

HydrogenOne Capital Growth plc (“HGEN”) – investing in clean hydrogen for a climate-positive impact. Article 9 Fund with an ESG policy integrated in investment decisions and asset monitoring.

Key highlights for the period

- Net Asset Value (“NAV”) per share of the Company 102.99 pence; an increase of 1.6% since 30 September 2023 (101.42 pence), and an increase of 5.8% since 31 December 2022;
- Continued revenue growth delivery from private portfolio companies, delivering an aggregate £74 million in total revenue in the 12 months to 31 December 2023, an increase of 125% compared to the 12 months to 31 December 2022;
- €45m investment in Elcogen by HD Hyundai has been followed by preparations for the construction of a new solid oxide fuel cell plant in Estonia, with up to 360MW capacity. This underscores HydrogenOne’s valuation, and introduces a major industrial strategic investor;
- HiiROC’s patented Thermal Plasma Electrolysis (“TPE”) hydrogen production process was officially included within the scope of the UK Government’s Low Carbon Hydrogen Standard (LCHS), opening up the UK market for HiiROC. Cemex Ventures increased its stake in HiiROC, further expanding strategic co-operation, and underpinning the Company’s valuation;
- In early 2024, the Company implemented a restructuring of NanoSUN, taking full ownership of the business, and forming a new company named Swift Hydrogen (“Swift”), which is reflected in the December 2023 valuation; and
- The fundamentals of the clean hydrogen sector continued to strengthen, despite weak macro-economic conditions. The Investment Advisor has seen some \$17 billion of investment in green hydrogen in 2023, an over 400% increase over 2022 levels, underscoring the positive industry outlook for clean hydrogen.

Investment Adviser’s commentary on the quarter

The clean hydrogen sector continues to grow rapidly, despite headwinds from weak financial markets. The Investment Adviser has tracked \$17 billion of new investment into clean hydrogen in 2023, over 400% higher than in 2022. Some 1.2GW of green hydrogen production was on line globally at the end of 2023, a 50% increase year-on-year, and a further 35GW is in development, an increase of 20% from 2022, which could result in over 40 million tonnes per annum of avoided greenhouse gas emissions. Announcements at COP28, calling for the phase out of fossil fuels and tripling of renewables, all underpin the positive outlook for the clean hydrogen industry.

The quarterly NAV increase was driven primarily by valuation uplifts to the Company’s portfolio of private investments, positively contributing 1.92 pence (1.9%) per share to the NAV movement.

Private valuations at the end of the quarter followed International Private Equity and Venture Capital Valuation guidelines. The portfolio weighted average discount rate at 31 December 2023 was 14.2%, higher than 31 December 2022 (13.0%), decreasing NAV by 6.7 pence per share. The portfolio weighted average discount rate at 30 September 2023 was 13.5%, reducing 31 December 2023 NAV by 0.3 pence per share compared to 30 September 2023.

During the 12 months to 31 December 2023, private portfolio companies delivered an aggregate unaudited £74 million in revenue, a 125% increase compared to the period ending 31 December 2022, on a pro-forma basis. Further growth is anticipated in 2024. These positive financial trends reflect the build out of capacity to meet strong order books for hydrogen supply chain equipment.

Investments in the quarter totalled £1.0 million in two existing portfolio companies Strohm and Gen2 Energy. Cash and cash equivalents were £4.7 million, with additionally £2.3 million of listed hydrogen companies at the end of the quarter.

We continue to see strong investment interest in portfolio companies from industrial strategic investors, and note that Cemex and HD Hyundai invested in HydrogenOne businesses during the quarter, which underpin the Company’s valuations and bring strategic partnerships to the businesses.

The UK Government continues to support the development of clean hydrogen supply, yet has elected to slow the pace of fossil fuel phase out in transport, which has reduced the pace of deployment of clean hydrogen in the UK into transport. In light of this development, and weak financial markets, we have re-set the NanoSUN business model in early 2024 to form Swift Hydrogen, which has a lower cost base and simplified capital structure, for renewed growth in the business, with customers in the EU in the near term.

At 31 December 2023, the Company has invested in ten private investments, in the UK and Europe, representing 98.2% of its invested portfolio by value. Additional investment in strategic, global hydrogen equities represented 1.8% of the invested portfolio.

The portfolio continues to perform in line with the expectations of the Investment Adviser, HydrogenOne Capital LLP.

Portfolio news during the quarter



Sunfire GmbH, a leading German industrial electrolyser producer (20.4% of NAV)
[sunfire.de](https://www.sunfire.de)

- Sunfire started the construction of its E30 million Research and Development centre at Dresden, Germany, including prototype testing and manufacturing facilities.
- The GET H2 TransHyDE joint project, based in Lingen achieved first hydrogen production, on the site of the RWE gas-fired power plant in Emsland (KEM) using a high-temperature 250 KW solid oxide electrolyser (SOEC) from Sunfire.



Elcogen, a leading innovator and supplier of solid oxide fuel cell and electrolyser components (18.4% of NAV)
[elcogen.com](https://www.elcogen.com)

- Korea Shipbuilding & Offshore Engineering, a member of HD Hyundai Group, invested €45m in Elcogen. This investment will be used to expand Elcogen’s manufacturing capacity, with a new factory facility in Tallinn, Estonia, where preparations for construction have now commenced, to add capacity of up to 360MW, with 100MW capacity planned for Phase 1. HD Hyundai and Elcogen intend to further strengthen their collaboration with a focus on marine propulsion systems and stationary power generation, based on Elcogen’s proprietary solid oxide fuel cell technology, with the intent to manufacture products in South Korea.
- Elcogen signed Memorandum of Understanding (“MOU”) with Bumhan Fuel Cell Co, a South Korean company (“Bumhan”). The purpose of the partnership is to cooperate towards the commercialisation of solid oxide fuel cells (SOFC) and solid oxide electrolyser cells (SOEC) technology to catalyse the global transition to clean energy.
- Elcogen signed a supply and R&D collaboration agreement with the French company Genvia. The contract helps to further deliver the goal to accelerate the production of affordable green hydrogen in the EU, under the Important Project of Common European Interest.



Strohm Holding B.V., a Netherlands-based hydrogen pipeline company (14.9% of NAV)
[strohm.eu](https://www.strohm.eu)

- Strohm became the first company to receive DNV qualification for deepwater thermoplastic composite pipe (“TCP”) Flowline. Initial trials began in Brazil in 2018, aimed at applications typical of the region’s post-salt deep water fields. Almost 40 tests were carried out on Strohm’s subsea flowlines, based on a product design life of 30 years, with changing loads at different temperatures.
- TCP offers significant greenhouse gas emissions savings compared to traditional solutions, and has significant growth prospects in transporting offshore hydrogen and CO2.



HiiROC, a UK company, is pioneering thermal plasma electrolysis technology, for low cost, zero CO2 emission Hydrogen production, using methane feedstock (10.3% of NAV)
[hiiroc.com](https://www.hiiroc.com)

- Cemex Ventures, Cemex’s corporate venture capital (CVC) and open innovation unit has increased their investment in HiiROC after an initial investment in 2022. The investment further validates the Company’s valuation of HiiROC.
- Cemex intends to initially inject hydrogen at its Rugby cement plant in the UK, and eventually expand use of HiiROC’s technology across its EMEA operations
- In December 2023, HiiROC’s patented Thermal Plasma Electrolysis (“TPE”) hydrogen production process was officially included within the scope of the UK Government’s Low Carbon Hydrogen Standard (LCHS), opening up the UK market for HiiROC.



Cranfield Aerospace Solutions Ltd (“CAeS”), a UK hydrogen flight innovator (8.9% of NAV)
[cranfieldaerospace.com](https://www.cranfieldaerospace.com)

- CAeS and Reaction Engines signed an MOU to expand their existing collaboration to explore additional aerospace applications for their zero-emission propulsion technology.
- CAeS and Dronamics announced an MOU to further progress the application of the CAeS’s hydrogen-electric propulsion system to the Dronamics Black Swan cargo drone aircraft. This agreement confirms the position of CAeS as the preferred supplier of HFC propulsion systems to Dronamics and includes a letter of intent for the supply of a substantial number of propulsion systems from 2026. This opens a new route to market for its hydrogen-electric propulsion system, alongside existing arrangements with Britten-Norman.



Bramble Energy is a UK-based fuel cell and portable power solutions company (8.0% of NAV)
[brambleenergy.com](https://www.brambleenergy.com)

- Bramble Energy and EDAG Group have signed an MOU to collaborate on a digital investigation into using a hydrogen Printed Circuit Board Fuel Cell (PCBFC™) within a standardized EV platform. The project, named ‘FC-STORM’, aims to create and showcase a design study of the 3D integration of Bramble’s cutting-edge hydrogen fuel cell system into EDAG’s storage platform designed for passenger vehicles and light commercial vehicles.
- Bramble Energy won The Gateley Business Transformation of the Year Award 2023 and was also announced in the Deloitte UK Fast 50, one of the UK’s foremost technology awards programmes.



HH2E is a green hydrogen project developer with a focus on industrial customers in Germany (5.3% of NAV). HH2E is the operator of the Thierbach green hydrogen development project, in which HGEN has a direct investment (1.5% of NAV)
[hh2e.de](https://www.hh2e.de)

- DHL Group, HH2E, and Sasol announced plans to collaborate for the production of sustainable aviation fuels in Germany, using HH2E-supplied green hydrogen, for an initial capacity of 200,000 tonnes per annum, with potential to scale up to 500,000 tonnes per annum.
- HH2E announced plans for a supply agreement for green hydrogen with Germany hydrogen refuelling leader H2 Mobility, aimed at the transport sector.



NanoSUN Limited, a UK-based developer of hydrogen distribution and mobile refuelling equipment (4.1% of NAV)
www.nanosun.co.uk

- In early 2024, the Company has implemented a restructuring of NanoSUN, and re-launched the slimmed down business, renamed as Swift Hydrogen Ltd (“Swift”). The Company will wholly own Swift, increased from 23%, ahead of future funding rounds. Swift will be led by previous senior managers from NanoSUN.
- NanoSUN and IIT Hydrogen Bolzano signed an MOU to jointly explore the operational use of NanoSUN’s Pioneer hydrogen refuelling equipment across a range of hydrogen applications in Italy, which could lead to the rapid deployment of safe, reliable, and cost-effective hydrogen refuelling infrastructure.



Gen2 Energy is a Norwegian green hydrogen project developer (3.3% of NAV)
[gen2energy.com](https://www.gen2energy.com)

- Gen2 Energy and SEFE Securing Energy for Europe (SEFE), via its subsidiary WINGAS GmbH, signed a Transaction Term Sheet for the delivery of green hydrogen. This defines the terms and conditions for a final Sales and Purchasing Agreement and represents a major step to realize the import of green hydrogen from Norway to Germany.

Key statistics as at 30 September 2023 (unaudited)

Sector	Renewable Energy Infrastructure
Net asset value (NAV)	£132.7m
NAV per share	102.99p
Share price	49.60p
Premium / Discount to NAV	(51.8)%
3-month NAV return	1.6%
Market capitalisation	£64.0m
Capital deployed in low-carbon growth	£113.7m
Number of shares in issue	128,819,999

Investment Adviser

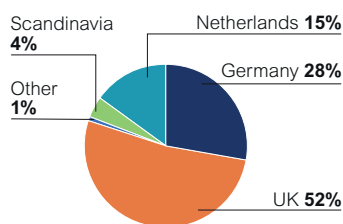


Dr JJ Traynor, Managing Partner
Former senior executive at Shell, BP and Deutsche Bank

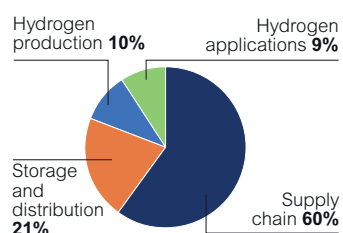


Richard Hulf, Managing Partner
Former Fund Manager at Artemis; senior executive at EY and Exxon

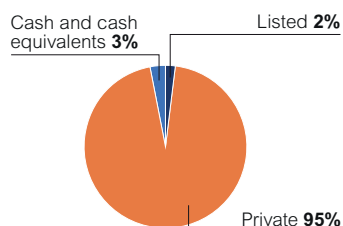
Portfolio segmentation by geography



Portfolio segmentation by theme



Portfolio segmentation by asset class



Note: the charts above show fund portfolio at 31 December 2023. Private Hydrogen Assets are valued in accordance with the valuation methodology at each period end.

Private investments % of NAV

1. Sunfire GmbH <i>Supply Chain (Electrolysers)</i>	20.4%
2. Elcogen Plc <i>Supply Chain (Fuel cells)</i>	18.4%
3. Strohm Holding B.V. <i>Storage & Distribution (Supply services)</i>	14.9%
4. HiiROC Ltd <i>Supply Chain (Electrolysers)</i>	10.3%
5. Cranfield Aerospace Solutions Ltd <i>Hydrogen Applications (Aircraft manufacturer)</i>	8.9%
6. Bramble <i>Supply Chain (Portable power units)</i>	8.0%
7. HH2E <i>Hydrogen Production (German project developer)</i>	5.3%
8. NanoSUN Limited <i>Storage & Distribution (Supply services)</i>	4.1%
9. G2E <i>Hydrogen Production (Norway project developer)</i>	3.3%
10. HH2E Thierbach Phase 1 Project <i>Private Hydrogen Project (Germany)</i>	1.5%

Investment objective and ESG commitment

- Through investing, directly or indirectly, in a diversified portfolio of hydrogen and complementary hydrogen focused assets, HGEN contributes to climate change mitigation and integrates core ESG principles into its decision making and ownership process;
- At least 90% of the fund will be invested in private equity over time, with the remainder in a focused portfolio of listed hydrogen companies; and
- Strongly orientated to ESG mandates, enabling the avoidance of GHG emissions and exclusion of fossil fuels producers, HGEN is targeting total NAV return of 10-15% per year over time, including proceeds from portfolio divestments*.



Company information

Listing

London Stock Exchange (ticker: HGEN)

IPO date

30 July 2021

ISIN

GB00BL6K7L04

SEDOL

BL6K7L0

Year end

31 December

Release of Annual Report

April

Registered address

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London
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Broker

Barclays Bank PLC

Alternative Investment Fund Manager ("AIFM")

FundRock Management Company (Guernsey) Limited

Public Relations

Buchanan

How to invest

HGEN shares can be traded through any UK stockbroker and most share dealing services, including online platforms that offer investment trusts.

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* For an investor in HGEN at IPO. The total NAV return target is a target only and not a profit forecast.

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