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THE RAILMASTER

Minimalist design meets complex mechanics. This has been the story of the OMEGA Railmaster since 1957, when it was first designed as an anti-magnetic timepiece for workers on the railways. Those same enduring qualities are still evident today, yet the latest 38 mm model has taken its own unique direction with a new gradient dial in grey. An easy-to-read display is achieved through large Super-LumiNova hour markers, while the essential magnetic resistance is maintained through a modern Co-Axial Master Chronometer calibre.

Ω
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BREGUET

250 YEARS

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breguet.com

Agriculture faces the challenge of the century

I have written here previously: I am fortunate. Fortunate to live in Switzerland and, in this instance, to have access to abundant, high-quality food. Sadly, this privilege is far from universal. UNICEF reports that 733 million people worldwide suffer from hunger. A figure that could soar over the coming years. The latest UN demographic projections indicate the world's population is set to reach 9.64 billion in 2050 (+19.7% compared to 2023), which would mean a 60% increase in food demand since 2010, according to the Food and Agriculture Organization of the United Nations (FAO).

To confront such a challenge, the agricultural world will be at the forefront. However, it will need to reinvent itself. Although mechanisation and the extensive deployment of pesticides and fertilisers enabled farmers to radically increase their productivity throughout the 20th century, this system is now exhausted. The utilisation of chemical products and intensive farming have led to soil depletion and environmental pollution, with a significant impact on

human health. Furthermore, agri-food systems are responsible for more than a third of greenhouse gas emissions and for 70% of freshwater withdrawals.




Should we despair? Certainly not. As our dossier demonstrates, the agricultural world – too often overlooked by investors – is experiencing a digital revolution. Still in its infancy, it promises to improve yields while reducing the sector's environmental footprint.

The FAO notes that a third of all food intended for human consumption is discarded, meaning that 1.3 billion tonnes of food are lost annually, and considerable amounts of energy, water and fertiliser are wasted for nothing. The primary culprit? We, the consumers. In Switzerland, 28% of avoidable food waste originates from households, a FOEN study reveals. Reducing this waste would constitute one of the most effective approaches to responding to the food emergency. So why not begin today?

Happy reading!

BY MARC BÜRKI,
CEO OF SWISSQUOTE



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i m p r e s s u m

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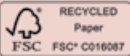
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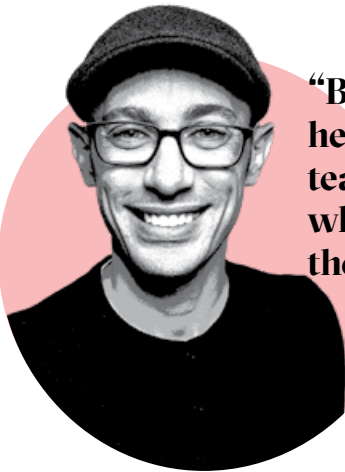
According to Amazon, the Vulcan robot reduces the arduousness of its employees' work.

ROBOTICS

A robot with a sense of touch

Amazon operates some 750,000 robots in its sorting centres. But until now, these machines have been used mainly to transport shelves full of goods to the workers responsible for sorting and packing them. At the beginning of May, the American group unveiled a new robot called Vulcan, equipped with tactile sensing. Thanks to artificial intelligence software, it can identify objects by touching them, then determine the best way to pick them up without any damage. This ability will enable it to handle three quarters of the goods processed in Amazon's distribution centres and perform some of the sorting functions previously undertaken by humans. Trade unions representing the e-commerce giant's employees fear that this innovation will lead to widespread redundancies.

→ AMZN



“Before asking for more headcounts and resources, teams must demonstrate why they cannot get what they want done using AI”

Tobias Lütke, CEO of Shopify, in a memo to his employees.

RANKING

The five most profitable stock exchanges (based on return on investment on an annualised basis since 2015)

- 1. S&P 500 (UNITED STATES) 16.9%
- 2. BOVESPA (BRAZIL) 15.9%
- 3. BSE SENSEX (INDIA) 15.9%
- 4. VN-INDEX (VIETNAM) 12.2%
- 5. S&P/NZX 50 (NEW ZEALAND) 10.7%

Source : HelloSafe

The five countries with the most rare earth reserves (in metric tonnes in 2024)

- 1. CHINA 44 million
- 2. BRAZIL 21 million
- 3. INDIA 6.9 million
- 4. AUSTRALIA 5.7 million
- 5. RUSSIA 3.8 million

Source : US Geological Survey 2025

20.8%

The increase in Chinese exports to countries in the Asia-Pacific region in April compared with the previous year. In particular, exports to Indonesia and Thailand jumped 37% and 28% respectively, as China seeks to distance itself from its American customers, whose orders have fallen due to tariffs imposed on Chinese goods by Donald Trump.

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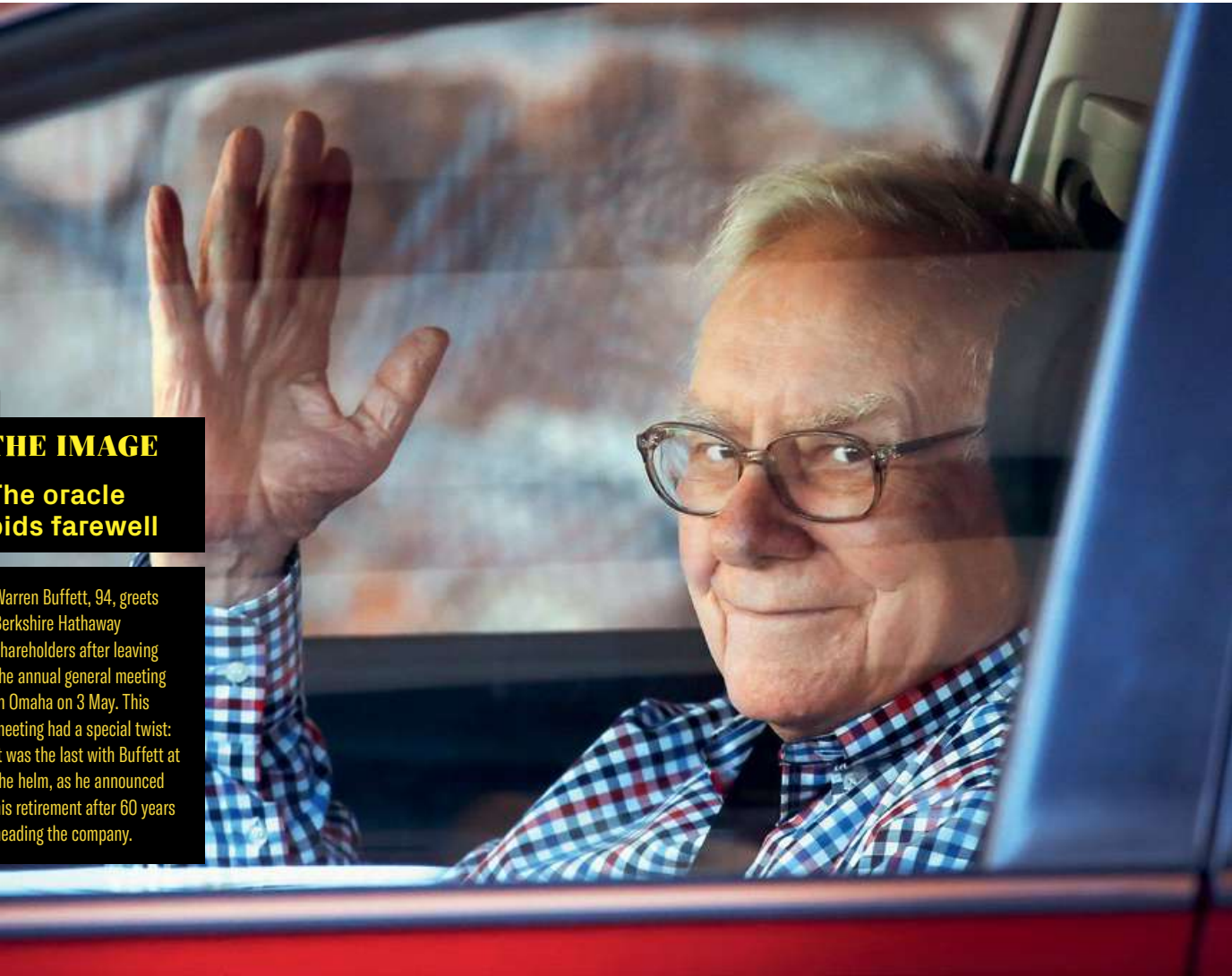
AUTOMOBILES

The US rushes to buy used cars

The 25% import tax imposed by Donald Trump on foreign cars is driving US buyers to used car sales platforms, which are exempt from this tax. Copart, which dominates the US resale market with a capitalisation of around \$50 billion, recorded revenue growth of 7.5% in the first quarter year-on-year. Carvana, the second largest of these platforms, saw its vehicle sales rise by 46% in the first quarter. → CPRT → CVNA



In Gaithersburg, Maryland, the Carvana company uses a vending machine to sell its cars.



THE IMAGE

The oracle bids farewell

Warren Buffett, 94, greets Berkshire Hathaway shareholders after leaving the annual general meeting in Omaha on 3 May. This meeting had a special twist: it was the last with Buffett at the helm, as he announced his retirement after 60 years heading the company.



“We’re acting as if we’re going into a recession”

The CEO of Delta Air Lines, **Ed Bastian**, who is having to deal with a significant drop in ticket sales.

\$38,175

This was the price reached by a tonne of tin on 2 April, the highest level for three years. The white metal, which is used in electric cars, electronic circuits and solar panels, owes this performance to rising demand, while supply has weakened following a mine closure in the Democratic Republic of Congo and a devastating earthquake in Myanmar.

HEALTH

Seven Swiss clinics join Mayo Clinic

Seven clinics in the Swiss Medical Network, 76% owned by Aevis Victoria, will join a collection of 45 establishments affiliated with the American group Mayo Clinic. They will be the first establishments in Western Europe to join this network, which grants access to the healthcare giant’s expertise. In particular, doctors

will be able to consult Mayo Clinic specialists on complex oncology cases and discuss ophthalmic research with their American colleagues. The partnership also aims to help them develop a range of preventive health services, including health check-ups, a fast-growing field.

→ AEVS



Mayo Clinic Medical Director Brian Costello (left) and Fabrice Zumbrunnen (right), delegate of the Swiss Medical Network Board of Directors, at a press conference at the Genolier Clinic on Tuesday, 6 May 2025.

SEMICONDUCTORS

India dreams of becoming a chip giant

India is preparing to complete construction of its first semiconductor plant, capable of executing all stages of the process. Located in Gujarat on the west coast, the \$11 billion complex is the result of a partnership between Indian conglomerate Tata and Taiwanese company Powerchip. The wafers produced on site will not be the very latest generation; they will initially be used to equip cars, household appliances and entry-level smartphones. This plant represents a concrete expression of the Indian government’s vision of becoming a world power in semiconductors, and it has earmarked a \$10 billion fund for this effort. However, it will have to contend with competition from other emerging centres, including Malaysia, Vietnam and the Philippines.

→ 6770 → TATAELXI

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COFFEE

Starbucks calls itself into question

Can the new CEO of Starbucks, Brian Niccol, who assumed his role in August 2024, reverse the coffee chain’s string of disappointing results? The former boss of Chipotle Mexican Grill is attempting to revive the characteristics that made Starbucks establishments, considered as ‘third places’ between the office and the home, successful. It has simpli-

fied the menu, reducing it by 30%, renounced the use of technology to automate the preparation of drinks, preferring to hire more baristas, and renovated the signs whose decor was beginning to look dated. However, these reforms have come at a price: operating costs climbed by 9% in the last quarter year-on-year.

→ SBUX

CHEMICALS

Cartel accusation for Clariant

Clariant is facing a new accusation in the ethylene cartel case. In May, Austrian oil company OMV filed a complaint against the Swiss group, claiming €1 billion in damages, which the Basel-based chemical company “firmly rejects”. Since the beginning of the year, Dow Europe (the European subsidiary of the American company Dow Chemical), Germany’s BASF and France’s TotalEnergies have filed similar complaints, claiming damages of €767 million, €1.4 billion and €625 million respectively. All of the plaintiffs accuse Clariant of forming a cartel to drive down the price of ethylene. In 2020, the European Commission fined Clariant and two of its co-defendants, Orbia and Celanese, €260 million for exchanging information to manipulate a reference index used to calculate the price of ethylene between 2011 and 2017. → CLN



Clariant’s headquarters in Muttentz, near Basel.

THE QUESTION

With growth of 3.2% in 2024, four times the eurozone average, the Spanish economy is flourishing. How can this performance be explained?

“Spain’s working-age population is growing at around 1% annually, five times the EU average, driven by strong immigration. This influx is fuelling growth by pushing up household consumption. Added to this is cheap electricity, thanks to the strong growth in renewable energies in the Spanish energy mix. The most buoyant sectors are tourism, hospitality, service exports and real estate. Spain’s healthy economy is set to continue in 2025, with expected growth of 2.5%, almost three times the eurozone average. In the medium term, however, growth is likely to slow, as current levels of migration are difficult to sustain over the long term. They are already causing discontent among the population. The government will also have to tackle the budget deficit, which stands at 3% of GDP. In some sectors, notably real estate, the numerous regulatory changes have also created uncertainty.”

Ignacio de la Torre, chief economist at the investment bank Arcano Partners



“If Latin America plays its cards well, I think it could benefit from this volatility”

Marcos Galperin, CEO of the Mercado Libre e-commerce portal, which is benefitting from a reorientation of US supplier chains towards Mexico.



Zeng Yuqun, chairman of Chinese battery giant CATL (2nd right) bangs a gong to start CATL's debut trading on the Hong Kong stock exchange, in Hong Kong on 20 May, 2025.

CATL, the IPO of the year

Chinese battery giant CATL floated on the Hong Kong stock exchange in mid-May, raising nearly 35.7 billion Hong Kong dollars (approximately \$4.55 billion). This makes it the biggest listing of the year worldwide. Founded in 2011 in Ningde, eastern China, the company produces more than a third of the batteries used in electric vehicles. Its customers include Tesla, Volkswagen and Toyota,

though nearly 70% of its revenues come from the Chinese market, capitalising on that country's electric car boom. Also listed in Shenzhen, the company plans to invest the funds raised in Hong Kong in the construction of a plant in Hungary, which will supply batteries to European carmakers BMW, Stellantis and Volkswagen. Another production site is planned for Spain. → 3750 → 300750



DELIVERY

DoorDash devours Deliveroo

US meal delivery service DoorDash is to acquire UK rival Deliveroo for £2.9 billion. This acquisition will enable the Californian group, which turned profitable for the first time last year after years in the red, to expand into the European market, particularly in the UK, France, Belgium, Ireland and Italy, taking market share from its competitors Just Eat and Uber Eats. This new meal delivery giant will have an annual order value of more than 90 billion in some 40 countries. The deal comes at a time when Deliveroo has been struggling to convince investors since its 2021 stock market listing. Its shares have lost nearly 50% of their value since then. → DASH

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Audi A6 Avant e-tron performance	
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Your special price	70 590.–
Your discount	11 760.–
Annual interest for leasing	1,99%
Leasing rate per month	489.–

Audi A6 Avant e-tron performance, 270 kW, 15,0 kWh/100 km, 0 g CO₂/km, category B. Leasing offer: price calculation as per table above, down payment CHF 17 650.– 48 months, 10 000 km per year, annual percentage rate for leasing: 2,01%, excluding compulsory comprehensive insurance. Displayed model: Audi A6 Avant e-tron performance, 270 kW, 16,3 kWh/100 km, 0 g CO₂/km, category B. Magnet Grey, S line exterior, black exterior package, Audi Sport wheels, 5-arm dynamic, black metallic, high-gloss turned finish, 8,5 J | 9,5 J x 21, 245/40 | 275/35 R21 tyres, adaptive cruise assist plus, brushed matt aluminium inserts with anthracite linear embossing, passenger detection in the rear, S interior with sports seats, black/light-grey leather/artificial leather combination, leather sports steering wheel, 3-spoke, flattened at top and bottom with multifunctionality and shift paddles, Tech plus, virtual side-view mirror without projection light, regular price CHF 96 820.–, premium bonus CHF 3 190.–, EnterprisePlus discount CHF 10 650.–, cash purchase price CHF 82 980.–, down payment: CHF 20 745.–. Leasing rate: CHF 579.–/month. The granting of credit is prohibited if it leads to over-indebtedness of the consumer. Financing provided by AMAG Leasing AG. Offer valid for contracts concluded up to 30.6.2025 or until further notice. Subject to change. Applies to all vehicles imported by AMAG Import AG. List price suggested by importer AMAG Import AG. * EnterprisePlus: commercial offer, only available for vehicles registered to companies with an entry in the commercial register.

Further attractive offers for SMEs

TELEPHONY

Swisscom sets its sights elsewhere

At the start of the year, Swisscom absorbed Vodafone's Italian subsidiary, acquired for 8 billion and integrated into Fastweb, the Swiss group's transalpine unit. This boosted Swisscom's results, which rose by 39.3% in the first quarter to CHF 3.76 billion. The Ittigen-based company's expansion into Italy comes against a backdrop of saturation in the domestic telecoms market. Specifically, Swisscom is facing competition from Sunrise, which plans to focus on growth in Switzerland, and Salt, which gained 184,000 new customers last year and expanded its network of outlets in Switzerland.

→ SCMN

THE FLOP



Oprah Winfrey, pictured here in 2020 at a Weight Watchers event, left the company's board of directors in 2024 after admitting to using anti-obesity drugs.

Weight Watchers trims down too much

The Weight Watchers programme has filed for bankruptcy, 62 years after it was founded. The company had based its success on a system that assigns points to foods according to their calorific value. At the height of its popularity in 2018, it had 4.5 million subscribers, compared with 3.3 million at the end of 2024. Losing ground with the youngest segment of the population, it bought the Kurbo app in 2018, which allows

teenagers to count calories ingested, but has suffered a barrage of criticism. The emergence over the past two years of GLP-1, the particularly effective anti-obesity drugs, has dealt it the final blow, despite a failed attempt in 2023 to launch a platform that allows these injectable substances to be ordered online. In 2024, Weight Watchers' revenues fell by 11.7% and its debt reached an unsustainable 1.5 billion dollars.



"The stuff that bores people at parties works really well on LinkedIn"

Dan Roth, in charge of editorial content for the platform.

\$63 BN

These are the combined annual revenues of the Japanese and Korean arms industries, up 25% from 2022 according to *The Economist*. The companies dominating this segment, including Kawasaki Heavy Industries, Mitsubishi Heavy Industries and Hanwha Aerospace, have seen their orders explode in Asia against a backdrop of increasingly militaristic China and US disengagement.

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Publireportage

ETF Savings Plans: Bridging the Gap from Saving to Investing

Swiss people are known for their diligent saving habits, but they often shy away from investing. ETF savings plans could serve as a bridge.



Ramon Vogt
Head of Wholesale Switzerland at Zürcher Kantonalbank's Asset Management

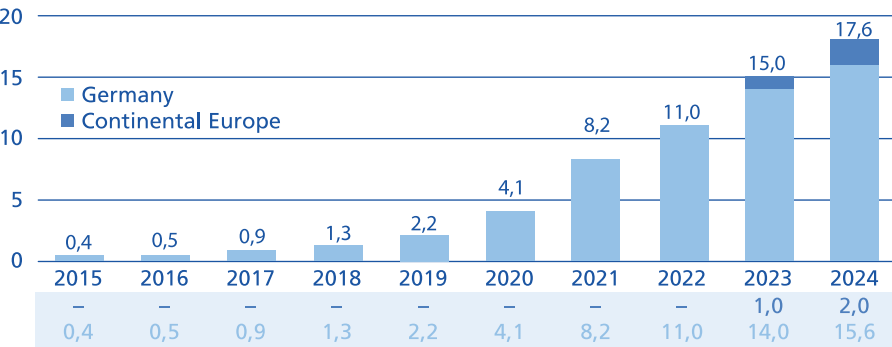
ETF savings plans are on the rise: according to data from the information portal extraETF, the number of ETF savings plans in Continental Europe surged by nearly half to around 10.8 million in 2024 alone. The assets entrusted to ETF savings plans increased by 17.3% to EUR 17.6 billion (see chart).

The year 2024 marks the breakthrough of ETF savings plans from a niche product to a mainstream option in Switzerland. Several banks, neobanks, and online brokers such as Swissquote have intro-

duced corresponding offerings to their substantial customer bases. International players have also become more active. Traditional financial institutions and asset managers are now also taking notice. Zürcher Kantonalbank offers its clients innovative equity ETFs, "Swisscanto ESGeneration ETFs", which allow investment in four key markets while also considering sustainability. These new Swisscanto ETFs are designed for use in third-party ETF savings plans. Zürcher Kantonalbank clients are exempt from brokerage fees on these new index solutions until the end of the year. Several factors could drive growth in ETF savings plans.

Alternative in a low interest rate environment
Savings in traditional accounts are eroded by inflation, and interest rates are also trending downward. This makes investing in securities more appealing. ETF savings plans offer this alternative while maintaining the component of long-term wealth accumulation.

Growing Assets in ETF Savings Plans
ETF savings volume in EUR billion



Source: extraETF

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Every investment carries risks, particularly those of value, return, and possibly exchange rate fluctuations. Past performance is no indication of current or future performance, and the performance data do not take account of the commissions and costs incurred on the issue and redemption of units.

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Booming ETFs Drive ETF Savings Plans
With a wide range of ETFs available, ideal products exist for simple, transparent, and relatively low-cost investing. Private investors, and those aspiring to be, find an accessible entry point to the capital market. The ETF market itself is experiencing unbridled growth. According to the European Fund and Asset Management Association (EFAMA), ETFs in Europe saw inflows of EUR 261 billion in 2024, a third more than the previous year.

For self-directed investors
Investors are increasingly taking charge of their investments, often through digital channels. ETF savings plans, well-suited for online distribution via apps, meet these needs. They can be opened and closed at any time, offering a high degree of flexibility.

ETF savings plan in brief
With an ETF savings plan, investors instruct the bank to purchase shares in an exchange-traded index fund (ETF) at predefined intervals for a specific amount. The required amount is debited from the corresponding account. An ETF savings plan allows you to invest smaller amounts on a regular basis instead of investing larger sums all at once. As there are no fixed terms, you can adjust or terminate the savings plan at any time.

Reinvesting ETFs, which automatically reinvest dividends, generate a compound interest effect in ETF savings plans. The longer the investment horizon, the greater this effect can increase your assets.

Since ETFs track an index, they hold a large number of securities. This tends to spread the risk widely.

This is important because ETF savings plans may be subject to greater value fluctuations than savings accounts.



Crypto establishes itself on Wall Street

The spring of 2025 marked another milestone in the recognition of the cryptocurrency sector. On 5 June, Circle, the issuer of the USDC stablecoin (the world's second-largest stablecoin behind USDT), successfully floated on the New York Stock Exchange, amid a thrilling atmosphere. The share price almost tripled on the first day, valuing the company at nearly

\$18 billion. A few weeks earlier, the market delivered another strong signal: Coinbase, the leading US cryptocurrency exchange, joined the prestigious S&P 500 index. A first for a crypto-native company. These two events reflect the growing interest of institutional investors, increasing numbers of whom are positioning themselves on Web3 players. → CRCL → COIN

↑
A high for Circle CEO Jeremy Allaire at the company's NYSE IPO on 5 June in New York. Shares in the USDC stablecoin issuer rose by up to 235% at the height of the day.

© BLOOMBERG, GETTY IMAGES / NICOLAS TUCAT, AP

Spar pilots Bitcoin in Switzerland

Following promising trials launched in April in Zug (the renowned 'Crypto Valley') and Kreuzlingen, supermarket chain Spar is exploring the extension of Bitcoin payments to other Swiss outlets. In the two pilot stores, customers can pay for their purchases by scanning a QR code at the checkout. The system is based on the Lightning Network, a technological add-on to the Bitcoin network that enables virtually instantaneous, low-cost transactions (generally less than 4 cents per transaction). If the experiment proves successful, Spar could become one of the first major European chains to democratise cryptocurrency payments. This initiative aligns with the crypto-friendly trend in Switzerland, where more than 1,000 shops already accept Bitcoin payments, as indicated on the BTC Map platform.

PSG acquires Bitcoin

Paris Saint-Germain, the recent European football champions, are continuing their foray into the cryptocurrency world. On 29 May, at the Bitcoin conference 2025 in Las Vegas, Pär Helgesson, the Parisian club's head of Labs & Web3, revealed that PSG was holding Bitcoin in its treasury. A strategic decision designed to diversify its reserves, but also to reinforce its image as a pioneer of Web3 in sport. PSG

was among the first clubs to launch a fan token in Europe.

Solana overtakes Ethereum again in DeFi

It's becoming a habit: in April, Solana (SOL) once again surpassed Ethereum (ETH) in trading volume on decentralised exchanges (DEX), reaching \$42.85 billion over the last 30 days, compared to \$40.42 billion for Ethereum, according to specialist media outlet The Defiant. This marks a return to the trend observed since October 2024, mainly driven by the explosion of memecoins on Solana, after a brief interlude in March when Ethereum temporarily regained the lead.

JPMorgan: cryptocurrency ETFs as loan collateral

JPMorgan is breaking new ground in traditional finance. In the coming weeks, it plans to allow its trading and wealth management clients to use Bitcoin-linked ETFs, such as the iShares Bitcoin Trust (BlackRock), as collateral for loans. This move reflects the standardisation of digital assets among major institutions. While the service is currently targeted at a limited circle of wealthy clients, it marks a step towards the integration of cryptocurrencies into mainstream banking products.

Central Africa: land tokenisation commences



Ambitious venture or vision for the future? On 30 May, the government of the Central African Republic announced an unprecedented project to tokenise 1,700 hectares of public land via a national memecoin (\$CAR) issued on the Solana blockchain. The stated objective is to attract foreign investors while modernising the country's land registry. The project is as grandiose as it is controversial, with experts and NGOs highlighting the legal uncertainty surrounding tokenised land ownership. This initiative forms part of the digital strategy of President Faustin-Archange Touadéra, who had already adopted Bitcoin as legal tender in 2022, making the Central African Republic the second country worldwide after El Salvador to take this step.

↑
The President of the Central African Republic, Faustin-Archange Touadéra, arrives at a meeting at the European Council headquarters in Brussels on 4 June.

BASHING

Tesla endures, despite Elon Musk

The world leader in electric cars is suffering from a dented image caused as much by the antics of its CEO as by his complicated romance with US President Trump. Although sales have fallen, the fundamentals, and above all the technology, should enable the brand to continue advancing.

BY SERGE ENDERLIN

E

ven the most outdated phrases can still be useful. Take this one: 'as we go to press', the romance between Elon Musk and Donald Trump had just ended in a spectacular fashion, with the two men trading insults on social media. But as the new American administration has taught us, predictability is not its strong suit, so it would be unwise to claim that the two men will not reconcile or come to hate each

other even more. Anything is possible, even two reversals in a single day.

While waiting to see what happens next (or not), it should be acknowledged that Elon Musk's extreme public visibility since the beginning of the year has had a direct impact on the running of his businesses, starting with the best known of them, Tesla. On the one hand, we have a whimsical character who is easily disliked, especially in Europe, due to his seemingly favourable stance on the far-right, conspiracies and apparent xenophobic comments. On the other, an iconic brand which, in the space of a decade, has become the symbol

of a radiant future in which technology saves the climate. And wedged between, five months of uncertainty during which Musk's political whims have severely damaged the health of Tesla, one of the greatest technological and industrial successes in recent history, and with which he is identified.

"Like a dime-store Icarus, [...] he flew too close to the sun. Wrapped in the halo of his social-media superstardom, he was blinded to the reality of his cir-

© ALLISON ROBERT, AFP



cumstances until it was too late. [...] He leaves Washington with his reputation as a jack-of-all-trades [...] severely damaged. The richest man in the world had become a political liability." Writing in the *New York Times*, historian David Nasaw (City University of New York) summarises the career of an individual so reviled in recent months that he has inspired a social media campaign entitled #EverybodyHatesElon.

Toxic for his own brand

From his overexcited gesture,

eerily reminiscent of a Nazi salute, at Donald Trump's inauguration ceremony (Monday 20 January) to his sly departure from the DOGE (Department of Government Efficiency) on Friday 30 May, the tech-troublemaker played his role as Donald Trump's best ally with such pervasive pessimism that he ultimately alienated much of the public. While it had long praised his creative and disruptive genius, it has now developed an aversion for him. Of course, chain-sawing the civil

service is unpopular anywhere, even in the United States. Moreover, at the rate of his untimely outbursts and jarring posts on X (the network he owns and on which he has 220 million subscribers), Musk ultimately became toxic for Tesla, tainting the brand, despite the intrinsic qualities of its models remaining unchanged. Long considered untouchable, the Californian (for its original plant on American soil at →

↑ Elon Musk looks pensive during a press conference with Donald Trump in the White House's Oval Office on 30 May. He has a black eye, reportedly caused by a punch from his 5-year-old son during a game.

Fremont, south of Silicon Valley) and Texan (due to its headquarters in Austin) carmaker has long ceased to be the stuff of dreams. Sales are declining: -9% globally in the first quarter, but -37% on the European market. Worldwide, Tesla owners are placing stickers on their cars, declaring they purchased them “before Musk went crazy.” The man has single-handedly shattered much of the extraordinary goodwill that his pioneering, well-designed cars had garnered.

Faced with a storm of this magnitude, any listed group would implement a crisis communications strategy

According to the 2025 study by Brand Finance agency, the company’s brand’s value has declined by 26% in one year, from \$58.3 to \$43 billion. “Tesla is no longer perceived as an innovative company, but as the expression of an unstable personality,” asserts Eunice Shin, founder and CEO of brand consultancy firm The Elume Group. The American brand has just endured an even more stinging rejection. In April, for the first time, it was overtaken on the European electric vehicle (EV) market by its Chinese rival BYD. In one year, sales of the Shenzhen-based manufacturer have surged by 359%, despite the European Union imposing punitive customs duties on these imports. Tesla had dominated EV sales in Europe for years, while BYD only arrived on the Old Continent at the end of 2022.

These headwinds would be less worrying (every company experiences ups and downs) if the brand hadn’t reached such a degree of conflation between the product and the man: Tesla

is Elon Musk, and vice versa. At this level, the only comparable example that comes to mind is that of Steve Jobs with Apple; but the Cupertino guru was renowned for his Olympian calm and composure. While Tesla has thus far succeeded in the feat of not being perceived as a car company, but rather as a technology brand, de facto associated with the prowess of the other Big Tech players (the ‘Magnificent Seven’), it is now no longer a tech brand, “but a personality brand,” analyses The Elume Group’s Eunice Shin in *Digiday*.

Communications vacuum
Faced with a storm of this magnitude, any listed group would implement a crisis communications strategy to reassure potential buyers and investors, but not Tesla, which abolished its press department in 2020. Since then, there has been no counterweight, no spokesperson, no institutional communication channel to rebut the Tesla bashing. Everything flows through Elon Musk, via tweets that are as pithy as they are improvised. “Tesla’s silence is deafening. In a crisis, not communicating is tantamount to abdicating,” says Ferdinand Dudenhöffer, automotive expert and director of the Center for Automotive Research in Bochum, Germany. “The perception of Tesla is no longer dictated by its products, but by the image of its boss.”

The brand certainly continues to innovate, but innovation no longer suffices. In a saturated, competitive market that is sensitive to societal values, reputation is becoming a strategic asset. The brand will have a long road to recovery, even if public opinion may have a short memory. “It will be very difficult to correct the new perception that has taken hold,” notes Sue Benson, founder of Behaviours Agency, a

UK agency that advises brands on managing their reputation.

A volatile stock
Confronted with all the negative buzz, Tesla’s share price could logically have collapsed and the scenario taken a nasty turn for investors. Instead, we are witnessing yet another demonstration of the dissociation between media noise and actual stock market performance. So, what is the market saying?

After reaching an all-time high of \$479.86 at the close on 17 December 2024, amid the euphoria on Wall Street following Donald Trump’s election, the decline in the TSLA ticker on the Nasdaq was spectacular until 8 April this year, when it hit a low (\$221.86). This was largely due to the turmoil caused by and around Musk, but also by the threat of comprehensive tariffs brandished

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Unaffected by the current controversies, the market primarily values the company’s perception of the future and its technological prospects

An anti-Tesla demonstration on International Workers’ Day in Berlin, Germany, on 1 May. ↓

by Donald Trump. Since then, however, the price has rebounded, reaching \$362.89 on 27 May... before falling 14% in a single session on Thursday, 5 June, when Trump and Musk traded insults throughout the day. Further jolts are likely to follow, depending on the mood swings of this unusual pair.

Unnerved by Musk’s omnipresence in Washington, financial analysts initially absorbed the shock before recovering when it became clear at the end of April that the Tesla boss’s political adventure was coming to an end.

True to the legend that he cultivates, the hyperactive individual will once again pass his nights at his desk or in the factories, spending 24 hours daily in service of Tesla and SpaceX, to name just two of his best-known companies. Thus the current analyst consensus remains overwhelmingly bullish. Two factors explain why the stock market’s momentum has not been completely halted, while Elon Musk’s image seems to have been more permanently compromised.

Underlying strengths
Firstly, there’s the pursuit of technological adventure. If Elon Musk is to be believed, there will soon be driverless taxis without steering wheels or pedals on Austin’s streets. In theory, these robot taxis herald a revolution in the business model. Moreover, software updates will enable cars already on the road to acquire

these extraordinary capabilities: “There will be millions of Tesla cars running autonomously in the second half of the year,” he predicted when presenting his first-quarter results in April. As in the days when Steve Jobs announced the next breakthroughs at Apple, without necessarily succeeding in all of them, these predictions by the chief executive are always much appreciated in the analyst community.

Unaffected by the current controversies, the market primarily values the company’s perception of the future and its technological prospects. “The golden age of autonomy is now upon us for Tesla,” Dan Ives, an analyst at Wedbush Securities, who has long been one of Tesla’s most bullish supporters, told CNBC. He has just raised his price target to \$500 from \$350. According to him, “the dark chapter of early 2025 is behind us, as we now see a re-engaged Musk leading Tesla into that autonomous, robotic future.”

Secondly, it is important to remember that the volumes traded in Tesla are mainly driven by Americans, not by European shareholders outraged by Elon Musk’s aggressive outbursts against European democracies. The American retail sector, one of his fervent supporters, continues to buy TSLA massively. The major funds, such as Vanguard, BlackRock and State Street, are focusing on long-term potential, not public image; not to mention the fact that under Donald Trump, criteria of good governance and social and environmental responsibility have lost importance, which puts moral criticism into perspective. Can you say, and do, anything just because your name is Elon Musk? Clearly, public opinion and the market do not use the same barometers to measure fluctuations. ▲ → TSLA



INTERVIEW

“The dollar’s decline has begun”

For economist Marc Schwartz, author of *La nouvelle guerre des monnaies*, the major currencies no longer reflect the real balance of economic power. Between the rise of BRICS, the weakening of the dollar and the emergence of cryptocurrencies, the old order is being challenged.

BY SERGE ENDERLIN

An esteemed institution founded in 864, the Monnaie de Paris is the government establishment whose main mission is to produce the French national currency. At its helm since 2018, economist Marc Schwartz published an educational book in March 2025, co-authored with economist Christian de Boissieu, analysing the history of currencies and their recent developments (*La nouvelle guerre des monnaies*, published by Odile Jacob). While this renowned currency expert does not believe that the dollar’s collapse is imminent, despite upheavals caused by US President Donald Trump, he does believe that the decline of the US currency has begun under the impact of a new triad comprising the yuan, the euro and crypto-assets. →



Why is there talk of a new currency war?

This expression is usually used to describe exchange rate battles between countries. A country can devalue its currency to lower the price of its exports and become more competitive. But today, two new currency wars are emerging. First, there is a war for position and market share, with each of the world's major currencies (dollar, euro, yuan) trying to gain ground globally. We are also witnessing a war over digital currencies: which ones will dominate the world stage, and who will control them? The question now being asked is this: will the public currencies we know and still use today manage to coexist, and to what extent, with new private digital currencies?

“BRICS all agree that the dollar should no longer be dominant, but they are not quite sure what to use to replace it”

What does today's money supply look like in concrete terms?

Let's take the euro as an example. The money supply in circulation stands at around 16,000 billion euros. But the currency in circulation (notes and coins) accessible to individuals represents only 10% of this total, or 1,600 billion euros. The remaining 90% comprises bank money and short-term monetary investments. In fact, these days, the vast majority of money is issued by private companies: banks and credit institutions.

With what safeguards?

These companies are strictly regulated by central banks, which verify compliance with certain capital or liquidity ratios – for

example the criteria defined by the Basel III Accord, which dates from 2010. The role of central banks is therefore to control money creation, their main tool being interest rate intervention, aimed at maintaining monetary and financial stability. These mechanisms are well understood, and they function effectively. The challenge for the future is determining whether, with money becoming increasingly digital, central banks will be able to maintain the regulatory and moderating role they have today, or whether crypto-assets will supplant them.

Behind this question lies the state's role in the economy...

We are talking about public power. Money has always been an element of state sovereignty, a regalian attribute. It allows the state to intervene in the economy, to finance it and to control its development. In today's economies, central banks play the role of lender of last resort, the fireman who steps in when there is no other recourse. I am thinking here of the great financial crisis of 2008 or COVID, when the fear of a liquidity shortage became so acute among economic agents (individuals, banks, industrial companies) that only the security of having access to ultimate liquidity through central banks prevented the economy from sliding towards generalised collapse. The US Federal Reserve (Fed) assumes this role globally, since it supplies the world with dollars.

So the dollar is also the currency that sets the tone, since it still dominates today.

It is dominant, but less and less so.

Has the dollar's end begun? We've been hearing about it for so long, we wonder if it will ever happen.

There has undoubtedly been an acceleration in monetary history over recent weeks, but this development is not new. Twenty years ago, 70% of the world's foreign exchange reserves were denominated in dollars; by the end of 2024, this figure had fallen to 58%. This relative decline in the dollar's influence is linked to the rising power of emerging countries, starting with the major emerging countries, BRICS. They all agree that the dollar should no longer be dominant, but they are not quite sure what to use to replace it. The dollar (ed. note: as at Tuesday, 20 May) has lost just under 7% of its value since the start of the year against a basket of major currencies. This is significant, but it is not an unmitigated disaster either, especially as Washington seems keen to weaken the dollar slightly to boost US exports and correct the trade deficit.

This would be competitive devaluation in disguise. Could it work?

First, we need to highlight the contradictions within the Trump team. On one hand, Stephen Miran, Chairman of the White House Council of Economic Advisers, seems fairly convinced that the greenback should be driven downwards, for the reasons I have just mentioned. But I'm not certain that the dollar's value is the main reason for the US trade deficit. There are many other factors. Starting with the fact that Americans consume more than they save, which is very low compared to Europeans. American consumer society imports goods on a massive scale, which is the real source of the trade deficit. So on one hand, the US administration would like to see a weaker dollar to serve the objective of redressing the balance of trade, but on the other, the dollar remains a tool for US global dominance.

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A CURRENCY EXPERT

Chairman and CEO of La Monnaie de Paris, **Marc Schwartz** is also a senior adviser to the French Cour des Comptes. He has held numerous positions in government (Ministry of the Economy and Finance, Ministry of Culture) and in the corporate world (France Télévisions, Forvis Mazars). Known for his talents as a populariser, he has just co-authored *La nouvelle guerre des monnaies* with Christian de Boissieu, published by Odile Jacob.

How does this dominance continue to manifest itself monetarily?

Worldwide, central banks hold substantial foreign exchange reserves in dollars. Although some, notably the People's Bank of China, are trying to reduce their exposure to the US currency. For the past three years, central banks have been buying around 1,000 tonnes of gold annually on the international market, by selling dollars. Finally, even if its global influence is slowly diminishing, the dollar remains the unit of reference in commercial transactions: a barrel of oil is quoted in dollars. When a European buys oil from the Saudis, he pays in dollars, not euros. As a result, the mass of dollars in circulation is

far greater than the real weight of the US economy in world trade. The United States accounts for less than 10% of world trade, but 60% of the world's foreign exchange reserves. This discrepancy is striking.

Let's return to this positional war. Do the euro and yuan have any chance of gaining the upper hand?

Whatever indicators we use (foreign exchange reserves, trade, international transactions, etc.), the dollar remains dominant. While it currently accounts for 60% of total foreign exchange reserves, the euro represents only 20%. The dollar is therefore still three times more important than the European currency, which

remains the second most important international currency, with no other direct competitor. The other currencies lag far behind: sterling and the Japanese yen account for around 5% of global foreign exchange reserves, and the Chinese yuan for just 2-3%. What becomes immediately clear, once these positions have been established, is that they no longer correspond to the hierarchy of the world's economies. The challenge over the next 20 years will be seeing how far the real weight of the economies and their currencies can be realigned. Clearly, the euro (in the case of the EU) and the yuan (in the case of China) are likely to gain influence at the expense of the dollar, as they gain ground. →



↑
Published in March 2025, the book *La nouvelle guerre des monnaies* deciphers the history of currencies and their recent developments.

So you're ruling out the yuan as the dollar's main future adversary?

Yes, firstly because the euro represents a monetary and financial union that is far ahead of what China represents. There is also the problem of the yuan's convertibility. For a currency to be bought, there must be sufficient liquidity – not only the ability to buy it, but also to sell it easily without risking a major capital loss. If you are not sure that you can sell a currency quickly, you will limit your exposure to minimise the risk. China has certainly built up a highly export-oriented economy, but it has not gone so far as to open up its country to the international capital market. It sells its products, goods and services abroad and earns foreign currency in return. This is why it has very high foreign exchange reserves.

The other limit to the yuan's growth is the incomparable size

of the American capital market (basically, the New York Stock Exchange and the Nasdaq). In the face of this dominance, even Europe remains highly fragmented. Take the US bond market: it dominates all others, because if you want to buy European bonds, you have to choose: German, French, Italian and so on. That's the whole point of Eurobonds. When it comes to money, we are talking about the long term. The situation is not going to change in one or two years. We are talking about developments over several decades.

“The Swiss franc is undoubtedly the most stable currency in the world”

What will cryptocurrencies change?

I prefer the term ‘crypto-assets’. It has to be said that they are really popular, and no longer a passing phenomenon. In France, nearly 10% of the population have already acquired them, so it's becoming significant. There is real attraction today, because some people see it as an investment asset with the potential for substantial gains. But this also implies the risk of equivalent losses: in short, these are speculative assets. There is also a new category that appeared a few years ago, ‘stablecoins’, which is gaining importance today, and on which Americans are betting at the moment, rather than on the digital dollar. Stablecoin is a crypto-asset indexed to the dollar, for example, and backed by currency reserves, which in principle protects it from the accidents of the past... But I'd like to come back to the first quality of a currency, which is its stability, at least that's what

we're looking for. In that sense, crypto-assets cannot claim to be ‘money’, especially as they are still a long way from being universally accepted as a means of payment. This is what stablecoins seek to address.

What are the other limitations?

According to British economist John Hicks, for a currency to be ‘complete’, it must have attributes as a unit of account, a means of payment and a store of value. But nobody is using cryptos as a unit of account today. I don't know of a single company or government

that uses them to denominate prices or their own accounts. And as a means of payment... I don't know if you've ever tried to buy a loaf of bread by paying in Bitcoin or Ethereum, but I wish you luck!

As far as the store-of-value function is concerned, there's no doubt that cryptos are used as investment assets. It's just that the characteristic we're looking for in a currency, and therefore in a good store of value, is its stability over time. When you invest in euros, dollars or Swiss francs, you are looking for some form of guarantee that, in a week, six months or a year's time, your assets will not have lost 40% of their value.

You mentioned the Swiss franc. What are its characteristics?

The Swiss National Bank has managed its currency very wisely, and this is recognised internationally. The Swiss franc is undoubtedly the most stable currency in the world. It appreciates, albeit slowly, when crises loom – since the start of the year, it has gained around 9%. But the Swiss economy is too small for the money supply in francs to serve as an international benchmark. ▲

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D O S S I E R

The smart farming revolution

Autonomous tractors, spraying drones, picking robots... The digital transformation of the world of agriculture is underway, promising to improve yields while reducing the use of chemical inputs. The aim is to feed 10 billion people by 2050, while minimising the sector's environmental impact. BY BERTRAND BEAUTÉ

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Thirteen compa-
nies reshaping
agriculture

A

new wind is blowing across farms. Grouped under the banner of the neologism 'Agritech' or the expression 'Agriculture 4.0', a myriad of startups, as well as major groups, are aiming to reinvent the agricultural sector through connected machines,

autonomous robots, intelligent greenhouses and sensors enhanced by artificial intelligence (AI) algorithms. "The world of agriculture is undergoing a revolution," enthuses Ignace De Coene, equity fund manager at DPAM. An opinion shared by Otmane Jai, investor and client advisor at family office MJ&Cie: "The primary sector is experiencing a structural transformation in which digitalisation will help farms to become more productive, more precise and more sustainable." →

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The situation is urgent. Agriculture, and the food sector as a whole, face major challenges. In 2023, nearly 733 million people worldwide were still suffering from hunger, representing one person in 11 according to UNICEF. The agricultural sector will have to feed 9.7 billion people in 2050, then 10.3 billion by 2080, according to UN demographic projections. “Demand for food is set to increase by 60% between now and 2050, despite the fact that the Earth’s resources are naturally limited,” points out Otmane Jai. The surface area of arable land cannot be extended indefinitely, and this poses numerous problems. “Nearly eight million hectares of forest – twice the size of Switzerland – are destroyed annually,” points out David Thomas, portfolio manager at Robeco. “And the main reason for deforestation remains agricultural expansion.”

“We are seeing the arrival on the market of disruptive innovations that are the beginnings of a new agricultural revolution”

Florin Istrate, partner at Circle Strategy

Moreover, global warming is likely to disrupt food production in many parts of the world due to an increase in droughts and other undesirable climatic events. Last but not least, the massive use of fertilisers, pesticides and other chemical inputs is having serious repercussions on the environment (water pollution, soil degradation, loss of biodiversity). “Smart farming companies aim to address these issues,” explains Stéphanie Rheinboldt, equity analyst at Banque Heritage. “These companies offer solutions to increase crop

profitability while reducing the impact on nature.”

Looking back, the first agricultural revolution took place in the 18th and 19th centuries with the appearance of the first machines in the fields (mechanisation and then motorisation). Then, in the 20th century, the second revolution was chemical, with the advent of fertilisers and plant protection products. Together, these revolutions led to radical increases in productivity. “But since the 1970s, agriculture has not evolved significantly and we are now reaching the limits of this model,” explains Florin Istrate, a partner at Circle Strategy. “Today, we are seeing the arrival on the market of disruptive innovations that are the beginnings of a new agricultural revolution, which should enable us to develop greener, more efficient agriculture.”

This account is corroborated by Stéphanie Rheinboldt: “After 1945, agriculture launched an agricultural revolution in industrialised countries. It enabled Western nations to guarantee an abundance of food, but at the cost of soil exhaustion, repeated droughts and health problems linked to inputs. For the past decade or so, Agriculture 4.0 has been attempting to meet these challenges.”

According to a study by Research and Markets, the global agritech market is set to grow from \$24.42 billion in 2024 to \$48.98 billion in 2030, representing annual growth of 12.3%. “At the heart of this revolution is a myriad of companies of all sizes. The existing giants,

such as John Deere (United States), CNH (Italian-American), Claas (Germany) and Fendt (Germany), are often the technology leaders,” explains Dimitri Kallianiotis, technology investment specialist at UBP. “However, many startups are also emerging, such as the Dutch company AgXeed, which specialises in autonomous tractors, the German company NEXAT, which specialises in very large vehicles with interchangeable modules, and the American company Carbon Robotics, which offers robots that use AI to control weeds.” Arugga, an

© NURPHOTO, AFP

Israeli startup specialising in the automation of greenhouses using robots, is also an agritech innovator in the making.

A concrete example of technology? American agricultural equipment manufacturer John Deere has launched ‘See & Spray’. This is a system of high-resolution cameras fitted to tractors which, thanks to artificial intelligence, recognise weeds and automatically trigger the spraying of herbicide only where necessary. “It’s a win-win-win system,” stresses Ignace De Coene. “Farmers use

less herbicide, which reduces their costs, John Deere achieves better margins and consumers enjoy superior products because they are grown with fewer chemical inputs.”

The American company also markets autonomous electric tractors and sprayer drones, designed to improve crop productivity while reducing their environmental impact. Enough to appeal to farmers? “The farmers I’ve met are enthusiastic about tractors equipped with the most advanced technologies,” reports Stéphanie

Rheinboldt. In fact, the American giant is not alone in this niche: its main competitors, the Italian-American CNH Industrial and the American AGCO, are developing similar products. Corteva and BASF, both active in crop protection, are also investing in digital technologies to improve yields and the deployment of their products (see company fact sheets on p. 44 to 51).

UBP Technology Investment Specialist, Dimitri Kallianiotis, summarises the most promising agritech technologies as →

→ Farmers use drones to spray pesticides on fields in the city of Suqian, China, in August 2024.



“Digital technologies should help us to improve productivity, guarantee the traceability of our products and reduce our environmental impact”

Olivier Camille, CEO of Reitzel

REITZEL AS A PIONEER

We're heading for Aigle in the canton of Vaud, home to the headquarters of Reitzel, famous for its gherkins and

Appointed in 2022, Reitzel CEO Olivier Camille plans to use smart farming technologies to reduce the environmental impact of pickle cultivation.



pickles. “We’re strong believers in smart farming,” says Olivier Camille, CEO of the family business founded in 1909. “Digital technologies should help us to improve productivity, guarantee the traceability of our products and reduce our environmental impact.” The Vaud-based company is brimming with ideas for smart farming, and has already implemented several systems with its partner farmers.

In India, for example, where Reitzel collaborates with more than 5,000 farmers, the company has deployed an application that collects a wide range of data on crops, such as the quantity of inputs used and production volumes. “Thanks to this application, we know the productivity of each plot of land in real time, which gives us better visibility of harvests and enables us to improve yields by determining, from the data col-

lected, the optimal time to sow or apply a particular input,” explains Léopoldine Mathieu, head of Commodities and Sustainable Development at Reitzel. “For consumers, it’s also a guarantee of traceability, as we know exactly where each of our products was grown and how it was treated.”

ROBOT PICKERS

In France, where the company works with around 20 farmers, Reitzel’s greenhouse partners use electronic sensors on their crops to measure humidity and other parameters, enabling them to irrigate and add fertiliser only when necessary.

The company has no intention of stopping there. “We’re soon going to be testing a weather station connected to decision support software (DSS) to detect the risk of mildew in our gherkin crops,” explains Léopoldine Mathieu. “This will enable us to treat our plants preventively or early in the event of disease.” For the future, the company is planning to utilise autonomous picking robots, for example. “At present, this type of machine remains very expensive, and the technology is not yet mature for harvesting gherkins, which requires the precision of a goldsmith,” explains Léopoldine Mathieu. “But it’s going to happen.”

Californian startup AFT (Advanced Farm Technologies), for example, has developed robots that distinguish ripe fruit and pick it automatically, using image sensors and artificial intelligence software. Its machines work particularly well on strawberry and apple crops. However, Karen Kharmandarian, CEO and partner at Thematics Asset Management, warns: “Robot picking technology is not yet mature. These machines still struggle to operate in an

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↑ An autonomous rice transplanting machine transplants seedlings in a rice paddy in Zhaohe, eastern China, in June 2024.

unstable environment and do not always have the necessary finesse to pick fruit without damaging it. This technology is not yet fully developed and not yet economically viable.”

In fact, to continue its development, AFT had to sell the intellectual property of its apple-picking robots to the giant CNH in April 2025. “Robotics and automation will ultimately help to reduce production costs in agriculture, make work less arduous, and improve precision,” stresses Robeco’s David Thomas. “What’s more, automation will solve the labour shortage in the primary sector, which now accounts for just 2% →

Many obstacles remain

“The digitalisation of agriculture will take time to become a reality,” cautions Dimitri Kallianiotis, technology investment specialist at UBP. “There are many reasons for this slow uptake. There is considerable reluctance to change, especially as the majority of farmers are close to retirement,” continues Kallianiotis. “The best approach would undoubtedly be to concentrate our efforts on training young farmers, who are more receptive to new technologies and more aware of climate and environmental issues.”

But the main barrier to adoption is undoubtedly the cost of these new technologies in an economically fragile sector. In France, for example, more than 40% of

farms are in debt. According to Agreste, the French Ministry of Agriculture’s statistics and forecasting service, debt will average €236,000 per farm in 2023 (for a Gross Farm Product of more than €25,000), a figure that was only €50,000 in 1980. “Adopting new technology is always a risk for a company,” points out Lee Qian, investment manager at Baillie Gifford. “To become established, smart farming technologies will have to demonstrate that they bring real economic added value to farmers.” Then there’s the social question. “If there are autonomous farms tomorrow, where will the jobs be?” asks Florin Istrate of Circle Strategy. “And how will the value created be distributed?”



← A trailblazer in vertical farming, the American company Plenty Unlimited is experiencing financial difficulties despite its innovations. However, according to the Federal Office for Agriculture, vertical farming allows vegetables to be grown with yields up to 200 times higher and water consumption up to 250 times lower than in open fields.

of the workforce in developed countries like Switzerland, compared with 50% at the end of the 19th century (see infographic on p. 36).” Lee Qian, investment manager at Baillie Gifford, points out: “The number of people who want to work in agriculture is declining constantly. Automation can help to solve some of this problem.”

In fact, farms are beginning to adopt digital technologies. “In the United States, a third of farms use agricultural software; in Germany, one in 10 farms,” explains Stéphanie Rheinboldt, equity analyst at Banque Heritage. “At present, it is mainly the very large farms in developed countries that are using digital technologies. But Agriculture 4.0 would be particularly beneficial in developing countries, where the majority of small farms are concentrated and where climate change is most visible.”

Is now the right time to invest in agritech companies? “Smart farming is a very exciting long-term investment sector,” says Lee Qian of Baillie Gifford. “The future of agriculture is a huge challenge, given population growth, the adoption of increasingly rich foods and environmental problems. Against this backdrop, demand for smart farming solutions is set to grow in the coming years.”

But the sector remains relatively young. “I firmly believe in the potential of smart farming,” continues David Thomas. “But we’re still in the early stages.

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This sector could represent an investment opportunity, but only with a long-term vision.” Otmane Jai agrees: “Agritech is still an emerging sector, driven by a large number of startups and technologies that are still being structured. In this context, any investment is accompanied by real uncertainty as to which technologies or players will dominate the market in the medium term.”

For example, in March 2025, Plenty Unlimited, an innovative US vertical farming company backed by high-profile investors such as Jeff Bezos, SoftBank and Walmart, had to file for Chapter 11 bankruptcy protection. The reason? Digital farms are still struggling to compete with the lower prices of products from traditional agriculture. This represents a stark illustration of the challenges that the industry still has to overcome, despite its promising innovations (see inset opposite).

In the short term, therefore, smart farming should begin to take root in the most profitable crops, as seen with Plenty Unlimited. After restructuring and emerging from bankruptcy in June, the company will now concentrate solely on strawberry cultivation. Stéphanie Rheinboldt confirms this, “Agriculture 4.0 is particularly well suited to high value-added crops such as strawberries. Their fragility requires appropriate harvesting methods and treatments against disease.”

A CASCADE OF ACQUISITIONS

“In 2021, the agritech bubble burst,” says Florin Istrate of Circle Strategy. “Today, the sector is in a phase of rationalisation where natural selection is operating. But the fundamentals of the sector are solid because, one way or

another, the need for food is not going to disappear.” Proof of this potential is the growing number of acquisitions. The giant John Deere, for instance, has purchased several startups, including Blue River Technology, which developed the ‘See & Spray’ technology in 2017, for \$305 million; Bear Flag Robotics in 2021 for \$250 million; SparkAI, an artificial intelligence specialist in 2023 for an undisclosed amount; and acquired the licences for Mineral in 2024, specialising in robotics and AI. As for its rival CNH Industrial, it acquired Hemisphere GNSS, a satellite positioning specialist in 2023; Raven Industries, a company active in precision agriculture in 2021, and, as mentioned above, the intellectual property for AFT’s apple-picking robots in 2025.

“But the fundamentals of the sector are solid because, one way or another, the need for food is not going to disappear”

Florin Istrate, partner at Circle Strategy

“Traditional agricultural players like John Deere are expanding into digital, robotics and AI,” notes Karen Kharmandarian, CEO and partner at Thematics Asset Management. “They have gained skills in these areas by acquiring more and more specialist startups. For the time being, however, agritech accounts for only a small proportion of their sales.” Kharmandarian continues: “Agriculture is lagging behind industry in terms of digitalisation. The potential is there because the addressable market is large and the penetration rate fairly low. But digitalising agriculture is going to take time.” This view is shared by Elliott

Grant, CEO of startup Mineral, who said in August 2024 when John Deere acquired some of its licences: “The challenge of sustainable agriculture is still ahead of us. But it’s a relay race, not a sprint.” ▲

Will big tech be entering the field?

The question divides experts. Will the Magnificent Seven, specialists in data and its exploitation, invest in the agricultural sector? For Karen Kharmandarian, CEO and partner at Thematics Asset Management, the answer is yes: “Big tech companies such as Alphabet, Microsoft and others will leverage artificial intelligence to provide new solutions for farmers, particularly in terms of weather forecasting and agricultural research.” Lee Qian, investment manager at Baillie Gifford, does not share this view: “The GAFAMs have the data, but not necessarily the necessary knowledge in the very specific sector of agriculture. What’s more, they don’t have a sales network. The barriers to entry into the agricultural market are very high, protecting the large existing players.” As a result, in August 2024, Alphabet closed down its agricultural startup Mineral, which specialises in robotics and AI, selling some of its licences to John Deere. Despite promising advances, the company was facing development costs that were too high.

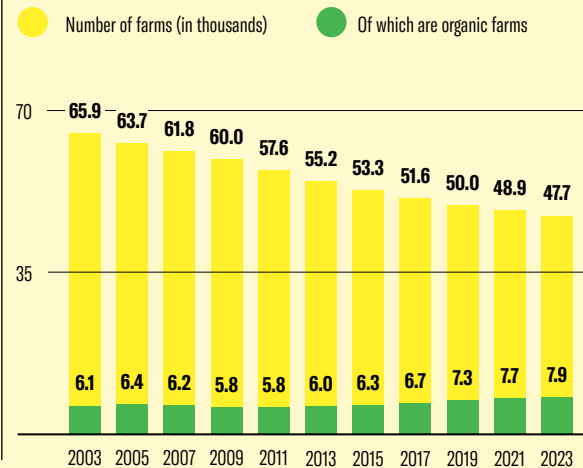
The agricultural paradox

The number of farmers worldwide continues to decline, but the sector's yields have exploded thanks to technological innovations. A case in point is Switzerland.

BY BERTRAND BEAUTÉ, INFOGRAPHIC: AURÉLIEN BARRELET

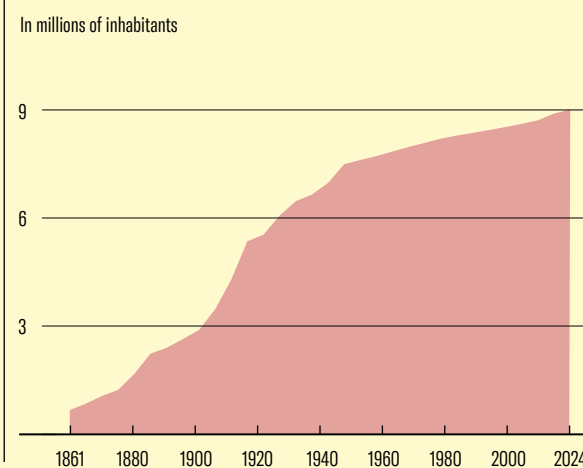
Fewer and fewer farms...

In 20 years, the number of farms in Switzerland has fallen by nearly 30%. Organic farms, still a small minority, have increased by 30%.



More and more mouths to feed...

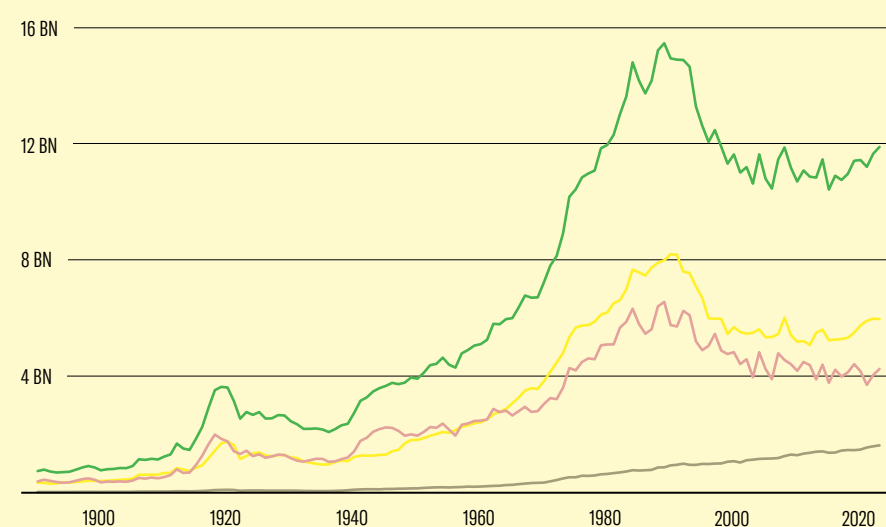
The Swiss population surpassed the symbolic threshold of 9 million residents in 2024.



... but steady yield

The total production value of Swiss agriculture will amount to around 12 billion Swiss francs in 2024.

— Total
— Livestock production
— Crop production
— Other products and services



SOURCES: THE FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS, OFFICE FÉDÉRAL DE LA STATISTIQUE

Globally, a productivity boom



10.3 BN

The world's population is expected to peak in 2080 before beginning to decline, settling at 10.2 billion people in 2100, according to the UN.

+45%

The increase in meat production between 2000 and 2020, to 337 million tonnes, more than a third of which is chicken.

866 M

The number of farmers worldwide in 2021, compared to 1.043 billion in 2000, representing a decline of 17%. The decline is even more pronounced in developed countries.

+52%

The increase in crop production between 2000 and 2020, to 9.3 billion tonnes.

+125%

The increase in vegetable oil production between 2000 and 2019. Growth driven by the rapid rise of palm oil.

+70%

The increase in pesticide use between 2000 and 2022. However, this figure has remained stable since 2012.



“The smartphone has transformed everything”

The Swiss research institute Agroscope, based in Ettenhausen in Thurgau, is studying the implementation of digital technologies in agriculture. Thomas Anken, head of the centre's Digital Production research group, explains the challenges involved. BY BERTRAND BEAUTÉ

Agroscope – the Swiss government's competence centre for agricultural and food research – may not be the best-known Swiss research institute, but it is undoubtedly one of the most important, as it focuses on a vital resource: food production. In Ettenhausen, in the canton of Thurgau, Thomas Anken, head of the Digital Production research group at Agroscope, is studying the digitalisation of agriculture and smart farming. He talks to *Swissquote Magazine* about the potential of digital technologies for Swiss agriculture.

In recent years we've heard considerable talk about 'agritech', 'agriculture 4.0' and 'smart farming'. But beyond these buzzwords, what is really happening? Is agriculture truly undergoing a digital revolution?

It's not just about marketing. Like other sectors, such as industry, agriculture is undergoing a digital transformation. In some areas of agriculture, these technologies are already well established. For example, 3,000 dairy farms in Switzerland use milking robots – automated systems in which the cows can go at will to be milked. The figure of 3,000 farms using milking robots is interesting because it shows both the democratisation of this technology, and also how far we still have to go, given that there are around 17,000 dairy farms in our country. But the proportion of robots probably exceeds 50% on new installations.

But what interest do dairy farmers have in adopting these expensive milking robots?

These systems, which collect a wealth of data on animals and production, also offer numerous direct benefits. They improve the hygiene and health of the cows, slightly increase productivity and reduce the physical workload and drudgery of farmers. What's more, these machines also compensate for the shortage of staff in the primary sector. In 1960, almost 140,000 farms produced milk in Switzerland. Now there are just 17,000. Nearly nine out of 10 have closed down, and there's more to come. But thanks largely to technology, productivity has remained constant (ed. note: see infographic on p. 36).

What other technologies are being democratised? Just as in the automotive sector, tractors are becoming increas-

ingly connected and automated, thanks to numerous sensors and the use of GPS data. Once again, these systems are helping to reduce the drudgery of farmers' work while increasing productivity. The arrival of the first autonomous vehicles for various tasks, including weeding, has opened up new possibilities.

It's easy to imagine autonomous tractors in a huge field in the United States. But are these machines suitable for small plots in Switzerland?

The preconception that only large farms with huge plots of land can benefit from smart farming is wrong. When a technology offers real added value, it is also used on small areas. In Switzerland, for example, around 90 spraying drones are in use. They are used to spray chemicals on vines planted on steep terrain, such as in the Valais, that other machines cannot access. In this way, they are an advantageous replacement for manual spraying, which is very difficult to do by hand. Furthermore, the arrival of intelligent sensors, which accurately monitor relevant parameters such as cow udder infections or activity, means that the herd can be better managed.

It should also be noted that many farms use low-cost technologies, such as automated feeding of concentrates to dairy cows, which is standard practice on most farms.

What can these intelligent sensors achieve for farmers?

Generally speaking, the new smart farming technologies should in future enable farmers to give crops and animals exactly what they need, when they need it. Smart farming therefore promises higher productivity, fewer

plant protection products, early detection of disease in animals and plants, and ultimately higher product quality. The simplest example is the moisture sensor, which measures the presence of water in the soil. Depending on the data collected, it will enable farmers to water at the right time and in the right quantity. But by going a step further and combining humidity data with weather data, it is possible to predict the appearance of certain diseases, such as potato mildew, enabling more precise treatment.

“Nature is much more complex than a factory. It is always changing and dependent on a huge number of parameters”

This type of decision-support software is already well established in industry. What about in agriculture?

Industry is much more advanced than agriculture when it comes to using data to improve processes. Even though farm information systems (FMIS), the equivalent of SAP software in industry, are beginning to be developed, many farmers still write down on paper the amount of pesticide they apply to each plot. This digitalisation of agriculture will take time. It's not a sprint, it's a marathon.

This delay is partly due to the fact that agriculture is a conservative environment, but it is

also because nature is much more complex than a factory. It is always changing and dependent on a huge number of parameters, which makes it more difficult to use data and requires much more experimentation. Plus, the willingness to invest in new technologies is lower than in industry.

Speaking of conservative circles, what is the level of acceptance of these new technologies among farmers?

A bit like society itself, some farmers are pioneers who want to use all the technologies, while others are more reticent. But the advent of the smartphone has been a real revolution in this area. Every farmer can now have applications that allow them to manage certain aspects of production, such as orders and stocks.

And what about the consumer? Are they prepared to eat food grown by autonomous AI-powered robots?

So far, there has been no debate in society on this subject. I think it's important to explain to consumers that these new technologies will help them to manage soil and water better, while reducing the use of chemicals, which will ultimately lead to better food. This will have a positive impact on the environment.

What technologies are you currently developing at Agroscope?

We have several projects. One, for example, is to use cameras and image recognition software to automatically identify weeds. The data is then transmitted to a robot that independently weeds the plot. Another project involves developing a sensor that measures plant stress, enabling fully automated irrigation that is perfectly adapted to the crop's needs. ▲

Nature to combat crop pests

Fighting the organisms that ravage crops with natural solutions rather than chemical pesticides – that's the green promise of biocontrol. We look at the rapidly expanding sector.

BY BERTRAND BEAUTÉ

➔ The autumn armyworm caterpillar, pictured here on a leaf, is a terrible pest. These insects have qualities that make them particularly difficult to control: as moths, they fly very well, reproduce in large numbers (females can lay up to 1,000 eggs during their lifetime) and their larvae feed on a wide variety of plants. In addition, they develop resistance to pesticides very quickly.

While the tiger mosquito is increasingly present in Switzerland, as the media remind us annually, another invasive species is quietly establishing itself in our latitudes: the autumn moth (*Spodoptera frugiperda*). "This is a moth that originated in tropical and subtropical regions of America and has now spread globally. It was observed in Africa from 2016, in India and in China in 2018, in Australia in 2020 and since 2024 it has been present in Europe," explains Ted Turlings, honorary professor at the Institute of Biology at the University of Neuchâtel.

"There is significant interest from public authorities, because it is a less toxic and more specific solution than chemical products"

Florin Istrate, partner at Circle Strategy

The problem: in its caterpillar state, this polyphagous invasive species causes major damage to plants, attacking mainly maize fields, but also more than 80 other crops including wheat, sorghum, millet, sugar cane, vegetable crops and cotton. "The armyworm has wreaked havoc in Africa, increasing the risk of famine," continues Turlings. According to 2018 estimates from FAO, up to 17.7 million tonnes of maize could be lost annually on the African continent due to the armyworm – enough to feed tens of millions of people.

To prepare for this threat, the European Union has placed *Spodoptera frugiperda* on its list of priority quarantine organisms for 2023, and has implemented measures to prevent its introduction, establishment and spread. To combat the armyworm, farmers can spray their crops with chemical insecticides. However, beyond environmental concerns, intensive use of these products leads to resistance – a major problem with this species of caterpillar.

Researchers at the University of Neuchâtel have developed another, more natural approach to combating the autumn caterpillar: a gel filled with nematodes, i.e., microscopic worms. "The gel, which is attractive to the caterpillar, is placed on the plant. The nematodes then act as a natural parasite that kills the caterpillars," explains Turlings. Tested in Rwanda in 2024, the process proved to be as effective as chemical products. In treated

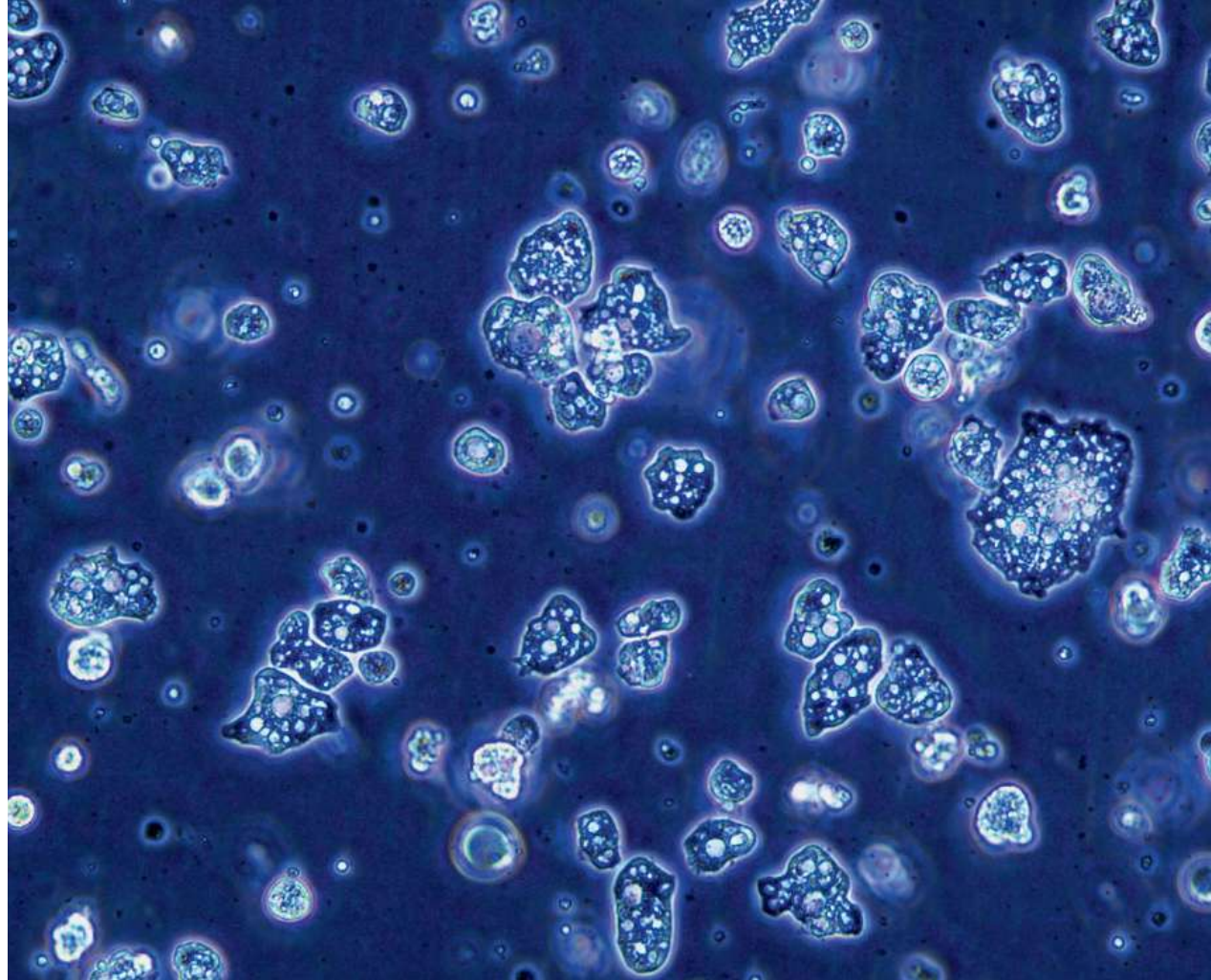
crops, caterpillar infestations were halved and maize production increased by one tonne per hectare. "Nematodes do not accumulate in nature and leave no traces," Turlings points out. "They therefore have no effect on the environment or human health, unlike traditional pesticides."

Employing organisms to kill others is not a new concept. Our ancestors already used ladybirds to eliminate aphids. However, for the past few years, this approach – known as biocontrol – has been expanding rapidly as chemical substances are banned, particularly in Europe. "Biocon-

trol is booming," confirms Florin Istrate, partner at Circle Strategy. "There is significant interest from public authorities, because it is a less toxic and more specific solution than chemical products. And the potential applications are enormous. It's going to transform the way we approach agriculture. All the giants in the sector are now examining this."

German giant Bayer, for example, markets Rhapsody, a bacterial product effective against *botrytis*, an infection also known as grey rot. BASF and Syngenta also have a growing range of biocontrol products. According to Market and Markets, the global biocontrol market is expected to grow from €6.6 billion in 2022 to €13.7 billion in 2027, representing annual increase of 15.8%. In Europe, biocontrol now represents 10% of the overall crop protection market, with revenues estimated at €1.6 billion – a figure that has doubled in the past decade, according to the International Biocontrol Manufacturers Association. The chemical giants are not the only ones coveting the biocontrol market. Small, fast-growing companies like France's Amoéba and Belgium's Biotalys are also aiming to make their mark (see profiles on pages 44 to 51).

Heading for Chassieu, on the outskirts of Lyon biotech company Amoéba opened its doors to Swissquote Magazine at the end of May. Notably, this French innovator has some good news to announce. As April came to a close, the company obtained emergency marketing authorisation in France for 120 days for its biocontrol product Axpera, to help winegrowers combat downy mildew from the 2025 season. A few days later, on 6 May, ➔



↑ The Willaertia amoeba used by Amoéba in its biocontrol product, which is particularly effective against downy mildew in grapevines.

the Netherlands granted an exceptional exemption for large-scale greenhouse trials of Axpera on several crops (tomatoes, cucumbers, strawberries, as well as roses and gerbera), with the added bonus of being able to consume the fruit and vegetables harvested during the trials.

“Emergency.” “Exceptional dispensation.” What warrants such urgency? An amoeba called Willaertia magna C2c Maky discovered in the thermal waters of Aix-Les-Bains. “Over the past few years, we have carried out more than 600 field trials in 19 different countries, which have shown that this amoeba has extraordinary properties,” enthuses Benoit Villers, Chairman of Amoéba’s Board of Directors.

The global biocontrol market is expected to grow from €6.6 billion in 2022 to €13.7 billion in 2027, representing annual increase of 15.8%

At present, for example, wine-growers use copper to combat mildew. The problem is that after decades of use, agricultural soils have elevated copper content because this metal does not degrade. While natural levels of copper can range from 3 to 100 milligrams of copper per kilogram (mg/kg) of soil, this concentration can reach 500 mg/kg in vineyards. In trials, treatment with Axpera made it possible to reduce the use of copper in vines by 83%, while maintaining the same effectiveness in com-

bating mildew as that observed with a total copper treatment. On Amoéba’s premises, the amoeba is cultivated in 500-litre bioreactors. Besides vine mildew, this amoeba could be used to replace or reduce the use of chemical fungicides in numerous crops, including tomatoes, cucumbers, strawberries and potatoes.

“The European Union is banning more and more chemicals because of their toxicity. And farmers are frustrated because they don’t always have other substances to treat their crops,” notes Benoit Villers. “In this context, the development of biocontrol solutions like ours offers farmers a very compelling alternative.” ▲

© AMOÉBA

The resurgence of fermentation

Fermentation, a technique well known to our forebears and then relegated to certain crops, is making a strong comeback thanks to advances in biotechnology. BY BERTRAND BEAUTÉ

Fermentation is not a new technology. Far from it. Since the dawn of time, people have been utilising this natural and spontaneous process to produce some of their foodstuffs, whether they realised it or not. Fermentation involves allowing micro-organisms (bacteria, fungi such as yeast, etc.) to act to transform food. Yoghurts, wine, beer, bread, cheese, soy sauce and Korean kimchi are all emblematic examples of fermentation, among the 5,000 or so fermented products worldwide.

Over the past decade or so, this ancient method has been experiencing a renaissance with the advent of precision fermentation, as opposed to traditional fermentation. What is precision fermentation? The result of advances in biotechnology, precision fermentation involves genetically modifying micro-organisms so that they synthesise food proteins in a bioreactor.

A pioneer in the sector, the unlisted American company Perfect Day is marketing a milk protein identical to that produced by cows. This makes it possible to produce food with the same nutritional properties as cow’s milk, but without lactose, cholesterol or antibiotics, and with less environmental impact because it is produced without animal exploitation. Other companies around the world are employing precision fermentation to produce egg proteins, oil, fat, honey and gelatine.

The company Perfect Day is marketing a milk protein identical to that produced by cows

“Precision fermentation could represent a massive change for the food industry,” points out David Thomas, portfolio manager at Robeco. This view is shared by the Food and Agriculture Organization (FAO), which, in a report on

the subject published in April 2025, believes that “precision fermentation is paving the way for a transformation of the food industry, offering a new method to produce food by harnessing the power of micro-organisms”.

Advocates of precision fermentation praise its benefits for the planet. This technique could limit intensive livestock farming, which is one of the principal sources of pollution (high water consumption and CO₂ emissions), and reduce animal suffering. However, there

are still numerous obstacles to overcome, not least the crucial question of costs, which remain significantly higher than those in the agricultural sector, but should decline as production volumes increase.

Consumers on this side of the Atlantic are often wary of genetically modified organisms. Nevertheless, this technique has been employed since the 1980s in sectors other than food, notably in the pharmaceutical industry to produce insulin. ▲



13

companies reshaping agriculture

Many companies worldwide are driving innovation in agriculture and reinventing it for the future. Here is our selection.

BY BERTRAND BEAUTÉ



Deere & Company
Agricultural
equipment leader

The Consumer Electronics Show (CES) – the mega-event for consumer electronics held annually in Las Vegas – is not just attended by manufacturers of smartphones and digital gadgets. At the latest edition, held in January, the agricultural equipment company Deere & Company, known for its John Deere brand, presented its second-generation autonomy kit. Comprising 16 cameras, it enables the tractors and other agricultural machinery marketed by the company to operate without human intervention. What about farmers? Via a dedicated application, they can access video feeds in real time and adjust various parameters such as speed. This autonomy kit will soon be available as pre-

installation for new machines and as an adaptation package for certain existing machines.

“John Deere remains a very well-positioned company”

Ignace De Coene, equity fund manager at DPAM

This is yet another innovation for Deere & Company. Founded in 1837 by John Deere, the company established its reputation by developing the first steel plough made of cast steel, which greatly facilitated the work of American farmers at the end of the 19th century. Almost 200 years later,

↑ Igino Cafiero, CEO of Bear Flag Robotics, a robotics and automation company acquired by Deere & Company in 2021, speaks at John Deere’s press conference at CES in Las Vegas on 6 January 2025.

Deere is globally renowned for its tractors and other agricultural machinery, recognisable by their yellow and green colours, which are deployed in fields worldwide. Innovation remains at the heart of the operation. In particular, the company has developed a sprayer drone in conjunction with the German company Volocopter. “John Deere remains a very well-positioned company, whose strength lies in its distribution network, points out Ignace De Coene, equity fund manager at DPAM.

In 2024, however, the company experienced a decline in sales of 15.6%, to \$51.7 billion, compared with \$61.3 billion in 2023. This decline was confirmed in 2025 (revenues fell by 22% in the first half of

2025, compared with the same period a year earlier). For the year as a whole, Deere is forecasting a 30% decline in sales of large agricultural machinery in the United States and Canada (regions which account for 64% of its revenues) and a 5% fall in Europe, while the Asian and South American markets are expected to remain stable. Despite this challenging environment, investors continue to believe in the value of the share, which has appreciated by more than 20% since the start of the year. A majority of analysts recommend holding Deere & Company shares.

FOUNDED: 1837 HEADQUARTERS: MOLINE (US)
EMPLOYEES: 75,800 REVENUE 2024: \$51.7 BN → DE

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Novonesis
The Danish biosolutions powerhouse

A new food giant has emerged. In January 2024, Danish companies Novozymes and Chr. Hansen merged to create Novonesis – a heavyweight with over 10,000 employees

and sales of €3.9 billion in 2024. Its domain? Developing and marketing biosolutions as an alternative to chemical products. In practical terms, Novonesis utilises micro-organisms – whether genetically modified or not – to produce various molecules (notably enzymes) that are subsequently deployed across

↑ Mikako Sasa, a mycologist at Novonesis, studies natural samples in search of microorganisms that produce enzymes with relevant properties.

a wide variety of industries, ranging from pharmaceuticals to food, energy and agriculture.

In the food industry, for example, Novonesis has developed FreshQ, an innovative molecule that extends the shelf life of dairy products by seven days. The company emphasises

that 80% of discarded yoghurt products are disposed of because their shelf life is too short.

Novonesis has developed an innovative molecule that extends the shelf life of dairy products by seven days

In the agricultural sector, the company has developed a comprehensive range of bio-control products to protect plants against numerous diseases, particularly biofungicides. The company's Agriculture, Energy & Tech division accounts for 36% of its sales, and its Food & Beverages division 33%. The remainder of the company's revenues derive from household products (19% of sales) and pharmaceuticals (12%). In June 2025, Novonesis expanded further by acquiring Swiss flavour, fragrance and ingredient specialist DSM-Firmenich's stake in Feed Enzymes Alliance, for €1.5 billion. This external growth strategy has attracted investors: since the start of the year, Novonesis shares have risen by nearly 15%, and most analysts continue to recommend purchasing the stock.

FOUNDED: 2024 HEADQUARTERS: KONGENS LYNGBY (DK)
EMPLOYEES: 10,000 REVENUE 2024: €3.9 BN →NSIS-B



← One of Local Bounti's greenhouses in the United States. The company has six production sites.

Local Bounti
Vertical farming innovator

Gigantic greenhouses whose interiors sometimes resemble a laboratory or a cleanroom in the electronics industry. The American startup Local Bounti is among these vegetable growers aiming to revolutionise agriculture through controlled environment production, combining vertical farming and hydroponics (on neutral substrates rather than in soil). According to the company, its patented technology uses 90% less water and 90% less soil than traditional agriculture.

The company is demonstrating robust growth

With six factories already operational and 13,000 retailers, including Amazon Fresh and Walmart, the company is demonstrating robust revenue growth. In 2024, Local Bounti generated sales of \$38.1 million,

up 38% on 2023. This growth was confirmed in 2025, when revenues rose by a further 38% in the first quarter of this year. Sufficient to attract investors? Since the start of the year, Local Bounti shares have lost 5% of their value, hovering around the two-euro mark. This is because the company remains in the red: in 2024, Local Bounti recorded a net loss of \$119.9 million, compared with \$124 million a year earlier. "Many startups specialising in vertical farms are struggling to achieve profitability," points out Ignace De Coene, equity fund manager at DPAM. "Their products are often more expensive than those of traditional agriculture." However, the experts remain optimistic: the two analysts who follow the company recommend buying the share.

FOUNDED: 2018 HEADQUARTERS: HAMILTON (US)
EMPLOYEES: 300 REVENUE 2024: \$38.1 M →LOCL

© NOVONESIS / LOCAL BOUNTI

BIOTALYS
The Belgian biocontrol innovator

A spin-off from the Flemish Institute for Biotechnology (Vlaams Instituut voor Biotechnologie), this company

is focusing on precision fermentation (see also p. 40) to produce proteins used as biocontrol solutions in agriculture,

offering an alternative to chemical pesticides. Its most advanced product, a fungicide called Evoca designed to combat

Botrytis and mildew, is awaiting approval in Europe and the United States.

FOUNDED: 2013 HEADQUARTERS: GHENT (BE)
EMPLOYEES: 60 REVENUE 2024: €3.2 M →BTLS

HYDROFARM
The agricultural equipment provider

Founded in 1977 and listed on the stock market since 2020, this small American company develops and markets all

the equipment required for greenhouse cultivation in a controlled environment, including nutrients, lamps, atmos-

pheric control systems and hydroponic systems. The sole analyst covering the stock recommends holding the shares,

which have declined by 40% since the start of the year (as at end-May).

FOUNDED: 1977 HEADQUARTERS: SHOEMAKERSVILLE (US)
EMPLOYEES: 300 REVENUE 2024: \$190.3 M →HYFM

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Amoéba

Harnessing microscopic power

There is an atmosphere of relief, even pride, at the Amoéba greentech facility in Chassieu. “Over the past few years, we’ve conducted more than 600 field tests, and now things are finally accelerating,” says Swiss businessman Benoit Villers, chairman of Amoéba’s board of directors. The company has indeed overcome numerous obstacles since its founding in 2010.

Let’s take a look back. In 2001, Professor Pierre Pernin of Lyon University discovered Willaertia magna C2c Maky in the thermal waters of Aix-Les-Bains. Behind this cryptic name lies a single-celled microorganism (an amoeba) with remarkable natural properties. “Willy”, as it is known, is capable of destroying microorganisms that are pathogenic to humans, particularly Legionella pneumophila, by phagocytosis. This discovery led to the filing of a patent in 2006, and Amoéba was created in 2010 by Fabrice Plasson to harness it. The concept is to utilise Willy’s biocidal properties to treat water.

To finance its development, Amoéba was floated on the stock market in 2015 at a price of €8.3 per share, raising €13.2 million. Promising results saw the share price soar rapidly, ex-

ceeding the €30 mark in 2016. And then... Europe refused to authorise the marketing of Amoéba’s product. The reason? Willy is an amoeba, a living organism. The authorities were unwilling to take any risks, given that five amoebae – out of the 15,000 recorded on the planet – are pathogenic to humans. In 2019, Amoéba became a penny stock – a share worth less than one euro – and had to completely reinvent itself. “As part of a study, we subsequently discovered that our amoeba in lysate form, i.e., mechanically crushed, retained fungicidal power,” recounts Jean-Baptiste Eberst, director of Regulatory Affairs at Amoéba. “This was excellent news, because with a product containing a dead amoeba, we could free ourselves from the regulatory issues associated with the use of a living organism.”

Amoéba’s sales will commence in 2026

Since 2019, the company has conducted more than 600 field trials in around 15 countries to prove the effectiveness of its product, called Axpera, against fungi such as downy mildew, powdery mildew, rust and fusari-



← Amoéba employees work around a 500-litre bioreactor in which amoebas are cultivated. The company is the only one in the world capable of cultivating amoebas on an industrial scale.

um, which attack a wide range of crops (vines, potatoes, soya, bananas and vegetables).

“Unlike chemical fungicides or copper, which is used in vineyards to treat mildew, our product has no impact on the environment or workers’ health,” stresses Jean-François Doucet, CEO of Amoéba. In May, the 27 member states of the European Union voted unanimously in favour of approving Willaertia magna C2c Maky lysate as a low-risk substance. Following this decision, Amoéba signed an agreement in June 2025 with Dutch biocontrol specialist Koppert, which will distribute this biofungicide from 2026 under its own brand. “This is a real turning point for Amoéba, which is moving from a research company to a commercial enterprise,” anticipates Jean-François Doucet.

The start of a stock market revival? The two analysts who follow Amoéba believe so. They have issued a buy recommendation, even though the share price has already appreciated by 20% since the start of the year (as at end-May).

FOUNDED: 2010 HEADQUARTERS: CHASSIEU (FR)
EMPLOYEES: 20 REVENUE 2024: € 0 → ALMIB

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Village Farms

Controlled agriculture pioneer

The year began exceptionally well for Village Farms on the Nasdaq. Since January, the Canadian company’s share price has risen by almost 50%, lifting it out of the unenviable category of penny stocks (shares worth less than one dollar). It was about time. A pioneer in Controlled Environment Agriculture (CEA), Village Farms opened its first greenhouses more than 35 years ago. According to the company’s own figures, its production technology now uses 97% less land and 86% less water than traditional agriculture. The company produces tomatoes, cucumbers and peppers in particular.

The company has changed course to focus on the cannabis market

However, the company has changed course. On 2 June 2025, Village Farms formalised the sale of the majority of its historic fruit and vegetable business to a private joint venture. It will retain a minority stake but will no longer operate the business. This decision confirms a strategic reorientation that began in 2020 with the company’s entry into the recreational cannabis market in Canada, where it is now the third largest producer. The company also exports part of its production to Israel and Germany (since 2023), Great Britain (2024) and New Zealand (2025). It also opened a facility in the Netherlands in January 2025. Analysts are backing this strategy of expansion and diversification. The three experts who follow this stock recommend buying it.

FOUNDED: 1989 HEADQUARTERS: DELTA (CA)
EMPLOYEES: 1,400 REVENUE 2024: \$336.2 M → VFF

BASF

The chemical industry leader

Well-known for its chemical products (pesticides, fertilisers and other plant protection products), the German giant BASF has in recent

years developed a range of biocontrol products (see also p. 40). This is a way to meet increasingly restrictive regulatory requirements. Although the

target of reducing the use of conventional crop protection products in the EU by 50% by 2030 was set aside in early 2025, Europe continues

to encourage more sustainable agricultural practices, reinforcing the relevance of BASF’s biocontrol offering.

FOUNDED: 1865 HEADQUARTERS: LUDWIGSHAFEN AM RHEIN (DE)
EMPLOYEES: 112,000 REVENUE 2024: €65.26 BN → BASF

AGCO

The American manufacturer

Like its competitors, AGCO, an American manufacturer of agricultural equipment, is focusing on precision farming. Among other

products, the company markets electric tractors and is developing autonomous vehicles, particularly since the acquisition of Canadian

JCA Industries, a specialist in the development of autonomous software for agricultural machinery, in 2022. A majority of analysts

recommend holding AGCO shares, which have risen by 10% since the start of the year.

FOUNDED: 1990 HEADQUARTERS: DULUTH (US)
EMPLOYEES: 25,000 REVENUE 2024: \$11.7 BN → AGCO

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CNH Industrial
The Fiat of tractors

Electrification and fully autonomous driving are not exclusive to cars. They could even become the norm in the fields first. In 2022, the Italian-American group CNH Industrial – the world’s second-largest manufacturer of agricultural machinery behind John Deere – presented the very first electric and autonomous tractor, the New Holland T4 Electric Power. It promises zero-emission agriculture. Since then, the competition – led by John Deere, but also Kubota and AGCO – has released equivalent models, launching the race to conquer the market for high-tech, so-called ‘precision’ agriculture, which aims to weed, plant, water and treat at precisely the right time and in exactly the right place, to increase yields and conserve every resource.

To capture this market, CNH – like its competitors – is actively

acquiring promising startups specialising in robotics or artificial intelligence. In 2021, for example, the company acquired the innovator Raven Industries, a US specialist in autonomous solutions for agriculture, for \$2.1 billion. “Precision agriculture and autonomy are critical components of our strategy,” CNH CEO Scott Wine declared at the time, to justify this substantial acquisition.

“Precision agriculture and autonomy are critical components of our strategy”
Scott Wine, CEO of CNH Industrial

What’s in it for investors? A majority of analysts recommend buying CNH Industrial – the company formed in 2013 from the merger of Italian company Fiat Industrial and its US subsidiary CNH Global. Since the start of the year, the share price has already risen by 13% as of end-May.

FOUNDED: 2013 HEADQUARTERS: BASILDON (UK)
EMPLOYEES: 35,000 REVENUE 2024: \$19.8 BN
→ CNH → 1CNHI



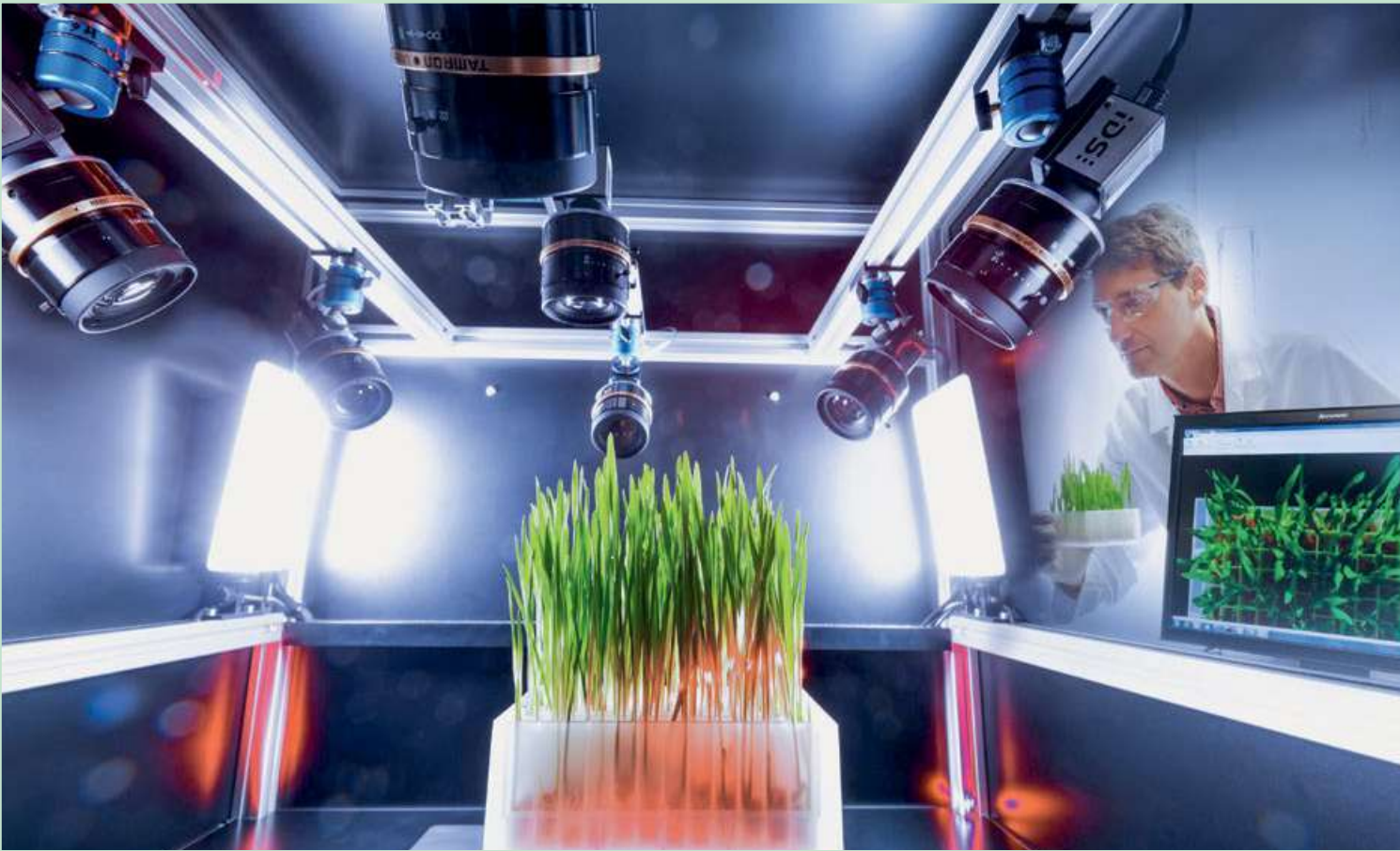
← New Holland, a CNH Industrial brand, develops agricultural drones, including the FieldXplorer, which allows farmers to take aerial images of their fields to identify and treat areas with weed or disease problems.

© CNH INDUSTRIAL / BAYER

Bayer
The world’s number 2 in pesticides

The issue of chemical pesticides (herbicides, fungicides, insecticides and others) continues to strain relations between legislators and farmers. On one side, both the European Union (EU) and the Swiss Confederation are attempting to reduce the use of these chemicals, which are ac-

Image from Bayer’s herbicide testing laboratory.
↓



cused of damaging the environment, biodiversity and human health. On the other, some farmers are campaigning to prevent a ban on active substances so that they can continue to utilise plant protection products to safeguard their crops. Drafted in 2019, the European Green Deal aimed to reduce the use of conventional plant protection products by 50% by 2030. However, farmers’ anger ultimately constrained the EU’s ambitions: at the beginning

of 2025, the reduction target was set aside by Brussels for an indefinite period.

This represents good business for a handful of multinationals: Switzerland’s Syngenta (world number one), Germany’s Bayer (number two) and BASF, and the US company Corteva Agriscience. Together, these giants control 70% of the global pesticides market, according to figures from the Pesticides Atlas published in

2023. Allied Market Research projects the global pesticide market will reach \$92.6 billion in 2032, representing annual growth of 7.5% between 2023 and 2032. In 2022, farmers applied 3.7 million tonnes of pesticides worldwide, up 4% on 2021 and twice as much as in 1990, the latest data available from the Food and Agriculture Organization of the United Nations (FAO) shows.

Bayer’s Crop Science division recorded sales of €22.26 billion, almost 50% of the company’s turnover

While pesticide giants such as Bayer have developed a range of biocontrol products in recent years (see p. 40), the majority of their revenue still derives from chemical compounds. As part of the powerful CropLife International lobby, which exerts major influence on international debates concerning pesticide regulation, they also continue to minimise the impact of their products on the environment and health. In 2024, Bayer’s Crop Science division recorded sales of €22.26 billion, almost 50% of the company’s turnover. A majority of analysts recommend holding the share, which has risen by almost 40% since the start of the year.

FOUNDED: 1863 HEADQUARTERS: LEVERKUSEN (DE)
EMPLOYEES: 93,000 REVENUE 2024: € 46.6 BN
→ BAYN

PARROT
The French drone manufacturer

Like other drone specialists, such as Germany’s Volocopter and China’s DJI, the French company has its sight set on the

agricultural market with dedicated models. In particular, the company markets the Parrot Bluegrass – a quadcop-

ter designed to maximise yields through its two on-board cameras: a video camera and a multispectral sensor.

FOUNDED: 1994 HEADQUARTERS: PARIS (FR)
EMPLOYEES: 400 REVENUE 2024: €78.1 M
→ PARRO

KUBOTA
The Japanese expert

Kubota, a Japanese manufacturer of agricultural equipment, is concentrating on precision farming. Specifically, the

company has introduced hydrogen-powered tractors, as well as other electric models. The firm also features

autonomous machines in its portfolio. A majority of analysts recommend holding the stock.

FOUNDED: 1890 HEADQUARTERS: OSAKA (JP)
EMPLOYEES: 52,000 REVENUE 2024: ¥ 3016 BN
→ 6326

PORTRAIT

BlackRock: the conquest continues

With the acquisition of 43 ports, the American asset management giant is solidifying its strategy of global expansion, including in critical infrastructures.

BY BLANDINE GUIGNIER

IN FIGURES

**\$27.7
BILLION**

The amount of BlackRock's acquisitions on the private markets in 2024.

**\$11,584
BILLION**

BlackRock's assets under management in the first quarter of 2025 – \$1,112 billion more than in the same period in 2024.

+6%

Organic base fee growth in the first quarter of 2025, BlackRock's best start since January–March 2021.

From Washington to Beijing, global media buzzed with commentary on the bold wager made by American company BlackRock in early March. The world's largest fund manager announced the acquisition of 43 ports, including two on the Panama Canal, from Hong Kong's CK Hutchison. "Through this acquisition, we are going to have 100 ports in our portfolio," explained its emblematic CEO Larry Fink before CNBC cameras. "We look at the real milestone and real opportunity!"

Far from being impulsive, the \$22.8 billion takeover bid, submitted jointly with Geneva-based shipping giant MSC, reflects a strategic pivot. For several years now, the New York-based company has been expanding its empire into the 'unlisted' market. This encompasses infrastructure, such as marine terminals, as well as private debt, private equity and real estate. "The diversification of BlackRock towards →

↗
At the helm of BlackRock since its inception, 72-year-old American Larry Fink has transformed the Wall Street firm into a key player in global finance. Architect of the ETF boom, he now pushes his clients toward private assets.

private equity represents one of its greatest strengths at present,” notes analyst Bill Katz, who follows the stock at TD Cowen.

This move into alternative investments signals a radical change for BlackRock, which built its business on its range of exchange-traded funds (ETFs) known as ‘iShares’. The firm has achieved phenomenal growth, from \$165 billion in assets under management and 650 employees in the early 2000s, to \$11,584 billion and 23,000 employees by early April 2025. In his latest letter to investors, Larry Fink advocates a shift away from the traditional 40/60 portfolio split towards a 50/30/20 model. In concrete terms, he encourages investors to move from 60% to 50% equities and from 40% to 30% bonds, thereby freeing up 20% for private market assets. Although some investments may carry higher risks, the CEO identifies numerous advantages: protection against inflation, stability and returns.

Infrastructure dominance

BlackRock first made its mark in the infrastructure sector. The company became

This move into alternative investments signals a radical change for BlackRock

A view of the port of Balboa, at the Pacific entrance to the Panama Canal, on 25 February 2025. Blackrock now has a majority stake in these infrastructure assets.

the leading investment manager in this field when it acquired US investment fund Global Infrastructure Partners (GIP) for \$12.5 billion in October 2024. “This acquisition has benefitted the stock,” says analyst Bill Katz. “It promotes organic growth in the company’s revenues, as well as in its base fees. It’s an attractive long-term strategy.”

Through GIP, BlackRock now holds interests in a diverse array of structures. Beyond ports, it operates in the transport sector with Gatwick, Edinburgh and Sydney airports, plus Italian railway company Italo. The firm has also established itself in wind and solar energy; in the digital sector (with CyrusOne and its dozens of data centres worldwide); and in water and waste management, holding a 39% stake in Suez.

Private credit offensive

BlackRock then targeted another promising area for alternative investments: private cred-

© BLOOMBERG, BETTY IMAGES

it. In December, it announced the purchase of sector heavyweight HPS Partners, with \$148 billion under management, for \$12 billion. This private debt market is expanding rapidly. Investment companies are displacing traditional lenders, which are retreating from risky loans due to stricter regulations. The market is expected to grow from \$1,500 billion under management at 2023-end to \$2,600 billion by 2029, according to private market data provider Preqin. This British firm was also acquired by BlackRock for \$3.2 billion in July 2024, with the aim of further increasing its influence in the non-listed sector.

Finally, the American behemoth is currently seeking to expand into private equity through discussions with various companies, according to a source quoted by Reuters. “Through all these acquisitions, as well as organic growth, BlackRock has created a competitive alternative investment platform,” summarises Bill Katz. “This provides better opportunities to expand into private markets, which are expected to grow faster than public markets over the next few years.” →

ANALYSTS' OPINION

Strong buy

The experts are almost unanimous. Ten Wall Street analysts have issued a ‘buy’ recommendation on BlackRock shares, compared with just two ‘hold’ recommendations in the last three months, according to Tipranks.com. As a reminder, between early May 2024 and end-January 2025, the share price had risen sharply, from \$763.9 to \$1,084.2, before dropping to \$916.4 on 1 May this year. The same experts agree on an average price target of \$1,030 at end-May.

In mid-April, Bill Katz, an analyst at TD Cowen, raised his price estimate from \$1,032 to \$1,063 (+3%). He lists the company’s various strengths. “Through several acquisitions (corresponding to more than \$27.7 billion invested in private market companies), as well as organic growth, BlackRock has created a competitive alternative investment platform. This provides greater opportunities to expand into private markets, which are expected to grow faster than public markets over the next few years.”

Another of BlackRock’s strengths, according to the expert, is its positioning in the pensions market. More than half of the funds managed by BlackRock are pension funds, according to its latest annual report.

BlackRock has another important differentiating factor for Bill Katz: its SaaS (Software as a Service) solution called Aladdin. This technology combines risk management, investment register, performance, accounting and data. Katz markets it to hundreds of major institutions, including insurers, companies and public authorities, asset managers, banks and pension funds. “It is a driver of revenue growth and above-average margins,” says the analyst. In 2024, it generated more than \$1.6 billion in sales out of total revenues of \$20.41 billion (+14% between 2023 and 2024).

The company can still improve its wealth management platform, believes the analyst. “They haven’t raised as much money for the retail channel as some of their peers, like Blackstone or Apollo for example. That’s probably the biggest deficit I see right now.”

→ BLK



Cathy Seifert, analyst at CFRA Research, interviewed by Reuters last December, also believes these recent buyouts will increase BlackRock’s profits from management fees, compared with “razor thin margins” from passive investments such as ETFs.

Industry-wide transformation

As Andreas Venditti, analyst at Vontobel, observes, BlackRock’s major offensive forms part of a broader context where traditional banks are forging alliances with companies active in alternative markets: “BlackRock signed a partnership in autumn 2024 with Zug-based Partners Group, which is listed on the Swiss stock exchange and specialises in private market mandates. We also witnessed mergers between Capital Group and KKR in spring 2024; and between Citigroup and Apollo in autumn 2024, for example.” This represents an underlying trend, notes the expert. “Just a few years ago, only institutions or very wealthy individuals had access to alternative investment offerings. Today, there is an ever-increasing range of products available

to private individuals, helped by regulatory changes in Europe in particular.”

In this race, Bill Katz nevertheless identifies a weakness at BlackRock. “The company needs to accelerate development of its wealth management platform. They haven’t invested as heavily in the retail channel as some peers, like Blackstone or Apollo for instance.” Yet, the analyst strongly recommends buying the stock, as do most colleagues. ▲

Climate activists storm BlackRock's headquarters in New York, armed with pitchforks, and dump coal on an escalator on 26 October 2022.



ESG criteria abandoned

In impact finance circles, the American giant has faced heavy criticism for its U-turn on ESG (‘Environmental, Social and Governance’) criteria. While the terms climate and sustainability abounded in CEO Larry Fink’s 2020 letter to investors, the 2025 letter contains none at all. BlackRock also left Net Zero Asset Managers (NZAM) in January. This initiative brings together managers committed to supporting the goal of reducing net greenhouse gas emissions to zero by 2050. Finally, in an open letter, American ethics and finance professor Michael Posner highlights the decline in shareholder proposals relating to environmental and social issues. Only 4% were accepted between July 2023 and June 2024, compared with 47% in 2021.

BlackRock explained that it focuses its international activities on topics most important to its clients and evolves according to their needs. “Over the past five years, these topics have included sustainable development, retirement and infrastructure, among others,” the firm told the *Financial Times*.

The situation remains tense. Contrary to the trend in several European countries, around 20 US states have passed laws or executive measures prohibiting or restricting the use of ESG criteria in managing public pension funds.

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VÉLOBSESSIVE

PRINCESS OF ORANGE

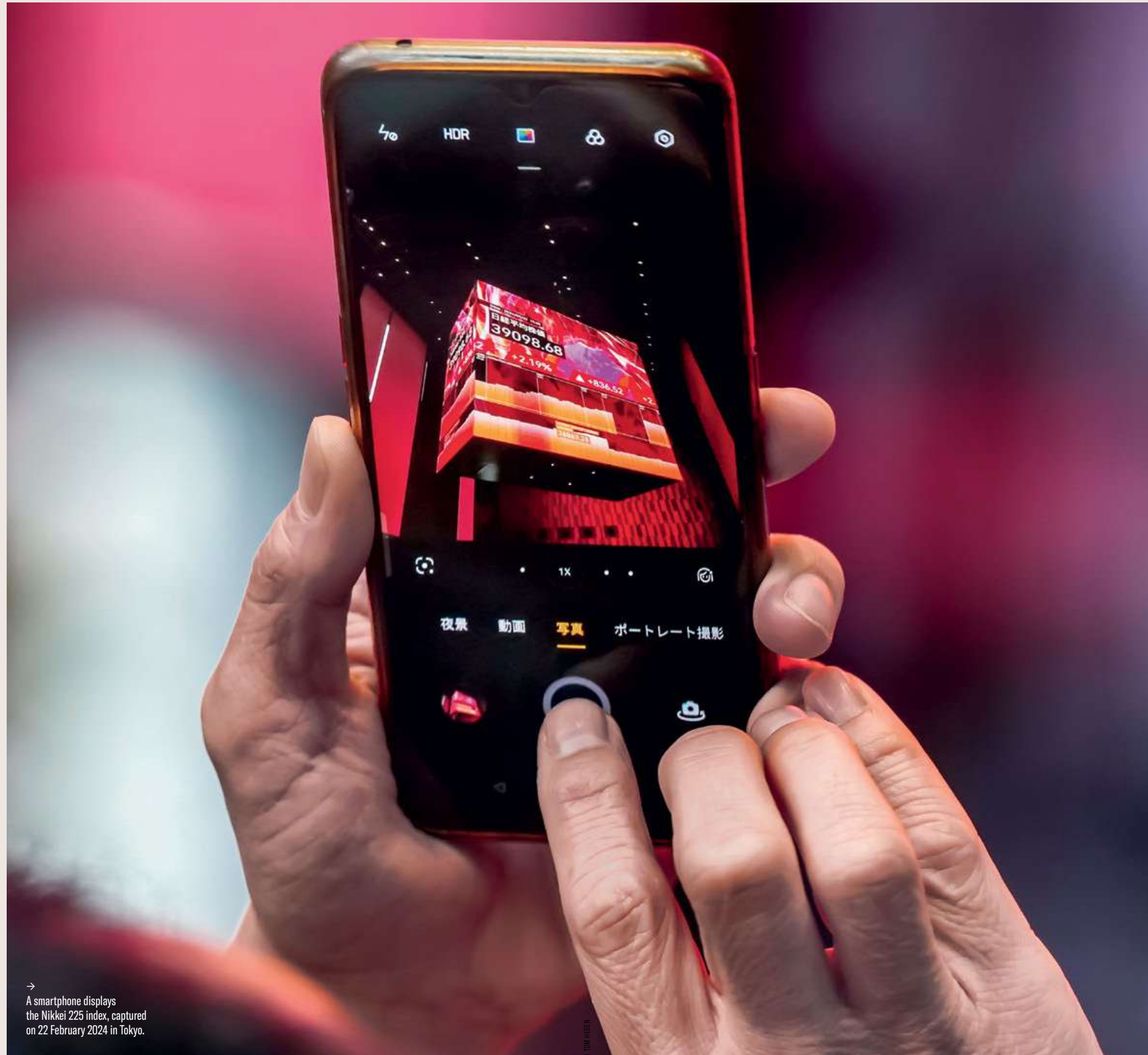


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→ A smartphone displays the Nikkei 225 index, captured on 22 February 2024 in Tokyo.

NIKKEI

Japan: the stock market reawakens

The Land of the Rising Sun is making a comeback after three decades of economic stagnation and deflation. Opportunities abound, particularly in technology, finance and consumer goods.

BY JULIE ZAUGG

O

gained more than 3% annually in nominal terms, according to Morgan Stanley, more than double the rate recorded between 2013 and 2019.

n 22 February 2024, the Nikkei closed at 39,098.68 points, breaking the previous record set in 1989. The event marked a symbolic turning point for Japan, a country mired in three decades of stagnation. Over the year as a whole, the index rose by 19%, having already gained 28% in 2023. This surge reflects the economy's growth: since 2022, Japan's GDP has

These strong results are linked to inflation's return, which reached 3.6% in March compared with a year earlier. "The country seems to have finally managed to put an end to 35 years of deflation," notes James Salter, founder of Zennor Asset Management, a company specialising in the Japanese market. Prices have risen across the board, from rice and electronics to trucking. The upturn →



© KEYSTONE / YOSHINBU GOTO, AFP

↑
Euphoria at the Tokyo Stock Exchange on 29 December, 1989. The Nikkei 225 index reached a record level that day, just before the financial bubble burst, which would have a lasting impact on the Japanese economy.

has enabled the Bank of Japan to raise its key rate three times since March 2024, bringing it to 0.5%.

An encouraging sign for this recovery’s sustainability is that inflation is essentially linked to domestic factors. Kévin Net, head of Asian markets at La Financière de l’Échiquier, explains: “Every spring, trade unions and employers hold major wage negotiations, known as *shuntō*. Over the past three years, these negotiations have resulted in historically high pay rises, fuelling inflation.” In 2024, salaries rose by 5.3%. This year, the Japanese Trade Union Confederation is targeting 5.5%.

For his part, Prime Minister Shigeru Ishiba has announced plans to raise the minimum

wage from 1,055 yen to 1,500 yen over the next five years, an annual increase of 7%. Oleg Kapinos, head of global distribution strategy at Asset Management One, says: “Because of the shrinking population, linked to a chronically low birth rate, the Japanese labour market is short of workers, especially those in their twenties and thirties. This is pushing up wages.”

Dividends paid to shareholders and share buybacks have reached record levels

Japan’s long period in the wilderness began in 1992, with the bursting of the asset bubble that ended a boom period during

which shares and property prices rose sharply. The global financial crisis of 2008 exacerbated the situation, as did the strong yen, which undermined this export-dependent country.

It was not until 2013 and the reforms initiated by Prime Minister Shinzo Abe – dubbed ‘Abenomics’ – that the country began to recover. “Abe eased monetary policy, introduced budget spending and carried out structural reforms, particularly in corporate governance,” explains Richard Aston, fund manager at Chikara Investments.

On the latter, there was a significant need for change. “The return on equity of Japanese companies was low, particularly by international standards,”

Berkshire Hathaway, Bain Capital, KKR and Blackstone have all taken positions in Japan recently

notes Kévin Net. Capital was also poorly allocated. “In a period of deflation, companies have little incentive to invest the cash on their balance sheets,” points out Oleg Kapinos.

In 2023, the Japanese stock exchange tackled the problem, asking companies whose market value was lower than their real value to explain this discrepancy and remedy it, the main threat being reputational and linked to market access. The results were felt

Japanese Prime Minister Shigeru Ishiba speaks to reporters after a telephone conversation with US President Donald Trump at the Prime Minister’s official residence in Tokyo on 7 April 2025. Reciprocal tariffs were on the agenda for discussion.
↓

immediately. “Japanese companies have begun to invest capital again, particularly abroad,” says Oleg Kapinos. Dividends paid to shareholders and share buybacks have reached record levels. In a bid to simplify their structure, conglomerates such as Toshiba, Hitachi and Mitsubishi have sold off their numerous cross-shareholdings and divested certain non-core activities.

This Japanese revival has provided many opportunities for investors. “For a whole generation of Japanese, investing in the markets was seen as the best way to lose money,” says Richard Aston. The cash reserves of Japanese households amount to 105,300 billion yen (606 billion francs). “But this has started to change, particularly under government impetus, which has created a tax-free investment scheme called NISA,” continues the expert. →



SIX COMPANIES TO WATCH

HITACHI
Champion of industrial AI
This conglomerate has recently refocused its business on IT services and green energy, improving its profitability. “It has become the largest provider of industrial artificial intelligence solutions,” says Pelham Smithers. In April, it announced a share buyback programme worth 300 billion yen (CHF 1.7 billion).

FOUNDED: 1910
HEADQUARTERS: TOKYO, JAPAN
EMPLOYEES: 268,655
REVENUE 2024: 9,783 BILLION YEN (CHF 57.5 BILLION)
→ **TYO:** 6501 **NAG:** 6501

MUFG
Global banking excellence
Japanese banks have benefitted from successive rises in interest rates. Mitsubishi UFJ Financial Group (MUFG) saw its profits rise by 32% year-on-year in the last quarter of 2024. The financial group is also benefitting from its strong exposure to the rest of Asia. “Some 50% of its revenues are generated overseas,” says Pelham Smithers.

FOUNDED: 2005
HEADQUARTERS: TOKYO, JAPAN
EMPLOYEES: 140,000
REVENUE 2024: 2,560 BILLION YEN (CHF 14.7 BILLION)
→ **TYO:** 8306 **NAG:** 8306 **NYSE:** MUFG

SHIN-ETSU CHEMICAL
Chemical semiconductor pillar
The company, which originally specialised in the manufacture of fertilisers, now dominates, alongside SUMCO (another Japanese group), the global production of silicon wafers used in semiconductors. This makes it an essential link in this industry, which is being driven upwards by demand tied to artificial intelligence.

FOUNDED: 1996
HEADQUARTERS: TOKYO, JAPAN
EMPLOYEES: 27,274
REVENUE 2024: 2,560 BILLION YEN (CHF 14.7 BILLION)
→ **TYO:** 4063 **NAG:** 4063



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→ A screen shows the sharp rise in closing prices for several companies in Tokyo on 10 April 2025. US President Donald Trump had just announced a 90-day suspension of the tariffs imposed the previous day.

Foreign investors have also started to flock to the country. Berkshire Hathaway, Bain Capital, KKR and Blackstone have all taken positions in Japan recently.

“The technology sector offers a wealth of opportunities,” emphasises Kévin Net. “The country has numerous companies that have made themselves indispensable, in the semi-conductor sector for example, accumulating 70% to 80% of global market share in niche segments.” On the domestic front, the modernisation of IT networks, e-commerce and on-line finance are lagging behind, opening up opportunities for companies providing this type of service.

Finance is another growth area, according to analysts. Overseas-oriented financial institutions such as Nomura, Sumitomo and MUFG benefit from privileged access “to a vast population in the rest of Asia that is both young and underserved by the banking sector,” points out Richard Aston.

Inflation’s return, particularly wage inflation, has also created opportunities in the consumer sector. The Muji chain of shops, owned by the Ryohin Keikaku group, Kobe Bussan supermarkets and MatsukiyoCocokara pharmacies are just some of the companies that analysts believe are well placed to gain.

“The Japanese population is ageing, which will boost spending in the health sector,” explains Richard Aston. Pharmaceutical groups will do well, as will companies providing robotic assistance for the elderly or home care.

Japan’s return to business has also kick-started a construction

boom. “In major cities, office vacancy rates are extremely low,” notes Pelham Smithers, founder of the financial analysis company of the same name. “As for the existing property stock, it often dates back more than 40 years and is in need of renovation.”

Multiple Japanese companies have announced plans to invest in the United States

While Japan’s recovery appears to be here to stay, it is not immune to turbulence. The yen’s strengthening, in the wake of interest rate rises, is “putting exporting companies at a disadvantage,” says James Salter. Added to this is the slowdown in the Chinese economy, Japan’s second biggest market after the United States.

The main risk, however, relates to the tariffs announced by President Donald Trump at the beginning of April. Goods will be taxed at a rate of 24% from July, while the automotive sector will be subject to an additional 25% tax. Last year, Japan exported 6,300 billion yen (approximately 36 billion francs) worth of cars to the United States.

Tokyo does, however, have several cards to play. Multiple Japanese companies have announced plans to invest in the United States, including Toyota, Isuzu Motors and Softbank. “Japan has also pledged to increase its purchases of liquefied natural gas,” notes Kévin Net. He believes that this should enable it to lay the foundations for a trade agreement with Washington by the summer. ▲

SONY
A gamer’s favourite
Over the years, the firm has moved away from selling electronic equipment “to become a content distribution platform,” particularly in the field of video games, points out Pelham Smithers, who runs the eponymous consultancy firm. PlayStation has become the world’s largest gaming portal, with 116 million active monthly users. Sony also dominates sales of image sensors for smartphones, and should gain from increased demand as autonomous vehicles become more widespread.

FOUNDED: 1946
HEADQUARTERS: TOKYO, JAPAN
EMPLOYEES: 113,000
REVENUE 2024: 13,000 BILLION YEN (CHF 74.6 BILLION)
→ **TYO:** 6758 **NYSE:** SONY

CHUGAI PHARMACEUTICALS
The biotech advantage
62% owned by Roche, the company boasts a “particularly exciting” pipeline of compounds, according to Richard Aston, fund manager at Chikara Investments. Its discoveries are focused on oncology, immunology, neuroscience, haematology and ophthalmology.

FOUNDED: 1943
HEADQUARTERS: TOKYO, JAPAN
EMPLOYEES: 7,778
REVENUE 2024: 1,170.6 BILLION YEN (CHF 6.7 BILLION)
→ **TYO:** 4519

NEC
The digital renaissance
The fourth largest PC manufacturer in the 1990s, the company has chosen to divest itself of numerous unprofitable divisions in recent years to focus on modernising IT networks for private companies and government bodies, 5G equipment and providing artificial intelligence software for the medical sector.

FOUNDED: 1899
HEADQUARTERS: TOKYO, JAPAN
EMPLOYEES: 105,246
REVENUE 2024: 3,423.4 BILLION YEN (CHF 19.7 BILLION)
→ **TYO:** 6701

WMF

A B R A N D
A S T O R Y

From salt shakers to coffee makers

Known to the general public for its Bauhaus-style tableware, the German brand is now extending its activities into the professional coffee machine sector, with the support of its French owner, SEB.

BY BLANDINE GUIGNIER

“C

rockery without superfluous frills, suitable for mass production and affordable for all customers” was Wilhelm Wagenfeld’s objective in 1952 when he designed the ‘Twins’ salt and pepper shaker duo, according to the Wertheim Glass Museum. The design by this former Bauhaus student captivated millions of German households. The pair achieved such popularity that they earned the nickname “Max und Moritz”, after the famous German-language illustrated book. It also established the reputation of the company that commissioned the designer: WMF. Thanks to Wagenfeld’s iconic series, which encompassed cutlery, an egg cup and a butter dish, the brand became “synonymous

with timeless design, high functionality and quality in the kitchen,” explains Sandra Jäger, senior buyer at Pfister. The furniture chain continues marketing several of these products in Switzerland, more than 70 years after their creation.

Combining metal and glass

When production began in 1953, WMF held all the cards to succeed. Primarily, it had developed metalworking knowledge over a century, and as early as 1862, its factory in Geislingen an der Steige in Baden-Württemberg, had begun producing tableware. Silver-plated pieces won prizes at the London World’s Fair and soon sold throughout Germany, supported by a sales subsidiary established in Berlin in 1868. In 1880, Württembergischen Metallwarenfabrik (WMF) emerged through a merger with another Esslingen manufacturer and the

new group was listed on the stock exchange seven years later. In 1893, it launched mass production of galvanised silver cutlery and, from the late 1920s, adopted stainless steel. It protected (patented) its Cromargan material, which was acid-resistant thanks to its formula (18% chromium and 10% nickel). This material continues to be used today, notably for the lids in the Max und Moritz set and its condiment caddy.

Simultaneously, the company cultivated glassmaking expertise. In 1883, WMF set up its own glassworks. From the 1920s onwards, it developed the “Ikora” technique, producing colourful and richly

↑ The famous ‘Twins’ salt and pepper shaker duo is a WMF classic dating back to the 1950s.

decorated glass objects, highly sought after by collectors today. In Wagenfeld’s tableware range, the company used borosilicate glass, which was gaining industrial popularity for its superior resistance to heat, scratches and splinters.

Within this global brand portfolio, WMF has preserved its identity

Following several acquisitions of rival German factories, WMF expanded internationally. It acquired facilities in Warsaw in 1886 and Vienna in 1900. By 1914,

it employed 4,000 workers at its Geislingen headquarters alone. However, both World Wars – during which WMF became an armaments factory and forced labour site between 1940 and 1945 – twice halted its expansion. Employee numbers recovered in the 1950s to over 3,000, then 6,000 in the 1960s, to support growing demand during the 30 glorious years. Beyond table accessories, the company innovated throughout the second half of the 20th century in the pressure cooker and coffee machine markets. It expanded further in the latter segment in the 2000s, acquiring Swiss company Schaerer, a pioneer in the supply of super-automatic machines for professional use (in hospital and government cafeterias, etc.).

Record takeover by SEB

In 2016, WMF attracted interest from the SEB group, the French household appliance giant owning brands including Moulinex, Rowenta and Tefal. At that time, the German company had undergone radical restructuring, eliminating 400 jobs, refocusing its product range and delisting from the stock market, a year after acquisition by an American fund. For SEB, the deal was strategic: it strengthened its presence in the DACH region (Germany, Austria, Switzerland), where WMF maintains a solid retail network and generates over half its sales. The €1.58 billion purchase price marked the highest in French group history.

Yet, it is mainly the professional coffee machine division that attracted SEB. This segment alone accounts for one-third of WMF’s sales, thanks particularly to Swiss company Schaerer, a forerunner in super-automatic machines for the catering trade.

Since then, SEB has continued its sector offensive, acquiring American Curtis (filter coffee makers) in 2019 and Italian La San Marco (professional coffee machines) in 2023. The result: in 2024, the coffee division recorded its second-best performance ever, with €975 million in sales.

Within this global brand portfolio, WMF has preserved its identity. SEB capitalises on its Germanic heritage and sleek design, faithful to Bauhaus principles. In choosing to embody this refined simplicity, the brand has enlisted German actress Diane Kruger. From salt shaker to coffee percolator, WMF continues blending tradition with innovation – a challenge it embraced over a century ago, and one that remains relevant today. ▴ → SK

KEY DATES

1880

Establishment of Württembergischen Metallwarenfabrik (WMF), originating in the metalworking industry.

1952

Creation of the salt and pepper shaker duo ‘Twins’ by artist Wilhelm Wagenfeld for WMF.

2016

Acquisition of WMF by French kitchen equipment specialist SEB.

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Verretex

Glass fibres get a second life

NUMBER OF
EMPLOYEES
4

HEAD OFFICE
SAINT-SULPICE

FOUNDED
2025

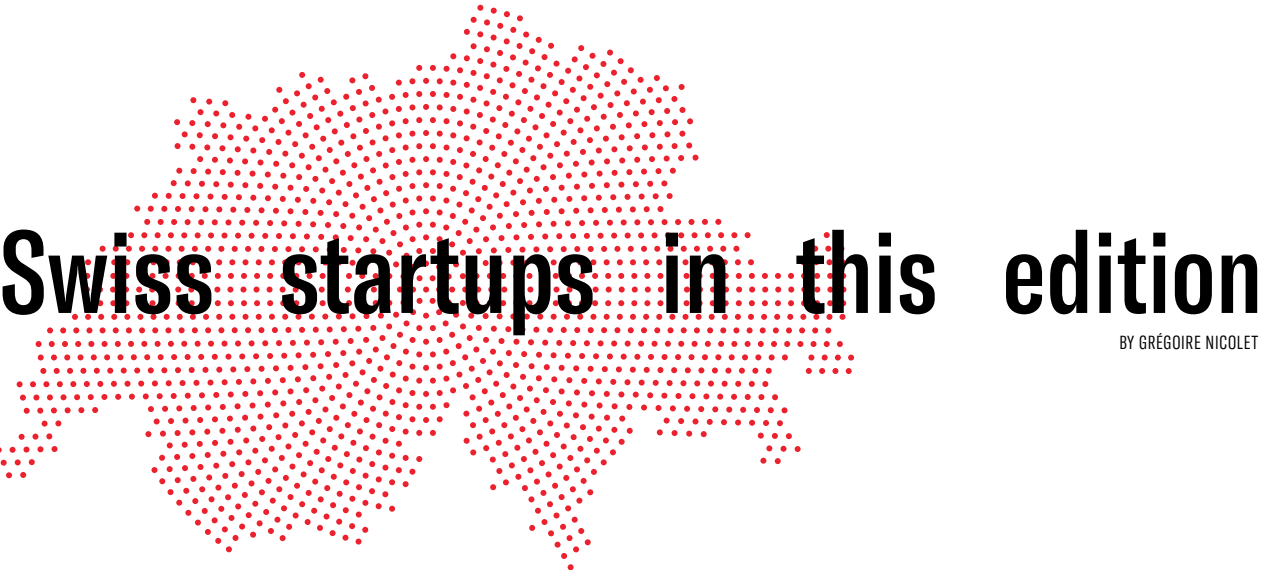
This Vaud-based EPFL startup specialises in upcycling glass fibres from composite waste. Using proprietary technology, the company restores the strength and durability of recycled fibres, delivering mechanical properties that match those of virgin materials. The innovation addresses a pressing environmental challenge, particularly given the mounting composite waste generated by the aerospace, automotive and wind power sectors.

Founded at the beginning of 2025, Verretex has already secured over one million francs in funding and will open a production facility at EPFL Innovation Park this summer to accelerate commercialisation. In March, the startup participated in JEC World 2025 in Paris, the premier global event for composite materials. There, it announced a partnership with Vaud-based ski manufacturer Madskis, resulting in the world's first skis incorporating textiles made from recycled glass fibres.

CEO and co-founder Mitchell Anderson outlines his compa-

ny's trajectory: "Beyond sporting goods, the wind turbine sector represents our most promising near-term opportunity, since turbines built with recycled materials face simpler certification processes. Over the medium term, the automotive industry presents a solid market opportunity driven by growing demand for sustainable materials."

Looking further ahead, Verretex plans on targeting the marine and aerospace sectors, where growth potential runs high – though stringent standards and testing requirements will extend development timelines considerably.



BY GRÉGOIRE NICOLET



AI-Tails

AI for cat health

NUMBER OF
EMPLOYEES
6

HEAD OFFICE
KLOTEN

FOUNDED
2025

This Zurich-based startup has developed an AI-powered device that monitors feline health and detects illness at early stages. The system centres on a feeding station equipped with multiple sensors – infrared, optical and weight detectors – that analyse the cat's appearance and eating patterns. Cloud-based AI algorithms process this data stream to identify early

warning signs of health issues, triggering alerts through the AI-Tails app with tailored recommendations. The information can also be shared with a vet.

The product is currently undergoing testing with a select group of customers as part of an early access phase, with full market launch scheduled for January 2026 at the Consumer Electronics Show in Las Vegas. Monthly app subscriptions will cost between 19 and 21 Swiss francs, plus the feeding station purchase price,

which varies based on customisation requirements. CEO Angelica De Riggi argues pet owners will quickly recoup these costs: "Early detection eliminates time-consuming small animal examinations at veterinary clinics and, crucially, prevents expensive treatments."

The startup envisions building a comprehensive connected health ecosystem for pets. "We're currently developing an intelligent litter box and a cat flap that analyses the cat's overall condition," says De Riggi.

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R E A D

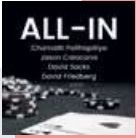
The Afterlife of Data

What Happens to Your Information When You Die and Why You Should Care

BY CARL ÖHMAN
UNIVERSITY OF CHICAGO PRESS

This book offers compelling insights into the fate of our online identities after death. Carl Öhman, a digital ethics specialist at the University of Uppsala in Sweden, exposes the vulnerability of digital data – often perceived as permanent but actually susceptible to technological obsolescence and inadequate maintenance. He advocates for collective governance of these digital archives, engaging governments, NGOs and businesses to prevent our shared memory from vanishing. The book explores how this data can extend the presence of the deceased, raising ethical questions about managing these ‘digital ghosts’. The author cites the example of a young man who, 10 years after his father’s death, continues to play an old racing game against him on an Xbox console thanks to back-ups of his father’s games. Carl Öhman also highlights risks of exploitation by technology companies, emphasising the importance of collective reflection on preserving and managing our digital heritage.

CHF 20.- PAPER EDITION
CHF 15.15 DIGITAL EDITION



L I S T E N

All-In

All about tech

This weekly programme features four influential figures in tech and investment: Chamath Palihapitiya, Jason Calacanis, David Sacks and David Friedberg. *Slate* magazine called it “the place where Silicon Valley’s money says what it really thinks”. Each episode, running between one and two hours, delivers compelling debates between its protagonists. The podcast regularly hosts high-profile guests, including Google CEO Sundar Pichai and US Secretary of the Interior Doug Burgum.

<https://podcasts.apple.com/us/podcast/all-in-with-chamath-jason-sacks-friedberg/id1502871393>



F O L L O W

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Sharp humour, heartfelt memes and unvarnished truths about the investment world: @Reformed_Trader distils into a few tweets what many analysts require pages to express. Behind the wit lies substantial market knowledge and valuable insight. Follow him for both entertainment and perspective during volatile times.

timeleft.

D O W N L O A D

Timeleft

Dining out with strangers

This innovative application organises weekly dinners between strangers, providing an alternative to conventional social networks and dating apps. Winner of Google’s “Best Hidden Gem 2024” award, it operates in over 250 cities worldwide, including three in Switzerland: Zurich, Geneva and Lausanne. Every Wednesday evening, the app arranges dinner for six guests, selected through an algorithm based on a personality questionnaire. Participants discover each other’s professions and astrological signs the day before, while the dinner venue is revealed that morning. The app includes a quiz to encourage conversation.

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7 seats in weightlessness

With its regal comfort, hushed silence and seven modular seats, the Volvo EX90 is the perfect choice for families. Our test drive.

BY BLAISE DUVAL



Volvo's new flagship model lives up to its status. During the 10 days we spent behind the wheel, the EX90 demonstrated what we expect from a large premium electric SUV: serenity at all times and uncompromising comfort. From the very first turns of the wheel, the tone is set. Passengers are ensconced in a cocoon perfectly insulated from the external world, seated on exceptional seats – a hallmark of the Swedish brand.

Naturally, this philosophy of on-board well-being has a trade-off: you barely sense the road beneath you. The steering and suspension, which are heavily filtered, diminish the driving sensations. However, this approach is entirely acceptable, as the EX90 is not designed to appeal to driving purists. At 5.05 metres long and weighing just under 2.8 tonnes, this SUV commands its presence, to the point of appearing disproportionate on our European roads. Yet it possesses a rare asset: seven seats. At the touch of a button, each seat in the third row unfolds or retracts instantly. While these additional seats are optimally suited to children or

teenagers, they have the considerable merit of being available. In this configuration, the boot volume drops to 310 litres (compared with 655 litres in 5-seater mode), but a front boot reinforces capacity with an additional 46 litres.

Among the EX90's other exceptional features is the optional Bowers & Wilkins system (3,270 Swiss francs), quite simply among the finest on the market – 25 speakers, 1,610 watts of power and Dolby Atmos spatialisation that transforms the passenger compartment into a mobile concert hall. The sound is crystal-clear and perfectly balanced, with no artifice or intrusive bass.

On paper, the claimed range of 580 to 614 kilometres (WLTP), depending on the variant, places the EX90 in the upper mid-range of the segment. In real-world use, particularly on the motorway, you should anticipate 350–400 km, which remains respectable for a behemoth of this calibre. Fast charging at 250 kW recovers 80% of the battery in approximately 30 minutes. As is often the case

with premium electric vehicles, the raw power figures are intimidating: over 500 bhp and 900 nm of torque for the Performance version tested. This reserve of energy, which is rarely utilised, endows the EX90 with undeniable ease of movement. It accelerates from 0 to 100 km/h in 4.9 seconds.

There is one drawback to this flattering picture – the finish has deteriorated compared with the previous-generation XC90. The increased use of glossy black plastic, particularly on the steering wheel, is disappointing. One question why so many manufacturers persist with this approach, which is widely disliked by users. Moreover, the necessity to use touch controls via the central screen is not particularly ergonomic when driving – another widespread shortcoming in the industry.

Overall, the EX90 is well positioned as a top-of-the range family SUV, designed for comfort and safety rather than driving pleasure. It will delight enthusiasts of technological serenity... provided they have adequate parking space. ▴

VOLVO EX90

POWER AND TORQUE
517 BHP, 910 NM (TWIN
MOTOR PERFORMANCE
VERSION)

BATTERY
GROSS CAPACITY: 111 KWH
MAX RECHARGING
POWER: 250 KW

WLTP RANGE
580 KM (TWIN MOTOR
PERFORMANCE VERSION)

PERFORMANCE
ACCELERATION 0-100 KM/H:
4.9 S. (TWIN MOTOR
PERFORMANCE VERSION)

PRICE
FROM CHF 94,950 (CORE
VERSION, REAR-WHEEL DRIVE)

FROM CHF 118,750 (ULTRA
VERSION, TWIN MOTOR
PERFORMANCE)



T R A V E L

SÈTE

The Mediterranean at its best

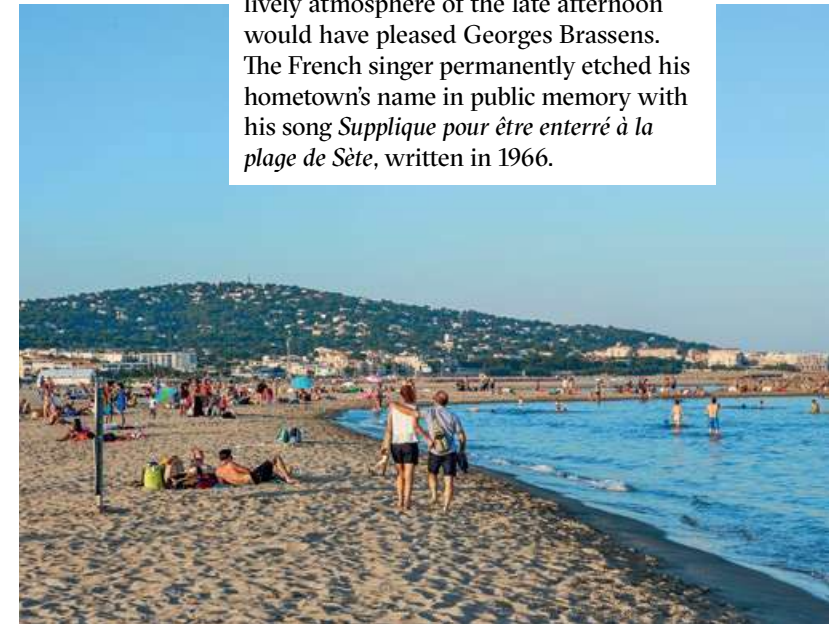
Known for its canals, the French city boasts a vibrant cultural life, fuelled by a rebellious spirit and lively traditions. A city that reflects its famous indigenes.

BY BLANDINE GUIGNIER

The port of Sète in south-eastern France.

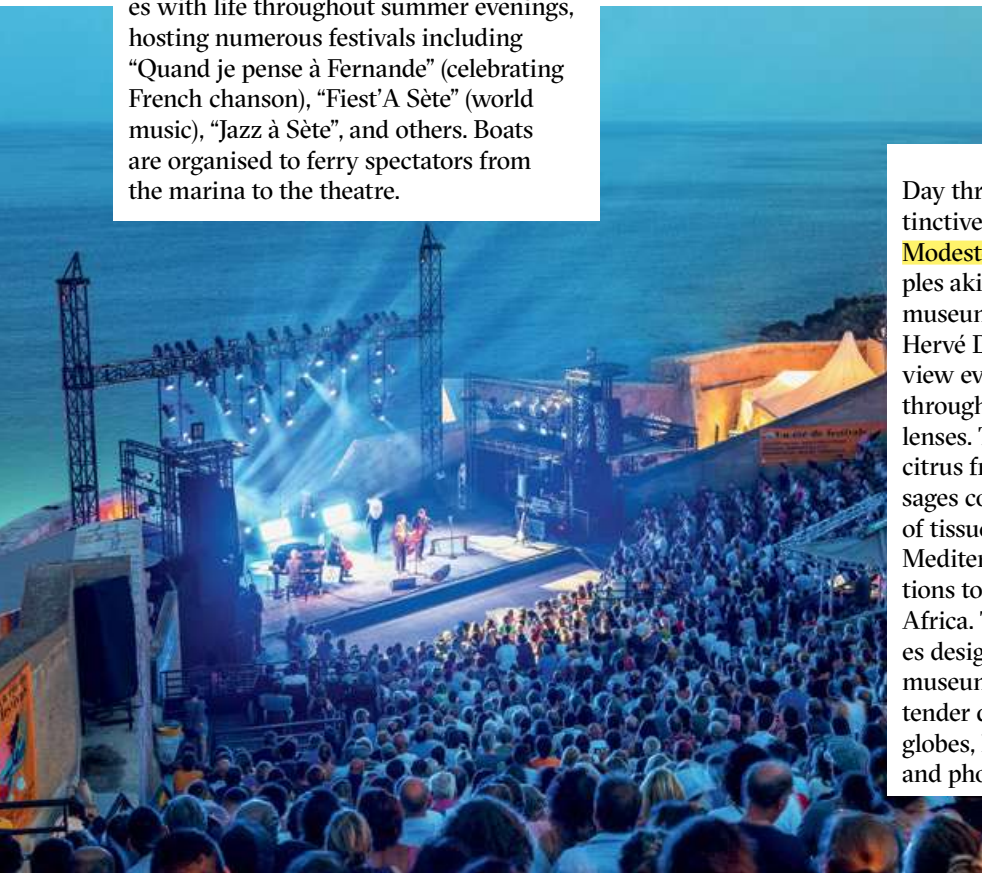
U

pon stepping off the train, we headed for **the beach at la Corniche**. The wind that typically batters the Gulf of Lion has mercifully subsided today. The fine sand provides blissful relief for feet cramped from the lengthy journey from Switzerland. On the deckchairs of the Praia beach bar, the Sétois bask in sunshine, sharing glasses of local wine in true *Les copains d'abord* fashion. Their children, ignoring warnings, plunge into water still crisp in the month of April. Certainly, the carefree and lively atmosphere of the late afternoon would have pleased Georges Brassens. The French singer permanently etched his hometown's name in public memory with his song *Supplique pour être enterré à la plage de Sète*, written in 1966.



The following day brought encounters with other artists born in this southern French town: theatre-maker Jean Vilar and poet-philosopher Paul Valéry. Both rest in the Cimetière Marin, the cemetery on the side of Sète's hill, known as Mont Saint-Clair. From their eternal vantage point, they command a bird's-eye view of the Mediterranean. Along pathways dotted with neo-Gothic chapels and cypress groves stand tombs of prosperous Sète families, many bearing symbols of maritime trade and fishing – industries that have sustained the city's port for over 350 years. →

Returning to the world of the living, the walk continues down to the **Théâtre de la Mer Jean-Vilar** below. The ochre walls of this former fort, almost white in the mid-day sun, contrast with the deep blue sea in the background. This open-air venue pulses with life throughout summer evenings, hosting numerous festivals including “Quand je pense à Fernande” (celebrating French chanson), “Fiest’A Sète” (world music), “Jazz à Sète”, and others. Boats are organised to ferry spectators from the marina to the theatre.



For those without tickets, another art form remains perpetually accessible: the **street art trail of the Musée à Ciel Ouvert**. Over 40 painted facades spread across the city centre's sloping streets. Particularly striking are those around the Lycée Paul Valéry, including *Mr Tielle* by artist Seth, and the geometric, colourful piece by Ratur & Sckaro nicknamed *Le guetteur* (The Watcher). A few steps from the latter fresco, a collective of artisans has established La Boussole à Facettes, a boutique-workshop. Many creations draw inspiration from local popular culture, featuring two Sète culinary specialities: oysters from the Thau lagoon, their shells transformed into precious objects, and the spicy tomato-and-octopus pie known as Tielle (see inset opposite).

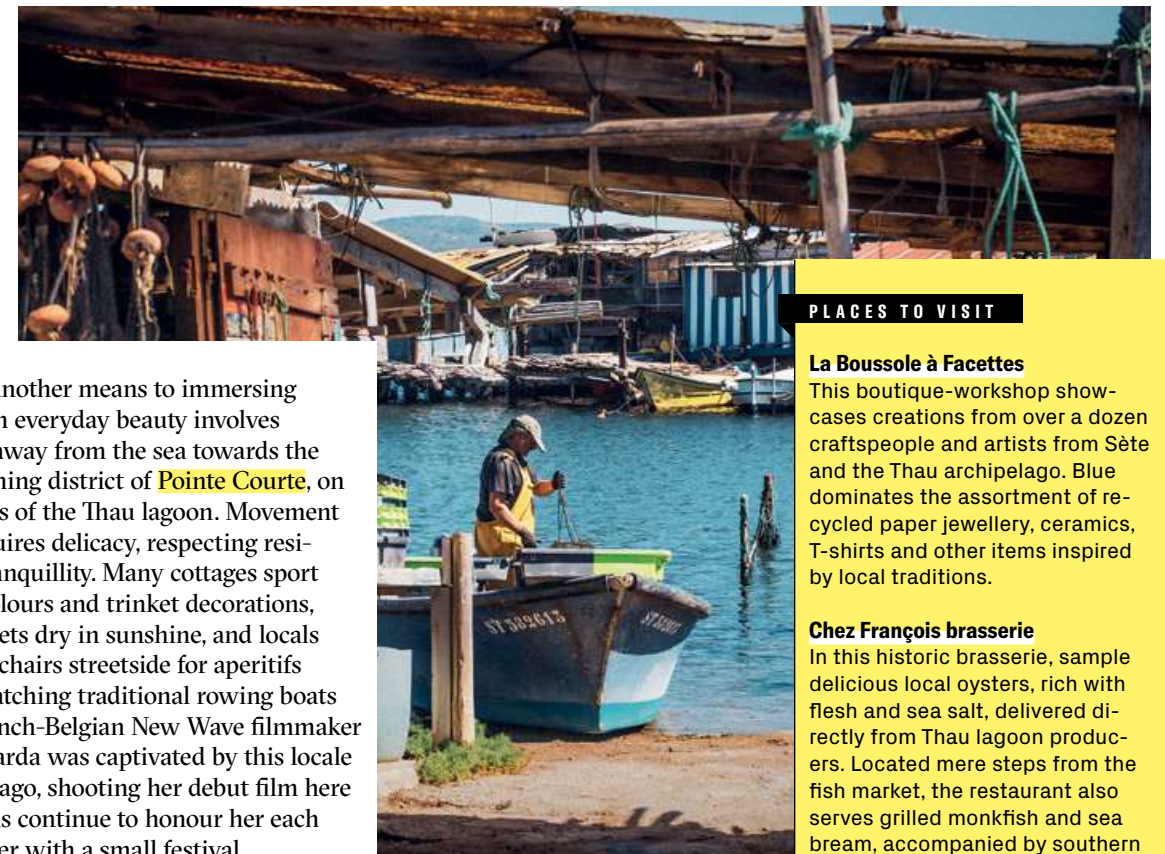


© F. AMBROSINO, M. RICARD, OT THAU / IGACIO CARRERA, ISTOCK, CHRISTIAN FERRER

Day three demands a visit to the distinctive **Musée International des Arts Modestes**, or MIAM. Operating on principles akin to art brut and naïve art, the museum's co-founder – Sétois painter Hervé Di Rosa – encourages visitors to view even mundane everyday objects through emotional rather than utilitarian lenses. The current exhibition focuses on citrus fruit packaging, exploring messages conveyed by these small pieces of tissue paper: childhood memories, Mediterranean mythology, and connections to French colonisation of North Africa. The tour concludes with showcases designed by Bernard Belluc, another museum creator, whose whimsical, tender displays feature plastic animals, globes, lead soldiers, candy wrappers and photographs.



In Sète, another means to immersing oneself in everyday beauty involves turning away from the sea towards the small fishing district of **Pointe Courte**, on the banks of the Thau lagoon. Movement here requires delicacy, respecting residents' tranquillity. Many cottages sport bright colours and trinket decorations, fishing nets dry in sunshine, and locals position chairs streetside for aperitifs while watching traditional rowing boats pass. French-Belgian New Wave filmmaker Agnès Varda was captivated by this locale 70 years ago, shooting her debut film here and locals continue to honour her each September with a small festival.



As our stay concludes, one final pilgrimage remains: locating Georges Brassens' famous burial site. Ultimately, the singer was not buried on the beach at la Corniche as his song requested, but nearby in Le Py cemetery, resting beside his muse Joha Heiman, nicknamed *Püppen* (“little doll”). Those seeking deeper Brassens knowledge can head across to the Espace Georges Brassens. Multiple facets of the poet-songwriter are explored here, from his Sète birth through artistic friendships to libertarian commitments epitomised by his song *La Mauvaise Réputation*. Above the museum, a walk through Pierres Blanches forest reveals **the coastline** separating sea from the Thau lagoon. Confronting this precious panorama, departing tourists will envy “the eternal summer visitor who pedals on the wave while dreaming”, as Brassens sings in his supplication. ▴



PLACES TO VISIT

La Boussole à Facettes

This boutique-workshop showcases creations from over a dozen craftspeople and artists from Sète and the Thau archipelago. Blue dominates the assortment of recycled paper jewellery, ceramics, T-shirts and other items inspired by local traditions.

Chez François brasserie

In this historic brasserie, sample delicious local oysters, rich with flesh and sea salt, delivered directly from Thau lagoon producers. Located mere steps from the fish market, the restaurant also serves grilled monkfish and sea bream, accompanied by southern vegetable tian, caramelised to perfection.

Restaurant La Mesa

Set in the heart of Pierres Blanches pine forest, this bistro with bohemian décor offers authentic Mediterranean cuisine. Honouring the owner's Spanish heritage, it serves a delicious chorizo-stuffed cuttlefish dish at lunchtime.

Le Grand Hôtel

While Sète lacks palaces, this address delights lovers of historic hotels. The warmly-coloured rooms, overlooking the quays, showcase this Mediterranean destination's charms. The Quai 17 restaurant ranks among the city's finest.

Les halles de Sète

All local products feature here, including the famous octopus pie with spicy tomato sauce. Locals debate who makes the best Tielle: Julietta, Dasse, Cianni? You'll need to judge for yourself.

Boundless creativity

Art of Ping Pong merges athletic functionality with visual appeal, transforming table tennis paddles into canvases for celebrated artists including Yayoi Kusama, Mr Doodle and Jimmy Turrell. The latest offering features pop-coloured designs by Kelly Anna, former dancer and gymnast turned fashion illustrator. The London-born artist's portfolio spans collaborations with Nike, BMW, Lego, Gant and Penguin, while her client roster includes Beyoncé and Justin Timberlake.

theartofpingpong.co.uk
CHF 105.-



Responsible running gear

Founded in 2020 by former pole-vaulter Nicolas Valentin, Colibri Frenchy is a sportswear brand, eco-designed in Auvergne. While conventional t-shirts travel 40,000 kilometres during manufacturing, this Clermont-Ferrand label requires merely 800 kilometres for production. The standout Sunset model, engineered for trail running, incorporates recycled PET from 12 plastic bottles combined with elastane. Lightweight (130 g), high-performance and comfortable, its technical fabric manages perspiration and accelerates drying.

lecolibrifrenchy.fr
CHF 60.85

Green design

Winners of the iF Design Award 2025, the Jack & Jenny duo from Geneva studio Puzz'le Design redefine the art of storage. Jack, a lightweight basket capable of supporting 8 kg of toys, accessories and miscellaneous items – or serving as a selective sorting solution – is crafted from 100% biosourced, biodegradable polymer derived from potato starch and cork. Available in six colour options, it pairs with Jenny, a modular beech support sourced from Swiss forests. Manufactured across Portugal and Switzerland, components can be purchased individually and assembled according to personal preference.

puzzle-design.ch
From CHF 139.-



Ride the wave

Made in the United States, the MasterCraft XStar is a high-end boat specifically designed for wakesurfing and wakeboarding. Its ballast system allows you to create a custom wave tailored to the skill level and preferences of each rider. Powered by a 630-horsepower Ilmor engine – one of the most powerful on the market – it delivers thrills and spills. Onboard luxury and a 4,700-watt audio system complete the experience.

offaxis.ch
Price on request

Vintage sound returns

Muse revives the Walkman era with the M-132 WM, drawing inspiration from Sony's original portable player launched 45 years ago. This contemporary iteration eschews traditional batteries for a rechargeable USB-C power source delivering five hours of playback, while Bluetooth connectivity enables wireless streaming to headphones or speakers. Despite these modern upgrades, the device preserves classic controls (Play, Rewind etc.) wrapped in retro styling that transforms forgotten cassette collections into viable entertainment once more.

muse-europe.com
CHF 56.-



Zurich's it bag

Can a handbag adapt like a butterfly? This concept drives the collaboration between Zurich designer Peter Nitz and Californian jewelry house James Banks Design. The grained calfskin creation functions as a backpack, shoulder bag, handbag or clutch – versatility that won over the heroine of Netflix's *Emily in Paris* series, bestowing authentic style credentials. Offering 11 modular configurations through interchangeable components, the design comes in nine colourways, each limited to 75 numbered pieces.

peterandjames.com
From CHF 2,990.-

b o u t i q u e



A LOOK
INSIDE
THE
LAB

AI in search of rare minerals

A laboratory at Stanford University is using artificial intelligence to discover the critical metals needed for the energy transition. A gigantic copper deposit has already been discovered in Zambia. BY JULIE ZAUGG

By 2050, demand for critical minerals used in electric vehicle production and renewable energy is expected to surge by 500%, according to Barclays' projections. Yet most surface deposits have already been mapped, while existing copper, cobalt, nickel and lithium mines face declining productivity. This challenge prompted Stanford researchers Jef Caers and David Zhen Yin to establish the Mineral-X laboratory in 2022. "Our goal was to adapt exploration techniques from the oil and gas industry, combining them with artificial intelligence to uncover critical underground mineral deposits," explains Caers.

These formations, buried 100 to 2,000 metres below ground, have developed intricate structures through millions of years of geological evolution. "Conventional exploration relies on drilling holes in a grid pattern, spaced 50 metres apart – an expensive and inefficient approach," says David Zhen Yin. Mineral-X has instead developed a machine learning algorithm that constructs three-dimensional maps of subsurface geology. "We input existing regional data, and the algorithm generates scenarios predicting the location, shape, size and depth of underground deposits," the researcher explains.

The data sources are extensive: geological surveys, geochemical analyses of rock samples, magnetic field measurements, seismic wave readings, radiation data from crustal elements, and satellite imagery capturing mineral spectral reflectance at the surface. Historical records – including hand-drawn parchment maps – occasionally prove valuable.

All the information is aggregated into a standardised, searchable database. "This enables field geologists to pinpoint the most promising sites for detailed investigation, perhaps deploying helicopter-mounted transmitter coils – essentially giant metal detectors that measure underground conductivity," says Yin. The machine learning model processes this data stream to generate predictions about critical mineral presence. Mineral-X has formed partnerships with private companies. "Our code is available as open source, but we provide early access to new iterations, as well as to our research papers, to a small number of partners that support us financially," notes Yin. These include California's KoBold Metals, Canada's Ero Copper and Ideon Technologies, Spain's Xcalibur Smart Mapping, Australia's Fleet Space Technologies and venture capital firm Bidra.

KoBold Metals deployed Mineral-X's algorithm to focus its search for nickel and cobalt across 800 square kilometres in Quebec's northern Nunavik region. In 2022, 10 drill holes spaced one kilometre apart yielded nickel concentrations in eight locations – a success rate 10 times the industry standard. Two years later, the company struck copper in Zambia, uncovering what promises to become one of the world's largest copper mines.

The next step is to apply artificial intelligence directly to production processes. "We can analyse extraction reagents to identify the most effective compounds for separating critical minerals from rock," explains Yin. The goal: maximising both recovery rates and ore quality. ▲



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