814 billion litres), more than 45 trillion BTUs (British thermal units) of energy, 3.6 million metric tons of CO2e and more than 84 million pounds of waste (approximately 38,100 metric tons).	 2.1, 3.3, 3.9, 6.3, 6.4, 7.3, 12.2, 12.4, 12.5, 13


Positive Chain ▲

Joby Aviation

First Invested **August 2021**

Positive Change hypothesis

Joby develops electric vertical take-off and landing (eVTOL) aircraft. This new form of transportation could bring substantial environmental benefits through the avoided use of fossil fuel-powered transport systems, and social and economic improvements by reducing congestion. Joby aims to make its service cost-competitive relative to transit and on-demand transportation, which could unlock a market that’s worth hundreds of billions of dollars annually. Achieving this vision will require FAA certification, scaling up manufacturing, building out infrastructure and designing front-end service.

Input	Activities	Outputs	Outcomes	Impact (SDG Target)
R&D US\$197.6m Employees 1,124 (Y/E Feb 2022)	Joby is developing eVTOL aircraft for use in urban areas. The aircraft are designed to carry 4 passengers up to 150 miles at top speeds of 200mph.	During 2021, Joby’s first pre-production aircraft flew more than 5,300 miles, generating 65 terabytes of test data. In one flight, the aircraft travelled 154.6 miles in a single charge.	While it is advancing the development of electric aviation, Joby is still in the pre-production phase and has not yet sold any aircraft.	 11.6, 13

Positive Chain ▲

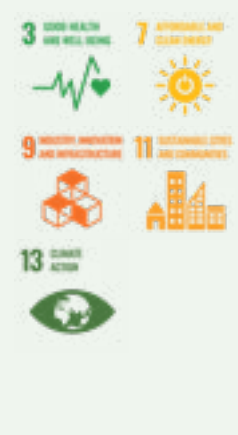
NIBE

First invested February 2021

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\$99.3m Employees 20,400 (Y/E Dec 2021)	NIBE develops and produces renewable energy systems, heating elements and stoves.	56.8 per cent of revenues at NIBE come from products designed for a low-carbon economy (LCE) according to the FTSE LCE classification. These include heat pumps, boilers and stoves for burning pellets and wood, solar panels, heat exchangers, components for rail, electric and hybrid vehicles and renewable energy production.	Based on the cut in emissions from the type of heating systems NIBE's heat pumps replaced in the respective markets in 2020 alone, the reduction was 320,000 metric tons of CO2e in that year.	 <p>3.9, 7.2, 7.3, 9.4, 11.6, 13</p>



Northvolt

Private
First invested **June 2021**

Positive Change hypothesis

Northvolt is a leading battery manufacturer with ambition to scale up the production of sustainable batteries in Europe. The demand for batteries will grow significantly and meeting this will be crucial for tackling climate change and improving air quality. Competitive advantage comes initially from Northvolt's ability to attract talent and its access to low-cost renewable electricity. This should develop into more durable advantages in the form of scale, customer relationships, sustainability credentials, and the vertical integration of cathode manufacturing and battery recycling. If the company can successfully execute on its strategy, then the potential investment returns could be very attractive.

Positive Chain ▲

Input	Activities	Outputs / Outcome	Impact (SDG Target)
R&D Undisclosed Employees >3,000 (Y/E Dec 2021)	Northvolt will manufacture and supply sustainable, high-quality lithium-ion battery cells and systems for electric vehicles and other applications. Through its Revolt and Hydrovolt facilities, Northvolt will recycle batteries to feed its battery production with raw materials.	By 2030, Northvolt aims to establish 150 GWh of annual cell production capacity, with 50 per cent of raw materials being from recycled sources. Northvolt aims for these cells to have a 90 per cent lower CO2 footprint than the current industry average. Northvolt aims to begin commercial production in 2022.	 11.6, 12.5, 13

Novozymes

First invested **February 2021**

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 versus 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\$307.2m Employees 6,527 (Y/E Dec 2021)	Novozymes produces enzymes, microbials, yeast and digital solutions 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 2021, Novozymes enabled savings of 60 million metric tons of CO2 in global transport through their bioenergy solutions.	 2.4, 6.3, 7.2, 12.2, 13



First invested February 2021

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 decent 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\$330.6m Employees 6,836 (Y/E Dec 2021)	Ørsted develops, constructs, owns and operates wind farms, solar farms and energy storage facilities and owns and operates bioenergy plants. In addition to its generation activities, Ørsted engages in partnerships and develops projects related to the production of green hydrogen.	In 2021, Ørsted added 1.7GW of installed renewable capacity to bring its total to 13GW. During the year it generated 22.2TWh of electricity from wind and solar assets. Including wind, solar and biomass, Ørsted currently produces 90 per cent of its energy from renewable sources.	Ørsted's renewable generation avoided 15.1 million metric tons of CO2e emissions in 2021.	 3.9, 7.2, 9.4, 13



Private
First invested September 2021

Positive Change hypothesis

Spiber is an early-stage innovative Japanese company that applies synthetic biology and material science to create and manufacture novel fibres. While these share the attractive qualities of animal or petrochemical-based fibres, they can be made in a much more environmentally sustainable way and biodegrade at the end of their life. Its products could be used in a number of applications from apparel to automotive parts. We admire Spiber’s vertically-integrated approach and the partnerships it has established that will help it commercialise its products.

Positive Chain ▲

Input	Activities	Outputs / Outcomes	Impact (SDG Target)
R&D US\$559.2m Employees 310 (April 2022)	Spiber is using synthetic biology and microbial fermentation to manufacture fibres that have smaller environmental footprints than the alternatives currently being used in the market.	Spiber has successfully processed its Brewed Protein™ into a range of materials including fleece, yarn and leather. In 2021, Spiber opened up a new plant in Thailand which, after some delays due to Covid-19, is expected to start production of Brewed Protein™ polymers in 2022.	 13, 15.3, 15.5



© Tesla

Tesla

First invested February 2021

Positive Change hypothesis

Tesla aims to accelerate the transition towards a sustainable energy system by developing and commercialising electric vehicle, solar and storage products. The adoption of electric vehicles is rising, driven by decreasing costs, an improved driving experience, regulatory support and consumer awareness of climate change. Similarly, the adoption of solar 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\$2.6bn Employees 99,290 (Y/E Dec 2021)	Tesla designs, develops, manufactures, leases and sells high-performance fully electric vehicles, solar energy generation systems and energy storage products.	During 2021 Tesla delivered 936,222 electric vehicles and deployed 3.99GWh of energy storage products and 345 megawatts of solar energy systems.	In 2021, the global fleet of Tesla vehicles, energy storage and solar panels enabled its customers to avoid emitting 8.4 million metric tons of CO ₂ e.	<p>3, 7, 11, 13</p>



Umicore

First invested **February 2021**

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 climate change. 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 decent 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\$278.6m Employees 11,050 (Y/E Dec 2021)	Umicore operates 46 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 different types of raw materials and recovering over 20 different metals.	Umicore sells catalysts, filters, battery cathode materials and recycled and refined metals to customers in 101 countries. In 2021, 54 per cent of materials Umicore used were from end-of-life or secondary origin, and clean mobility and recycling accounted for 79 per cent of revenues.	Umicore’s catalysts reduce air pollution, and its materials improve battery performance in electric vehicles, reducing emissions from transport. Umicore estimates that its electric mobility and recycled products avoided 35 million metric tons of CO ₂ e (2016-2020).	 3 GOOD HEALTH AND WELL-BEING, 11 SUSTAINABLE CITIES AND COMMUNITIES, 12 RESPONSIBLE CONSUMPTION AND PRODUCTION, 13 CLIMATE ACTION
				3.9, 11.6, 12.4, 12.5, 13



Xylem

First invested **February 2021**

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 ageing infrastructure should support attractive long-term growth prospects for Xylem.

Positive Chain ▲

Input	Activities	Outputs	Outcomes	Impact (SDG Target)
R&D US\$204m Employees 17,300 (Y/E Dec 2021)	Xylem is a global water technology company which produces equipment and digital solutions to deliver, manage and treat water.	About 95 per cent 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.	In 2021, Xylem’s products helped its customers reduce water loss by 440 million cubic metres (440 billion litres), treated over 1.08 billion cubic metres of water for reuse, and provided access to clean water and sanitation to 1.8 million people at the bottom of the economic pyramid.	
				6.1, 6.3, 6.4, 9.1, 9.4, 12.2





Healthcare and Quality of Life

Introduction



As most of the world transitions out of the Covid-19 pandemic, the terrible disruption and loss of life it caused leave a reminder of the importance of our health and having robust healthcare systems.

We believe it is a very exciting, even revolutionary, time for both human health and healthcare systems. Although many challenges remain, there is huge reason for optimism. Change is being made possible by the convergence of different technologies including genomics and AI, which are helping to unravel the underlying causes of diseases to enable more targeted treatments and effective preventative methods. Healthcare is likely to change fundamentally, which will help us better understand, diagnose, treat and prevent illness as well as improve the efficiency and inclusivity of the healthcare system.

The Challenge

Lifestyle and aged related diseases

Advances in medicine have contributed to improved quality and length of life but new challenges have emerged. Urbanisation and globalisation are contributing to greater spread of disease, and chronic conditions associated with unhealthy lifestyles such as type 2 diabetes and hypertension are increasing globally. One in 10 adults are living with diabetes, with this number predicted to rise. Diabetes cost at least \$966bn in health expenditure in 2021 alone, a 316 per cent increase over the last 15 years.¹

Age-related diseases including cancer and cardiovascular disease, both of which are leading causes of death globally, are also on the rise. Between 2010 and 2030, it is thought that the ageing of the US population will lead to a 67 per cent increase in the incidence of cancer among Americans over 65 years of age,² with similar trends seen globally.

Healthcare inefficiencies

Healthcare is a system that faces huge efficiency challenges due to a misalignment of interests, particularly with large incumbent companies. The last two years have emphasised this, especially in the US where biopharma companies, insurers, regulators, pharmacies, hospitals, governments and pharmacy benefit managers are just some of the players that determine the economics of a drug or treatment.

Antimicrobial resistance (AMR) is a prime example, with antibiotic overuse and a lack of rotation being prevalent. This results in antibiotics and other antimicrobial medicines becoming ineffective, making infections very difficult to treat – so much so that the World Health Organisation (WHO) has declared that AMR is one of the top 10 global public health threats facing humanity.

Climate change

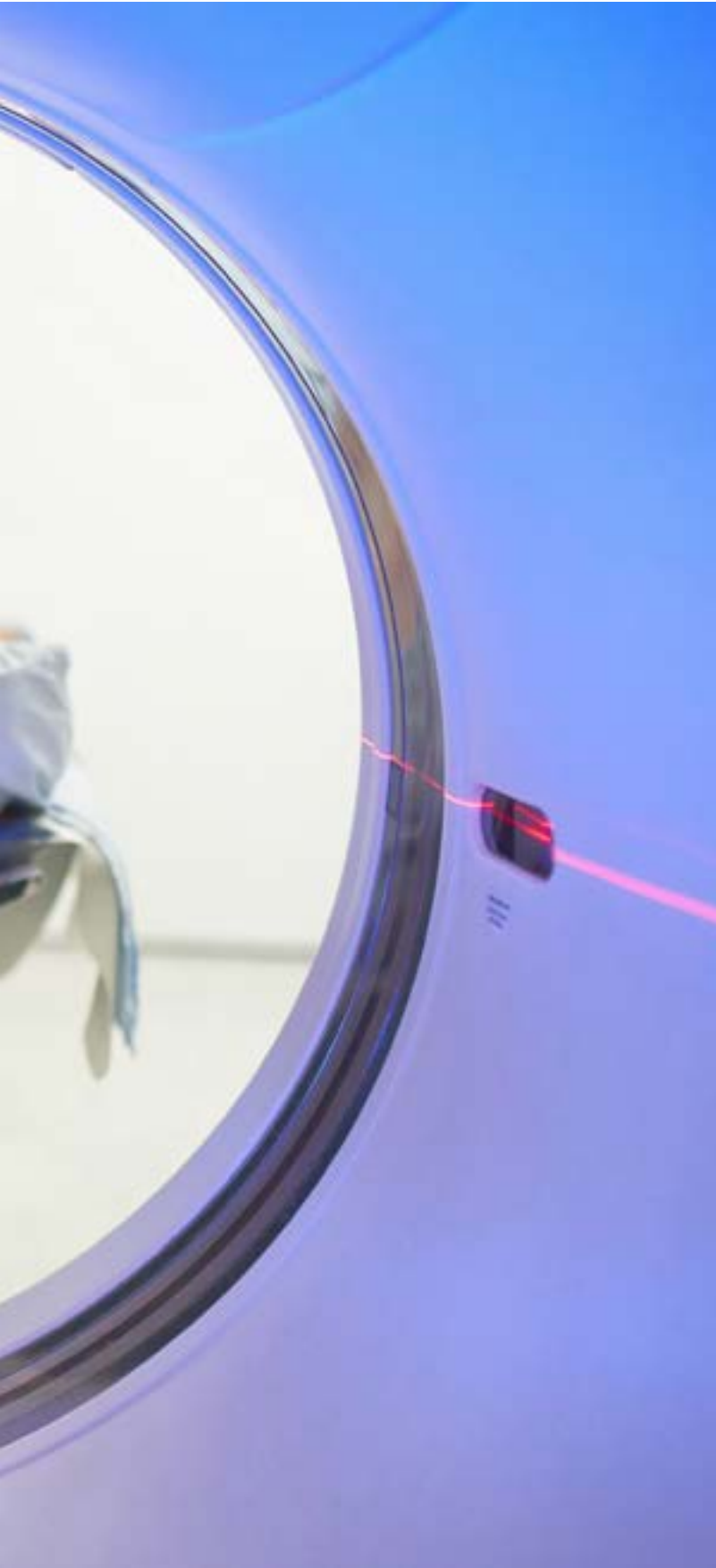
Climate change is resulting in more frequent and intense droughts, storms and heat waves, which are wreaking havoc on people's livelihoods, disrupting food systems and contributing to the spread of disease. Warmer temperatures are also causing rising sea levels and contributing to changes in animal habitats, which increases the risk of animal-borne 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 stress³. Areas with weak health infrastructure, mostly in low and middle-income countries, will be the least able to cope, prepare and respond.

Inequality

The inequitable distribution of the Covid-19 vaccine is a stark illustration of how health inequalities persist within low and middle-income and higher-income countries. At the same time, 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 greater expense for healthcare systems as diseases progress.

Against the backdrop of these challenges, we remain hugely optimistic, as innovation can help address many of the healthcare challenges facing the world.





Positive Change — part of the solution

Amid the turmoil of the global stock markets over the past year it is pleasing to note that healthcare holdings in the portfolio spent 16.2 per cent of sales on research and development in 2021 on average versus 11.7 per cent on average by companies in the MSCI World Health Care Index. This focus on investing in long-term innovation should provide better outcomes over the next decade.

There are currently five major themes, explained overleaf, through which the Positive Change strategy addresses healthcare challenges:

1. Understanding diseases
2. Diagnostics
3. Treatment
4. Prevention
5. Efficiency

What are we missing?

We are conscious that healthcare breakthroughs tend to be more accessible to middle and high- income populations and that change is needed for the benefit to be felt more widely. 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.

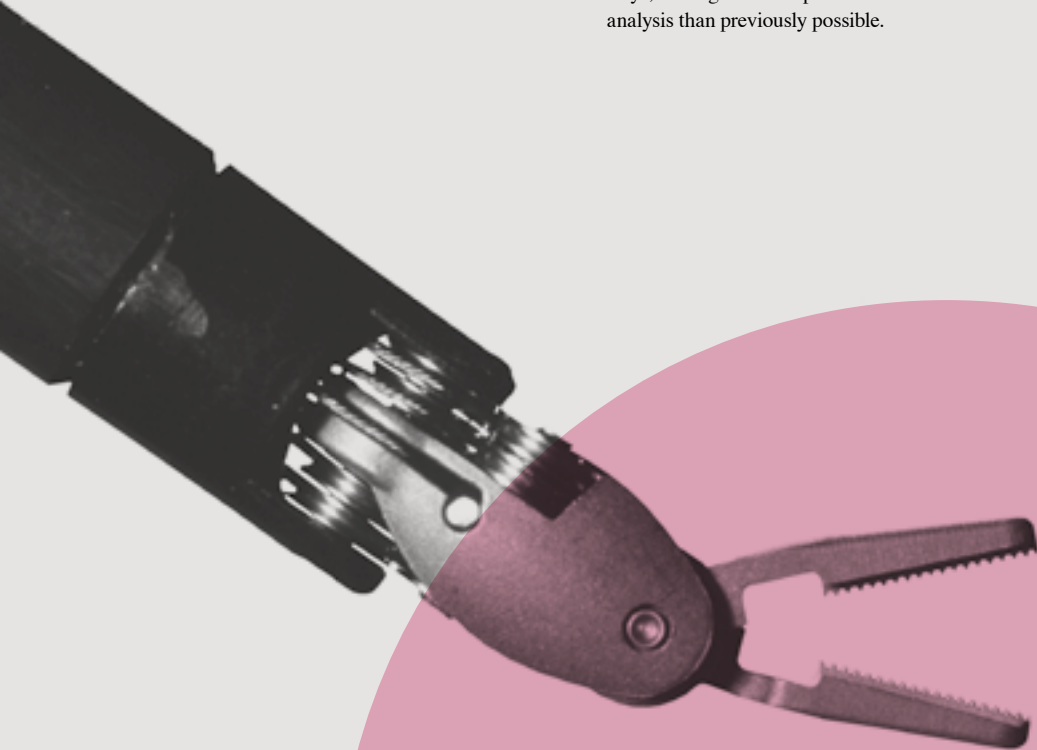
Five healthcare themes

01 Understanding of Diseases

A good understanding of human biology is crucial for successfully preventing and treating diseases. We invest in **Illumina**, whose genome sequencing technology has allowed identification and in some cases preventative or targeted treatment of many diseases including rare cancers. We also invest in **10x Genomics** and **Berkeley Lights**, which build on Illumina's technology by focusing, in different ways, on single cells to provide a more detailed analysis than previously possible.

02 Diagnostics

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



03 Treatment

Treatments either lead to a cure or to a substantial improvement in patient outcomes, while not compromising on quality of life. Historically a drug takes 10 years and \$1bn to develop, with only a 7 per cent chance of success. Young, agile companies are heralding a new era of healthcare, with foundational technologies such as mRNA or genetic-based treatments increasing the chances of repeated drug successes. This can be seen with **Alnylam**, whose drugs are based on RNA interference (identifying and silencing faulty genes) and have enjoyed a 60 per cent track record of success.⁴

By utilising mRNA technology, **Moderna** will help drive personalised therapies beyond Covid-19 to ultimately treat and prevent multiple diseases for years to come. During 2021, we invested in another innovative company, **AbCellera**, which helps to develop antibody drugs that harness the immune system to fight disease. Antibodies will be increasingly important in helping us to tackle diseases in a more efficient and cost-effective way.

Effective treatments can be hugely varied, and another area of exposure in the portfolio is innovative medical devices. We invest in **Abiomed**, which provides a minimally invasive heart pump that protects patients during high-risk heart surgery. We also hold **Dexcom**, whose continuous glucose monitoring device enables diabetic patients to better manage their sugar levels, reducing the risk of complications.

04 Prevention

Disease prevention rather than cure is better for individuals and society at large. A healthy diet and exercise are important for good health. **Chr. Hansen** provides products which can make food healthier, as well as probiotics for human and animal health which reduce dependence on antibiotics. **Peloton** is a connected fitness company that is lowering the barriers to exercise by providing engaging content and fitness hardware for use at home. **Discovery's** insurance plan incentivises healthy lifestyles by rewarding customers for healthy choices, such as exercising, eating well and moderating alcohol consumption.

05 Efficiency

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

Both **M3** and **Teladoc** provide technologies that improve healthcare system efficiency. They were key in helping healthcare services pivot to digital provision during the Covid 19 pandemic, which accelerated the shift towards digital healthcare, a trend we expect to endure.

Teladoc is the largest telemedicine company in North America and provides medical care for patients via phone or video consultation, helping to improve healthcare by increasing access to care while reducing costs. **M3** also provides telemedicine, alongside technologies that increase the efficiency of information sharing in the medical community and allow faster recruitment to clinical trials, which in turn could speed up drug development.

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

1. [IDF Diabetes Atlas: Tenth Edition | diabetesatlas.org](https://diabetesatlas.org)
2. [Future of Cancer Incidence in the United States: Burdens Upon an Aging, Changing Nation | JCO](#)
3. [Climate change and health | WHO](#)
4. [A Dose of Innovation | Baillie Gifford \(p4\)](#)

10X Genomics

First invested February 2021

Positive Change hypothesis

Single cell analysis provides a granular view of biology and helps to significantly advance our understanding of health and disease. We believe that it will be increasingly adopted by researchers in approximately 100,000 labs across the world and that 10x Genomics can unlock this opportunity over time through innovations that add new functionalities, easy-to-use software, and by reducing costs. Longer term, we believe that the pharmaceutical and clinical markets could also become addressable.

Positive Chain ▲

Input	Activities	Outputs	Outcomes	Impact (SDG Target)
R&D US\$211.8m Employees 1,239 (Y/E Dec 2021)	10x Genomics develops machines and software which enable scientists to gain a better understanding of biology through single-cell analysis.	By December 2021, the company had sold 3,511 instruments to researchers around the world, including all the top 20 global biopharmaceutical companies by 2020 research and development expenditure.	The information gained using 10x Genomics' products has already expanded our understanding of biology. To date, more than 3,300 peer-reviewed articles have been published using data generated by the company's technology.	 3.3, 3.4, 9.5

© 10x Genomics




AbCellera

First invested **March 2021**

Positive Change hypothesis

AbCellera performs antibody discovery services for pharmaceutical and biotechnology companies. Using its differentiated technology stack, which consists of proprietary immunisation methods, single-cell screening, and the use of data and software, AbCellera will help its partners bring more antibody therapeutics to patients more quickly and at a lower cost. As AbCellera monetises mainly through high-margin milestone and royalty payments, a meaningful share of the ever expanding antibody therapeutic market could lead to a very attractive investment outcome.

Input	Activities	Outputs	Outcomes	Impact (SDG Target)
R&D US\$62.1m Employees 386 (Y/E Dec 2021)	AbCellera's artificial intelligence-powered services include technologies that source, search, decode, analyse and engineer antibodies.	AbCellera has had 156 antibody discovery programmes that are either completed, in progress or under contract with 36 partner companies. This has resulted in five molecules discovered using AbCellera's technology 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 infectious diseases.	 3.3, 3.4


Positive Chain ▲

Abiomed

First invested **February 2021**

Positive Change hypothesis

Cardiovascular disease will continue to place a significant cost burden upon society. Abiomed's miniature heart pumps will drive a change to the standard of care for patients who require heart support, whether that be during surgery, after a heart attack, or in other circumstances yet unknown. The company's competitive advantage will remain strong owing to a powerful combination of strong efficacy, value for money and an innovative culture that pushes improvements and new offerings.

Input	Activities	Outputs	Outcomes	Impact (SDG Target)
R&D US\$121.9m Employees 1,725 (Y/E Mar 2021)	Abiomed develops, manufactures and markets Impella® heart pumps, which are used for treating patients experiencing cardiogenic shock following a heart attack or when undergoing heart surgery.	Abiomed's Impella Heart Pumps have been used to support more than 210,000 patients worldwide.	Clinical studies show that patients treated with Impella® have a more stable recovery and less tissue damage.	 3.4

Positive Chain ▲


Anylam Pharmaceuticals

First invested February 2021

Positive Change hypothesis

Anylam is an early-stage biopharmaceutical 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 licence payments is being used to fund Anylam’s pipeline of new treatments. Early proof of concept data regarding RNAi drugs have been encouraging and significant upside exists in Anylam shares if this can be extended into the therapeutic setting.

Positive Chain ▲

Input	Activities	Outputs	Outcomes	Impact (SDG Target)
R&D US\$792.2m Employees 1,665 (Y/E Dec 2021)	Anylam produces and develops therapeutics to treat rare chronic diseases using a technique that switches off the faulty proteins that cause diseases.	As of 2021, Anylam has four drugs on the market, treating over 2,500 patients.	Anylam's drugs have been proven to prevent the symptoms of diseases, improving quality of life for patients.	 3.3, 3.4



Berkeley Lights

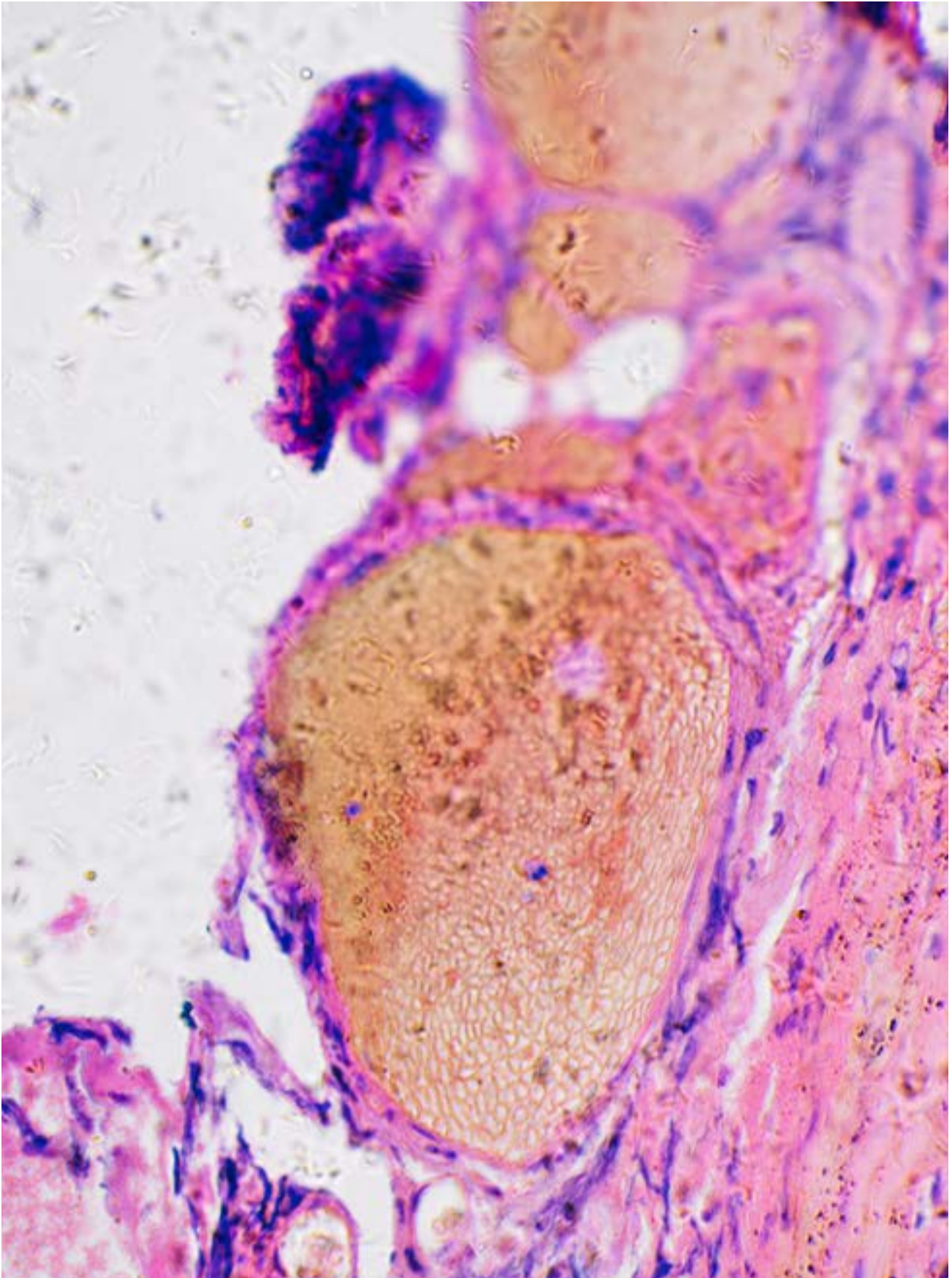
First invested February 2021

Positive Change hypothesis

Berkeley Lights develops equipment that enables the precise control and characterisation of single cells, using light to control the movements of fluid and cells on a semiconductor chip. This has the potential to generate more insights, simplify researchers’ workflows and speed up experiments, ultimately leading to better and cheaper therapeutics becoming more quickly available to more patients. Berkeley Lights is currently focused on commercialising the equipment for the antibody and synthetic biology markets, which the management believes could be worth US\$8bn.

Positive Chain ▲

Input	Activities	Outputs	Outcomes	Impact (SDG Target)
R&D US\$58.6m Employees 293 (Y/E Dec 2021)	Berkeley Lights' single cell analysis technology includes the Beacon and Lightning optofluidic platforms, which are sold to customers in the healthcare, synthetic biology and agricultural industries.	Berkeley Lights cumulatively placed 111 platforms at 80 biotechnology and pharmaceutical customers, for which its technology helps to reduce the costs and time required for drug discovery, development and commercialisation. Berkeley Lights added 17 new customers in 2021.	Through improving researchers' understanding of the biology that can cure diseases, Berkeley Lights' platforms will help to unlock the promise of new antibody therapeutics and cell therapies, ultimately leading to more treatments being available to patients, at a lower cost. These are increasingly used to treat and even cure some of the world's most common diseases, such as cancer.	  3.3, 3.4, 9.5



Chr. Hansen

First invested **February 2021**

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, that 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 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 sticky customers.

Input	Activities	Outputs	Outcomes	Impact (SDG Target)
R&D US\$102.5m Employees 3,700 (Y/E Aug 2021)	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 2020/2021, the company's range of natural plant solutions was applied on 4.4 million hectares of land; their cultures reduced 160,000 tons (145,150 metric tons) of yogurt waste; and 149 million people around the world consumed their probiotic solutions.	 2, 3, 12

Positive Chain ▲

Dexcom

First invested **February 2021**

Positive Change hypothesis

Dexcom's Continuous Glucose Monitoring systems (CGMs) empower diabetic patients to manage their condition. 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 stick 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 runway for the company. This is a competitive market, but we believe Dexcom's technological leadership, distribution capabilities and growing brand awareness provide an edge.

Input	Activities	Outputs	Outcomes	Impact (SDG Target)
R&D US\$517.1m Employees 6,300 (Y/E Dec 2021)	Dexcom designs, manufactures and sells Continuous Glucose Monitoring (CGM) systems that monitor changing glucose levels for diabetes patients.	Dexcom's systems help approximately 1.25 million people around the world manage their diabetes more effectively.	Improving blood glucose control has been proven to lower the risk of developing diabetes-related complications by up to 49 per cent.	 3

Positive Chain ▲


Discovery

First invested **February 2021**

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 claims 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, UK, and China, 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 12,650 (Y/E Jun 2021)	Discovery offers medical, health, motor and life insurance products across 28 countries, including South Africa and the UK.	Discovery’s products impact 41.3 million lives around the world. Of these, more than 20 million are members of the shared-value range of products, called Vitality.	Vitality Active Rewards members are at least 34 per cent more active than non-members; Discovery reports highly engaged members live longer, experience fewer lifestyle diseases and claim less. Discovery has a goal of making 100 million people 20 per cent more active by 2025.	 3.4, 3.8


Illumina

First invested **February 2021**

Positive Change hypothesis

Illumina sits at the centre of the genomic revolution. We believe the company’s products will transition from being used primarily as research tools to being the foundation which supports the development of a whole host of new clinical applications. Through innovation, the price of sequencing will continue to fall, albeit at a measured pace, which 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\$1.2bn Employees 9,100 (Y/E Dec 2021)	Illumina designs, manufactures and markets gene sequencing machines for genetic and genomic analysis which are used in 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 20,000 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.	 2.4, 3.3, 3.4, 9.5

M3

First invested **February 2021**

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, which have a long runway for growth, especially as pharmaceutical companies continue to shift their marketing online.

Input	Activities	Outputs	Outcomes	Impact (SDG Target)
R&D N/A Employees 554 (Y/E Mar 2021)	M3 operates medical portals predominantly in Japan, the U.S., 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 roughly 6 million physicians globally, and over 310,000 in Japan. Its medical health record platform is used at over 3,600 different 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 genome diagnostics and cancer tests.	 9.5


Positive Chain ▲

Moderna

First invested **February 2021**

Positive Change hypothesis

Moderna is developing an entirely new modality (mRNA) to treat a wide range of diseases, thanks to mRNA's ability to get inside cells and hence go after novel targets that have been out of reach for previous technologies. Moderna will invest aggressively in its technology platform and solve challenges relating to drug stability, delivery and potency, allowing for a repeatable research engine and the development of drug candidates in multiple therapeutic areas. Moderna's coronavirus vaccine has proven that mRNA can work as a vaccine and helped generate significant cashflows to strengthen the balance sheet. We expect that in the next five years Moderna will add several new vaccines and expand mRNA's potential to improve human health outcomes globally.

Input	Activities	Outputs	Outcomes	Impact (SDG Target)
R&D US\$2bn Employees 2,700 (Y/E Dec 2021)	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 44 development programmes, of which 25 have entered clinical studies, and one of which is at a commercial stage. In 2021, Moderna shipped 807m 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 for which there are no treatments currently available.	 3.3, 3.4

Positive Chain ▲




Peloton

First invested **March 2021**

Positive Change hypothesis

Peloton has an ambitious goal of 100 million subscribers over the next 10-20 years. We believe the company can reach this audacious goal through its superior offering, which will entice people to become more active than before. The beneficial effects of fitness are widely publicised and include lower risk of heart disease, stroke, diabetes, depression, dementia and certain types of cancer. By lowering friction and cost, Peloton will help drive better health outcomes for subscribers.

Input	Activities	Outputs	Outcomes	Impact (SDG Target)
R&D US\$247.8m Employees 7,866 (Y/E June 2021)	Peloton produces exercise equipment, such as the Peloton Bike and the Peloton Tread. Peloton also produces digital exercise content that can be streamed to the exercise equipment via their interactive software platform.	Peloton promotes exercise to a community of over 5.9 million individual members.	It is well established that regular exercise provides a variety of health benefits. Peloton has 2.3 million Connected Fitness subscriptions, which have 22 average monthly workouts.	 3.4


Positive Chain ▲

Sartorius

First invested **February 2021**

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 by way of resources (e.g. 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.

Input	Activities	Outputs	Outcomes	Impact (SDG Target)
R&D US\$159.1m Employees 13,832 (Y/E Dec 2021)	Sartorius is an international pharmaceutical and laboratory equipment supplier. They operate a bioprocess solution division and laboratory & services division.	Sartorius' portfolio of single-use technologies, which accounts for approximately 59 per cent of revenues, includes a wide selection of equipment ranging from bioreactors to storage bags.	Over a lifetime of use, single-use technologies require 30 per cent less electricity and use 87 per cent less water compared to stainless steel products. Single-use products can also speed up productivity, increase flexibility, and can lower upfront capital costs for smaller biotech innovators.	 3.4, 3.b

Positive Chain ▲




Teladoc

First invested **February 2021**

Positive Change hypothesis

Teladoc has developed scale and a leadership position in virtual healthcare 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 payors to providers. Covid-19 is a watershed moment for the industry as it will lead to permanent behavioural change and hence 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 through in-house developments, acquisitions and partnerships 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\$205.3m Employees 5,100 (Y/E Dec 2021)	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 15.4 million telehealth visits in 2021, an increase of 38 per cent from 2020. Over 92 million people 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 chronic care solution live in vulnerable communities. A 2016 study found Teladoc’s clients saved US\$472 per general medical visit relative to receiving healthcare in other settings.	 3.8





Base of the Pyramid

Introduction

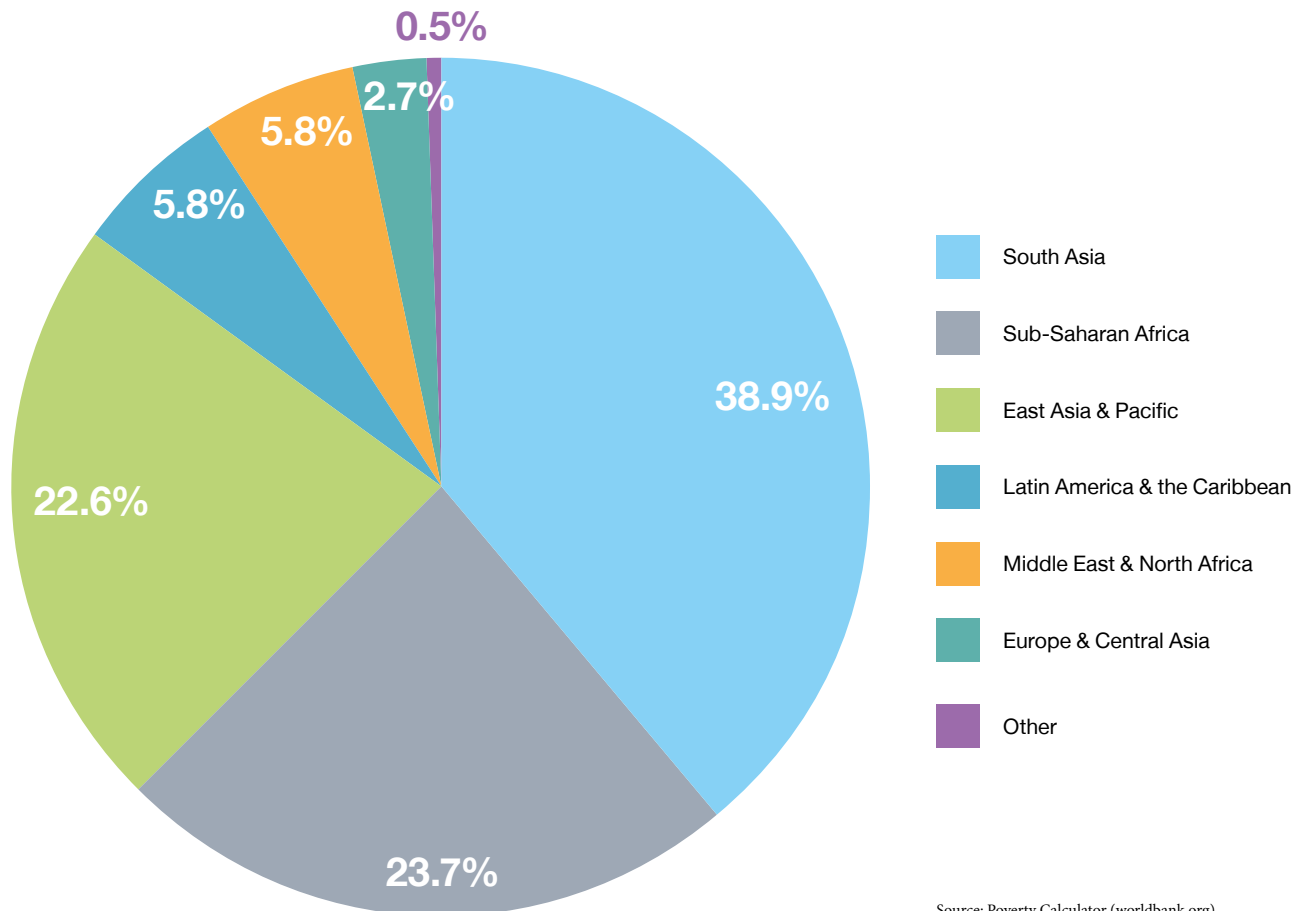


“At the most basic level, the key to ending extreme poverty is to enable the poorest of the poor to get their foot on the ladder of development.”

– Jeffrey D. Sachs, Professor of Economics, Columbia University

Over the last 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. Efforts to define the quantity of the population still trapped in poverty estimate 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 that’s frequently defined as the base of the pyramid. Improving the prospects of these people is vital to building a prosperous and inclusive world.

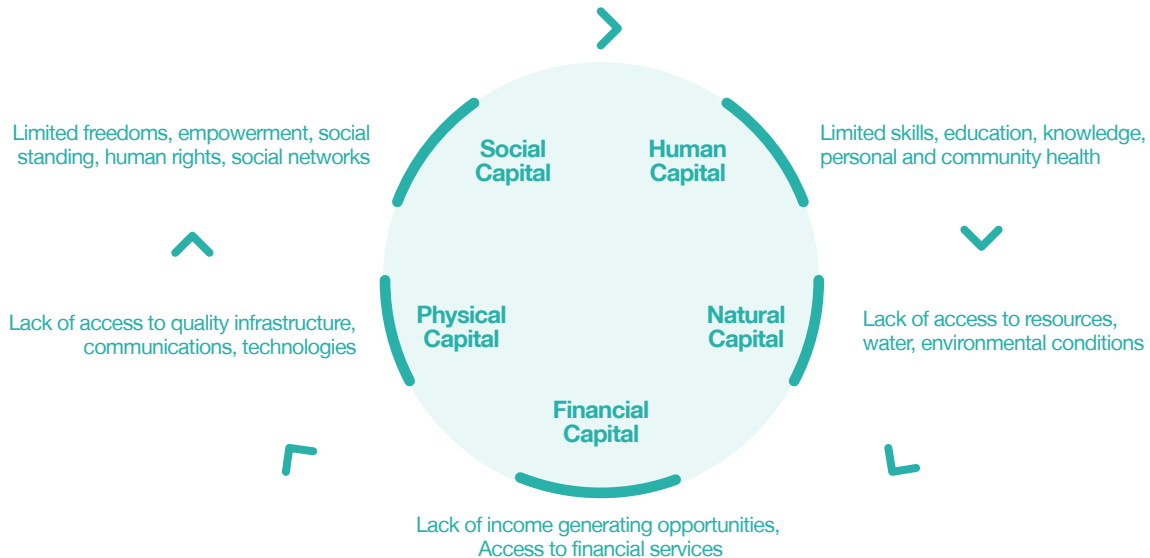
Where do the Base of the Pyramid live?



Source: [Poverty Calculator \(worldbank.org\)](http://Poverty-Calculator.worldbank.org)

Self-reinforcing cycle of poverty

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



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 where there is an absence of socio-economic development.

Although economic growth might not be an end in itself, “it makes possible to achieve other important objectives of individuals and societies. It can spare people en masse from poverty and drudgery,” according to 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 this 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 two years as a result of Covid-19, which has had a disproportionate effect on the poor through job losses, loss of remittances, rising prices and disruption of already lacking services.

For example, UNICEF estimates that the number of children living in multidimensional poverty (encompassing various forms of deprivation) rose to approximately 1.2 billion in 2020, with a further 100 million children falling into the category during 2021.¹

The relationship between geography, environmental conditions and development has been recognised by many researchers. In the 21st century, a new dynamic is added: climate change.

The impact of rising temperatures and increasing frequency of extreme weather events such as droughts and floods will be felt most severely by low-income populations which lack the resources to prepare for such shocks.

The 2022 Intergovernmental Panel on Climate Change (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 (e.g., smallholder farmers, pastoralists, fishing communities).”

Although we define the base of the pyramid by income level, the experience of poverty is more multidimensional. Those affected often face several deprivations of basic needs at once – 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.

We are the first to highlight the difficulty we have had in identifying investible opportunities to break this cycle. While some of our new investments in 2021, such as Nu, Duolingo and Coursera, do benefit customers living at the base of the pyramid, they may not be the core customer group and so we conservatively classify these companies under Social Inclusion and Education.



Positive Change — part of the solution

Although there are only two companies currently in the base of the pyramid category, many companies across the portfolio also provide products and services to improve the lives of people living on low incomes*. They address the base of the pyramid in the following ways.



Access to basic services

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

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. Its step pumps are specifically designed to improve irrigation for smallholder farmers.

Moderna, in the Healthcare and Quality of Life theme, will provide treatments and vaccines for diseases that disproportionately affect the poor, such as Zika and HIV.

Around 25 per cent of all doses of its Covid-19 vaccine delivered in 2021 went to low and middle-income countries and it is building a state-of-the-art manufacturing facility in Kenya partly to ensure future access to mRNA vaccines in the continent.

Coursera and Duolingo, in the Social Inclusion and Education theme, are both companies with 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 through providing individuals with the skills they need to improve their employment prospects and increase their economic participation. During 2021, Coursera's highest rates of new learner growth came from lower-income countries such as Paraguay, Lebanon, the Philippines, Kenya and Indonesia. Duolingo has over 40 million learners across 194 countries.

*Those living on less than US\$8 per day.



Financial inclusion

Financial inclusion, or the ability of individuals and businesses to access appropriate, affordable and timely financial products, is very important. 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 seven 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. Of course, huge gaps remain around the world in terms of digital access, affordability and skills. Influencing many of these barriers may be out of our scope but supporting companies that design products to be as inclusive as possible 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 28 million customers to send and receive money globally.

MercadoLibre and Alibaba, in the Social Inclusion and Education theme. They enable access to financial services that facilitate transactions, saving and access to credit, creating opportunities for those living at the base of the pyramid.

Nu, the Brazilian digital bank. It has included over five million Brazilians in 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.



Financial resilience

Poverty is not a hard line. Alongside those who suffer from persistent poverty, there are those who suffer from poverty occasionally due to unexpected shocks – either personal, such as ill-health or job loss, or more widespread shocks² such as recessions or pandemics. Some people are cyclically poor, for example farmers.

Many countries have a high degree of economic vulnerability. For example, in Brazil over 72 per cent of adults are classified as either highly vulnerable or vulnerable in terms of financial resilience to shocks. 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 designed to allow low-income users to save for healthcare costs. M-Tiba has over five million customers.

What we are missing?

We continue to look for more investment opportunities in the Base of the Pyramid theme. There are many facets of people's lives at the base of the pyramid which enable 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.

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

Some geographies remain too challenging for us to find investment opportunities. For example, they may be too fragile, they may be affected by conflict or they may simply lack companies which we can access.

Our search for companies continues in areas such as facilitating entrepreneurship in low-income countries, improving infrastructure in Africa, supporting financial inclusion in India and providing low-cost remittances.

Within Base of the Pyramid, 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.



1. [COVID-19 impacts on child poverty | UNICEF](#)
2. [\(PDF\) Financial Resilience of Brazilian Households: The importance of financial resilience in Brazil \(researchgate.net\)](#)



Bank Rakyat Indonesia

First invested **March 2021**

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\$25.6m Employees 82,718 (Y/E Dec 2021)	BRI provides more than 137m depositors 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 enterprises (MSME).	Microloans 31.1m borrowers Microsavings accounts ~90m savers Microinsurance 21.2m insured BRILink Processed 929m transactions, worth IDR1,144tn (US\$80.2bn) MSME loans underwritten IDR543.4tn (US\$38.1bn)	Expanding access to affordable financial services helps more people build financial resilience and capture livelihood opportunities. We are comfortable that BRI's practices enable this, evidenced by its online/offline approach, its relatively low fees and nonperforming loan rate for the micro segment of 1.5 per cent.	
				1.4, 1.5, 9.3, 10.2



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Safaricom

First invested April 2021

Positive Change hypothesis

Safaricom is contributing to improving lives in East Africa. Firstly, through its construction and provision of mobile networks in Kenya, providing access to information services. Secondly, through the provision of M-Pesa which promotes financial inclusion. And finally, 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 runway for rapid digitisation.

Positive Chain ▲

Input	Activities	Outputs	Outcomes	Impact (SDG Target)
R&D N/A Employees 6,230 (Y/E Mar 2021)	Safaricom is the largest telecommunications company in Kenya and provides various mobile, financing and connectivity services, with the most well-known being M-Pesa, a mobile money ecosystem.	In FY2021, Safaricom had 39.9m mobile customers, and provided 4G coverage to 94 per cent of Kenya's population. M-Pesa had 28.3m monthly users and 301,597 merchants were using Lipa Na M-Pesa; 1.4m loans through Fuliza and 3.98m saving and borrowing on M-Shwari; 5.2m users of M-Tiba healthcare and 1.5m farmers on DigiFarm.	In addition to the benefits of mobile connectivity, Safaricom's array of services contribute to greater financial inclusion. Using KPMG's True Value Assessment Methodology, Safaricom has estimated that its impact on society has been 9.7 times its profit, contributing 5.2 per cent to Kenyan GDP and sustaining 1,003,669 jobs.	
				1.1, 1.4, 1.5, 3.3, 4.6, 5.b, 9.3, 9.c, 10.1, 10.2, 10.c

Portfolio Snapshots: Headline Impact Data

In Portfolio Snapshots we present aggregated data for the portfolio, represented in two ways.

Headline Impact Data

For those companies that report (either through company reports or via our engagement) the impact of their products and services, 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 (SDGs).

Important Notes

- Contributions are based on the full year impact of portfolio holdings as at 31 December 2021. As Baillie Gifford were appointed as managers in February 2021, all of the holdings have been in the portfolio for less than the full year. No attempt has been made to pro-rate the contribution of the holdings. 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.
- 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 not available, 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.

In 2021**, through provision of products and services, companies are estimated to have:

ALIBABA / MERCADOLIBRE
SHOPIFY

Provided access to online marketplaces for over

94 million merchants



(approximately 10 times the estimated population of London in 2021)

CHR HANSEN / DEERE & CO

Helped farmers engage in better farming practices on close to

132 million hectares of land



(more than 5 times the land area of the United Kingdom)

SAFARICOM

Enabled over

5 million people to send, save and spend money on healthcare services**



(More than the population of New Zealand in 2021)

ALIBABA / BANK RAKYAT /
MERCADOLIBRE / NU / SAFARICOM

Provided access to financial services to close to

1.4 billion people



(approximately the population of China in 2021)

COURSERA / DUOLINGO / FDM

Provided access to education and/or training to over

597 million
registered learners



(close to the estimated population of North America in 2021)

ECOLAB / XYLEM

Allowed customers to save over

1.3 trillion
litres of water



(the average yearly consumption of drinking water for over 1.7 billion adults)

ECOLAB / CHR HANSEN

Allowed customers to save over

180,000
metric tons of waste



(a year's waste for almost 176,000 UK households)

ECOLAB / NOVOZYMES / ØRSTED
TESLA

Through products in use and/or sold during the year, enabled the avoidance of at least

87 million
metric tons of CO₂e*



(equal to taking close to 19 million passenger cars off the road during 2021)

DISCOVERY / PELOTON

Contributed to healthier lifestyles for over

47 million
people**



(more than the population of Spain in 2021)

MODERNA

Contributed to the delivery of

807 million
Vaccines**



(equivalent to vaccinating more than 98 times the population of New York)

ABIOMED / ALNYLAM / DEXCOM

Provided treatment and disease management solutions to close to

1.5 million
patients**



(more than the population of San Diego in 2021)

TELADOC†

Facilitated over

15 million
telehealth visits



(approximately one visit every 2 seconds in 2021)

10X GENOMICS / BERKELEY LIGHTS / ILLUMINA

Provided over

24,000
instruments for scientific research**



BANK RAKYAT / SAFARICOM‡

Provided loans to over

36 million
borrowers



(approximately the population of Morocco in 2021)

† M3 also contributes to telehealth visits, but does not report comparable data for inclusion.

‡ In 2021, MercadoLibre and Nu Holdings financed US\$2.45bn in loans, but do not report number of borrowers for inclusion

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

**Data related to healthier lifestyles, healthcare services, including treatment and disease management, and instruments for scientific research are presented to date, covering multiple years.

Important Notes

- Our SDG mapping is underpinned by using the 169 targets that sit below the 17 SDGs. SDG mapping is the output of our philosophy and process and will change as the composition of the portfolio changes. The portfolio currently addresses 16 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 explicit 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.

Negative Contributions

Ørsted

While the forward-looking goals of the business are wholly positive, Ørsted currently still operates some fossil fuel facilities as their transition to renewable power is underway. The green share of energy generation is currently at 90 per cent, and Ørsted has a target to eliminate coal-fired power generation by 2023, at which point their green share of energy generation will be equal to or above 95 per cent. Given the progress that Ørsted has already made, their strong targets for decarbonisation of their energy generation, and the small contribution to revenues that fossil fuel fired 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 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 their good combustion technology limits these emissions, they have state-of-the-art technology producing optimum combustion and their stoves already meet the latest eco-design requirements to be 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, segments of the business, which are providing a positive contribution to addressing climate change through sustainable energy products.



Ecolab

As of 2020, 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 their 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 and water management, improve sustainability and minimise pollution, therefore providing a positive environmental contribution. In some cases, products are process aids that enable customers to profitably and reliably refine fuels and process petrochemicals. It can therefore be argued as having a negative contribution to climate change by supporting the fossil fuel industry. The breadth of 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 considered to be negative.



Bank Rakyat

Bank Rakyat has been criticised by NGOs in recent years for their 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 therefore it is perhaps unrealistic to expect that they would not have any exposure given its status as a state-owned enterprise. We have engaged with Bank Rakyat regarding their approach to environmental and social due diligence and they have confirmed that they follow government guidelines regarding 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 Roundtable on Sustainable Palm Oil certificate. The corporate loan book is much smaller than that for the micro and small enterprise segment (about one fifth) and it is that which drives the positive change case for the company.



Deere & Co

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



Our Investment and Impact Analysis

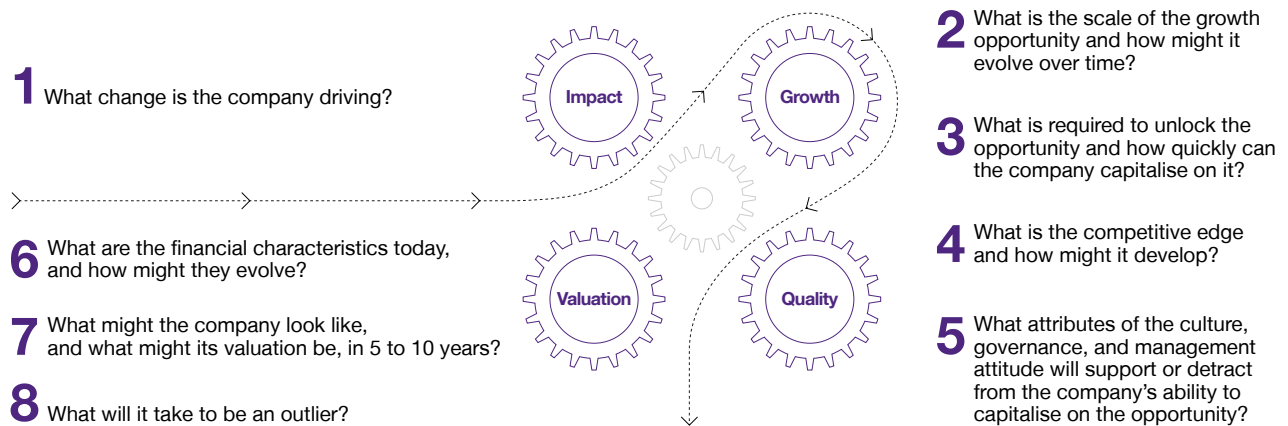
The challenges to sustainable development are numerous and interlinked and the impacts of companies on society are often complex and nuanced. We do not believe that broad-brush approaches such as negative screens or incorporating third-party environmental, social and governance (ESG) scores provide much insight.

Instead, we utilise in-depth, fundamental research using diverse sources of information to help us make informed judgements, always with a long-term mindset.

Our rigorous company analysis is a consistent and repeatable process which consists of two stages:

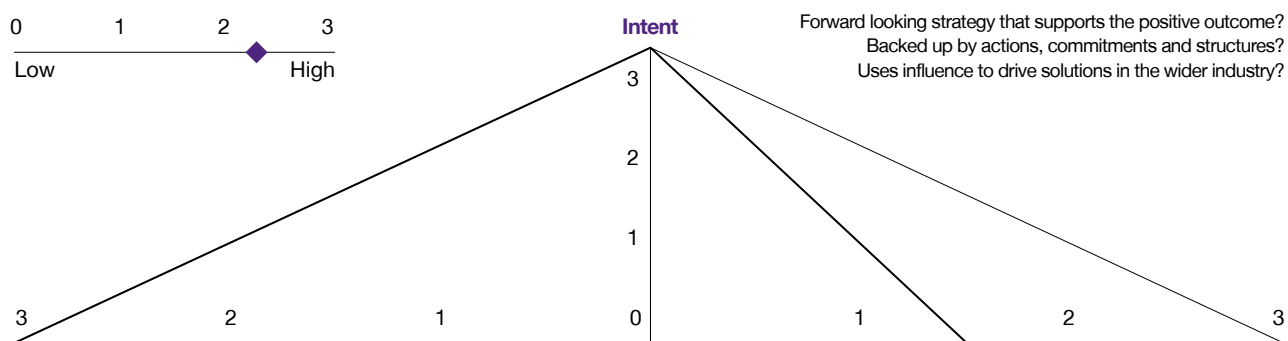
1. Fundamental company research
2. Impact analysis.

Our fundamental company research involves one of the Positive Change team's investment managers examining eight questions relating to the quality of the business and its growth prospects, as shown below.



The second stage of research focuses specifically on the impact potential of a business and is based on robust, bottom-up research that is independent from, but complementary to, the investment analysis. It is carried out by one of the team’s impact analysts using a rigorous, qualitative framework based upon the three factors below.

This analysis is holistic: we recognise that there is no perfect company and under each of these three factors we also consider areas of controversy, the negative consequences of a company’s operations and its awareness of those issues.



Product Impact

- Relationship between the product and the impact?
- Breadth and depth of impact?
- Materiality in the context of the business and the problem?
- Linkage with the United Nations Sustainable Development goals (UN SDG)?

Business Practices

- Addresses impacts across the full value chain?
- Transparent in its actions?
- Leads the industry in business practices?

For inclusion in the Positive Change Portfolio, we must be convinced that a company will meet both our investment and our impact objectives. It is a high bar, but we remain resolute in identifying companies that meet both these hurdles and are uncompromising on either objective



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 2021.

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 Keystone Positive Change Impact Report (“the Report”) for the year ended 31 December 2021, and consists of the ‘Portfolio Snapshots: Headline Impact Data’ section, the ‘Portfolio Snapshots: Significant SDG Contributions’ section, and in respect of each portfolio holding, the ‘Positive Chain’ section, (collectively, ‘The Selected Information’).

These sections are marked with the symbol ▲ within the Report. For the avoidance of doubt the Selected Information does not include any of the ‘Positive Change Hypothesis’ sections.

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 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 the Keystone Positive Change Fund Impact Measurement Methodology as set out at <https://www.bailliegifford.com/en/uk/intermediaries/literature-library/funds/investment-trusts/keystone-positive-change-investment-trust/keystone-positive-change-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 have been developed to assist Baillie Gifford in producing its Keystone 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 control

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 International Ethics Standards Board for Accountants (“IESBA”) Code of Ethics. We apply International Standard on Quality Control (UK) 1 Quality Control for Firms that Perform Audits and Reviews of Financial Statements, and Other Assurance and Related Services Engagements and accordingly we maintain a comprehensive system of quality control including documented policies and 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 on a sample basis 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 a selection of the Selected Information to corresponding source documentation, including, but not limited to, the annual reports and sustainability reports of the underlying portfolio holdings;
- reperforming a selection of manual calculations over the Selected Information including whether the formulae (including unit and conversion factors) used were in accordance with the applicable Reporting Criteria;
- performing analytical procedures over the aggregated Selected Information; 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

This assurance report is made solely to Baillie Gifford in accordance with the terms of the engagement contract between us. Those terms permit disclosure to other parties, solely for the purpose of Baillie Gifford showing that it has obtained an independent assurance report in connection with the Selected Information.

We have not considered the interest of any other party in the Selected Information. To the fullest extent permitted by law, we accept no responsibility and deny any liability to any party other than Baillie Gifford for our work, for this assurance report or for the conclusions we have reached.

KPMG LLP

KPMG LLP

Chartered Accountants
15 Canada Square
London
E14 5GL
19 August 2022

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 when presented on Baillie Gifford’s website.

BAILLIE GIFFORD. ACTUAL INVESTORS.

bailliegifford.com/actual-investors

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