

Cleantech Trailblazers: Mapping innovation and impact across the green economy

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1. Introduction to the cleantech industry

1.1 What is cleantech?

Clean technology, shortened to cleantech or sometimes referred to as climate tech, transcends a range of industries. Essentially, cleantech can be defined as follows:

“Cleantech refers to the technologies, products and processes which improve the environment and accelerate progress towards sustainability”.

Cleantech also has an important role to play in the drive to cut carbon emissions, especially given the increasing activity towards setting targets and climate commitments both at an international and domestic level. This opens the door to legal requirements for businesses to accurately report and reduce emissions moving forwards, something we are already seeing evolve in the US, UK and EU. Further, consumer attitudes are changing, with customers increasingly aware of the environmental activities of corporations and subsequently eager to see their professed green credentials in action. Therefore, businesses engaging in and implementing clean technologies could not only reap the rewards of first mover advantage but improve their brand reputation and relationship with consumers. Lastly, alongside a growing push for climate commitments from companies themselves, there is also increasing scrutiny of supply chain practices. Cleantech products which make business within supply chains more attractive to their partners are a huge

benefit, likewise, monitoring and reporting tools which streamline processes are also advantageous.

The major sectors where cleantech is presently disrupting more traditional processes includes: the energy sector, waste management, transport, manufacturing, and agriculture. It represents technologies such as renewable energy sources, battery storage solutions, recycling facilities, and even aspects of AI. The reason for this is that many of these industries are major polluters and therefore ripe for disruption from cleaner alternatives especially where subsidised and encouraged by government. Others, such as manufacturing and agriculture, can be greatly enhanced through improvements in efficiency and technologies which bolster yields.

Subsequently, new technologies require new skillsets, and the cleantech revolution is driving up demand for workers with ‘green skills’. In ZCA’s recent research [The Green Skills Gap 2025](#) our forecasts showed a projected 257% increase in the demand for green skills by 2030, whilst in the same period green talent is only projected to rise by 59%, leading to a skills gap.

Cleantech investment summary

Cleantech has an important role to play in sustainability and in the drive to cut carbon emissions, especially given the increasing activity towards setting targets and climate commitments both at an international and domestic level. Cleantech has influence across a range of industries, and encompasses many technologies, including renewable energy sources, battery storage solutions, recycling facilities, and even aspects of AI (Artificial Intelligence).

ZCA's latest research finds that cleantech investment* reached \$299 billion in 2024, with this heavily skewed towards the energy segment. This followed a record \$468 billion of investment achieved in 2023, meaning that between 2023 and 2024, levels dropped by 36%.

On a regional basis, 2024 saw North America continue to dominate investment, accounting for just under half. The region has held this title since 2020.

Investment recorded in the first half of 2025 is already above last year's total at the same point in time, reaching \$152.9 billion by the end of June compared with \$132.8 billion in H1 2024. Whilst the vast majority of this can again be attributed to energy, investment into resource extraction & manufacturing, as well as waste management & water, and transport is also notably up year-on-year.

**Successful funding rounds for cleantech businesses*

Sample of Zero Carbon Academy's Cleantech top 50

Zero Carbon Academy have designed our cleantech top 50 to recognise boundary pushing innovators, market disruptors and players to watch over the course of this year within the cleantech space. We have balanced recipients of large-scale investment against businesses who are undertaking something new and exciting that holds potential to disrupt their respective industries.

Methodology

Using data on investments and funding rounds, alongside our own research into company product offerings, patents, innovation, and partnerships, ZCA have sought to showcase representatives from each of the key industries listed below. Our categories are:

1. AgTech & Food
2. Energy, Battery & Storage
3. Technology & Innovation, Analytics & Software
4. Automotive & Transport
5. Real Estate, Construction & Building Materials
6. Financial Services
7. Artificial Intelligence
8. Waste Management & Water
9. Manufacturing
10. Other

Here we provide a sample of the Energy, Battery & Storage industry analysis. The full research report also includes a future outlook and investment analysis, as well as the other 9 industries included in our study.

i. Energy, Battery & Storage

The energy segment has seen rapid growth within the cleantech industry over the past few years largely due to expansion of renewable energy. At the same time battery and storage solutions have also gained traction, driven by both the requirements from the energy segment, and by the needs of the clean transport sector – particularly EVs.








a) Sector outlook

Investment within this sector is skewed more towards the energy segment than battery & storage, where energy accounts for 97% of spend within this sector so far this year.

Whilst the cleantech energy segment looks bright, and is up versus H1 2024 spend, the same can't be said for battery & storage which presently trails last year's investment (between January and end of June) by \$6.5 billion. We have seen major developments within the battery sector over the past year, most notorious perhaps being the collapse of Northvolt, a company which had been seen as Europe's hope for home grown battery production, instead it collapsed, filing for bankruptcy in March 2025 with debts in excess of \$8 billion.

Representatives in ZCA's Cleantech Top 50

Seven businesses operating in the Energy, Battery & Storage space have made it into our 2025 Cleantech top 50.

Company		Country	Investment to date	Last round
Antora Energy		USA	\$205.4 million from 6 funding rounds.	February 2024
CorPower Ocean		Sweden	\$69 million from 9 funding rounds.	February 2025
e-Zinc		Canada	\$73.2 million from 14 funding rounds.	June 2024
Form Energy		USA	\$1.5 billion from 13 funding rounds.	December 2024
Lightbridge		South Korea	\$1.5 billion from 1 funding round.	November 2024
Ascend Elements		USA	\$1.8 billion from 16 funding rounds.	September 2024
Solid Power		USA	\$437.2 million from 9 funding rounds.	September 2024

Source: Zero Carbon Academy

Antora Energy is a US company that has received \$205 million in funding from 6 rounds. The business provides thermal energy storage by collecting excess solar and wind electricity and in turn uses it to heat blocks of carbon. The business then delivers this zero-carbon industrial heat and power to heavy industries.

Swedish company **CorPower Ocean** develops high efficiency Wave Energy Converters (WECs), which deliver five times higher annual energy output per ton of device when compared with previously known wave power solutions. The company claim that this improvement in performance and efficiency allows a Cost-of-Energy that can compete with offshore wind.

e-Zinc provides long-duration energy storage solutions using its electrochemical technology which enables energy to be stored in zinc metal. This provides safe, low-cost, and flexible energy storage from a metal which is abundant and recyclable. The technology is therefore helping to develop efficient and cost-effective energy storage for the renewable electricity sector.

Form Energy, which has raised \$1.5 billion, specialises in long-duration batteries and pioneering new cost-effective technologies to help solve the issue of energy storage. The companies first commercial product is an iron-air battery the size of a washer-dryer, which takes in oxygen to convert iron to rust, harnessing the resulting electrons and their energy. The batteries are capable of storing electricity for 100 hours with the technology named one of Time magazine's best inventions of 2023. The devices can discharge power for roughly four consecutive days meaning they last far longer than lithium-ion batteries.

South Korean firm **Lightbridge** has received \$1.5 billion in funding from 1 round. The business specialises in the development of electrolyzers as well as the commercial production and storage of green hydrogen.

Ascend Elements has received \$1.8 billion in funding from 16 separate funding rounds, the most recent taking place in September 2024. The US company is aiming to create a sustainable source of domestic lithium-ion battery materials. Using the recyclable elements found in end-of-life batteries and manufacturing scrap, the companies patented Hydro-to-Cathode direct cathode precursor (pCAM) synthesis process transforms waste into high-value, engineered materials for new batteries.

Solid Power is a developer of solid-state rechargeable batteries for electric vehicles and mobile power markets, offering an alternative to lithium-ion batteries. These batteries are extremely energy-dense, reliable, and unlike lithium, contain no flammable materials.

The company offers a range of EV batteries all containing Solid Power's proprietary sulphide-based solid electrolyte technology. The business has attracted \$437 million in funding and in May announced that BMW Group would be deploying it's large-format, pure ASSB (All Solid-State Battery) cells in its BMW i7 test vehicle.