



How investing in biotech can help achieve the UN SDGs

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What is biotechnology?

The authoritative scientific journal, *Nature*, defines biotechnology as ‘a discipline in which biological processes, organisms, cells or cellular components are exploited to develop new technologies.’ It elaborates further to emphasise the sector’s ability to develop useful innovations in ‘research, agriculture, industry and the clinic’.¹

While often recognised as a niche subset of healthcare, in this paper we argue that biotechnology should be seen more broadly as the application of biology for the benefit of our planet and society. From pioneering therapies to renewable food sources, biotechnology has the potential to address many of humanity’s greatest challenges, as aligned to the United Nations’ Sustainable Development Goals (SDGs).



Biotechnology has been enjoying the limelight as of late. Faced with the Covid-19 pandemic, the sector demonstrated its unequivocal societal impact by championing ground-breaking advances ranging from diagnostic testing to vaccine production. In particular, genomics played a critical role in sequencing the SARS-COV-2 virus, which has subsequently led to the development of more than 250 treatments and vaccines.

As governments seek to ‘build back better’ in a post-pandemic world, innovative companies that are working to reduce healthcare inequalities and improve life expectancy will be highly sought after, representing a significant opportunity. Indeed, biotechnology achieved record funding inflows in 2020, with the market now set to grow to over \$700 bn by 2025².

While few can deny that healthy populations are a key indicator of sustainable development, when it comes to funding, some countries are in a better position than others. Given mortality and morbidity rates are highly sensitive to the amount of investment in healthcare, we must take these inequalities seriously if we are to achieve the SDGs. For biotechnology, equity and access are key.

The role of investors in realising biotechnology’s potential for good

As an industry, biotechnology often receives criticism for disproportionately funding treatments for diseases that affect affluent western populations.

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To give an example, by 2040 there will be more than 30 million new cancer diagnoses each year—a 47% increase on 2020 – with 60% of cancer diagnoses and 70% of deaths currently occur in the emerging world³. These populations, however, are often outpriced by the most novel immuno-oncology therapies. As we are witnessing most acutely with Covid-19, only 1% of people in low-income countries have been vaccinated, compared to more than half of all high-income populations. If biotechnology innovations are not equally distributed and made more affordable, then the sector’s progress towards achieving the SDGs will be undone, pushing vulnerable populations deeper into poor health and poverty⁴. Investors must therefore evaluate a company’s pricing policy to ensure pre-market strategies and pricing models are equitable.

Beyond healthcare: Biotechnology’s many SDG touchpoints

The impact of biotechnology does not stop at healthcare; we are referring to more than just SDG 3, ‘good health and wellbeing’ here. Insofar as agriculture uses biotechnology, the sector encourages progress towards SDG 1, ‘no poverty’, and SDG 2, ‘zero hunger’.

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¹ Nature, ‘Biotechnology – Definition’

² Seed Scientific, ‘32 Mind-blowing Biotechnology Statistics – 2021 Update’ (22 January 2021)

³ ‘Innovation capability’ refers to a company’s ability to discover and develop more cost-efficient and efficacious solutions through original thinking and more effective management of competitive resources. Patents are one way of measuring the internal innovation DNA of a company and a biotechnology pipeline with a high proportion of new inventions can achieve sustainable impact.

⁴ World Health Organisation (Institutional Repository for Information Sharing), ‘Technical Report: Pricing of Cancer Medicines and its Impacts: A Comprehensive Technical Report for the World Health Assembly Resolution 70.12’ (2018)

⁵ World Economic Forum, ‘Vaccine equity will define how global economies recover from Covid-19’ (12 August 2021)

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Over the past decade, net income revenue from genetically modified (GMO) crops reached almost \$200bn, benefiting approximately 20 million farmers worldwide. Insect resistant cotton has engendered a more resilient garment manufacturing industry in Bangladesh, for example, creating millions of jobs and significant export revenue. Meanwhile, drought-tolerant maize has increased yields by more than 25% for Vietnamese farmers. Agricultural advances with a more direct impact on health include the development of biofortified 'golden rice' to alleviate vitamin A deficiency, which currently affects more than 250 million pre-school children and causes more than 3 million child deaths a year⁵.

By improving crop resiliency and productivity, biotechnology also saves millions of hectares of land from being cultivated in support of SDG 12, 'responsible consumption and production' and SDG 15, 'life on land'.

The investment landscape

So, what does the investment landscape currently look like for biotechnology?

Last year, the industry received over \$30bn, invested across more than a thousand private equity deals (a more than 60% year-on-year increase) and 70 new public listing (with a total exit value of \$40bn)⁶. Biotechnology companies represented almost a quarter of all initial public offerings (IPOs) with phase I and phase II assets; their lead assets accounted for more than half of biotech IPOs. Having an early IPO gives a biotechnology company earlier access to capital and leaves more scope to concentrate on science.

It is small- and medium-sized biotechnology companies that are at the forefront of sustainable health and wealth creation. The current clinical pipeline is dominated by emerging companies that account for more than three quarters of all global, clinical-stage drug programmes. Mergers and acquisitions (M&A) are helping large cap biotech and pharma companies strategically build out their drug pipelines by acquiring promising drug assets from these more nimble and agile early-stage biotechnology companies. The resources provided by the acquirer both accelerate the target's drug progress, through clinical trials, and enhance manufacturing and scale-up capabilities. With the top dozen biopharma companies having more than \$170bn in excess reserves, which could be made available for spending on M&A activity, the prospects for further financing and deal making look promising⁷.

The difficulties investing in biotechnology

Biotechnology is unlike any other sector for various reasons. Healthcare is less dependent on economic cycles than other industries and, as biotechnology is healthcare's greatest innovator, it is innately resilient, despite being centred on binary events. That said, with only one in twenty pre-clinical assets successfully making it to launch over a median time of 12 years, investing in biotechnology can be tricky. Ultimately, the pandemic has highlighted the need for channelling patient capital into science if we are to sustain the world we live in according to an SDG framework.

⁵ NYU Langone Health, 'Genetically Modified Organisms: The Golden Rice Debate'

⁶ PitchBook, 'PitchBook Analyst Note: Biotech Went To Work as the World Stayed Home' (30 March 2021)

⁷ McKinsey & Company, 'What's ahead for biotech: Another wave or low tide?' (30 April 2021)

Ensuring sustainability across the value chain

Of course, the sustainability of a biotechnology investment cannot be assured unless an investor delves into a company's value chain, management of ESG risk, and strategic position in relation to the SDGs.

Biotechnology companies that adequately manage ESG considerations will ultimately optimise their long-term financial performance and social impact. In an industry where success relies on recruiting talent, sustainable investors must hold boards to account on workforce diversity. Currently, more than 92% of biotechnology CEOs are white males⁸.

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Companies must also better manage their bio-waste and particulate emissions across the product life cycle to address the leakage of such pollutants. Material ESG factors that are slowly being recognised in the traditional pharmaceutical sector are just as relevant to emerging private biotechnology companies, who would be wise to take this into early consideration.

By developing treatments through gene therapies for conditions that were untreatable over a decade ago, to sustainable alternatives to petrochemicals, the scale and scope of the biotechnology sector can accelerate our transition to a more just and self-sufficient society.

If investors want to invest responsibly in this space, they must realise that they are at the cusp of a once in a generation opportunity to solve the world's greatest challenges. Biotechnology is finally coming of age.



Introducing Federated Hermes' Innovation Lab

The Innovation Lab was established to bridge the gap in understanding and practice between climate science and investing, provide broad ESG insights and generate ideas. Through the talent and alternative data we have available, the Lab enhances our capacity for Sustainable Wealth Creation by providing actionable insights to our fund managers and global team of engagement specialists.



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⁸ Business Insider, 'Men fill more than 9 in 10 biopharma CEO positions, an inequity that costs women more than \$500 million in pay each year' (30 June 2021)

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