



Cleantech: The innovators & disruptors greening our future

Report Author: Lauren Foye, Head of Market Research & Consultancy



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 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 (Artificial Intelligence). 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.

Cleantech companies and their technologies also hold the potential to attract talent from the younger segments of society. As our previous research report [the emerging green skills gap & Gen Z attitudes](#) highlights, younger generations are very climate aware. As a result, they have become more outspoken than their older peers with regards to their workplace values due to their concern for environmental issues especially Gen Z (those born between 1997 and 2012). The result is that they demand the businesses they work for (and with) reflect their commitment to sustainability. In fact, a recent study indicated that, of the over 23,000 respondents, a significant portion of Gen Zers (55%) and millennials (54%) have gone as far as to investigate a company's environmental impact and policies before accepting a job from them.ⁱ Further, 17% of Gen Z respondents said they have previously changed employment, even entire industries, in favour of careers that better reflect their values, and 25% said they want to do the same in the future.

Cleantech investment summary

Cleantech companies received a record \$468 billion in investment in 2023, with this heavily skewed towards the energy segment. This represented an increase of 198% when compared with the \$157 billion achieved in 2022, making it the highest levels of annual investment into the cleantech sector to date.

Globally total investment in 2024 is up by \$45.1 billion (29.7%) in the first five months of this year compared with the same period in 2023.

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, 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 AgTech & Food 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. The AgTech & Food industry

AgTech is perhaps one of the most often thought of segments when we consider cleantech. Given that agriculture is entwined with nature and the environment, advancing sustainability is critical to ensure food security, protect nature, and regenerate our environment for generations to come.

a) Sector outlook

The coming year presents an exciting time for the sector, key trends to watch for 2024 include the expansion and implementation of innovative technologies, these include areas such as on-farm robotics, regenerative agriculture and drones. More widely, as with many other sectors, the application of generative AI holds a wealth of opportunities for the sector. Challenges and headwinds however will play their part, with extreme weather and evolving climate patterns a challenge for farmers across the world. This means that predictive analytics and climate monitoring are becoming an ever more sought-after area for those within the agricultural sector, and thus a potential target for investors.

b) Representatives in ZCA's Cleantech Top 50

Six businesses operating in the AgTech space have made it into our 2024 Cleantech top 50.

Company	Country	Investment to date	Last round
Ynsect 	France	\$579.1 million raised over 12 rounds.	
PureHarvest 	United Arab Emirates	\$334.4 million over 11 rounds.	
Aleph farms 	Israel	\$119.4 million over 6 funding rounds	
Inari 	USA	\$609 million from 7 funding rounds.	January 2024
Muddy Machines 	United Kingdom	£4.5 million over 9 funding rounds.	September 2022
Aero Farms 	USA	\$ 313.7 million raised from 11 rounds.	April 2024

Source: Zero Carbon Academy

Aleph farms is an Israeli startup which has raised \$119 million from 6 funding rounds. The company, which is based in Rehovot, is a 'cellular agriculture' business, meaning it creates animal products in the lab. In a notable milestone, the company has received regulatory approval from the Israeli

government to sell its lab-grown steaksⁱⁱ, and has since set up production facilities in Thailand as well as adopting AI in its partnership with BioRaptor to ramp up production and streamline operations.



Source: Aleph farms

Ynsect is a French company founded in 2011 and is headquartered in Fontaine, Bourgogne. The company owns more than 380 patents and has extensive experience in the agro-food and environmental biotech industries. The company uses insect nutrients to produce products and services, cultivating mealworms in state-of-the-art vertical farms powered by advanced robotics, computer vision and cutting-edge AI.

Inari is a biotechnology company that aims to transform AgTech and its impact on society and the environment. The company uses gene editing via its 'SEEDesign platform' to enhance and adapt crops to suit various geographies

and climate condition ultimately boosting yields as well as ‘disaster-proofing crop.

Pure Harvest Smart Farms is based in the United Arab Emirates and is a tech-enabled agribusiness which specialises in CEA (Controlled Environment Agriculture). The company uses hydroponics and smart technology to grow produce in arid desert environments. The firm recently acquired Red Sea’s CEA production facility in Saudi Arabia, expanding its production capabilities.

One to watch: **Muddy Machines** is a UK-based company operating in both the AgTech and robotics industries, it hopes to solve labour shortages by providing electric robots-as-a-service for growers to undertake selective harvesting & precision applications. The company has previously received investment from grants and recently showcased it’s offering at World Agri-Tech London last August.

Figure 14: Muddy Machine’s robot ‘Sprout’



Source: Muddy Machines

References

-
- ⁱ [Indeed – Gen Z, Millennial Workers Are Prioritizing Sustainability and Climate Change.](#)
ⁱⁱ <https://techcrunch.com/2024/01/17/aleph-farms-cultivated-beef-process-regulatory-approval-israel/>