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INVESTOR

# HydrogenOne Capital Growth

**Investment companies | Update | 17 October 2023**

## Sky is the limit for HGEN

The disconnect between HydrogenOne Capital Growth (HGEN)'s net asset value (NAV), current and prospective track record, and its share price is hard to rationalise.

The recent bond market rout (yields have spiked higher, driving down bond valuations) has added insult to injury for renewable energy investors. Higher interest rates have increased concerns around the availability and cost of financing, in addition to the added competition from money market funds, which are now providing steady returns with lower risks than other investment types. Even so, share price discounts to net asset values on renewable energy funds now appear to be out of step with reality, driven by sentiment rather than any fundamental justification.

This is certainly the case for HGEN, which saw revenue growth of 170% year-on-year across its portfolio of green hydrogen investments (page 6 of our April 2023 initiation note gives a detailed breakdown of the different types of hydrogen – green being the most sustainable as it is produced by electrolysis powered by renewable energy), further vindicating the investment case. Whilst the last six months have been particularly harrowing for many investors, there appear to be few trusts with as high a potential ceiling as HGEN, and for the long-term investor, the current discount to NAV should provide an excellent entry point.

| | |
|---|---|
| Sector | Renewable energy infrastructure |
| Ticker | HGEN LN |
| Base currency | GBP |
| Price | 56.4p |
| NAV | 100.7p |
| Premium/(discount) | (44.0%) |
| Yield | Nil |

Hydrogen technology is proven

170% year-on-year revenue growth for H1 2023

HGEN's portfolio is valued around 30% lower than the average listed hydrogen company.

## Diversified green hydrogen exposure

HGEN aims to deliver an attractive level of capital growth by investing, directly or indirectly, in a diversified portfolio of hydrogen and complementary hydrogen-focused assets while integrating core ESG principles into its decision-making and ownership process.

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# Contents



| | |
|---|---|
| Domicile | England & Wales |
| Inception date | 30 July 2021 |
| Manager | JJ Traynor<br>Richard Hulf |
| Market cap | 72.7m |
| Shares outstanding (exc. treasury shares) | 128,819,999 |
| Daily vol. (1-yr. avg.) | 190,171 shares |
| Net gearing | Nil |

Click for our initiation note

Click for an updated HGEN factsheet

Click for HGEN's peer group analysis


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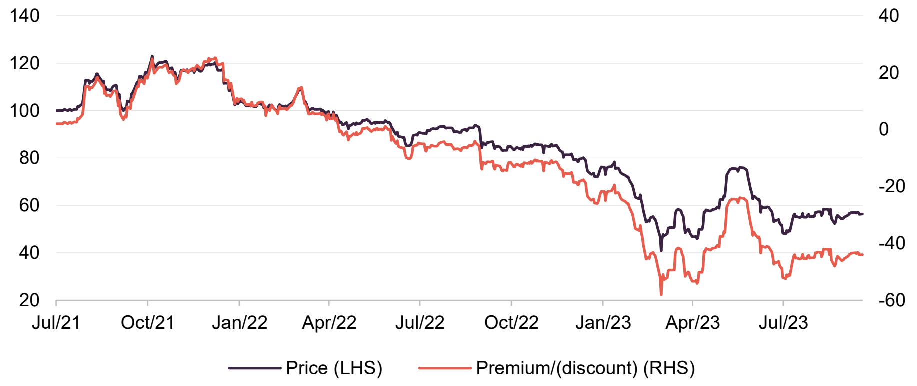
# At a glance

## Share price and discount

HGEN's shares moved from trading at a premium to net asset value (NAV) to trading at a discount in May 2022, and the discount hit its widest level in March 2023. Following the publication of our initiation note, the discount narrowed, but has widened again subsequently.

A significant driver of HGEN's discount has been the 'risk off' attitude that investors have adopted since interest rates began to rise.

## Time period 30 July 2021 to 16 October 2023

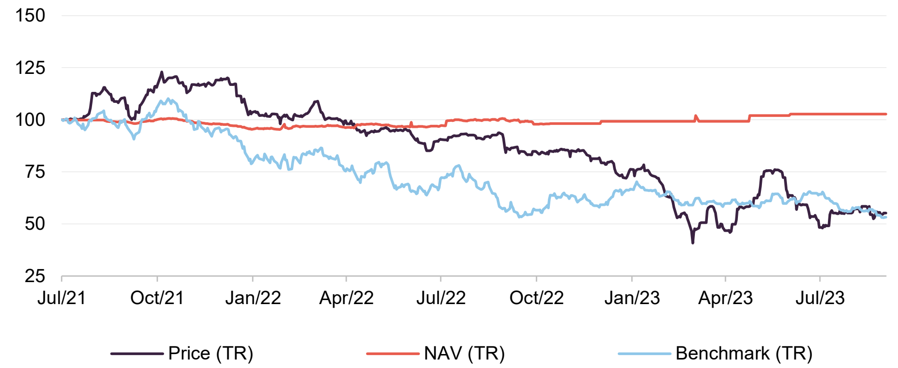



**Source:** Morningstar, Marten & Co

## Performance over five years

HGEN's NAV has not moved by much since launch. This was to be expected given that its investments have only been made recently and many of them are still valued at the price that HGEN paid. As more of these companies start to earn revenues and profits, then comparisons with listed companies will become more important. HGEN's portfolio was valued on about 4x 2024's forecast revenues at the end of June 2023. That is said to be about 30% lower than the average listed hydrogen company.

## Time period 30 July 2021 to 30 September 2023




**Source:** Morningstar, Marten & Co

| Year ended | Share price total return (%) | NAV total return (%) | Benchmark[2] total return (%) | MSCI ACWI total return (%) |
|---|---|---|---|---|
| 30/09/2021[1] | 7.0 | (1.0) | (3.8) | 1.1 |
| 30/09/2022 | (19.2) | 0.7 | (41.7) | (4.2) |
| 30/09/2023 | (36.1) | 3.1 | (5.1) | 10.5 |

**Source:** Morningstar, Marten & Co. Note 1) period from launch on 30 July 2021. 2) Benchmark is Solactive Hydrogen Economy Index. 3) HGEN's NAV is as at 31 December 2022.

## Green Hydrogen Backdrop

Our initiation note – funding a green revolution – describes HGEN's investment approach and the fundamentals of the green hydrogen sector

Whilst it is understandable that the broader renewables sector has derated as capital has flown towards money markets and debt (now that both offer higher returns), the scale of the move is hard to fathom. This is particularly true for HGEN, given the underlying quality and potential of its assets.

The discount to NAV for HGEN is now 44%, despite steady NAV growth and ongoing portfolio execution. Unfortunately, this distinction does not count for a huge amount in the current climate, as the multitude of investment trusts trading on wide discounts can attest. What sets HGEN apart, in our view (outside of its ongoing fundamental performance, which we believe justifies a much tighter discount in its own right), is the potential upside of the fund due to the weight of the tailwinds driving green hydrogen, particularly the scale of government spending flowing into the sector.

$16bn of new investment in green hydrogen has been announced in 2023

The sector is developing at an impressive rate. HGEN's managers report that $16bn of new investment in green hydrogen has been announced so far in 2023, including $8.4bn to fund a 4GW plant as part of the wider Saudi NEOM project. This increased interest is reflected in the growing backlogs and rapidly expanding production capacity of HGEN's portfolio companies, and we believe this to be an underappreciated element of the investment thesis.

The opportunity is vast, particularly in hard to decarbonise sectors

It remains early days, however. As we covered in more detail in our initiation note, the opportunity for industrial-scale green hydrogen production is vast, particularly in hard to decarbonise sectors of the market such as power generation and transport. Whilst estimates vary, some 20bn tonnes per annum of greenhouse gas emissions could be addressed with clean hydrogen over time, which is over one third of all greenhouse gas emissions today.

Hydrogen technology is proven

It is true that 'world changing' technological innovations have been a dime-a-dozen over the last few decades. However, the attraction of green hydrogen, and the HGEN portfolio, is that the technology is proven, growing in profitability and can scale rapidly – which is why we are beginning to see significant investment interest from both the public and private sector.

170% year-on-year revenue growth for H1 2023

This growth was highlighted in HGEN's interim results (covering the six months ended 30 June 2023), which showed aggregate revenue across the portfolio increasing by 170% year-on year. The bulk of this is attributable to just three of HGEN's 10 portfolio companies – Bramble, NanoSUN, and Sunfire (which we discuss from page 6 onwards) – highlighting the potential upside of these assets as they reach commercial scale.

HGEN's significant discount is on top of conservative valuations

Despite these bullish tailwinds, there is no guarantee that the pain is over for investors as interest rate volatility increases, and even if rates do settle, it is entirely possible that investors' cash does not immediately revert back to the sector. However, over the long term, fundamentals drive prices and, given the size of the thematic tailwinds behind green hydrogen, and the execution of the HGEN team, the potential upside for the fund appears to be significant. This is especially true given the current discount on what are already conservative valuations.

## Asset allocation

At 30 June 2023, HGEN had £117m invested or committed to 10 private hydrogen assets, had £3.0m in listed assets and a further £9.0m of cash.

Over the first six months of 2023, HGEN made £8m of investments, including the Thierbach hydrogen plant that we discussed in our initiation note and follow-on investments into three other portfolio companies: £1.5m for NanoSUN, £1.8m for Sunfire, and £2.9m for Cranfield Aerospace.

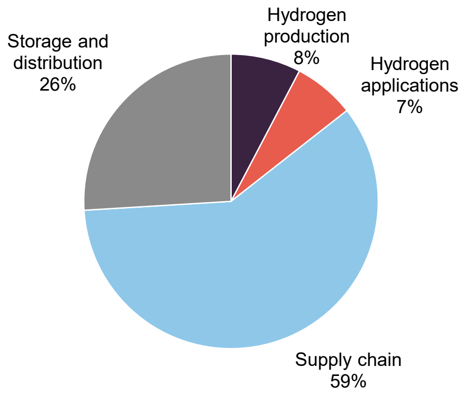
### Figure 1: HGEN portfolio as at 30 June 2023

| | Country | Sector | Value as at 30/06/23 (£000's)[1] | Change from 31/12/22 (£000's) | % of NAV as at 30/06/23 | % of NAV as at 31/12/22 |
|---|---|---|---|---|---|---|
| Sunfire | Germany | Electrolyser producer | 25,559 | 3,796 | 20 | 17 |
| Elcogen | United Kingdom | Solid oxide fuel cells | 21,475 | 1,045 | 17 | 16 |
| Strohm | Netherlands | Thermoplastic composite pipe | 18,440 | 6,834 | 14 | 9 |
| NanoSUN | United Kingdom | Mobile hydrogen storage and refuelling | 12,555 | 1,036 | 10 | 9 |
| Cranfield Aerospace Solutions | United Kingdom | Hydrogen powered aircraft | 10,422 | 4,126 | 8 | 5 |
| HiiROC | United Kingdom | Clean hydrogen technology | 10,325 | (2,589) | 8 | 10 |
| Bramble Energy | United Kingdom | PCB fuel cells | 8,439 | (1,593) | 7 | 8 |
| HH2E AG | Germany | Green hydrogen producer | 4,453 | (681) | 3 | 4 |
| Gen2 Energy | Norway | Green hydrogen producer | 3,999 | 578 | 3 | 3 |
| HH2E Thierbach phase 1 | Germany | Green hydrogen project | 1,852 | 1,852 | 1 | - |
| Total of unlisted portfolio within the LP | | | 117,519 | 14,404 | | |
| Value of HGEN's investment in the LP[2] | | | 117,721 | 14,715 | 91 | 82 |
| Listed stocks | Various | | 3,013 | (654) | 2 | 3 |
| Cash and other assets | | | 8,986 | (9,694) | 7 | 15 |
| Total | | | 129,720 | 4,367 | 100 | 100 |

Source: HGEN, Marten & Co. Note 1) Unlisted positions are held through the limited partnership, listed positions are held by the company directly. 2) There was a small net current assets position of £202,000 within the limited partnership at the year end.

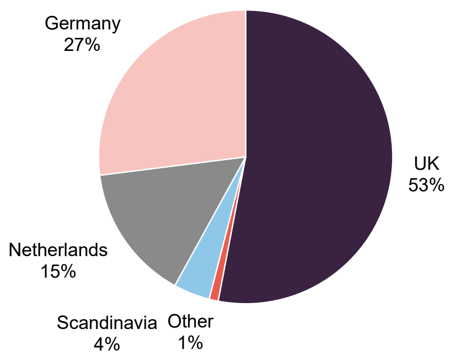
The distribution of the portfolio is not much changed from that of our initiation note. Changes reflect the £8m of investments that HGEN made in the first half of 2023 and valuation movements.

**Figure 2: HGEN portfolio by theme as at 30 June 2023**




**Source:** HGEN

**Figure 3: HGEN portfolio split by geography as at 30 June 2023**




**Source:** HGEN

## Portfolio developments

### Sunfire

Sunfire says that the Bad Lauchstädt Energy Park green hydrogen project in Saxony, Germany has been given the go-ahead. Over the course of two years, Sunfire is building a 30MW electrolyser to produce hydrogen as part of the project. The electrolyser will be powered by a nearby wind farm.

In August, Sunfire announced that it had received an order for a 100MW pressurised alkaline electrolyser (10, 10MW modules and associated power supply units) for an unnamed European refinery.

Later that month, it got €169m of IPCEI grant funding, which we believe formed part of the €5.2bn of public funding announced in September 2022 that EU states and regions are putting towards research and innovation – first industrial deployment, and construction of relevant infrastructure in the hydrogen value chain, including large-scale electrolysers. Sunfire is putting the bulk of the money towards its plant in Saxony. This is intended to have capacity of 500MW in 2023, expanding to 1GW in due course.

Finally, in September 2023, Sunfire announced that one of its solid oxide electrolysers is in use at a 250kW test facility at Lingen in Lower Saxony.

### Elcogen

Elcogen was also a beneficiary of IPCEI grant funding, this time for €24.5m, which will be used to accelerate the deployment of solid oxide (SOEC) technology.

In addition, Korea Shipbuilding & Offshore Engineering (part of the HD Hyundai Group) is making a €45m investment in Elcogen, having collaborated with it on research and development. This will help fund Elcogen's new 360MW facility in Tallinn, Estonia.

Elcogen's SOEC technology is being used in a test facility (ARENHA – Advanced Materials and Reactors for Energy Storage Through Ammonia) that will produce ammonia as a means of energy storage and as a fuel. This is the technology that is often touted as a solution to decarbonisation of the shipping industry. This is also part of the attraction for HD Hyundai.

## Strohm

Strohm was the main driver of HGEN's NAV improvement over H1 2023. It is involved in a test floating hydrogen and/or ammonia production and storage facility (the OFFSET project) and a test 10MW hydrogen production project (HOPE) powered by an offshore wind farm in the North Sea off the coast of Belgium. In its fossil fuel business, it has also won new business for natural gas pipelines being installed in deep water of the coast of Brazil and Congo.

HGEN says that Strohm has a €60m order book, which will be easier to tackle having tripled its production capacity to 140km of pipe per annum, and it is forecast to be EBITDA- and cashflow-positive in 2024.

## NanoSUN

NanoSUN has worked with Westfalen to provide a mobile hydrogen refuelling station to a small fleet of six fuel-cell-powered buses in Brühl, North Rhine Westphalia, Germany. In addition, in Italy NanoSUN and IIT Hydrogen Bolzano have agreed a pathfinder initiative to promote Pioneer mobile hydrogen refuelling in that country.

Italy is making a €3.64bn national investment towards the green hydrogen transition, €230m of this will be dedicated to establishing a national network of hydrogen refuelling stations, 36 of which will be operative in 2026.

## Cranfield Aerospace

The merger with aircraft manufacturer Britten Norman that we discussed in our last note is yet to be concluded. However, Cranfield has announced a deal with MONTE Aircraft Leasing and Torres Strait Air to convert up to 10 Britten-Norman Islander aircraft to hydrogen-electric power.

Cranfield Aerospace has also signed a Memorandum of Understanding with Dronamics, the world's first cargo drone airline, with the intention of using hydrogen fuel cell propulsion in Dronamics' Black Swan cargo drone aircraft. This includes a letter of intent for the supply of a substantial number of propulsion systems from 2026.

The two companies have been working together since November 2022 on a joint feasibility study for the Black Swan cargo drone aircraft, which is capable of carrying 350kg of freight for up to 2,500km. These studies have concluded that the Cranfield Aerospace hydrogen fuel cell system is well suited to meet the required payload, cargo volume and range for the Black Swan aircraft. With the letter of intent that was included in the deal, Cranfield Aerospace now has a total order pipeline of over 1,300 drivetrains.

In addition, upgrade work at company's UK hangar and research and development facility was completed in the summer.

### HH2E

HH2E announced that it had secured development funding for its second 100MW green hydrogen plant at Lubmin, Mecklenburg-Western Pomerania, Germany from Foresight Group. HGEN opted not to participate in this project. As with Thierbach, the intention is that the plant will scale to 1GW in time. Orders for the electrolysers for this and other HH2E projects have been placed, with an order for 120MW from Norwegian manufacturer Nel.

HH2E, DHL Group, and Sasol have signed an agreement for the setup of a joint initiative aimed at building potential production capacities for sustainable aviation fuels based on green hydrogen (eSAF) at a suitable location in East Germany.

The intention is that the initial plant has the capacity to produce 200,000 tonnes per annum (avoiding the emission of 632,000 tonnes of $CO_2$) and the potential to scale that to 500,000 tonnes.

HH2E is participating in its role as a producer of green hydrogen. Sasol is using its technology to turn that into eSAF and DHL will be a major consumer of that eSAF (it has an air cargo hub at Leipzig/Halle airport). Airbus intends to join the consortium with the expected aim of being another potential customer.

### Gen2 Energy

Gen2Energy has signed a transaction term sheet with SEFE Securing Energy for Europe GmbH, an integrated midstream energy company (midstream energy companies operate pipeline and collection or transmission facilities that move gas from the producer – upstream, to the users – downstream), to supply green hydrogen from its plant in Mosjøen Norway to customers in Germany. The agreement is conditional on (and a big boost towards) the final investment decision to construct the Mosjøen plant, which is expected in 2024. Assuming that construction work commences in 2024, the construction time is expected to be 30 to 36 months.

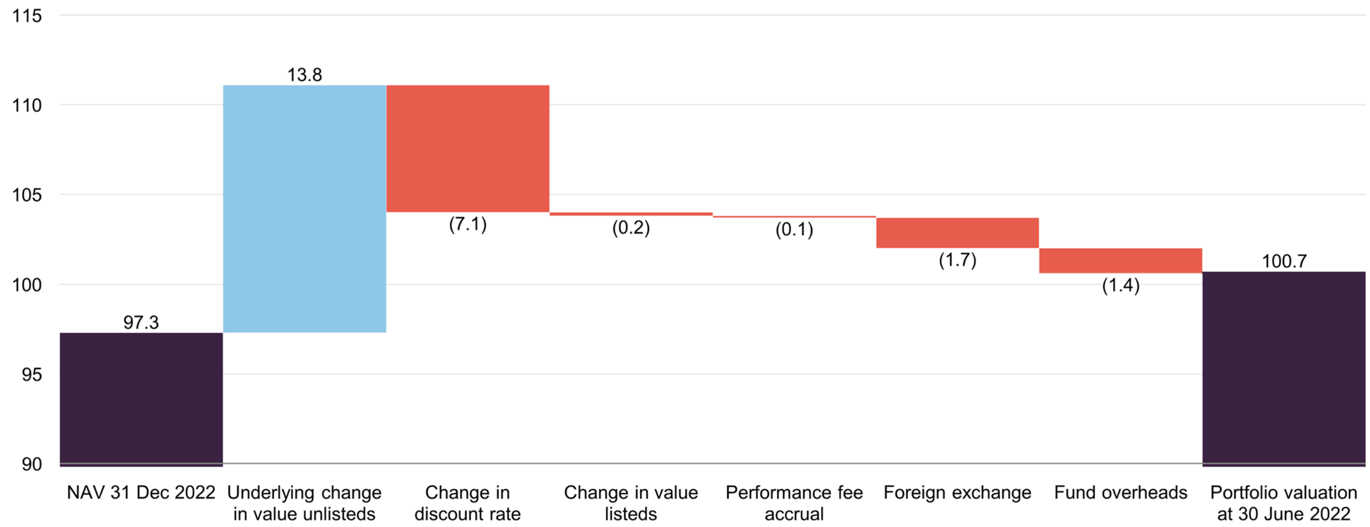
### ESG

HGEN is an Article 9 fund with 87.6% of its portfolio aligned with EU taxonomy under SFDR. HGEN has just adopted a six-monthly reporting cycle on ESG metrics. As part of this, it disclosed that 83,497 tonnes of $CO_2e$ of greenhouse gas emissions were avoided in the six months ended 30 June 2023 as a result of its activities, and 134,076 $tCO_2e$ since IPO.

## Performance

Over the six months ended 30 June 2023, HGEN's NAV rose by 3.5% despite an adverse movement in the discount rates used to value the portfolio (by discounting projections of future cashflows into a net present value). The weighted average discount rate rose to 13.7% from 13.0% over the first half of 2023. Discounted cash flow valuations were used for 81% of the portfolio (by value). The balance of the unlisted portfolio was valued based on a blend of discounted cash flow and the price of recent investment. Listed stocks are, as you might expect, valued on listed share prices.

**Figure 4: HGEN contributions to change in NAV over six months to end 30 June 2023**




**Source:** HGEN, Marten & Co.

To add further reassurance as to the quality of HGEN's valuations, all of the positions in the private portfolio have downside protections such as anti-dilution (protecting the fund in the event that the company raises more money at a lower valuation than HGEN paid) and liquidation preferences (which mean that HGEN gets paid out ahead of other investors in the event of a liquidation of the company).

**Figure 5: Total return cumulative performance over various time periods to 30 September 2023**

| | 3 months (%) | 6 months (%) | 1 year (%) | Since launch (%) |
|---|---|---|---|---|
| HGEN share price | (13.2) | 17.1 | (36.1) | (44.7) |
| HGEN NAV[1] | 0.0 | 0.7 | 3.1 | 2.8 |
| Solactive Hydrogen Economy Index | (13.9) | (14.5) | (5.1) | (46.7) |
| MSCI ACWI | 0.6 | 3.9 | 10.5 | 7.0 |

**Source:** Morningstar, Marten & Co. Note 1) HGEN's NAV is as at 30 June 2023.

Valuation of HGEN's portfolio is around 30% lower than the average listed hydrogen company.

HGEN's portfolio was valued on about 4x 2024's forecast revenues at the end of June 2023. That is said to be about 30% lower than the average listed hydrogen company.

## Premium/(discount)

Over the 12 months ended 30 September 2023, HGEN's shares have moved within a range of a 10.7% to a 58.1% discount to NAV and averaged a discount of 33.5%. At 16 October 2023, HGEN was trading on a 44% discount to NAV.

## Figure 6: HGEN premium/(discount) since launch


**Source:** Morningstar, Marten & Co

HGEN's shares moved from trading at a premium to trading at a discount in May 2022 and the discount hit its widest level in March 2023. Following the publication of our initiation note, the discount narrowed, but has widened again subsequently. The swings in discount suggest that the shares are fairly illiquid, which seems sensible given the long-term nature of HGEN's investment proposition and the fund's short history (investors at launch ought to have been there for the long term rather than trading their shares). This might suggest that a small improvement in sentiment could have a meaningful positive impact on the share price.

A significant driver of HGEN's discount has been the 'risk off' attitude that investors have adopted since interest rates began to rise. This has contributed towards falls in the share prices of listed stocks.

We feel that HGEN's discount is entirely unjustified and is not supported by the fundamentals. As we have explained in this and our previous note, the prospects for the hydrogen industry are bright.

## Fund profile

More information is available on the trust's website: hydrogenonecapitalgrowthplc.com

HGEN is the first London-listed fund investing in clean hydrogen for a positive environmental impact. It aims to deliver an attractive level of capital growth by investing, directly or indirectly, in a diversified portfolio of hydrogen and complementary hydrogen-focused assets whilst integrating core ESG principles into its decision-making and ownership process.

HGEN compares its NAV performance to the Solactive Hydrogen Economy Index.

HGEN's AIFM is FundRock Management Company (Guernsey) Limited (formerly Sanne Fund Management (Guernsey) Limited). It is advised by HydrogenOne Capital LLP, whose lead managers are JJ Traynor and Richard Hulf.

HGEN can hold both listed and unlisted (private) investments: however the majority of the portfolio is invested in unlisted hydrogen assets. In both cases, HGEN aims to be a long-term investor. The early portfolio was established with a liquidity reserve of cash and listed hydrogen assets, with the intention of giving investors exposure to the sector from day one.

HGEN holds its unlisted investments through a 100% stake in a limited partnership, HydrogenOne Capital Growth Investments (1) LP.

## Previous publications

We published our initiation note – Funding a green revolution – on 3 May 2023. Click the link to read it.

# IMPORTANT INFORMATION

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