AgFUNDER

2022

AgFunder European Investment Report

F&A NEXT

INVESTORS MEET FOOD AND AGRI STARTUPS

European AgriFoodTech in 2022

NINE BILLION DOLLARS?!

Yes, it sounds like a lot of funding, and it is. However, when you look a bit closer you will see the impact of a few *very* large rounds for eGrocery startups. Strip out that whole category and funding to European agrifoodtech startups reached $5 billion in 2021. While not quite as inspiring, that's still a nearly 50% year-over-year increase in investment.

Without eGrocery, upstream and downstream investment was almost on par at around $2.5 billion each. Upstream startups -- those operating closer to the farm and manufacturing food -- did close significantly more deals, however. This is often the case across the globe and typically speaks to more early-stage activity and fewer mature startups.

European venture capital funding across industries surpassed $100 billion for the first time, which is positive momentum for sure. But when you consider that Flink Food, an instant delivery startup in Germany, raised a total of $1 billion across seed, Series A and Series B rounds that all closed in the same year, there wasn't much left for others in arguably more impactful, albeit more complex, upstream categories.

As part of this year's partnership between AgFunder and F&A Next, we've also joined up with Invest-NL, the Dutch government investment agency, to dig into how agrifoodtech investing aligns with climate tech investing -- and where it doesn't.

Stay tuned for more detailed analysis in the full version of this report coming out next week but the good news is that some of the categories you see featured in this report – such as Innovative Food and Novel Farming Systems – are highly correlated to climate impact investing. A few companies operating downstream are also making strides to join the circular economy but the question is where investors should prioritize for maximum impact.

We hope you had a great time at the conference and save the date for next year's edition: 24-25 May 2023 .

The AgFunder and F&A Next teams

www.agfunder.com | www.fanext.com

AgFunder is a digitally-native venture capital fund

We invest in bold, transformational foodtech & agtech founders

AgFunder is one of the world's most active foodtech and agtech VCs. We're rethinking venture capital for the 21st century. We were born online, and with our publication *AFN* we've built a global ecosystem of 90,000+ subscribers. This gives us one of the most powerful networks to help build impactful and important companies. Our research reports are our love letter to the industry. ❤

See our portfolio companies:
agfunder.com/portfolio

Are you a corporate, startup, or investor?
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F&A NEXT IS DEDICATED TO ACCELERATING INNOVATION IN FOOD AND AGRICULTURE BY CONNECTING MAJOR PLAYERS.

The F&A Next community consists of entrepreneurs, corporates, investors and scientists, who are dedicated to innovation in food and agriculture. F&A Next is expanding its community. Join us!

F&A NEXT

INVESTORS MEET FOOD AND AGRI STARTUPS

Founding Partners

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The Netherlands needs to become more sustainable and innovative. Achieving this requires dedication, patience and capital. Invest-NL is committed to financing businesses and projects that are working on sustainable solutions for the Netherlands of tomorrow. We provide support to innovative entrepreneurs through financing and advisory based on one principle: impact is our goal, returns are our means.

As an impact investor, one of our investment pillars it to accelerate the transition towards a carbon neutral and circular food system. Invest-NL offers support and patient capital to entrepreneurs working on sustainable solutions transforming how we produce, consume and process food. One of our portfolio companies, Protix, contributes directly to the sustainable protein transition by producing proteins and fats from insect larvae. Invest-NL also invest in funds to strengthen the financing landscape. One of our fund investments, Unovis, an impact investment fund dedicated to reducing carbon emissions by making plant-based and alternative proteins an easier choice for Dutch consumers.

In addition to our patient-capital investments, Invest-NL supports early-stage companies through several capacity building and acceleration programs. We have partnered with Foodvalley NL and ScaleUpNation to launch the "Fastlane" program. Fastlane is a tailored program for impact-driven agrifood pioneers to prepare them for their next funding round. Fastlane entrepreneurs get support from a multidisciplinary team of experienced experts to develop their businesses in order to attract growth funding.

Invest-NL has also supported the development of the Business Innovation Program Food in partnership with the Netherlands' regional development agencies, Samen Tegen Voedselverspilling and Rabobank. The program supports entrepreneurs in the agrofood sector to build profitable business cases around waste reduction

For more information about Invest-NL's activities in the AgriFood sector, please visit: Agrifood | Invest-NL

Image Credits

Special thanks to F&A Next's 'New Heroes of Food & AgTech, and AgFunder's portfolio companies who contributed images to this year's report

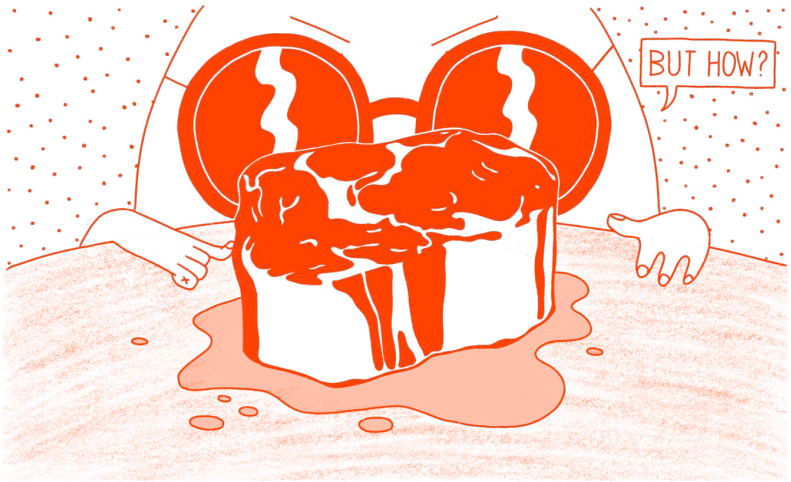
Biorena is a grocery delivery startup that supplies city-dwellers with organic produce from countryside growers. Learn more

OneSoil is a Swiss company offering precision farming tech to farmers in Europe and the Americas. Learn More

Plantik is leveraging genome-editing technology to cut down the time taken to develop new plant varieties. Learn More

Modern Synthesis manufactures a non-woven leather alternative by growing bacterial cellulose. Learn more

Ekonoke is growing hops indoors to ensure maximum yield and quality, and to safeguard biodiversity in the wake of climate change impacts on the crop. Learn more



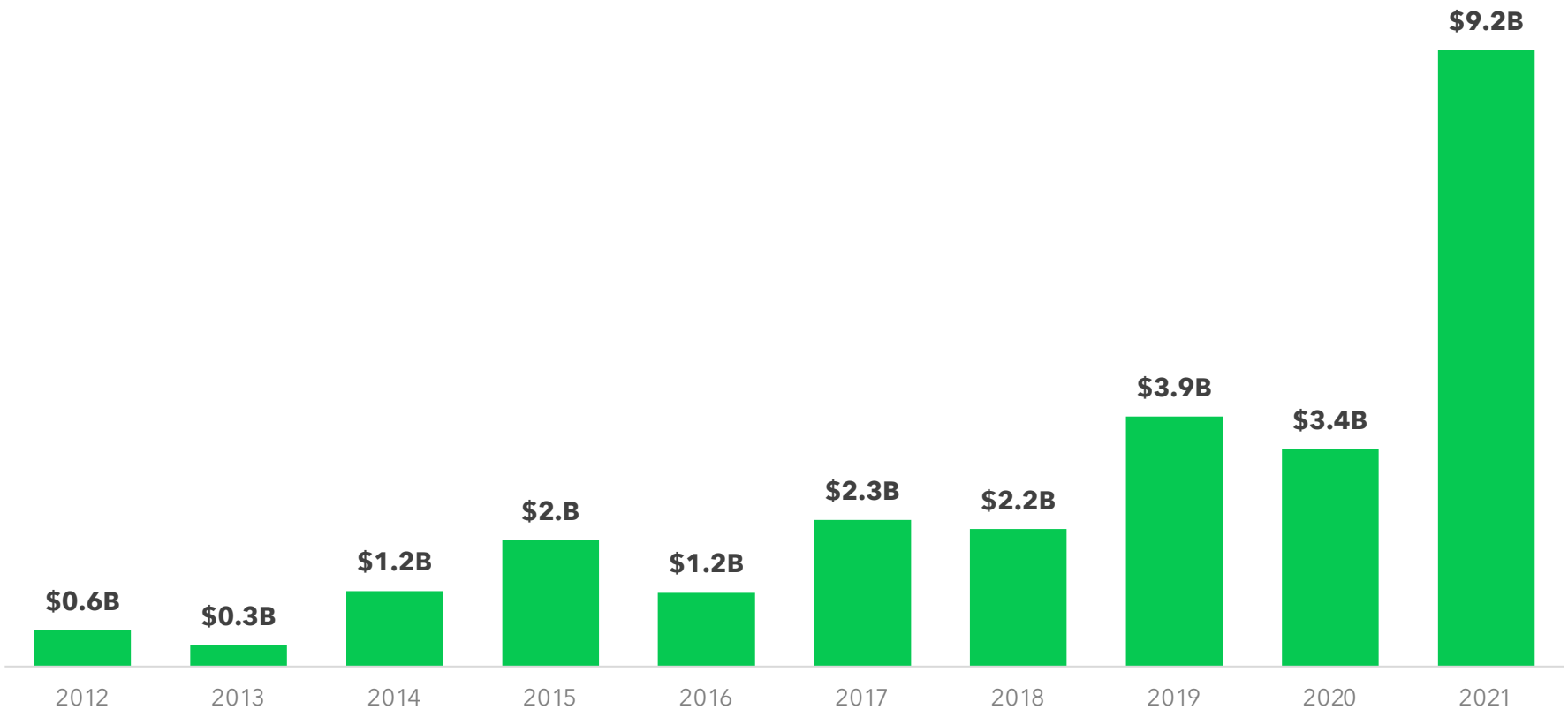
Juicy Marbles, dubbed the 'Salvador Dali of meats' because of how surreal its plant-based meats are, manufactures whole-cut steaks from a combination of protein-rich and nutrient-dense ingredients. Learn More

AgFunder portfolio company

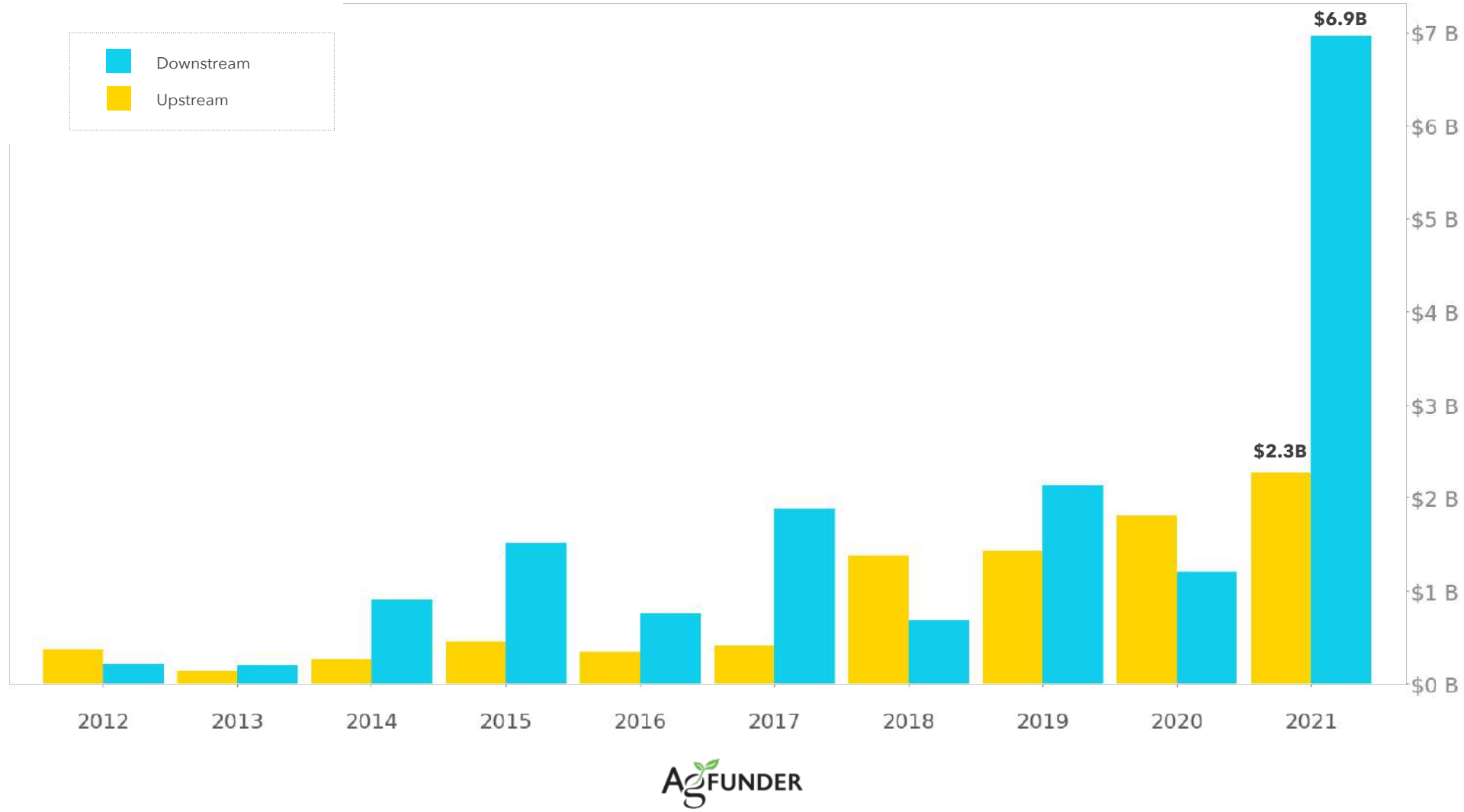
2021 Overview

Image courtesy of Biorena

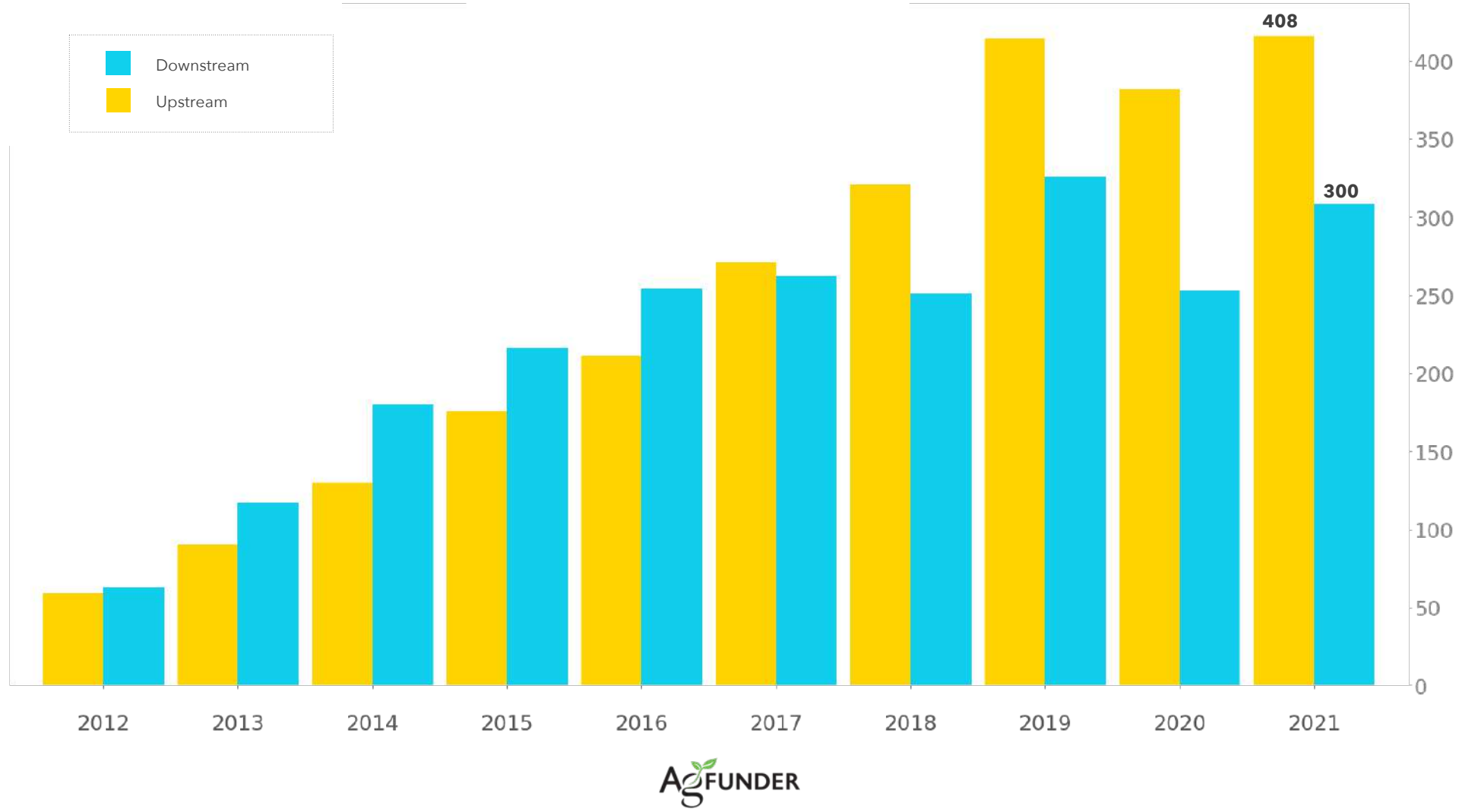
Annual Financings | 2012-2021



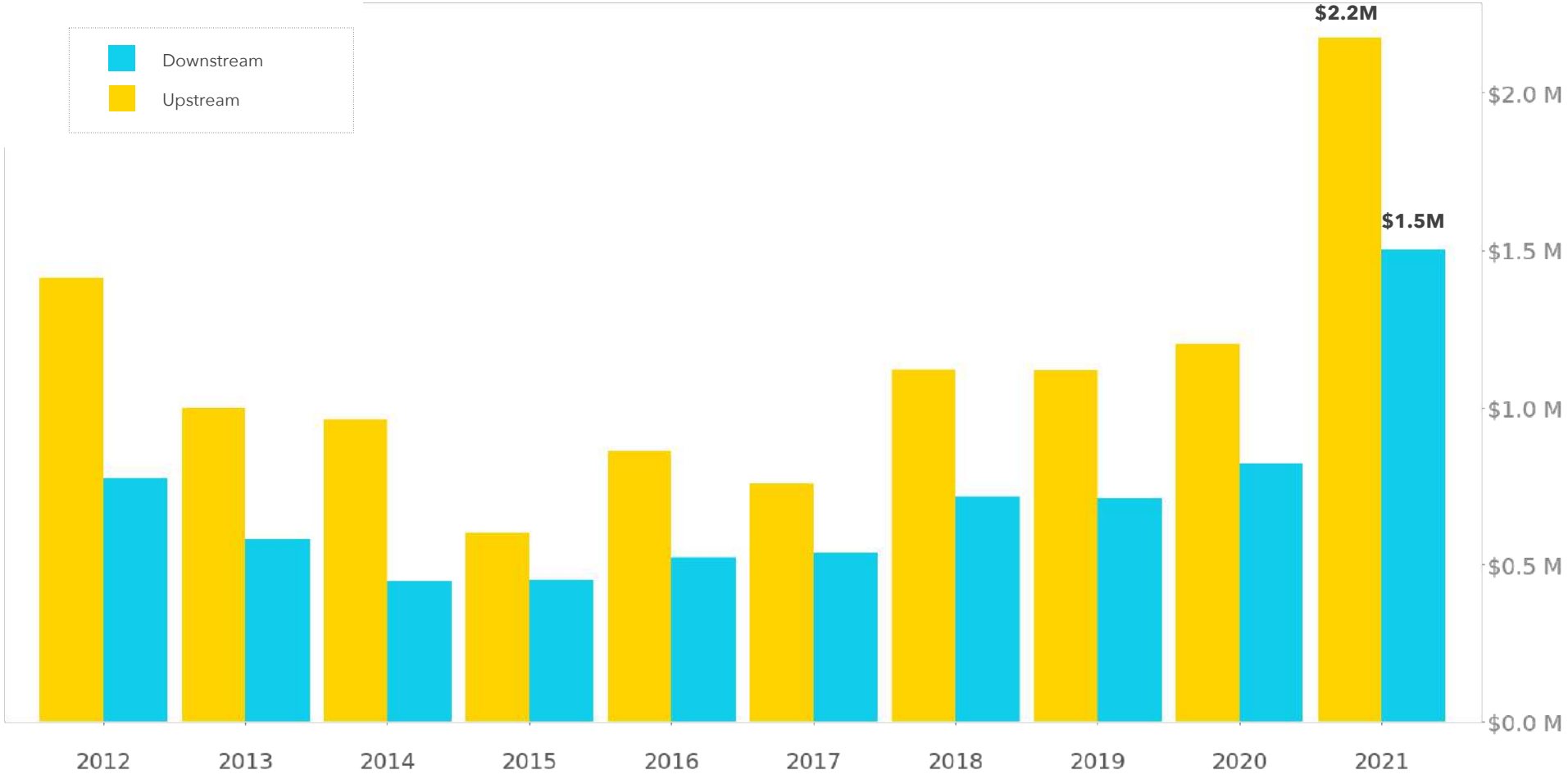
Annual Financings | 2012-2021



Deal Count | 2012-2021



Median Deal Size | 2012-2021



Deals by Category

Image courtesy of Plantik

AgriFoodTech Category Definitions

Ag Biotechnology
On-farm inputs for crop & animal ag including genetics, microbiome, breeding, animal health.

Agribusiness Marketplaces
Commodities trading platforms, online input procurement, equipment leasing.

Bioenergy & Biomaterials
Non-food extraction & processing, feedstock technology, cannabis pharmaceuticals.

Farm Management Software, Sensing & IoT
Ag data capturing devices, decision support software, big data analytics.

Farm Robotics, Mechanization & Equipment
On-farm machinery, automation, drone manufacturers, grow equipment.

Midstream Technologies
Food safety & traceability tech, logistics & transport, processing tech.

Novel Farming Systems
Indoor farms, aquaculture, insect & algae production.

Miscellaneous eg, fintech for farmers

Innovative Food
Cultured meat, novel ingredients, plant-based proteins.

In-Store Retail & Restaurant Tech
Shelf-stacking robots, 3D food printers, POS systems, food waste monitoring IoT.

Restaurant Marketplaces
Online tech platforms delivering food from a wide range of vendors.

eGrocery
Online stores and marketplaces for sale & delivery of processed & unprocessed ag products to consumer.

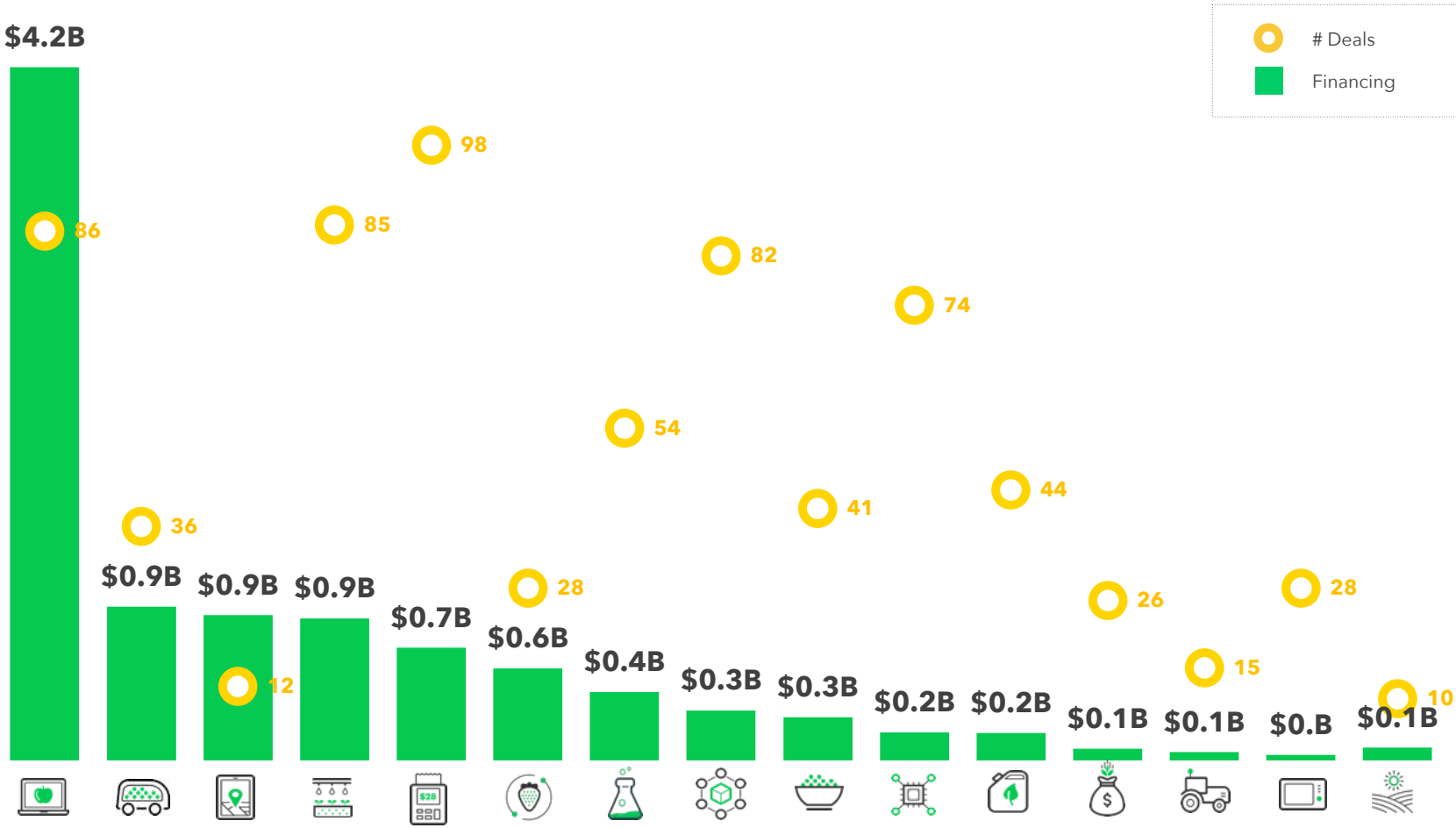
Home & Cooking Tech
Smart kitchen appliances, nutrition technologies, food testing devices.

Online Restaurants & Mealkits
Startups offering culinary meals and sending pre-portioned ingredients to cook at home.

Cloud Retail Infrastructure
On-demand enabling tech, ghost kitchens, last-mile delivery robots & services

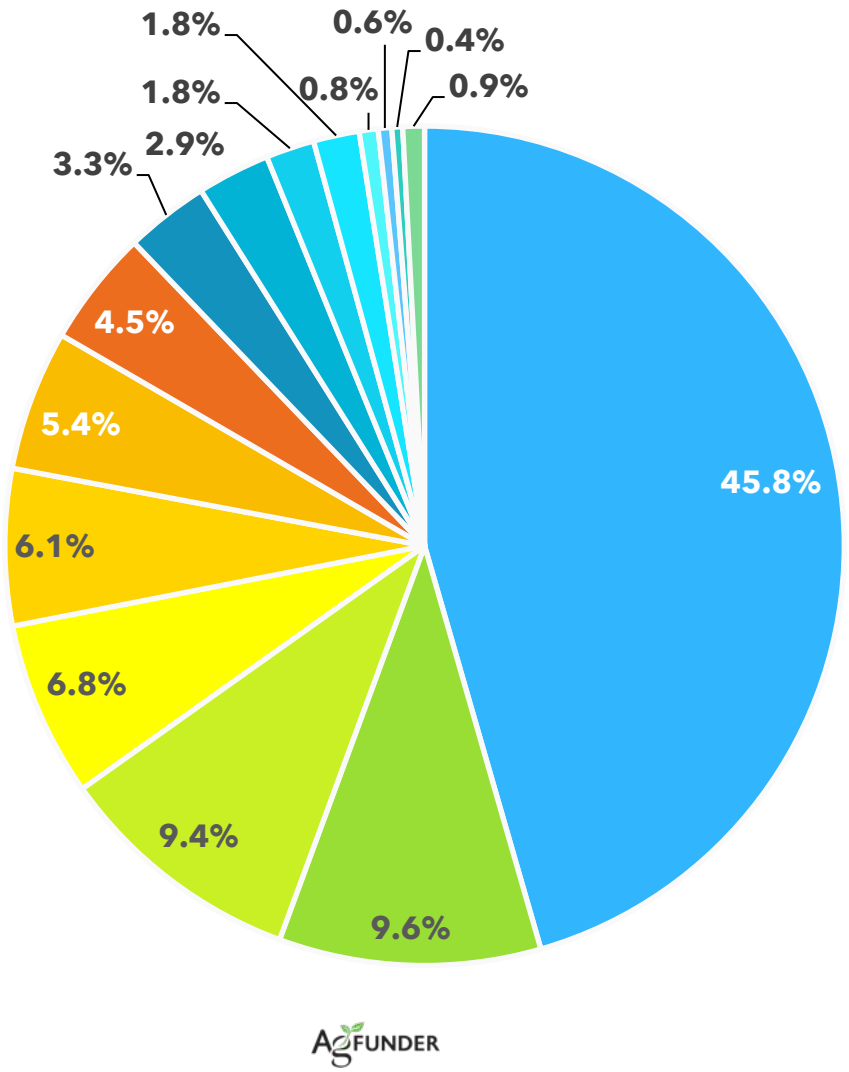
Upstream
Downstream
Both

2021 Deal Volume and Activity by Category



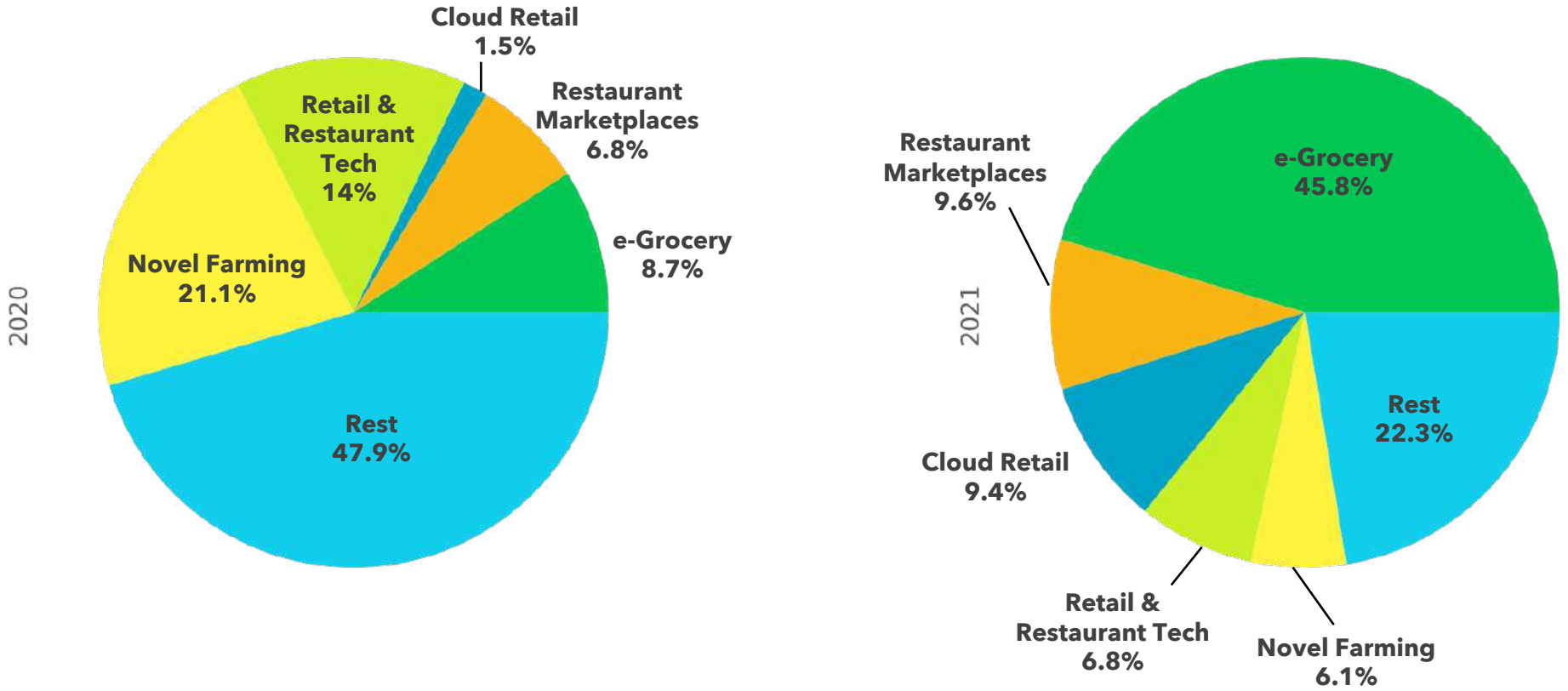
*for category icons, see p 13

2021 AgriFoodTech Investment



Category Share of $ Investment 2020 vs 2021

Top investment categories changed significantly from 2020 to 2021. In 2020, Upstream categories collectively claimed a majority of invested capital. In 2021, they claimed just a quarter. The biggest category in 2020 shrank by nearly 23% in terms of dollars invested, while e-Grocery grew by more than 1300%.



Fund IV

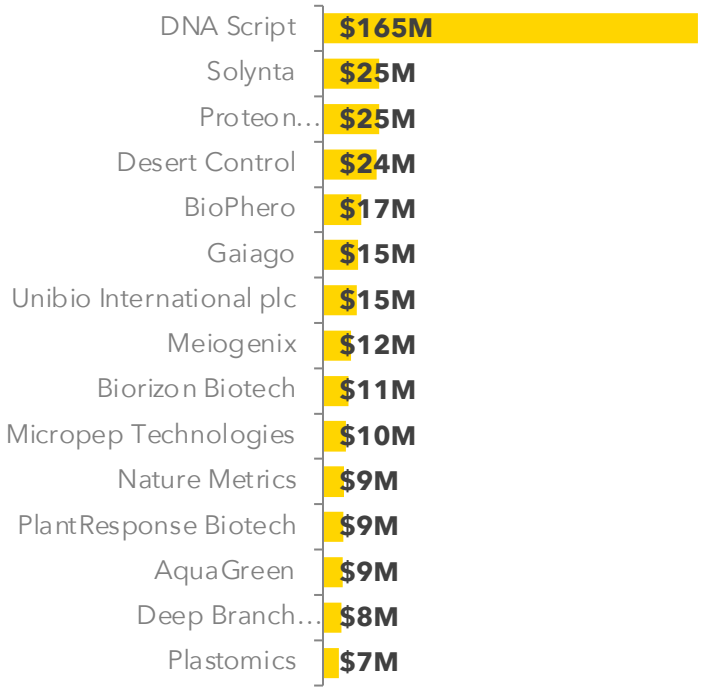
$100m global agrifoodtech fund.
(First close held on $60m.)

Join us and leading global LPs
before end of August.

Learn more: https://agfunder.com/

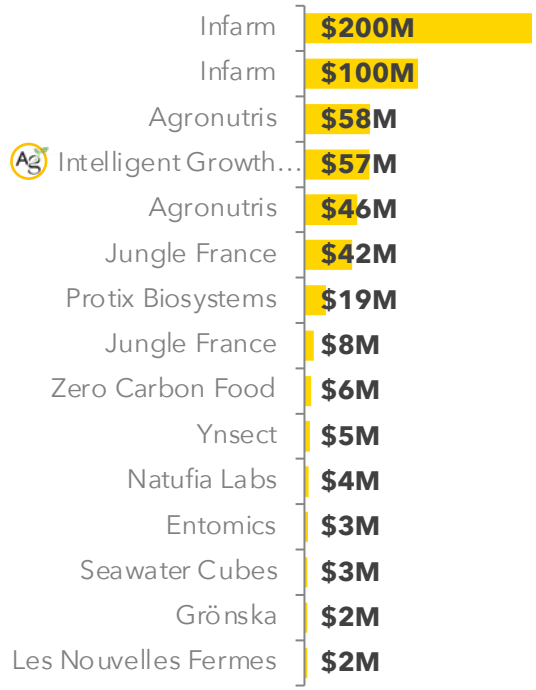
Top Ag Biotech Deals

The size of Europe's top ag biotech deals shows the relative nascency of the sector. Only France's DNA Script made it into the top global list. Netherlands-based Solynta inked its $25m Series C round 15 years after the company was founded. Of the 54 European ag biotech deals in 2021, eight were Series B or later.



Top Novel Farming Systems Deals

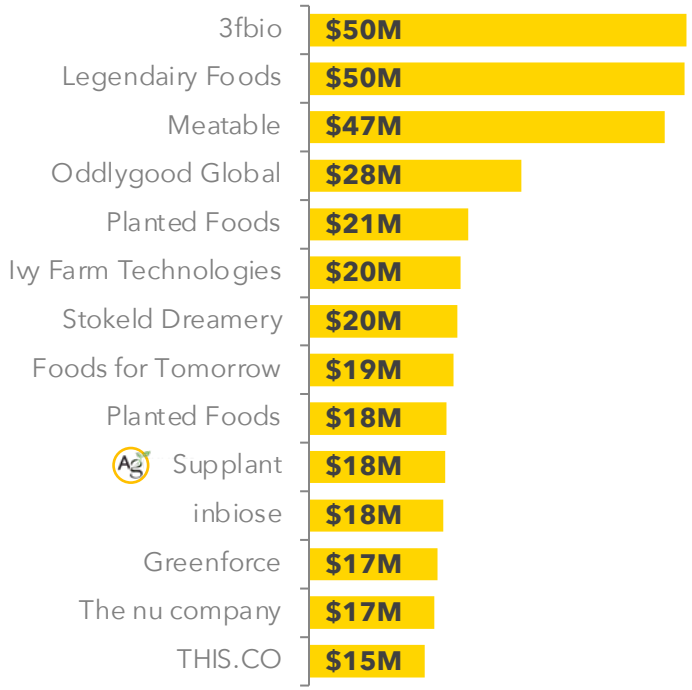
Investors shied away from what was their top investment category in 2020: investment in novel farming technologies fell 23% from 2020. *Where they did invest:* hyper-local vertical farming. German vertical farming company Infarm claimed 58% of all 2021 European investment capital in the novel farming category.



AgFunder portfolio company

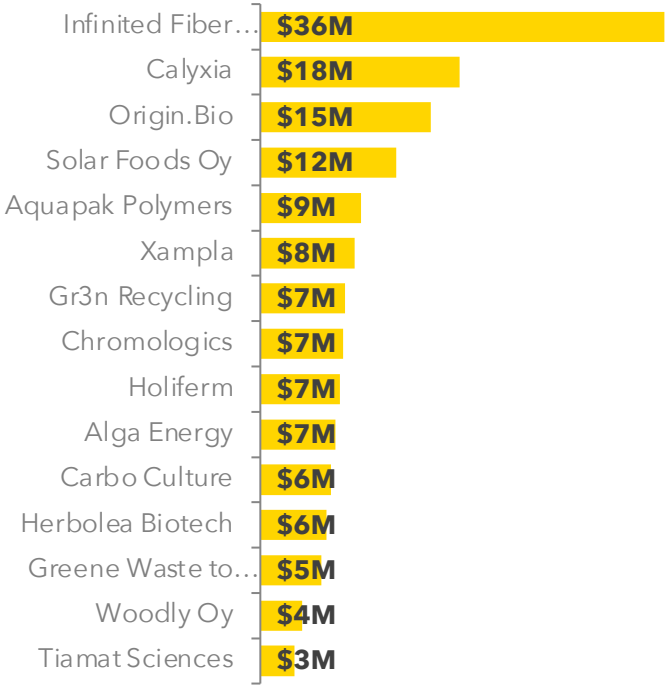
Top Innovative Food Deals

The biggest Innovative Food deal in Europe, UK-based fermented protein maker 3fbio, ranked 20th globally. Of the 87 innovative food rounds in Europe in 2021, only four were Series B or later. The UK leads in minting innovative food startups; Germany is an emerging market to watch.



Top Bioenergy and Biomaterials Deals

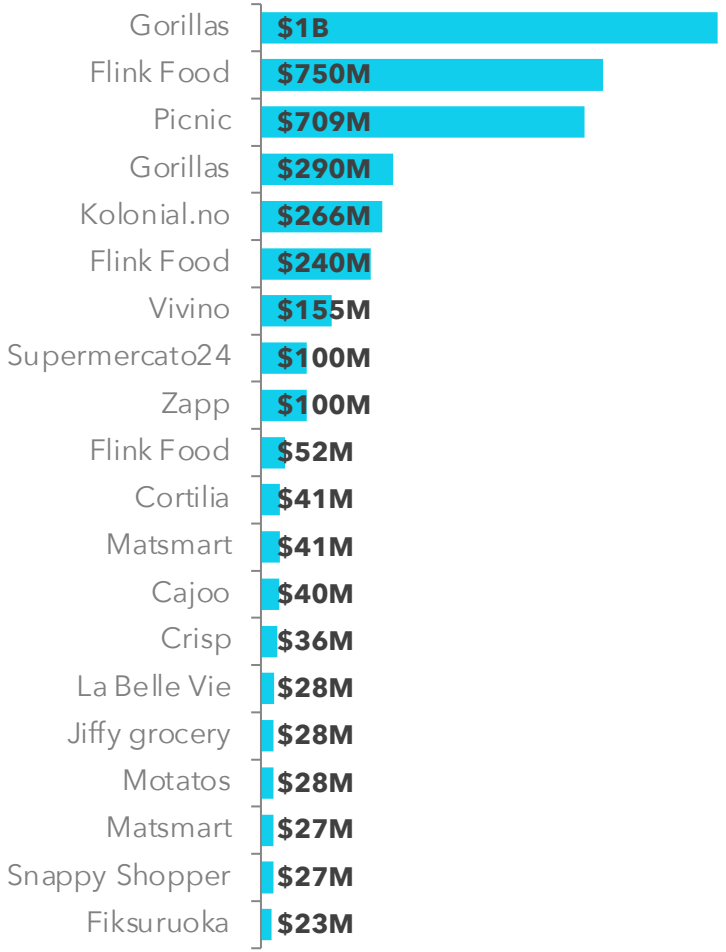
Finland's Infinited Fiber makes textiles for the fashion industry out of used textiles, cardboard and crop waste. France's Calyxia makes biodegradable "microcapsules" to support precision agriculture. Bioenergy and Biomaterials was one of the least invested agrifoodtech categories in Europe, claiming just $168m or 1.7% of investment capital.



AgFunder portfolio company

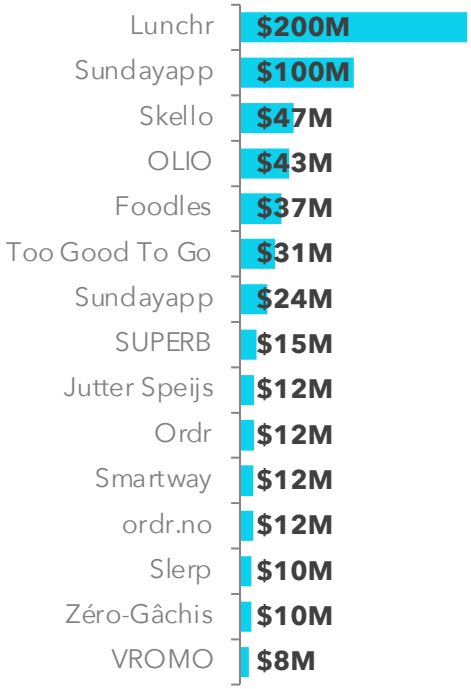
Top eGrocery Deals

- E-Grocery startups raised $4.2 billion, accounting for 43% of all of Europe's agrifoodtech investment capital. Last year, e-Grocery startups raised only $300 million.
- Investment in the category jumped more than 1300% from 2020. Meanwhile the number of ***deals*** in the sector increased only 30%.
- Three near-instant delivery companies raised 73% of all e-Grocery funding and 32% of total funding in Europe: Germany's Flink and Gorillas and the Netherlands' Picnic.
- Gorillas' $1 billion Series C round was the largest in Europe last year and the third largest globally.
- In the Netherlands, Picnic's $709m Series D round claimed 77% of all agrifoodtech investment capital in the country in 2021. That means 43 startups shared the remaining $207m.



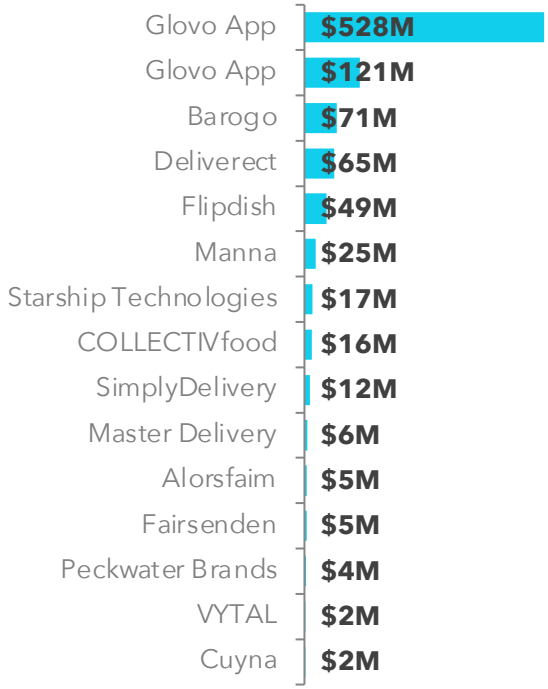
Top In-store Retail & Restaurant Tech

France's Lunchr, which offers meal vouchers to employees as a workplace perk, led the pack of the retail tech sector. A trend trend to watch in this sector: startups addressing food waste in the retail value chain. Zero-Gachis helps grocers manage unsold food. OLIO allows consumers to trade surplus food.



Top Cloud Retail Tech

Cloud retail infrastructure was the second biggest investment category in 2021, accounting for 9.7% of invested capital. Spanish restaurant delivery startup Glovo raised two late-stage rounds that accounted for nearly 70% of investment in the category. Ireland's Manna closed a Series A round to provide drone-based restaurant delivery.



Deals by Stage

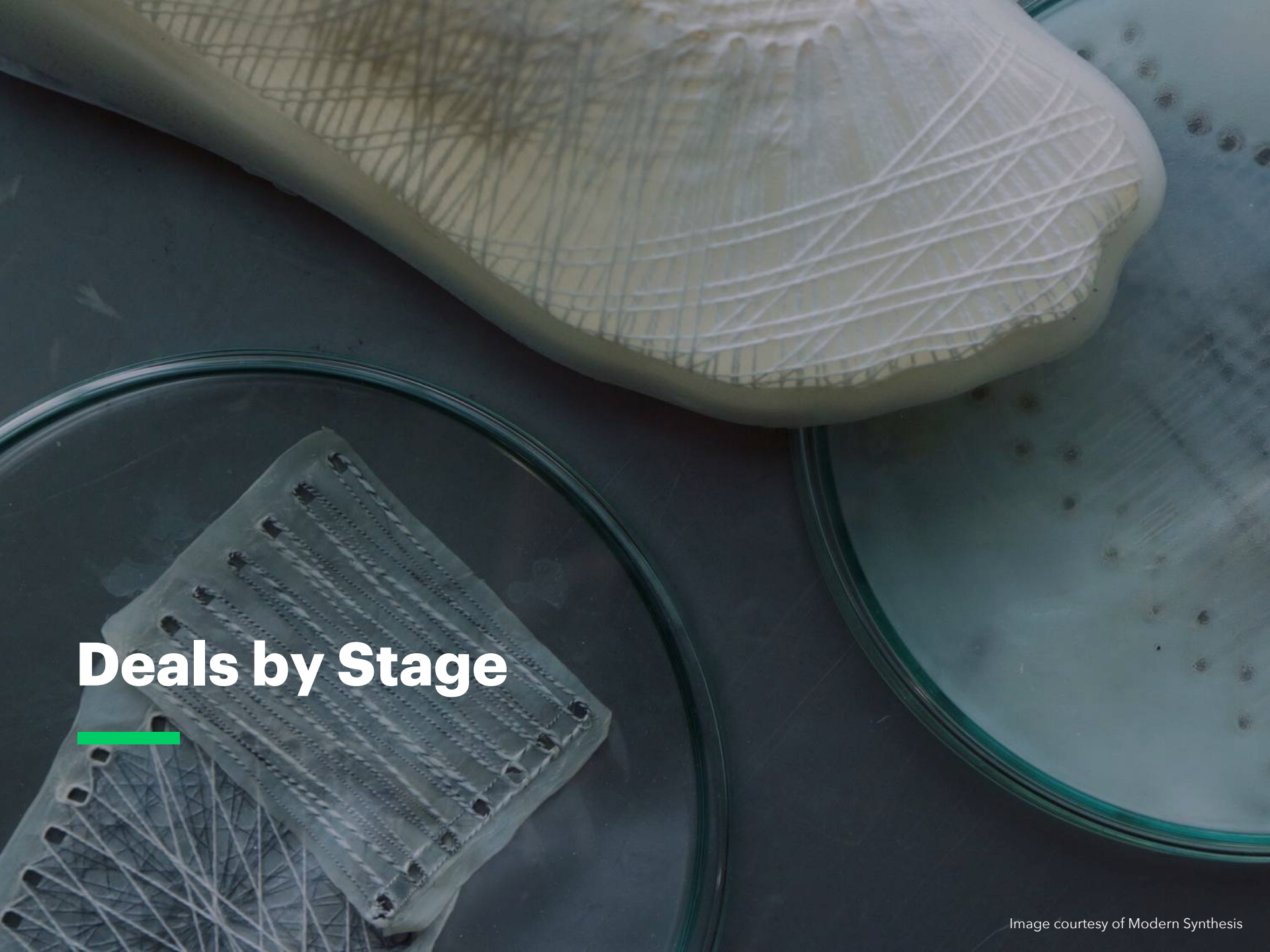
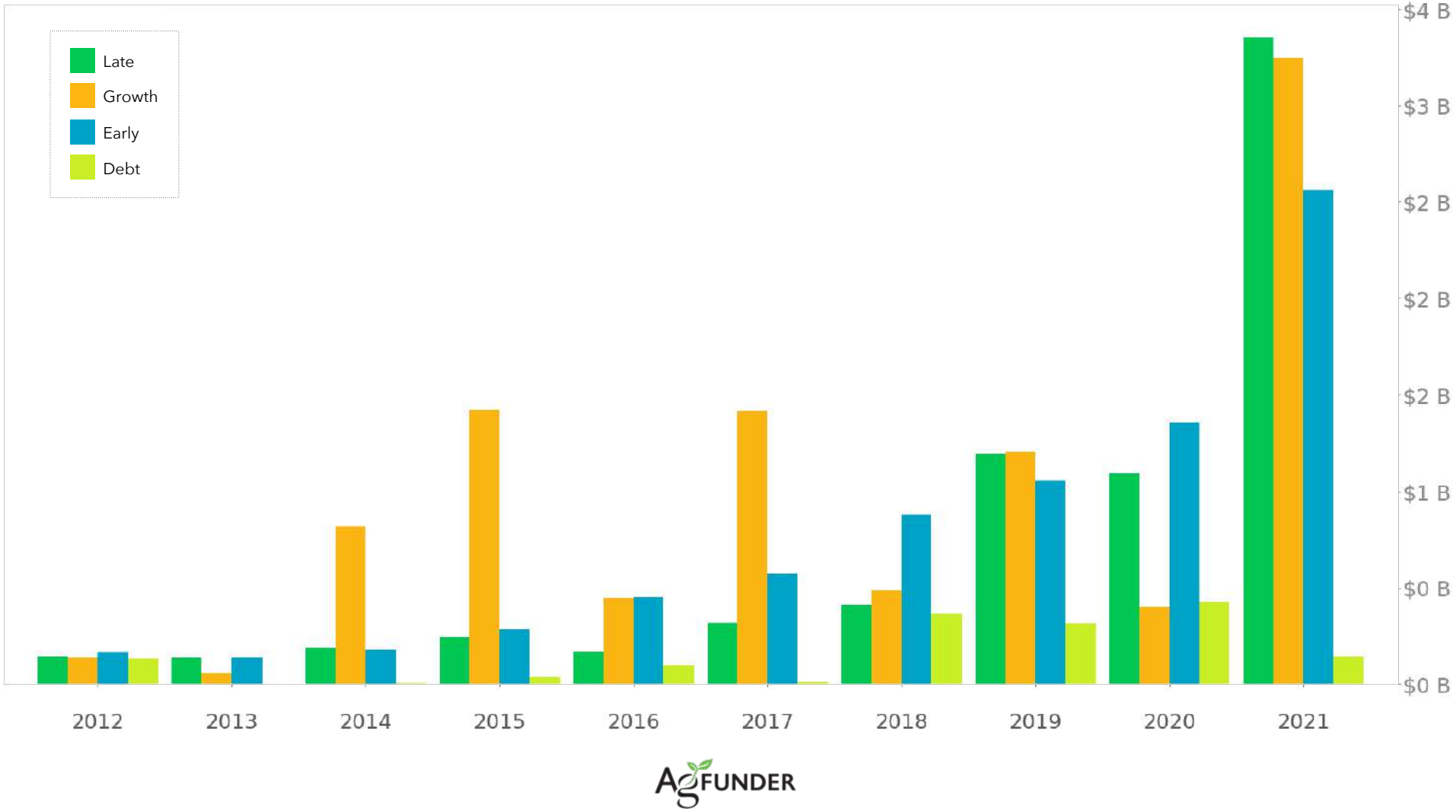


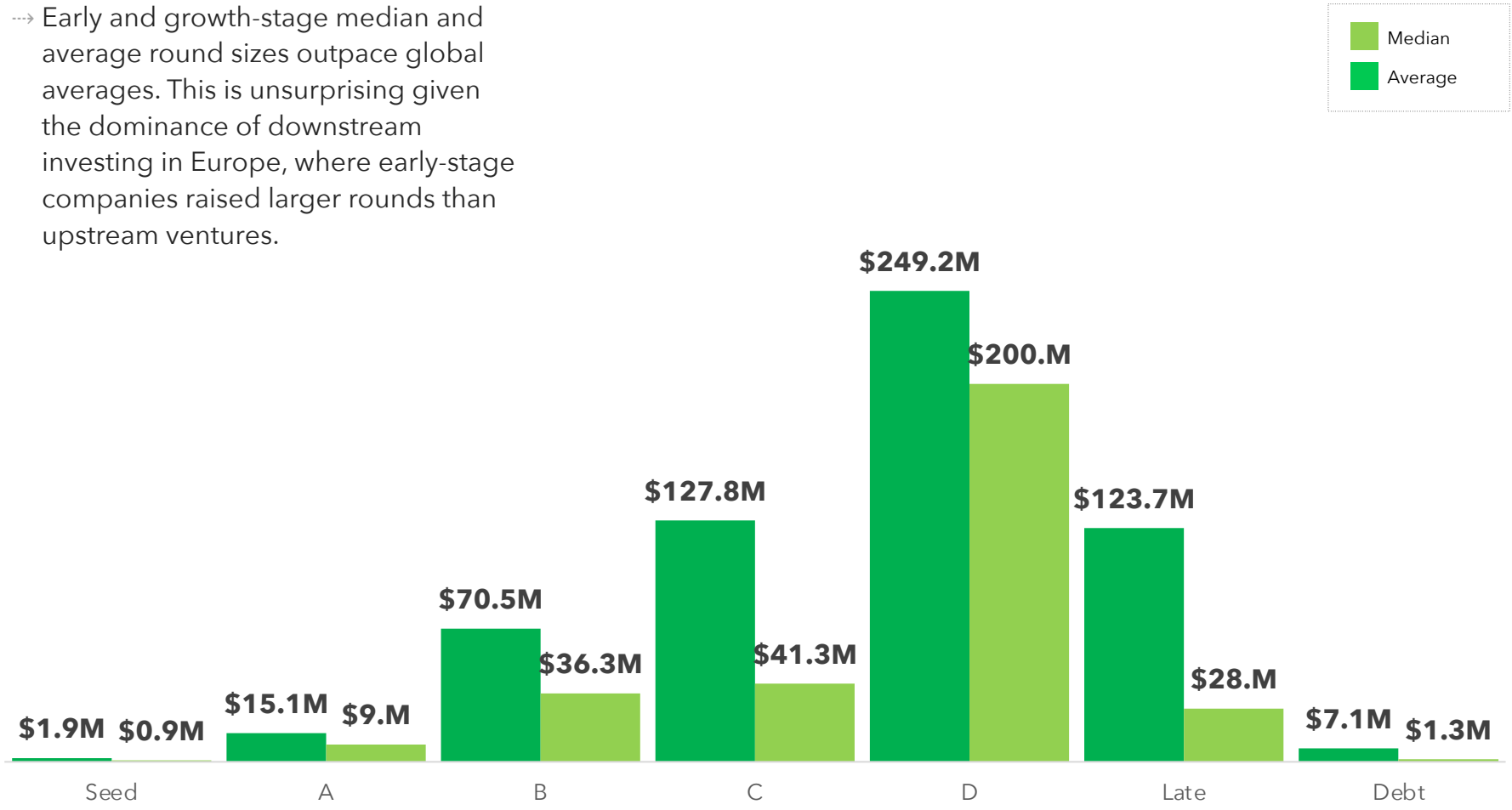
Image courtesy of Modern Synthesis

Deal $ Volume by Stage | 2012 - 2021



Deal Average and Median by Stage

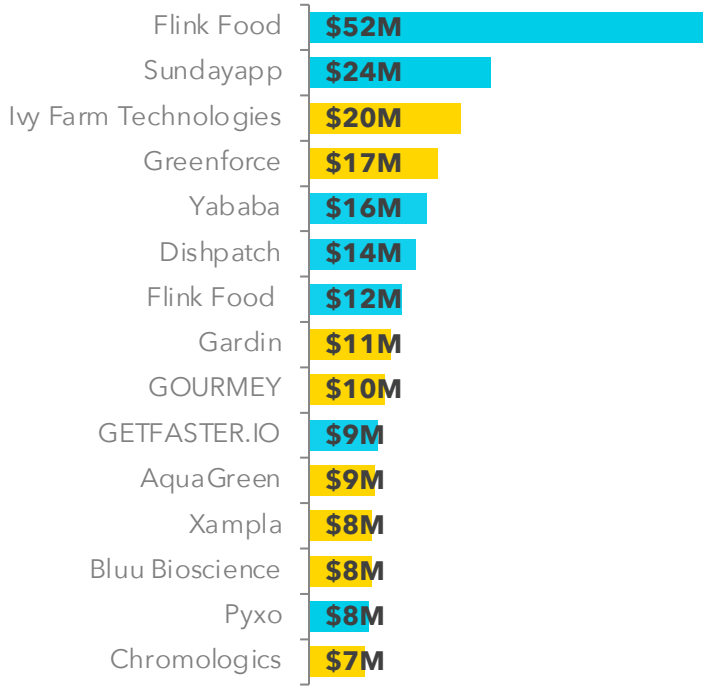
- Early and growth-stage median and average round sizes outpace global averages. This is unsurprising given the dominance of downstream investing in Europe, where early-stage companies raised larger rounds than upstream ventures.



Median Round Size by Stage - 2012-2021

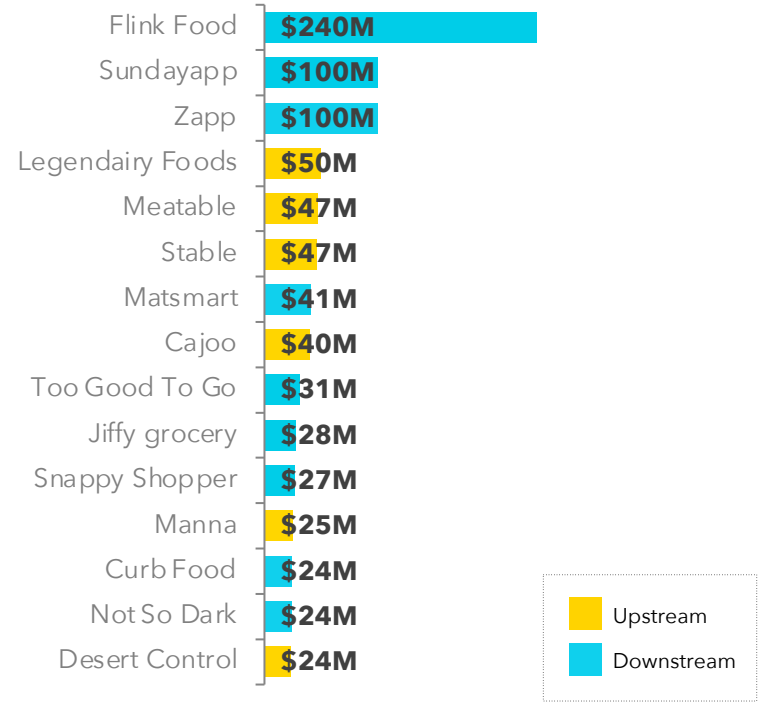
Top 15 Seed Deals

German instant grocery delivery company Flink raised a large two-part seed round, which pulled up seed-stage averages overall. Several alt-protein companies scored seed rounds, including cultured-meat startup Ivy Farm Technologies and Munich-based Greenforce.



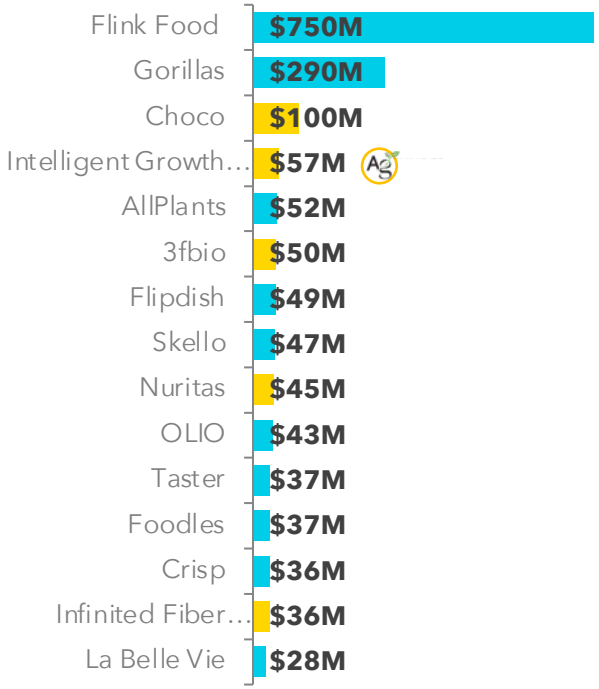
Top 15 Series A Deals

Flink followed $64 million in seed funding with $240 million in Series A financing and $750 million in Series B financing—leading the top round charts in all three categories, all in a year. The only two upstream ventures to make the top 15 were both cultured protein ventures.



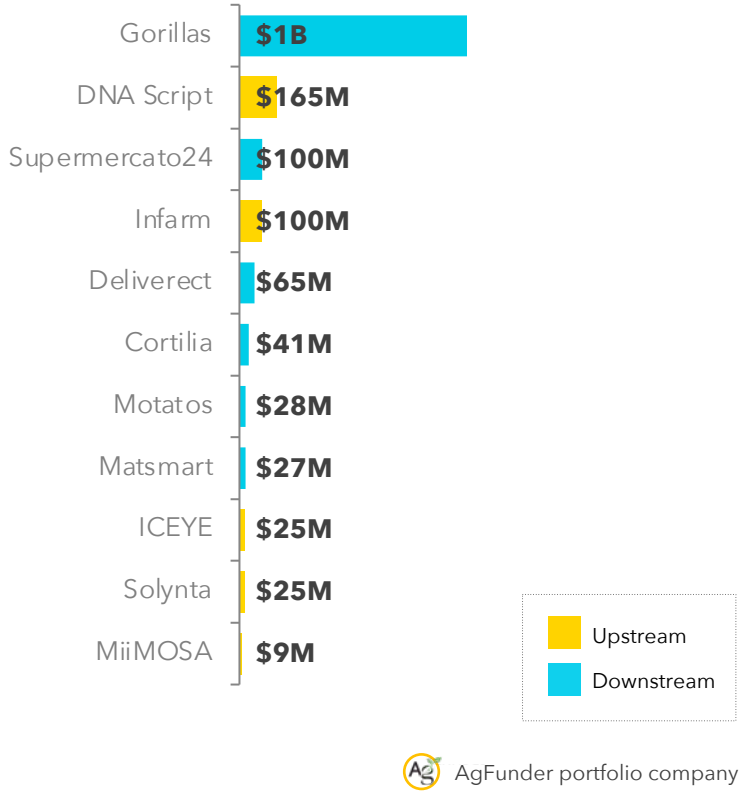
Top 15 Series B Deals

The Series A, B and C charts make clear how much e-Grocery skewed round sizes in 2021. The median deal size at the Series B stage was only about $36m. In the sub-$100m rounds, deals ranged from the UK's vertical farming software startup Intelligent Growth Solutions and vegan delivery platform AllPlants, also in the UK.



Top 10 Series C Deals

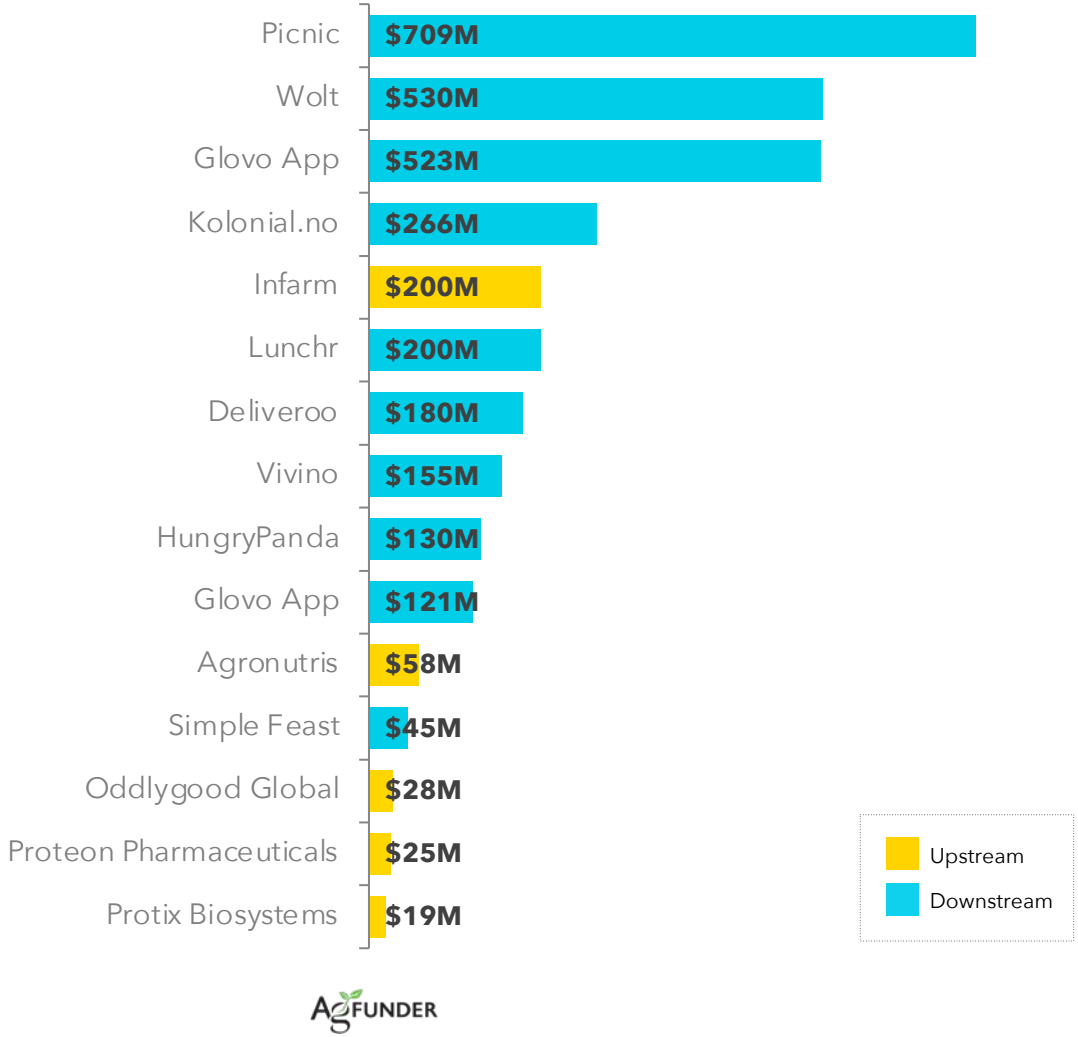
Gorillas' $1bn Series C round was the largest round in Europe (Flink's $750m Series B was second largest.) With its two rounds in 2021, Gorillas claimed 14% of European investment capital. Another German company, vertical farming venture Infarm, raised the most funding for an Upstream startup: $300m.



AgFunder portfolio company

Top Late Deals

- Netherlands'-based e-Grocer topped the late-stage deals chart for a deal that was the third largest in Europe.
- The company is unique to its peers: the company takes a climate-forward approach to grocery delivery, operating an all-electric fleet. It also says it's a no-waste grocer.
- Delivery, grocery or otherwise, seems to be investors' preferred category in Europe, evidenced by restaurant delivery startups Wolt and Glovo's large late-stage rounds.
- Vertical farming venture Infarm closed its second round of the year in December, nine months after it completed its $100m Series C extension. Another novel farming venture, French insect breeding startup Agronutris, also raised a late round.

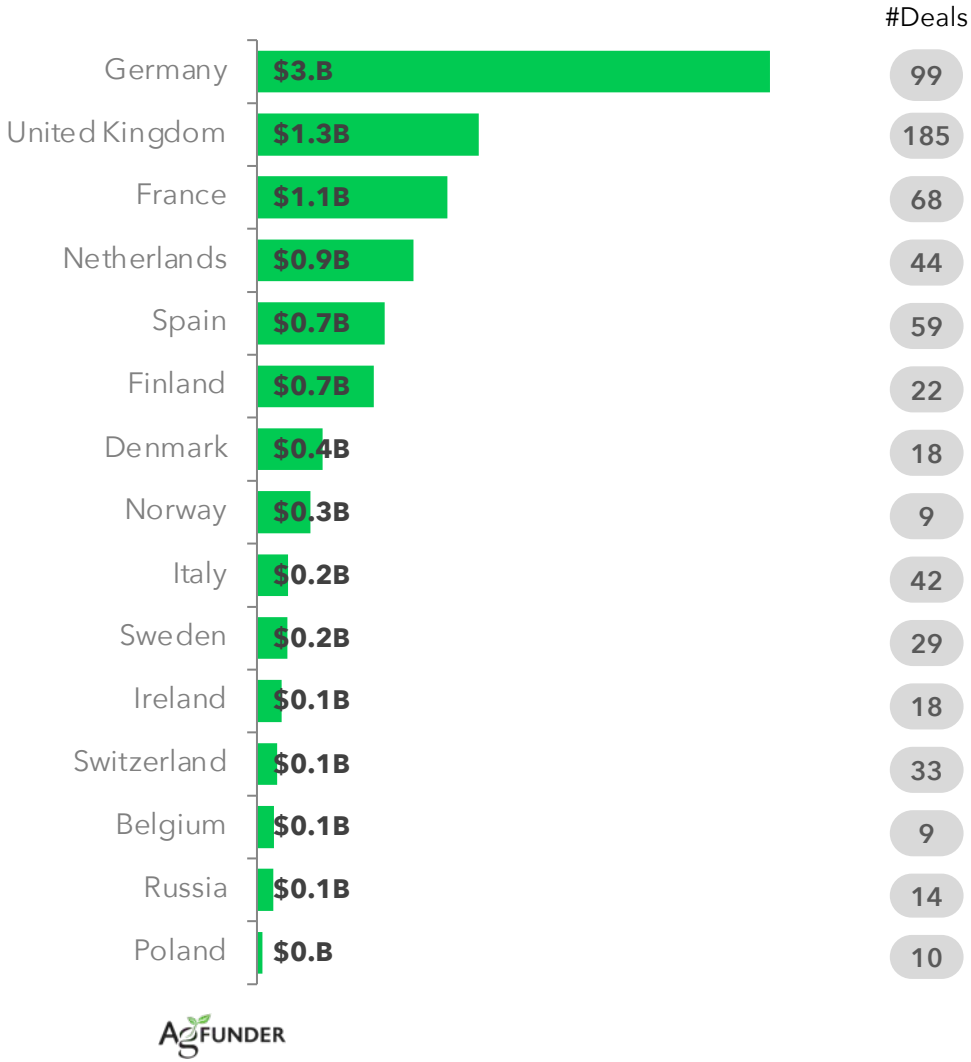


Deals by Country

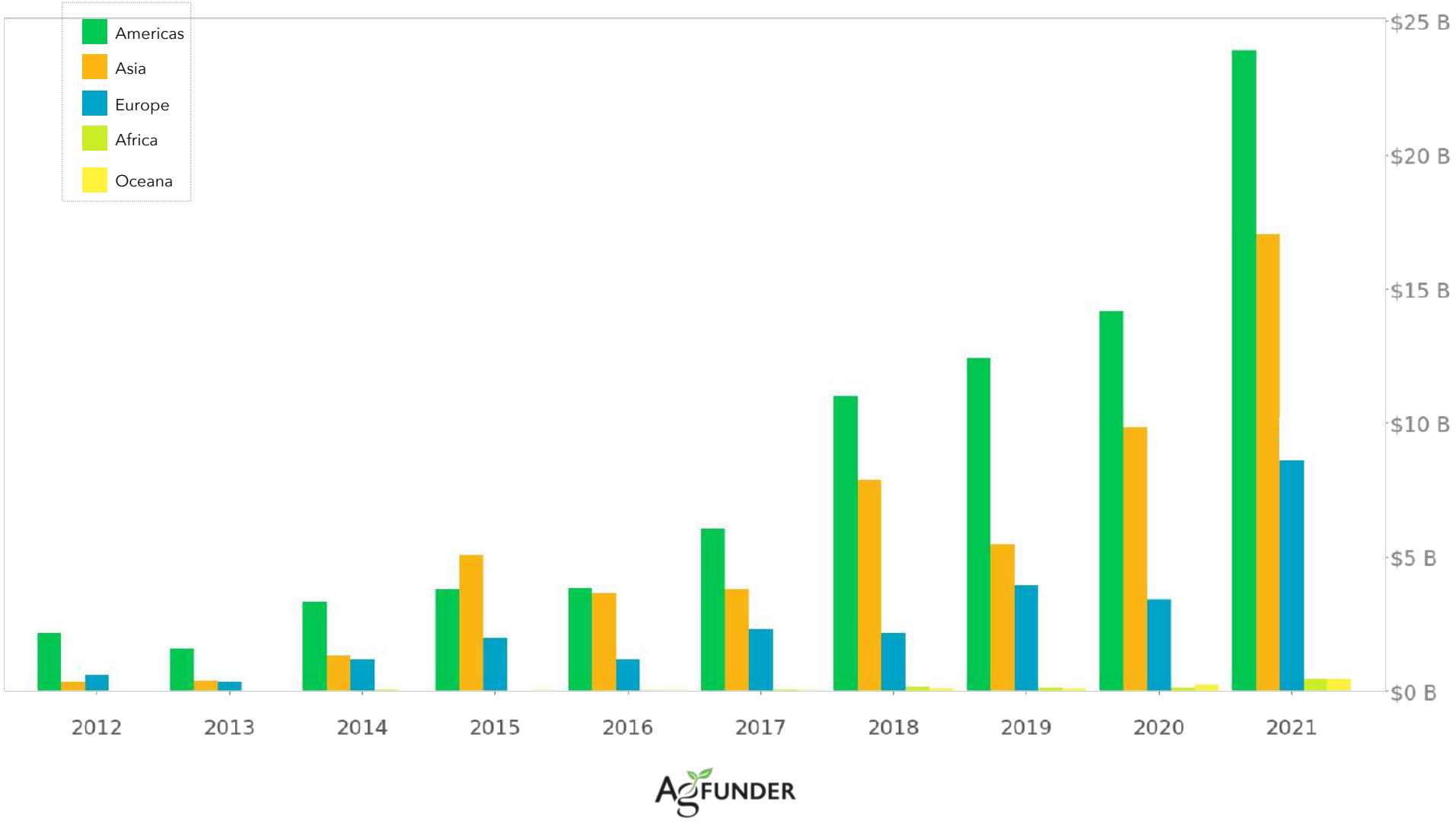
Image courtesy of Ekonoke

Top 20 Countries by Investment

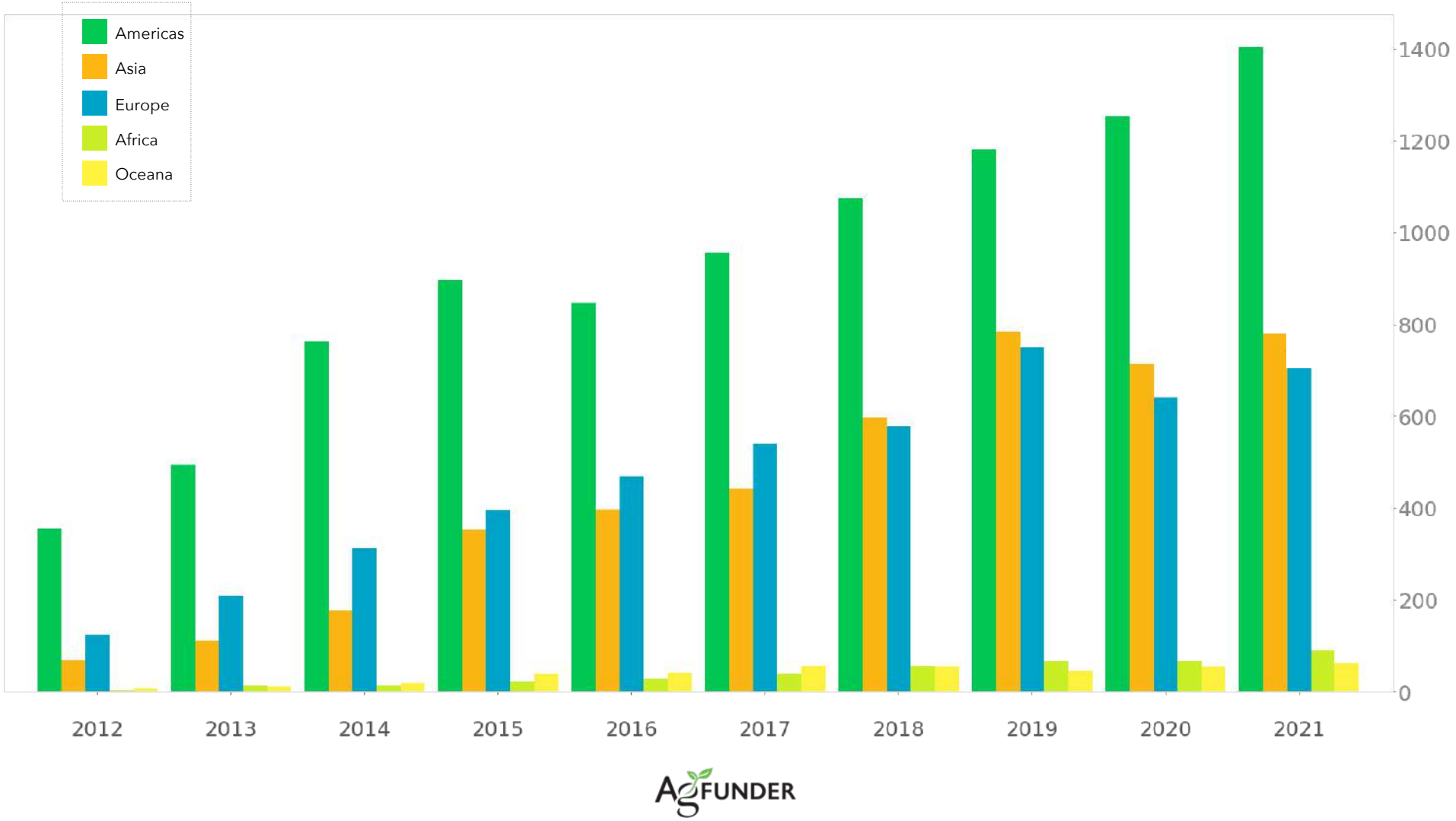
- Germany overtook the UK as the top agrifood investment market in Europe. 70% of the $3.3bn raised went to just two companies: instant-grocery delivery startups Flink and Gorillas.
- The UK was the most active country in Europe by deal count, inking 186 deals in 2021. Only 13 deals were Series B stage or later. The UK claimed just over 25% of total agrifoodtech investment capital, with the largest round ($180m) going to restaurant delivery company Deliveroo.
- The Netherlands is a small but interesting market. Dutch startups claimed 10% of European investment capital with just 6% of funding rounds. Investment in the market increased 260% from 2020, largely because of one deal: e-Grocer Picnic's $709m late-stage round.
- Upstream ventures accounted for nearly 70% of Dutch deals but only raised 14% of capital. That said, 16% of Netherlands-based deals were Series B stage and later, and upstream ventures inked four of the seven deals.



Global Investment by Region



Global Deal Activity by Region



Climate Investing in European AgriFoodTech in 2022: Special Report

Image courtesy of Protix

Invest-NL: impact investing for a sustainable future

The agrifood sector plays a vital role in the transition to a carbon neutral and circular economy. Food production alone is responsible for 25% of total global greenhouse emissions, while at the same time roughly one third of the food produced for human consumption every year gets lost or wasted. Our global food system is vulnerable, and change is needed to meet critical environmental, social and governance goals.

Invest-NL believes a new way of thinking and operating is required to address these challenges across the fragmented value chain. The move to net zero has implications all along the supply chain and calls for innovative solutions. An analysis by Invest-NL shows that there are three important segments that can make the food system far more efficient while tackling environmental concerns:

1. A shift in consumption towards alternative proteins, to move away from carbon-intensive animal proteins
2. The adoption of sustainable farming practices and technologies, to minimize resources used for food production while maintaining our planet's health.
3. Implementing circular food solutions to minimize waste across the supply chain

To make this happen, innovation, creativity and commitment are needed. Many entrepreneurs in the Netherlands working on new and innovative ideas that contribute to the challenges that we're facing. It is often the case that many of these innovative solutions are perceived as risky and have difficulty attracting funding to scale their businesses. Patient capital is needed to push these innovations forward.

With this addendum to AgFunder's Europe investment report, we present new investment opportunities that are much needed to support the transition of the food system. This deep-dive will focus on Climate Tech in particular by presenting an analysis of over- and under-funded segment within the food system in relation to the UN's Sustainable Development Goals. Also, there is a specific zoom-in on the Netherlands' investment landscape with a combination of industry research, a database analysis, and interviews with European agrifood organizations to get some practitioner insights.

We hope you find it useful.

The Invest-NL team

Introduction

There are less than eight years to go until 2030—the magic deadline for achieving the Paris climate accord and the UN Sustainable Development Goals. Funding across the board is trillions of dollars short annually to meet these two frameworks for a sustainable future and keeping global warming below 1.5 degrees Celsius by 2050. In 2021, just $630 billion was invested in climate change mitigation and adaptation worldwide. About half came from the private sector.

The agrifood sector is a major contributor of greenhouse gas emissions globally, responsible for a third of carbon emissions. It also has high mitigation potential, given land's natural capacity for storing carbon.

In partnership with Invest-NL, AgFunder sought to better understand how the venture capital can play a role in advancing climate solutions in the agrifood ecosystem. We mapped our 2021 European agrifoodtech investment data to Invest-NL's three priority themes: Alternative Proteins, Sustainable Farming and Circular Food Systems.

The following research highlights where the greatest climate impact opportunities are within the current agrifoodtech VC landscape in Europe.

Agrifood climate investing needs

- The most recent report from the Intergovernmental Panel on Climate Change identified eight key climate-impacting agrifood sectors in need of greater investment:
  - Soil carbon management
  - Agroforestry
  - Use of biochar
  - Improved rice cultivation
  - Livestock and nutrient management
  - Shifting to sustainable healthy diets
  - Reducing food waste
  - Building with wood, biochemicals, bio-textiles and bio-materials
- Few countries are thinking holistically about how to address climate impacts in the agrifood system, particularly the impact of demand-side drivers, like the shift to healthier and more sustainable diets and curbing food waste.

Key insights

The climate investment opportunity in the agrifoodtech sector is primarily an upstream play. The problem is that most agrifoodtech capital is flowing downstream.

Of the more than $9 billion invested in agrifoodtech in Europe last year, just 27% went to climate-impacting ventures. Investment categories that are most closely aligned to climate impact include Novel Farming Solutions, Innovative Foods and Farm Robotics and Machinery, as well as AgBiotech and Biomaterials and Biofuels.

Worryingly, many of sectors with the most climate impact potential actually ***decreased*** in funding from 2020 to 2021.

Sectors with the lowest climate impact include e-Grocery, Europe's largest agrifoodtech investment sector by far, and other downstream technologies like Cloud Retail Tech and Restaurant Marketplaces.

Investors committed just 16% of European agrifoodtech capital to the three thematic areas we targeted in this research: alternative proteins, sustainable farming and circular food systems.

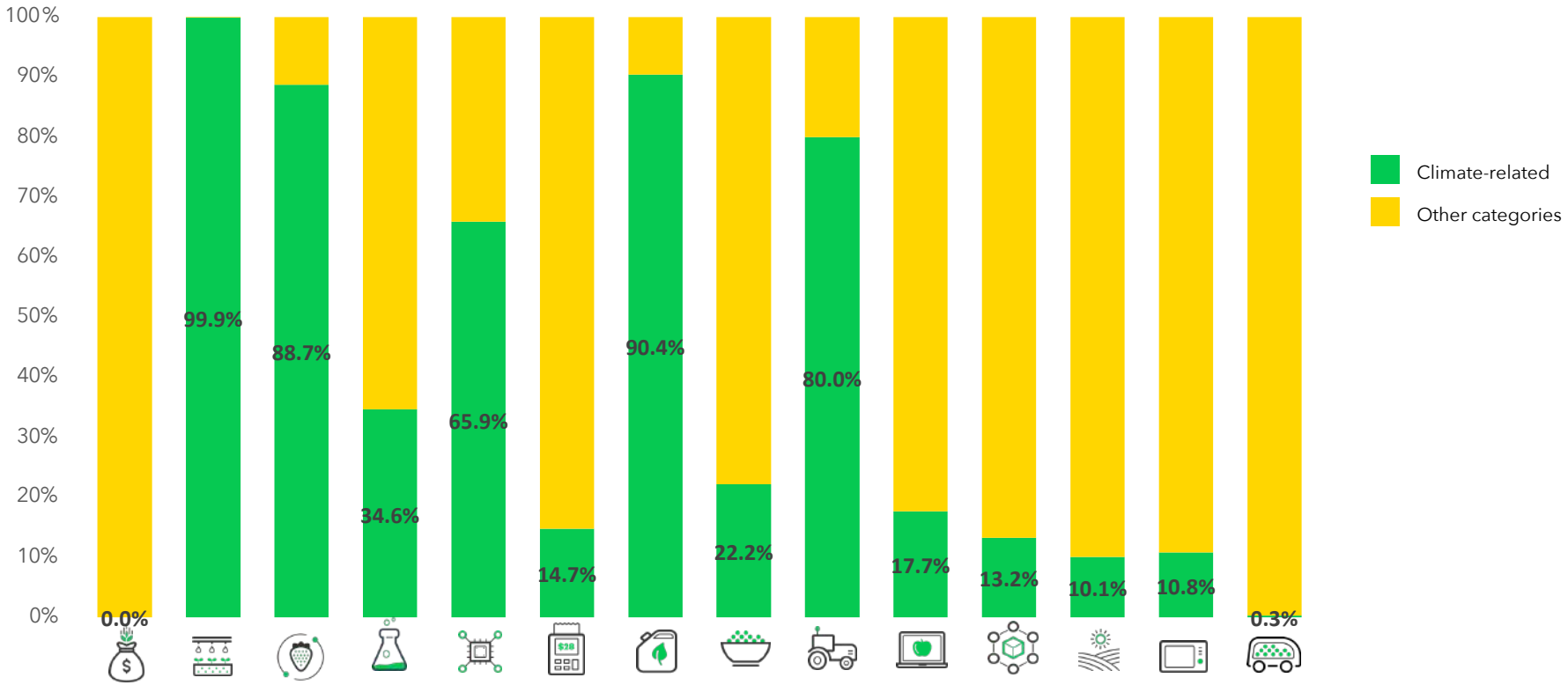
Key takeaway: the flow of agrifoodtech capital in Europe is out of sync with global climate impact potential, goals and needs.

Climate-impact themes

- **Alt-Proteins.** This category includes investments in plant-based foods, cultivated meat, fermented food products, insect-based foods and other innovative foods, as well as substitutes for animal products, like alternative leather. It accounted for 5.5% of European agrifoodtech investments in 2021.
- **Sustainable Farming.** This includes novel farming systems, sustainable crop inputs and other agbiotech products and precision farming tech. It accounted for 9.5% of of European agrifoodtech investments.
- **Circular Food Systems.** This category includes agri-waste-to-fuel and other waste-to-value technologies, sustainable alternative food packaging, shelf-life extension and food monitoring tech, and downstream food distribution tech combatting food waste. It accounted for just 2.8% of investments.
- **Other Climate Tech.** This includes investments that are having a positive climate-impact, although as a secondary business consideration.

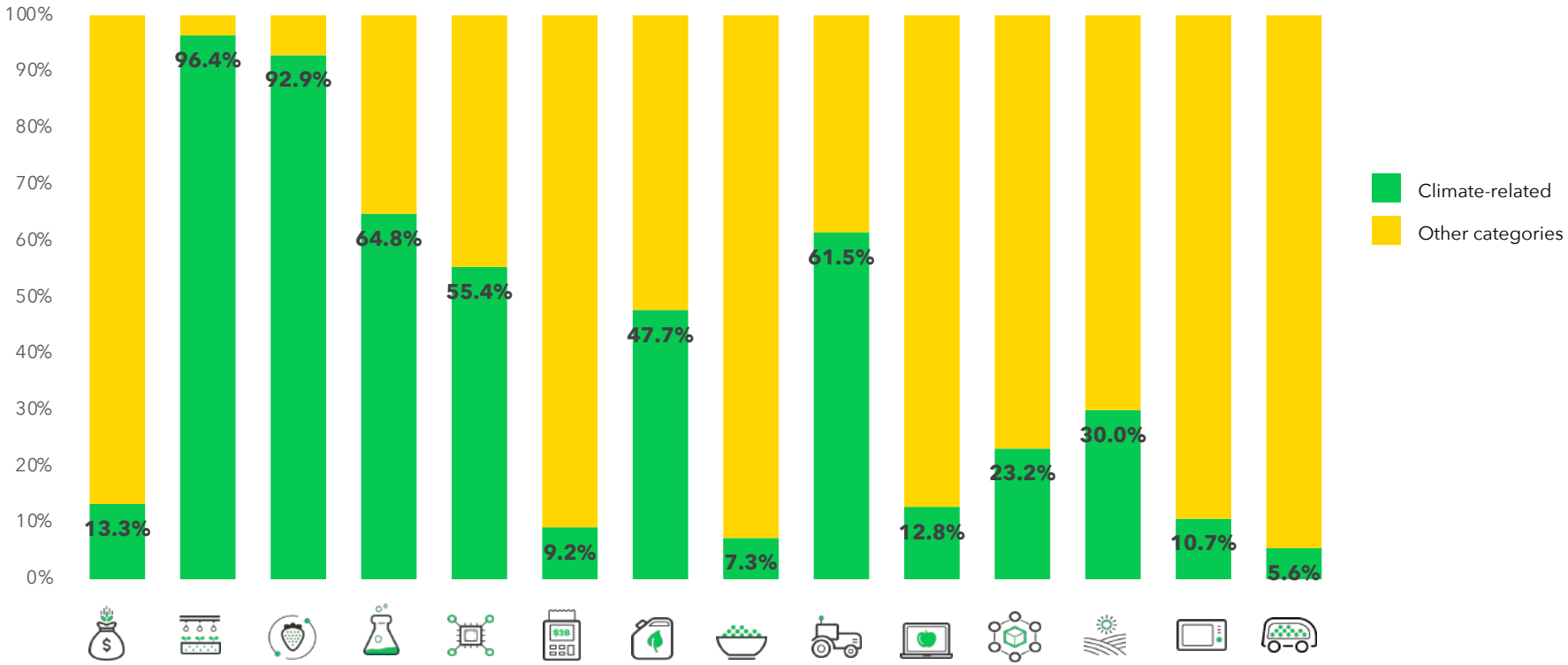
Climate Investing in AgriFoodTech by $

The green bars reflect where climate-related agrifoodtech deals are happening. Categories with the biggest climate overlap are all Upstream sectors: Novel Farming Systems, Innovative Foods, Ag Biotech and Farm Robotics & Mechanization. Worryingly, many of the sectors with the biggest potential climate impact, and where the biggest transformation in the agrifood sector could happen, *decreased* in funding from 2020 to 2021. *(Note: two Agribusiness Marketplace startups raised funding but amounts were undisclosed.)*



Climate Investing in AgriFoodTech by deal

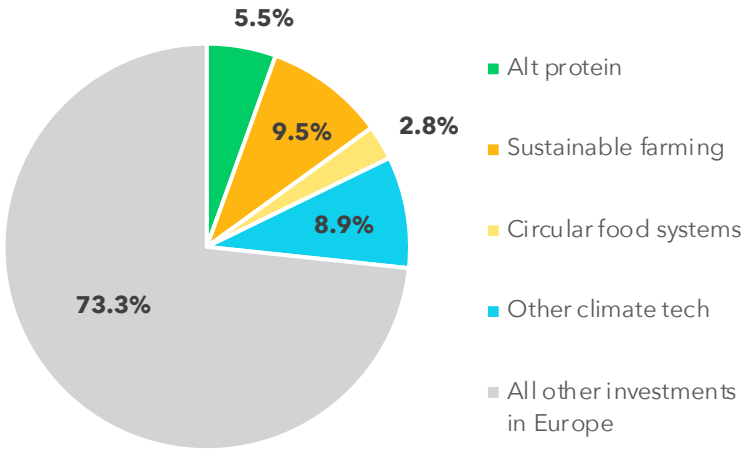
As with dollars raised, the number of deals in the most climate-impactful agrifoodtech sectors also decreased last year: Novel Farming deals fell 30% from 2020, Farm Robotics and Mechanization dropped 24%, and Bioenergy and Biomaterials dropped 15% year-over-year. Positively, the number of Innovative Food companies increased in 2021, as did Ag Biotech deals.



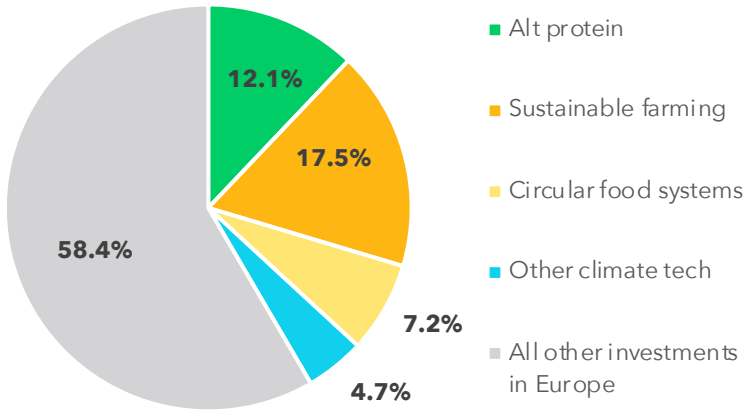
Climate Investing in AgriFoodTech by Theme

We mapped AgFunder's deals database to three themes for Invest-NL: Alternative Proteins (which includes plant-based, fermented and cellular foods, as well as new materials, like vegan leather); Sustainable Farming (which covers indoor and vertical farming, farm software, machinery, and other precision ag tools, and biological crop inputs); and Circular Food Systems (which includes repurposed agrifood waste streams, sustainable packaging and business models driving a circular agrifood economy.) 'Other Climate Tech' includes business models and biofuels that have a positive climatic impact as a secondary business outcome.

Investment in $

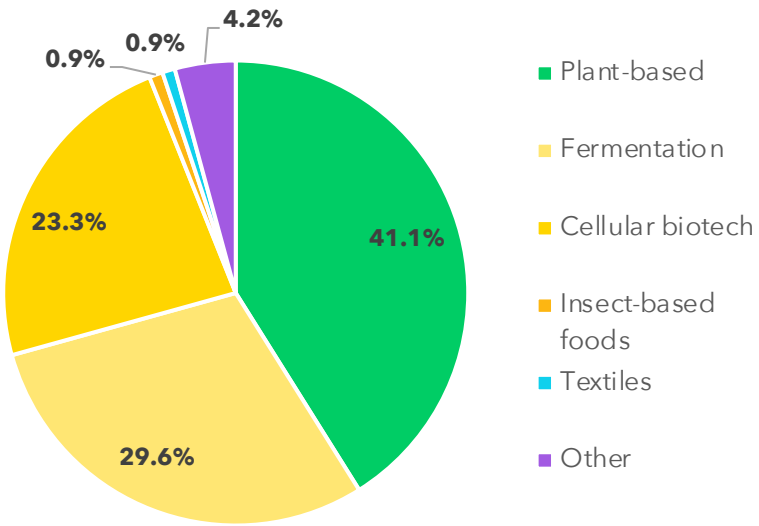


Investment in # of deals



Alternative Protein Funding in 2021 by Sub-Category

Plant-based alternative proteins, including pea, oat and soy-based products, claimed just over $200m in investment in 2021. Fermentation-based alt-protein startups raised $144m. Cellular biotech, including lab-grown meat, raised $113m, led by Dutch startup Meatable.



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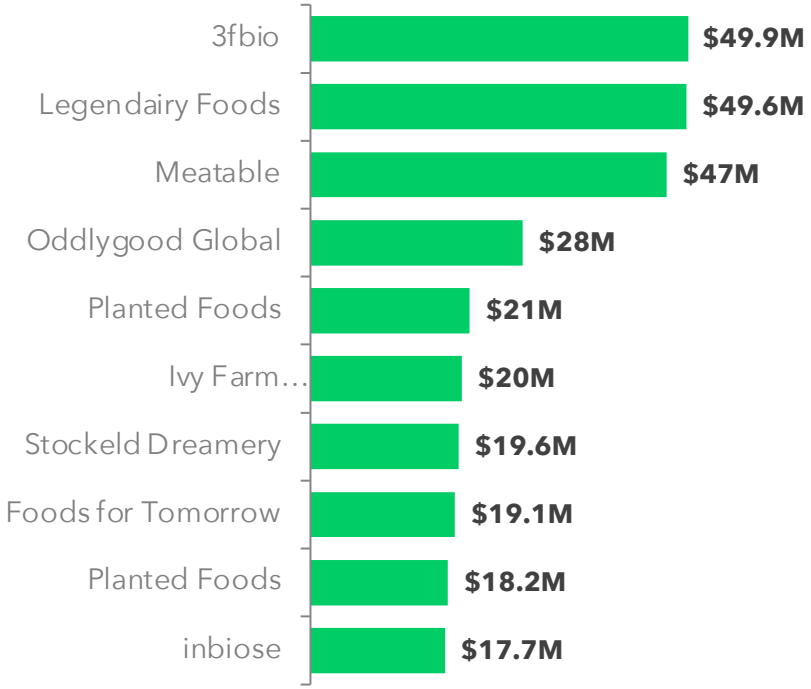
Top Alternative Protein Deals

UK-based fermentation tech startup 3fbio led the list, followed by German fermentation tech startup Legendairy Foods, which is making alt-dairy products. Netherlands-based cultivated meat company Meatable came in third. Half of the top 10 were plant-based food startups.



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Insights from ECBF

ECBF is a venture capital fund exclusively dedicated to the circular bioeconomy. The firm, based in Bonn, Germany, is investing its $300m fund in entrepreneurs contributing to achieving the goals of the European Green Deal. Investment director Ananya Manna comments on how ECBF is tackling climate challenges through its portfolio at the intersection of climate change and agrifood.

What problems in the agrifood value chain is ECBF solving?

At ECBF, we are investing in technologies that are contributing to sustainable food production with a focus on reducing the carbon footprint of the agrifood sector while maintaining productivity and optimizing resource usage. We also ensure that biodiversity is not harmed as a result of the adoption of new technologies.

We invest across the value chain and have invested in farm inputs, such as biocontrols, via Aphea Bio; Elicit Plant's biostimulants for hydric stress; alternative proteins via plant-based protein venture Prolupin and insect-based protein venture Protix, and upcycling of waste materials via Peel Pioneers.

What agrifood technologies have the potential for the greatest climate impact?

Technologies that promote soil health via increased organic content in soil have a huge potential for carbon sequestration and will have the greatest impact on climate. Paramount for achieving this is reduced application of chemical inputs on farms, so we are excited about technologies such as biological farm; precision spraying of fertilizers, herbicides and pesticides to reduce chemical usage; digital farm monitoring for pests and crop health, as well as for animal health; better seeds for higher yields and nutrients; and plant-based proteins.

Are there bottlenecks that are preventing promising technologies from achieving greater impact?

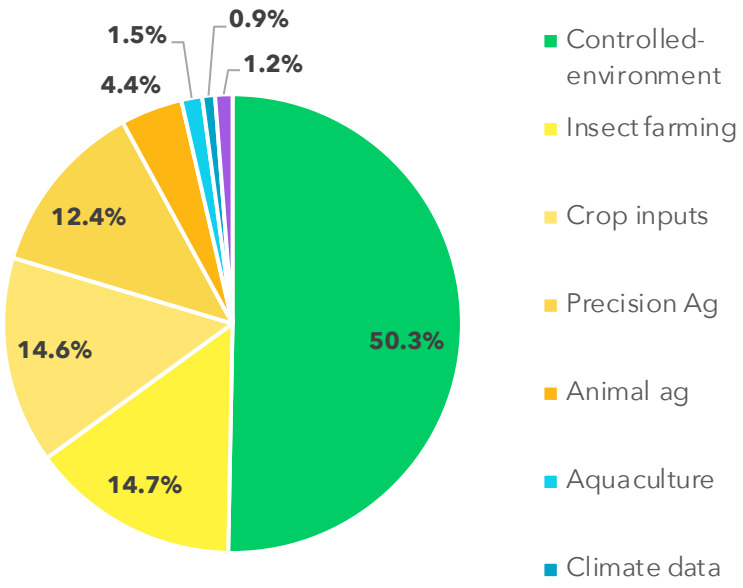
Agrifood investments have grown significantly in recent years, and that is a good sign. However, if we are to make a meaningful impact on climate through the agrifood sector, we believe the upstream side is where more funding needs to flow versus downstream, such as food delivery companies.

There are definitely challenges that are sometimes not aligned with typical VC investment periods. We believe investing in agrifood startups requires caution and pacing capital deployment right due longer cycle times but can be equally rewarding.

ECBF
European Circular Bioeconomy Fund

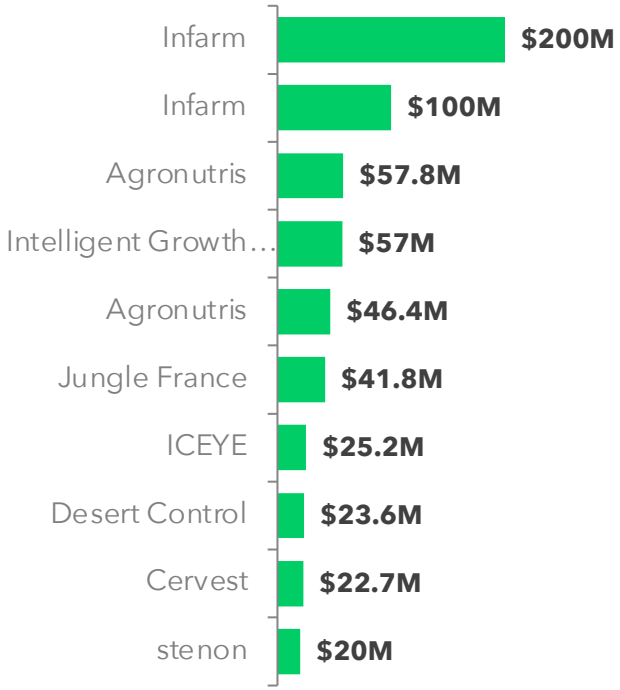
Sustainable Farming Funding in 2021 by Sub-Category

Controlled-environment agriculture (CEA) is a strength in the European agrifoodtech ecosystem. Startups, including indoor, vertical and urban farms, raised more than half of all funding for sustainable farming ventures. Another strength: insect farming for animal and fish feed.



Top Sustainable Farming Deals

German vertical farming startup Infarm claimed a third of the nearly $900m invested in Sustainable Farming tech in 2021. Unlike the other Invest-NL sub-sectors, Sustainable Farming's top 10 included a number of growth and late-stage rounds, signifying some maturity in these categories.



Startup spotlight: AgXeed

Agxeed believes that farmers have an indispensable role in society. CEO Rienk Landstra talks about how the Netherlands-based company's "autonomy-as-a-system" uses data insights to help farmers get the most out of available agricultural land while conserving soil health. AgXeed was a participant in Invest-NL's Fast Lane program.

What problem in the agrifood value chain is Agxeed trying to solve?

Fertile soil is a non-renewable resource. We contribute in a structural way to improving productivity and yields while minimising the impact on the environment and without the need for physical labor.

AgXeed provides autonomy-as-a-system using a combination of autonomous machines in the field and a cloud-based portal with virtual planning tools and valuable data models that provide the farmer with a tool set to bring added value in the food supply chain. Our machine is equipped with a standard front and rear hitch to connect with existing equipment—we do not intend to throw away decades of experience in cultivation of our soils.

Why is such a solution necessary? What is the potential impact on climate change?

The weight of agricultural equipment is now 10-times greater than it was in 1950. Usage of this heavy machinery comes at a high price: the weight of machines have compacted our soils. This is negatively impacting the biodiversity inside the soil and the ability of plant roots to reach nutrients in deeper soil layers.

This irreversible process results in less productive fields. To compensate for this, farmers are using more chemicals and fertilizer. If we do not change this, it will inevitably lead to erosion and ultimately desertification.

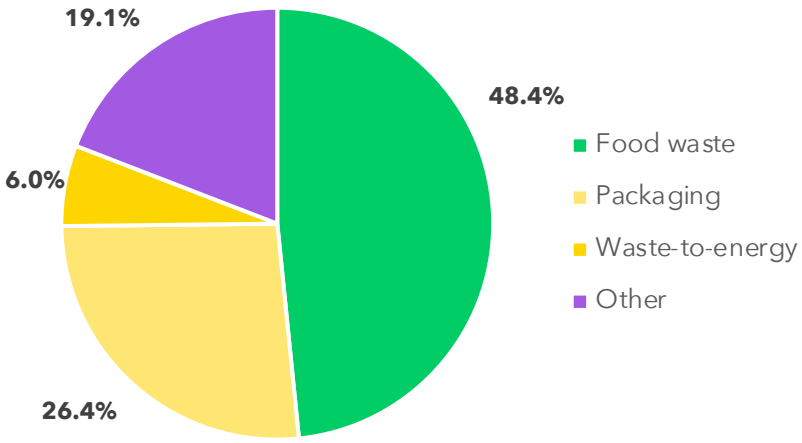
Our ag-bots stay under the irreversible soil compaction threshold, eliminating further degradation of our valuable soils in comparison with conventional heavy machinery, leading to healthier crops and higher yields.

Where are you currently in your development journey?

In 2022, we will put the first 20 machines in the field with customers in the vicinity of our headquarters in the Netherlands. To bring our solutions to farmers all over the globe, we are now setting up partnerships with local distributors that are already active near our target customers.

Circular Food System Funding in 2021 by Sub-Category

Circular Food System tech was the smallest Climate Tech sector in the broader agrifood ecosystem. Companies curbing food waste, by helping grocers manage inventory, developing "ripeness" monitoring devices, and selling "ugly produce," claimed the largest share of funding.



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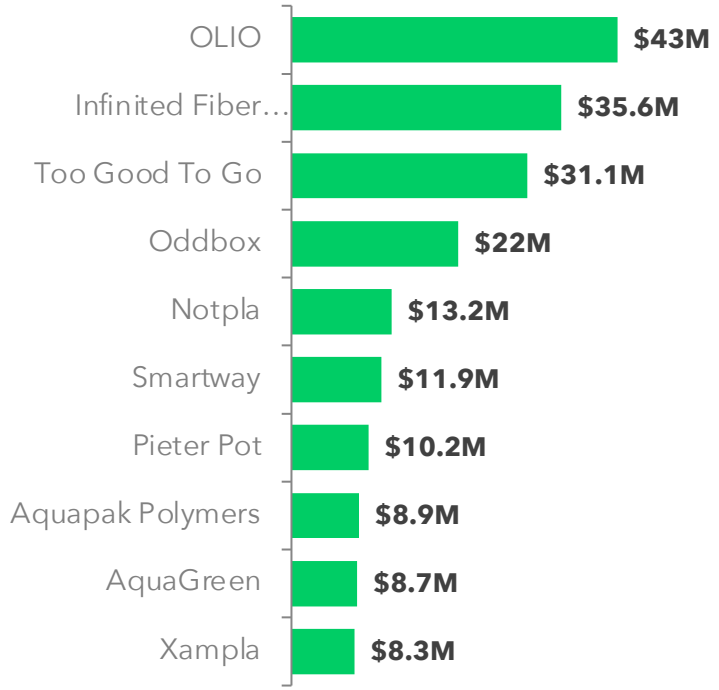
Top Circular Food Systems Deals

The top 10 rounds in this category include a mix of upstream and downstream ventures. Upstream includes circular packaging and materials companies Infinited Fiber, Notpla Aquapak and Xampla. Downstream includes food waste apps OLIO and Too Good To Go.



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Startup spotlight: Protix

Protix was founded in 2009 to contribute to a sustainable food system by developing ingredients from insects. The Dongen, Netherlands-based company uses high-tech control systems, artificial intelligence, genetic improvement programs and robotics to produce insect-based animal feed on a commercial scale. Invest-NL is an investor in Protix.

We are increasingly confronted with the environmental limits of consumption. Land is becoming scarce, waters are over fished, species are going extinct, and climate change is radically changing weather patterns. We need to move to a low environmental-footprint society.

Protix was started with one goal; to reduce the environmental pressure on marine and land resources. Our vision is a food system in balance with nature where no waste exists. The proteins we make are a natural source of nutrition for poultry, pigs, pets and fish.

The black soldier fly is a key player in bringing our vision to life. Its larvae provide us with a unique source of protein for food and feed. Our circular production approach uses low-grade food waste, which is consumed by the black soldier fly and then used as a high-quality nutrition source in feed for fish, chicken, pigs and pets, mimicking the natural circular food chain—all in a matter of weeks and using little space and water.

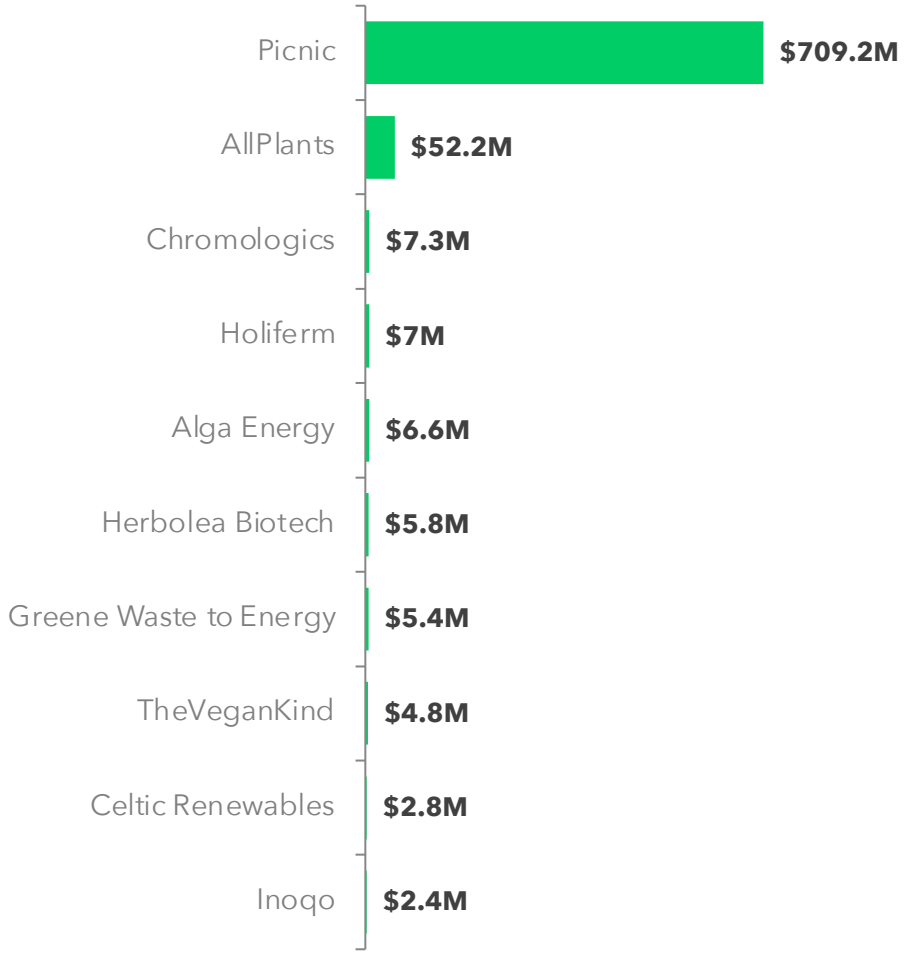
We produce black soldier fly-based ingredients such as proteins, fats and fertilizer by sourcing the needed raw materials locally and breeding the flies in-house. This allows us to improve the food/feed security of every region where we produce.

Our process has been studied, with the conclusion that Protix's technology produces protein sources more sustainably than other forms of proteins, including soymeal and traditional fishmeal.

We are on an exciting journey with our partners to build insect-based nutrition in pet, livestock, aqua and plant markets. As a business, Protix has proven that it is resilient. We are in the third phase of our evolution, producing at a commercially-viable and industrial scale even in these dynamic times. Together with our customers we create and capture added value in the animal and pet feed markets.

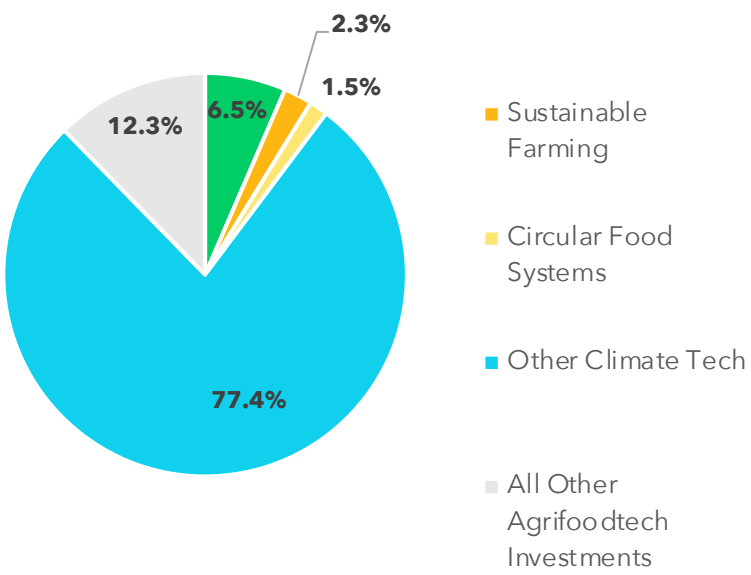
Top Other Climate Tech Deals in 2021

- The 'Other climate tech' theme we identified for this report consists of climate-impactful technologies that raised funding in 2021, but which do not fit into the other three core themes.
- Most of the companies in the category consist of Bioenergy and Biofuels materials that are producing renewable fuel sources, but which are not deliberately using agrifood waste streams as an input source (the ones that do are included in the Circular Food Systems category.)
- Dutch online grocer Picnic raised the majority of funding for companies in the Other Cliamte Tech category. Picnic actively manages its climate impact by operating all electric fleets and pledging to be zero-waste. The Bill & Melinda Gates Foundation led the investment in its late-stage funding round. Still, the core business is delivering groceries, not climate intervention or technology.
- Others in the category include vegan meal-delivery service AllPlants, biochemicals producer Holiferm, and gasification tech developer Green Waste to Energy.



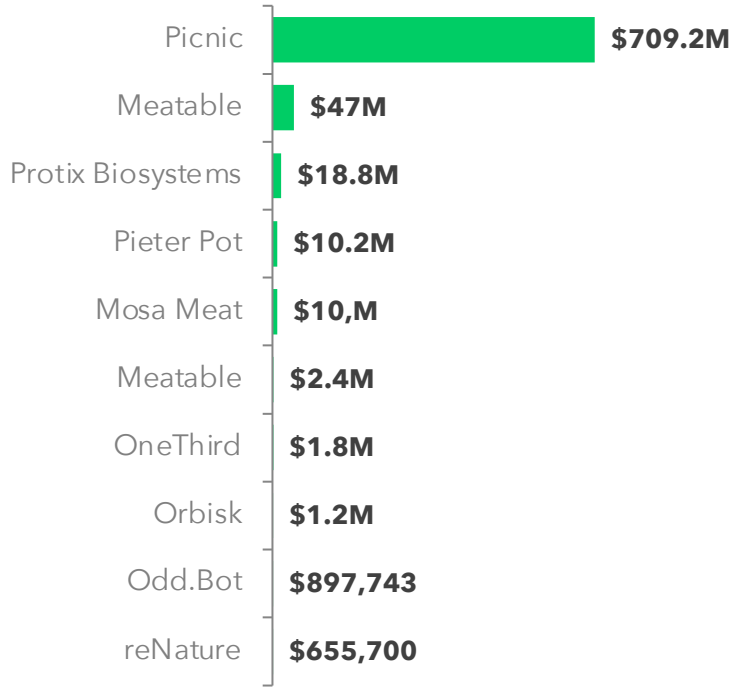
Netherlands by Category

On the surface, the Netherlands looks like the biggest developer of Climate Tech in Europe with $803m. But more than 77% of the funding went to e-grocer Picnic, which uses electric vehicles and is committed to zero-waste but isn't *by design* a climate tech venture.



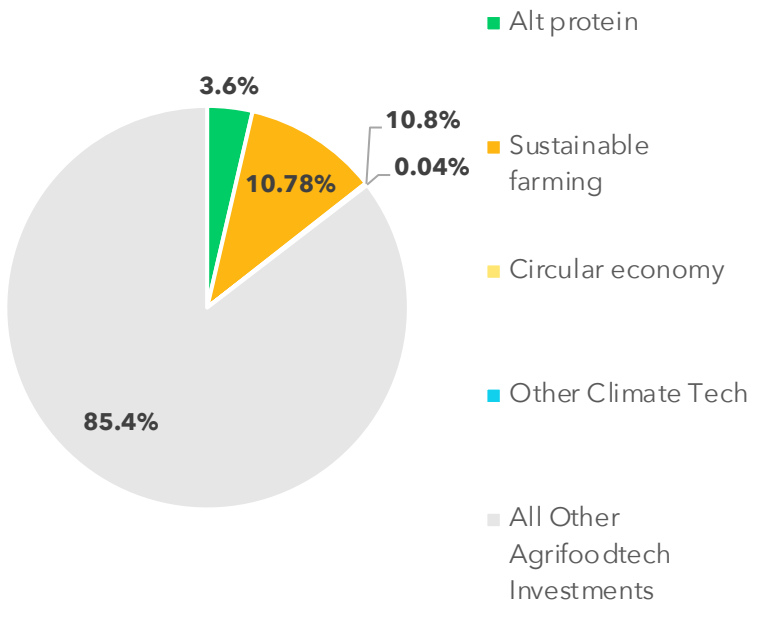
Top Netherlands Deals

Three of the top 10 deals in the Netherlands went to cellular biotech companies making cultivated meat: Meatable and Mosa Meat. The very-early-stage nature of the Dutch ecosystem is evident by the fact that the top 10 list includes deals of sub-$1 million.



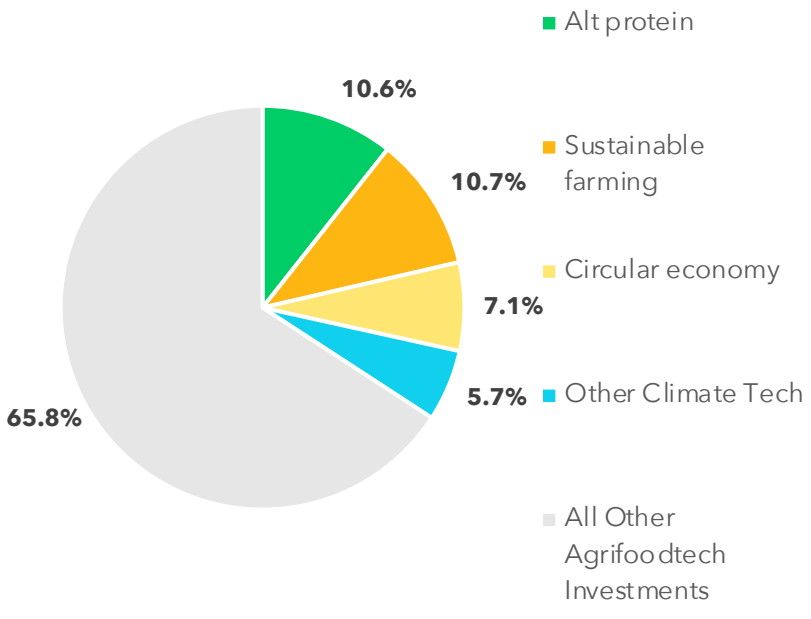
Germany by Category

Germany and UK-based Climate Tech agrifood startups raised the same amount of funding: $437m. The markets represent the top-funded (Germany) and most diverse, by range of funded startups (UK), in Europe. Investment sectors were more diversified in the UK than Germany, where climate investing was dominated by Infarm's $300m raise.



UK by Category

Climate Tech funding accounted for about a third of all agrifoodtech capital raised in the UK, compared to just 15% in Germany. A wide range of technologies got funding, including plant-based, fermentation and cell cultivated alt-proteins. Most rounds were seed and Series A.



Sources & Methodology

What is AgriFoodTech?

Agrifoodtech is the growing segment of the startup and venture capital universe that's aiming to improve or disrupt the global food and agriculture industry.

As with all industries, technology plays a key role in the operation of the agrifood sector – a $7.8 trillion industry, responsible for feeding the planet and employing well over 40% of the global population. The pace of innovation has not kept up with other industries and today agriculture remains the least digitized of all major industries, according to McKinsey.

The industrial agrifood sector is also less efficient than other industries, with an increasing number of demands and constraints being placed on it. These pressures include a growing global population; climate change and global warming; environmental degradation; changing consumer demands; limited natural resources; food waste; consumer health issues; and chronic disease.

The need for agrifoodtech innovation is greater than ever. This creates many opportunities for entrepreneurs and technologists to disrupt the industry and create new efficiencies at various points in the value chain.

Broadly speaking, agrifoodtech startups are aiming to solve the following challenges: food waste, CO2 emissions, chemical residues and run-off, drought, labor shortages, health and sugar consumption, opaque supply chains, distribution inefficiencies, food safety and traceability, farm efficiency and profitability, and unsustainable meat production.

There are many ways to categorize agrifoodtech startups highlighting the complexity of the industry. See page 38 for more information on our categorization system, which we developed in consultation with venture capitalists, entrepreneurs, and other industry experts.

Sources & Methodology

Data Sources & Curation

Utilizing new advanced machine-learning algorithms and artificial intelligence to help identify and categorize agrifoodtech startups, our knowledge base has grown to over 29,939 companies, with new startups and historical data being added each day.

The raw data for our reports comes from Crunchbase, which gathers publicly-available information such as press releases and US Securities and Exchange Commission filings, as well as crowdsourcing directly from the industry. AgFunder contributes data from its own collection methods, including private communications with investors and companies. We also collect data from partners across the globe (see page 57 below) to ensure we have the most comprehensive, accurate and curated dataset and knowledge base of agrifoodtech companies and investments.

The raw data are painstakingly curated by the AgFunder team to ensure they are relevant, accurate, up-to-date, and categorized according to AgFunder's proprietary tagging system.

We update and improve our dataset continuously throughout the year, meaning total figures from previous years' reports will shift as our dataset becomes more complete.

In 2022, we tightened our definitions of what constitutes an agrifoodtech venture to ensure that the emphasis on food and agriculture is core to the business.

That's had a recalibrating effect on this year's investment figures as well as some past data. Examples include logistics, drones, cloud and any other tech services that may have started in agrifood but have since added other sectors or pivoted away from agrifood. We've maintained historical rounds that were raised on an agrifood focus, where we could.

While we are happy to share our findings, we reserve all rights with respect to AgFunder research and this report and we require it to be fully and accurately cited when any of the data, charts, or commentary are used.

Undisclosed Financings

Of the 720 financings in this report's curated dataset, 164 were undisclosed and could not be determined through research or direct sources. We exclude undisclosed financings when computing averages and median values. In some cases, we're able to confidentially obtain financing figures directly from investors on the condition they're only included in aggregate.

Multiple Financings

In some cases, Crunchbase displays multiple financings for the same company in the same year. This can be because a company closes subsequent rounds in the same year, but it can also be the result of several closes of the same round. We keep them separate unless they are announced as one single round.

Sources & Methodology

Categorization

AgFunder's categorization system is designed to capture broad themes across the complex agrifoodtech value chain *(see page 13 for a list of categories)*. The agrifood sector has a wide supply chain spanning inputs and industrials, farming, logistics, wholesale distribution, processing, retail distribution, and the consumer. In many cases, technologies such as marketplaces connect different links in the supply chain and so in this report we've chosen to focus on high-level themes. To assist with the categorization and to avoid subjectivity, AgFunder first employs over 150 machine learning and artificial intelligence models to suggest category placement and to help tag the company according to the technology and its place in the supply chain. Finally, the AgFunder team manually reviews the suggestions for each company, often with significant research and debate among our team.

In 2019, we added a new category, Cloud Retail Infrastructure, to relieve the Midstream Tech category of 'later-stream' deals we felt no longer fit. Cloud Retail Infrastructure includes the growing number of technologies enabling companies to provide customers with on-demand, at-home dining such as ghost kitchens and last-mile delivery services including delivery robots.

We've also taken taken a stricter stance on cannabis and CBD-related startups; there needs to be clear proprietary technology involved. We will not include pure consumer packaged goods or pure production, as we wouldn't include pure production in any other crop. If we believe the growing facilities are particularly high tech or utilize proprietary technology, we will still include it in our Novel Farming Systems category. The same goes for processed products; if the extraction technique is particularly innovative, we'll include it as a Biomaterials or Midstream Tech startup. Large vertically-integrated cannabis companies are also excluded.

Special Acknowledgement

Special thanks to Tim Li, Ellen Ehrsam, and the rest of the Crunchbase team for their support and assistance.

Are we missing your data?
Don't forget to send it to us!

data@agfunder.com or
add direct onto
Crunchbase.com

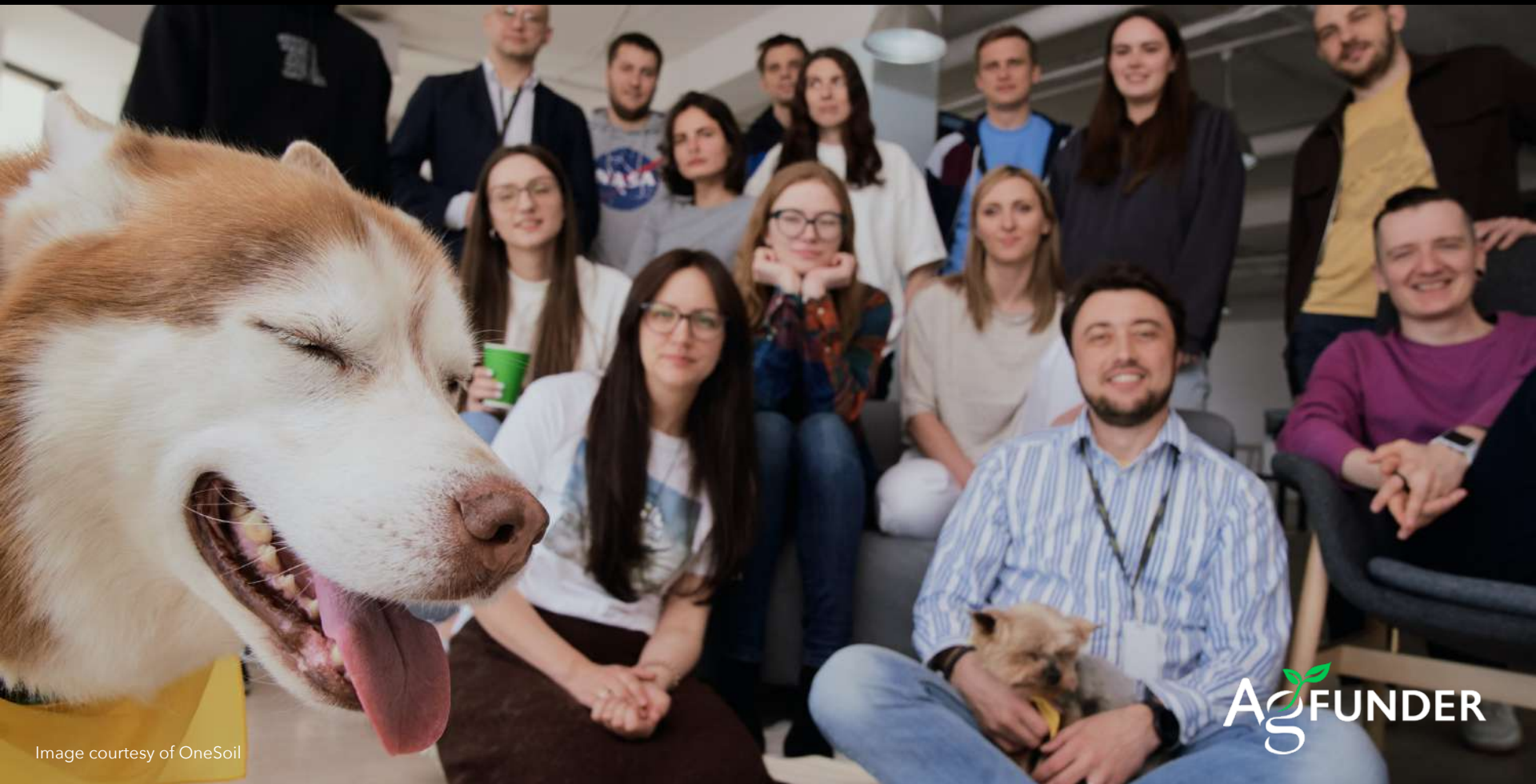


Image courtesy of OneSoil