SWISSQUOTE MAGAZINE

FINANCE AND TECHNOLOGY UNPACKED

N° 2 MAY 2023 | CHF 9.- | WWW.SWISSQUOTE.COM

INDIA
The Tata behemoth picks up speed

STOCK EXCHANGE
The companies buying back shares

HAVAIANAS
Wearing Brazil on your feet

DOSSIER

Plastic: The World's Growing Addiction

Towards a tripling of consumption by 2060

→ CARBIOS → TOMRA → AVANTIUM → CORBION → LOOP INDUSTRIES → ORIGIN MATERIALS →

ISSN 2296-3278
80
9 772296 327000

cartier.ch - 044 580 90 90

SANTOS
DE
Cartier

EDITORIAL

Plastic: the invisible danger

How can you not feel sad when you see a plastic wrapper or a PET bottle left abandoned on the edge of a lake or mountain path? Fortunately, such uncouth behaviour remains fairly rare in Switzerland. But here or elsewhere, we need to understand that this form of pollution, however blatant, is only the tip of the iceberg. Another kind of pollution, although invisible, threatens biodiversity and our health: microplastic. These tiny fragments travel through the air and are now everywhere. A scientific study showed for example that 42 kg of microplastics fall on the summit of Hoher Sonnenblick mountain in Austria each year. In our country, up to 3,000 tonnes per year cover Switzerland.

The problem is that plastics can take up to several hundred years to decompose. They therefore build up in the environment and contaminate the entire food chain. The WWF estimates that a human being now ingests an average of 5 grams of plastic every week – about the amount of a credit card. And we do not yet know the consequences that this has on our health.

After global warming, the second-largest scourge our modern society faces appears to be plastic pollution. Even the United Nations declared "War on Ocean Plastic" in 2017. However, as our feature story shows, production and use across all categories of plastic could triple by 2060. As will plastic waste!

As environmental scientist Julien Boucher, who spoke with us in an interview, says, I agree that it is an illusion to think that we can completely do away with plastic in the future. No material can entirely replace plastic, as it is so useful in medicine, the food industry... And actually, in all areas.

Are we fighting a losing battle? No! Like our featured guest, I believe that we can reverse the trend and drastically reduce plastic pollution. That means we must educate both consumers and the manufacturing industry. But furthermore, it is on governments to take measures that limit the use of unnecessary plastic, develop alternative materials such as bioplastic, and promote reuse and recycling. Investors also have a role to play. For this feature, we have selected a handful of companies that are stepping up to tackle the issue through innovation. A drop in the ocean of plastic certainly, but a drop of hope.

We hope you enjoy reading!

BY MARC BÜRKI,
CEO OF SWISSQUOTE

contents

3
Editorial
by Marc Bürki

6
Scans
Economic survey

14
The crypto gazette

18
Stock Exchange
Share buybacks

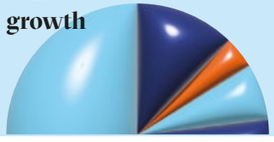
DOSSIER

Plastic: The World's Growing Addiction
22

36
Are bioplastics really so fantastic?

38
Breaking the recycling deadlock

30
Infographic: Wild growth



32
Interview: Julien Boucher
Plastic expert and co-CEO of EA - Environmental Action

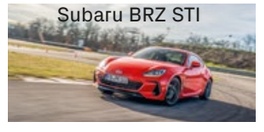
44
10 companies revolutionising plastic

54
Portrait
Tata: India's behemoth picks up speed

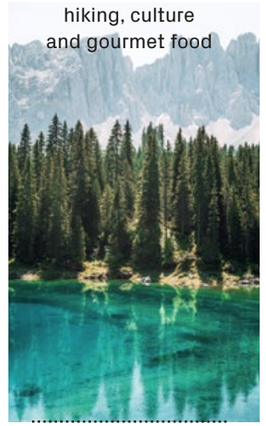
62
A brand, a story
Havaianas: Brazil on your feet

66
Swiss startups in this edition

70
Auto
Testdrive: Subaru BRZ STI



72
Travel
Dolomites: hiking, culture and gourmet food



78
Boutique

80
A look inside the lab
A birth control pill for men: coming soon?

impressum

Publisher
Swissquote
Chemin de la Crétaux 33
1196 Gland – Suisse
T. +41 44 825 88 88
www.swissquote.com
magazine@swissquote.ch

Manager
Brigitta Cooper

Editor-in-chief
Ludovic Chappex

Associate editor
Bertrand Beauté

Editorial staff
Bertrand Beauté
Stanislas Cavalier
Ludovic Chappex
Raphaël Leuba
Angélique Mounier-Kuhn
Grégoire Nicolet
Gaëlle Sinnassamy
Julie Zaugg

Design director
Caroline Fischer
Rue de la Navigation 5
1201 Genève

Layout
Caroline Fischer
Jérémie Mercier

Editing (English version)
Ose Ayewoh

Photography
AFP, Keystone,
Getty images,
iStockphoto, Theispot,
Unsplash

Cover
Spooky Pooka

Printing, Binding and Distribution
Stämpfli Ltd.
Wölflistrasse 1
3001 Berne
www.staempfli.com

Translation
Acolad

Advertising
Infoplus AG
Traubenweg 51
CH-8700 Küsnacht
hans.otto@i-plus.ch

Wemf
REMP 2022: 82,521 Ex.
Print run: 108,400 ex

MIX Paper from responsible sources FSC® C016087

printed in switzerland

SUBSCRIPTION
CHF 40 for 6 issues
www.swissquote.ch/magazine

Scans

“Bringing inflation back to 2% over the medium term is non-negotiable”

Christine Lagarde, president of the European Central Bank, during the annual conference “The ECB and its Watchers” on 22 March.

A US serviceman fires a Javelin missile during an exercise.

RANKING

The top five most popular streaming platforms
(by number of paid users)

1. NETFLIX (US)
225 million
2. PRIME VIDEO (US)
205 million
3. SPOTIFY (Sweden)
180 million
4. DISNEY+ (US)
130 million
5. HBO MAX (US)
85 million

Source: All Top Everything, 2022

The top five semi-conductor manufacturers
(by revenue in this sector)

1. TSMC Taiwan Semiconductor Manufacturing Company (Taiwan)
$74.1 BN
2. SAMSUNG GROUP (South Korea)
$65.6 BN
3. INTEL CORPORATION (US)
$63.1 BN
4. QUALCOMM INC. (US)
$44.2 BN
5. SK GROUP (South Korea)
$34.2 BN

Source: All Top Everything, March 2023

WEAPONS

War and business

Each day, the Ukrainian army fires 5,000 to 6,000 shells – equivalent to the annual production of a small Western country – as well as dozens of missiles. A profitable situation for weapons manufacturers. US companies Raytheon and Lockheed Martin produced the 6,500 Javelin anti-tank missiles that Washington sent to Kyiv. Each missile costs $78,000. Raytheon also won a $625 million contract to produce Stinger missile launchers. Their European counterparts are also keeping busy. UK group BAE Systems and Germany’s Rheinmetall manufactured a significant proportion of the artillery that has been sent to Ukraine. Rheinmetall, which joined the DAX in mid-March, went so far as to acquire Spanish group Expal Systems, and plans to build a factory in Hungary to increase its production capacity. French company Thales manufactures the Starstreak anti-aircraft missiles that were recently deployed on Ukrainian front lines.

→ RTX → LMT → BA → RHM → HO

$34,180

The price of one tonne of cobalt in early March, compared to $82,000 a year ago. This drop reflects the decrease in sales of electronic products, as consumers feel the pinch of sky-high inflation. Cobalt, whose global production is concentrated in the Democratic Republic of the Congo, is one of the primary components of the batteries used to power laptops, smartphones and tablets.

© LOCKHEED MARTIN / INEOS, WINTERSHALL DEA / KEYSTONE, GAETAN BALLY

THE IMAGE

This is a global first in the fight against climate change. On 8 March, Denmark opened a carbon dioxide (CO_2) storage facility in the North Sea in a former oil deposit 1.8 km beneath the seabed. Named “Greensand”, this joint project between UK group Ineos and German company Wintershall Dea is currently being tested. It will have the capacity to store 1.5 million tonnes of CO_2 per year in 2026 and up to 8 million tonnes by 2030, which is approximately 13% of Denmark’s annual CO_2 emissions.

FRAGRANCE

Cartel concerns in the perfume sector

Four flavourings and perfume giants – Geneva-based companies Givaudan and Firmenich, US group International Flavors & Fragrances, and German group Symrise – are being investigated by competition authorities in Switzerland, the United States, Europe and the United Kingdom. They are suspected of violating competition law by coordinating their price policies, preventing their competitors from supplying clients and controlling the supply of certain perfumes. Several searches were conducted in early March at various locations operated by these four companies, that alone control two-thirds of the $37.5 billion global fragrance and flavourings market. If the investigation concludes that these companies were conducting illegal activity, they could face fines of up to 10% of their annual revenue.

→ GIVN → IFF → SY1

Perfume production in Givaudan’s laboratory in Duebendorf, in the canton of Zurich.

“Free trade is almost dead”

Morris Chang, founder of TSMC, in reference to the United States’ desire to bring chip production back to American soil.

SWISS SCANS

DUTY FREE

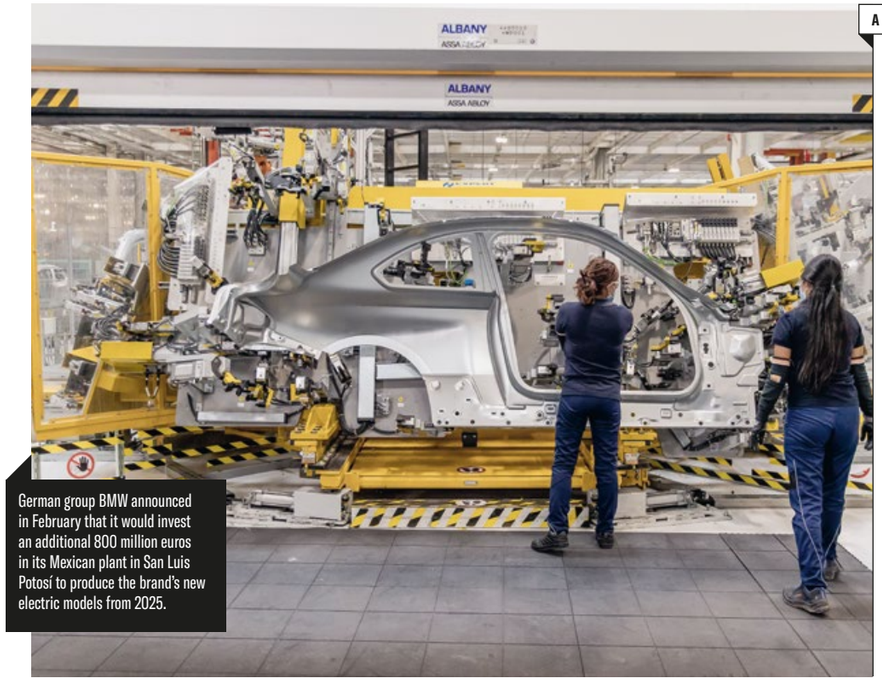
Shopping takes off again at airports

Dufry is in the black for the first time since the pandemic, with revenue up 76.1% in 2022, reaching 6.88 billion Swiss francs. The Basel-based group, which operates more than 2,200 duty-free shops in airports and ports and on cruise ships, benefited from the uptick in travel in the second half of 2022, particularly in Europe, the Middle East and the United States, as most COVID restrictions were lifted. But revenue continues to suffer due to Beijing's zero-COVID policy. Dufry has a minimal presence in Chinese airports, but relies heavily on purchases made by Chinese travellers when they go abroad. However, the country's citizens are expected to be on the move again in mid-2023.

→ DUFN

"AI can reduce some of the world's worst inequalities"

Bill Gates, in a post published on his blog on 21 March.



German group BMW announced in February that it would invest an additional 800 million euros in its Mexican plant in San Luis Potosí to produce the brand's new electric models from 2025.

AUTOMOBILE

Mexico: the new haven for green vehicles

Alarmed by delays to deliveries of Chinese vehicles during the pandemic and tensions between Washington and Beijing, the United States decided to bring production a little closer to home. And so Mexico was the ideal choice, particularly for electric vehicles. Tesla plans to build a gigafactory in Monterrey, a three-hour drive from Texas. Ford will triple production of its Mustang Mach-E in Mexico and GM will invest over $1 billion to expand its facility in Coahuila, near the US border, and convert two other locations to manufacture electric vehicles starting in 2035. Mexico, which contains significant lithium deposits, is also an ideal place to produce batteries. Bombardier plans to build a dedicated battery factory in Querétaro, in central Mexico.

→ TSLA → F → GM → BBD

BIDEN PLAN

Washington courts battery manufacturers

Europe and the United States are both trying to reduce their dependence on China for the production of lithium-ion batteries, which are used in electric vehicles. Europe, which has about 50 factories under construction and 18 lithium mine projects, hopes to do so by 2030. But a series of hurdles could jeopardise these plans. In early 2023, Britishvolt, which was planning to open a gigafactory in the UK, went bankrupt. With an ambitious plan to dedicate $369 billion to green technologies, US president Joe Biden has also disrupted the market. Several European battery manufacturers, such as Swedish group Northvolt and Italy's Italvolt (not currently public), are now looking to transfer their factories to the United States.

33

The number of countries whose CO_2 emissions have declined over the last 10 years while their GDP continued to increase. Three-fifths of these countries are in Europe, but others include the United States, Australia, Mexico and Israel.

From 2028, the French company Imerys intends to produce 34,000 tonnes of lithium hydroxide per year, the amount needed to equip 700,000 cars, in its Kaolin mine near Vichy. The project is worth 1 billion euros.

+5% Growth rate expected by the Chinese authorities in 2023. For the Swiss economy, SECO experts expect growth of 1.1%

FUEL

European AdBlue shortage

AdBlue is a mix of urea and demineralised water that neutralises nitrogen oxide emissions from diesel-powered freight trucks. Without this liquid, the majority of these vehicles are programmed to stop after a few kilometres. But rising energy costs forced German group SKW Stickstoffwerke Piesteritz, one of the leading manufacturers of AdBlue, to stop producing it in autumn 2022, causing the price of the precious liquid to skyrocket. Some freight companies are now spending up to €500,000 more per year just for AdBlue. However, this situation presents an advantage to other big AdBlue suppliers, such as German group BASF and Norway's Yara.

→ BAS → YARIY

© BMW / AFP, CORNON FRANCIS / AFP, PHILIPPE TURPIN

THE QUESTION

As Europe struggles with inflation and looming recession, the US economy just keeps growing. How is that possible?

"The US economy grew 2.9% in the last quarter of 2022. The job market is also strong. In January, the country posted a net gain of some 500,000 jobs, despite 6% inflation and a spate of interest rate hikes by the central bank. This good performance is due to the amazing resilience of the American consumer. During the pandemic, households built up savings that they are now spending. And 70% of the US economy is based on household consumption. This is what sets us apart from Europe and explains why the crisis is more acute there. But the US economy could suffer a setback in 2023. The most inflation-sensitive sectors, such as new home construction and commercial real estate, are showing signs of slowing. Interest rates on mortgages have hit record highs. The fall of Silicon Bank will also reverberate through the economy. It won't be as bad as in 2008, but banks will be more cautious, especially when it comes to granting home loans. We are not immune to a recession."

Stephan Weiler, professor of economics and regional development at the University of Colorado, United States.

-70%

The price cut agreed by US pharma group Eli Lilly for its insulin-based drugs for diabetics. The company was the target of a political campaign in the United States to make its products more financially accessible, particularly for the poorest people. Now, competitors such as Novo Nordisk and Sanofi are being called upon to do the same.

"The law passed in Europe (ed. note: a ban on combustion vehicles in 2035) would be economic and social suicide for our country"

Matteo Salvini, Deputy Prime Minister of Italy and Minister of Infrastructure and Transport, on Facebook.

After pulling out of e-cigarette specialist Juul, Altria bought Njoy, another player in the industry.

TOBACCO

Altria tries to break into the vaping market

Altria, the owner of Marlboro, acquired electronic cigarette manufacturer Njoy for $2.75 billion, after liquidating its stake in Juul, which it had held since 2018. This decision came after Juul's recent issues in the United States that almost resulted in bankruptcy in November 2022. Njoy, on the other hand, offers the advantage of having six products with authorisation from the US regulator (the FDA). The two other big cigarette companies, Philip Morris International and Japan Tobacco International, have decided to focus on heated tobacco products, sold under the brands Iqos and Ploom.

→ MO

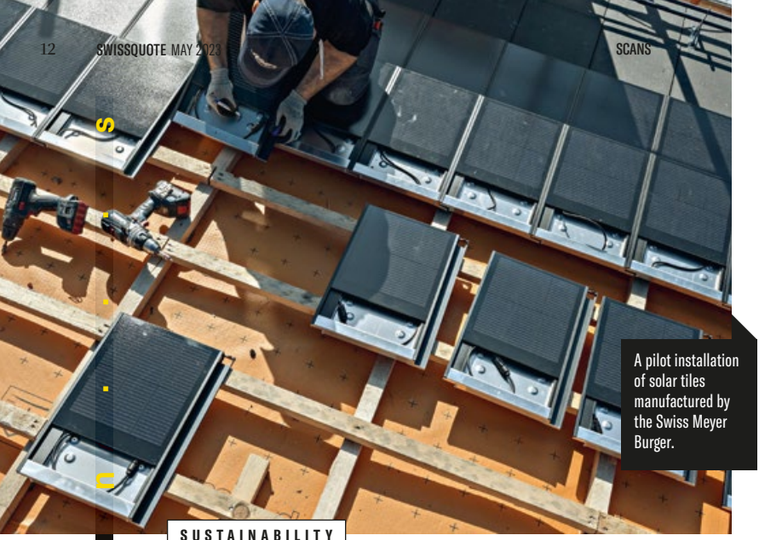
IPO

ARM ready to heat up Nasdaq

The IPO market has been quite sluggish since the invasion of Ukraine in February 2022 and the tech industry correction last year. But exciting times are ahead with the IPO of UK chip manufacturer ARM. The Cambridge-based group, whose semiconductors are used in most smartphones and laptops, will submit its request to Nasdaq in April, with an IPO expected by the end of the year. It hopes to raise at least $8 billion. ARM was publicly listed on the London Exchange until 2016, when it was acquired by Japanese group Softbank for $32 billion. Softbank then tried to sell it off to US firm Nvidia, another chip manufacturer, but the transaction was blocked by the US and European competition authorities. → ARMH

2027

The year when solar is expected to outpace all other energy sources in terms of installed capacity. The drop in the price of photovoltaics, which cost just $36 per megawatt hour in 2021 – 90% lower than in 2009 – has resulted in a boom in new PV installations.



A pilot installation of solar tiles manufactured by the Swiss Meyer Burger.

SUSTAINABILITY

Meyer Burger updates its solar panels

Swiss solar panel manufacturer Meyer Burger will no longer use plastic in its manufacturing process. The back of the panels are usually covered in a layer of polymer, which will now be replaced with glass. By updating its production lines, the Bern-based group will be able to simplify and accelerate the manufacturing process, a significant advantage in an industry with razor-thin margins. The change to glass-glass layers will also make the panels more resistant to UV rays and humidity. According to Meyer Burger, they will degrade less than 0.2% per year, functioning at 93.2% of their maximum capacity 30 years after installation. → MBTN

"It's free and always will be"

The slogan on Facebook's website, as it rolls out a paid subscription model.

$150 BN

The total profits generated last year by the top five oil companies: BP, Shell, ExxonMobil, Chevron and Total, due to the rising cost of fossil fuels after the Russian invasion of Ukraine. This represents an increase of between 28% for Total and 157% for ExxonMobil.

"People should take a deep breath before they declare victory"

Jamie Dimon, CEO of US bank JPMorgan, cautions against declaring victory over inflation in an interview with Reuters news agency.

BUST

Nestlé hopes to sell Palforzia

In 2020, Nestlé spent $2.6 billion to acquire Palforzia, a treatment for peanut allergies in children. But the drug – a powder made from peanut flour used to develop a progressive resistance to the allergen – never took off. Patients found it was too difficult to administer. It required a doctor's visit twice a month and patients had to mix the capsules with food that had a specific temperature and consistency. Palforzia is also very expensive – $1,000 per month per patient – and is not without risk. During clinical trials, 9% of children suffered from allergic reactions. The Vevey-based giant is now trying to sell off Palforzia, but it has admitted that the resale price would likely be much lower than the amount it paid to acquire the treatment. → NESN

The crypto gazette

crypto express

DOGE takes over Twitter

Elon Musk once again stirred the pot on 3 April (maybe a late April Fool's prank?) by replacing Twitter's logo with Dogecoin's (DOGE), a cryptocurrency that he has praised for several years now. As a result, Dogecoin shares were up 37% and a total of $4 billion was invested in under an hour. The famous Shiba Inu dog spent several days at the top of the social network's pages, replacing the traditional bird logo. But on 7 April, the bird was back, and DOGE's share price had already almost fallen back to its previous levels. Many criticised the fact that Elon Musk had manipulated the markets yet again.

France knocks down crypto influencers

The French Assemblée nationale (parliamentary body) passed a draft law on 30 March to combat scams by social media influencers. The cryptocurrency sector is particularly affected because under this law, promoting cryptocurrencies would be illegal. The sole exception is for companies that are awarded PSAN certification, deeming it a financial assets service provider. But this certification, granted by the French financial markets authority, has not yet been given to any company in the sector. Many cryptocurrency players oppose the law, arguing that it will benefit French-speaking foreign influencers who are not subject to this ruling. The law must still be passed by the Senate. Promoting NFTs (non-fungible tokens) does not currently fall under this law.

Russia continues to ramp up crypto mining power

The Russian cryptocurrency mining company BitRiver reported that Russia's mining capacity reached 1 gigawatt (GW) between January and March 2023, up from 500 MW in 2022. With that output, Russia now comes second only to the United States, which generates 3 GW to 4 GW. The Chinese government's ban on crypto mining in 2021 has left the market up for grabs. While the Biden administration is leaning more towards imposing taxes and regulations on miners, Russia is headed in the opposite direction and rolling out the red carpet. The Russian government is subsidising a new 100-megawatt Bitcoin mining centre in eastern Siberia. The future facility will be operated by BitRiver, which will not pay property taxes and will benefit from a reduced income tax rate. Plus, electricity at the new centre will be subsidised at 50% of the current rate.

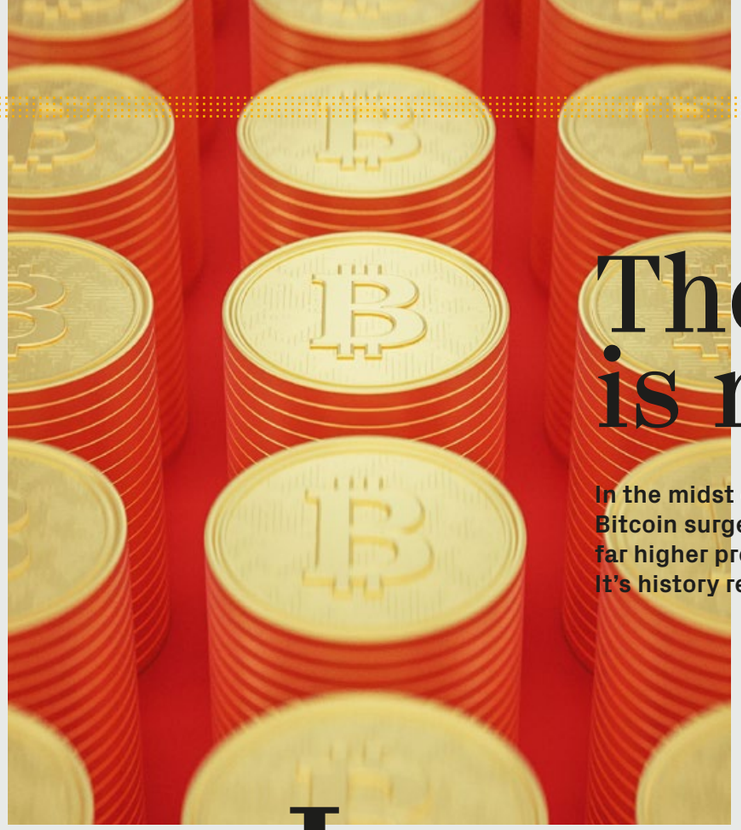
Crypto spotlight

XRP

Awaiting the verdict

The volatility of XRP's share price has significantly increased in recent weeks. The token from Ripple saw its share price rise nearly 50% in March, unlike most other altcoins, which were sluggish in Q1. The California-based company has been in a legal battle for over two years with the Securities and Exchange Commission (SEC), the US market watchdog, starting with a trial that began in December 2020. But Ripple is hoping that justice is imminent. The judge is ruling on the following question: is XRP a security, as the SEC believes, or a commodity?

This situation has led to many rumours and rampant speculation. If Ripple wins the trial, XRP's share price could skyrocket. But if the trial goes the other way, it would be a warning sign for the crypto ecosystem, with a potentially negative impact on prices – including XRP and possibly others. At the time of going to print, XRP was ranked 6th by Coinmarketcap in terms of capitalisation, behind BTC, ETH, USDT, BNB and USDC.



The king is not dead

In the midst of the banking crisis, Bitcoin surged in March, generating far higher profits than stocks or gold. It's history repeating itself. BY LUDOVIC CHAPPEX

It is one of the charms of the crypto market. Everything moves so fast. A mere four months ago, many people were patiently waiting for the price of Bitcoin, at the time hovering around $16,000, to bottom out at around $12,000 before starting to buy or buying more. Like every time the king of cryptocurrencies takes a dive, naysayers talk of its collapse or imminent death.

Then in mid-April, BTC easily breezed through the $30,000 mark after a stunning first quarter, its best in two years.

It is plain to see: bitcoin generated returns up to five times higher than major corporate stocks in the first quarter of 2023. The US news site Axios reported that the price of BTC shot up 72.6% during the period, while the Nasdaq Composite index, which includes almost all stocks listed on the Nasdaq, increased 16.8%. Meanwhile, gold rose only 8.8%.

The eye-popping rise in March came at a time when confidence in the banking sector was teetering

Ironically, the eye-popping rise in March came at a time when confidence in the banking sector was teetering due to bankruptcies in the United States (Silicon Valley Bank, Silvergate Bank, Signature Bank) and a sensational takeover closer to home (Credit Suisse). Forced to react, the US Federal Reserve (Fed) intervened with emergency rescue plans to quell the panic, expanding its balance sheet by $300 billion. To offset the current market tension, many traders believe that the Fed will launch an easing cycle in June, cutting rates by a quarter percentage point.

That was all it took to bring back the speculative fever surrounding BTC. How high can prices go? Will it be another bull run? Caution should remain, however. In a 25 March Coindesk post, research analyst Conor Ryder, from the crypto data firm Kaiko, warned of the all-time low in liquidity during the March rally. "BTC market depth, the number of orders waiting to be filled on an order book, reached 10-month lows this week – that's lower than levels seen since the collapse of the FTX exchange and sister firm Alameda Research." In other words, little upside resistance stood in the way.

At the time of writing, on 14 April, bitcoin was taking the entire crypto market along with it – again. Ethereum, in particular, was regaining momentum by gaining about 15% in the space of two days. Check back in June! ◢

Upgrade to Audi’s business class

Displayed model: Audi Q8 50 e-tron Black Edition quattro, 340 hp, 23.2 kWh/100 km, 0 g CO_2/km, category C. Chronos Grey Metallic, Audi Sport wheels, 5-spoke structure design, titanium grey, high-gloss turned finish, 9.5 J × 22, tyres 265/40 R 22, second charging socket, black roof rails, regular price CHF 98 180.–, compensation CHF 4120.–, EnterprisePlus discount CHF 10 340.–, cash purchase price CHF 83 720.–, down payment CHF 20 930.–. Leasing rate: CHF 529.–/month. All offers exclusive of compulsory comprehensive insurance. The granting of credit is prohibited if it leads to over-indebtedness on the part of the consumer. Financing provided by AMAG Leasing Ltd. Offer valid for contracts concluded by 30 june 2023 or until further notice. Subject to change. Applies to all vehicles imported by AMAG Import Ltd. Suggested list price of importer AMAG Import Ltd. * EnterprisePlus: commercial offer, only available for vehicles registered to companies with an entry in the commercial register.

Further attractive offers for SMEs

As an SME, you can benefit from special conditions on a range of models.

Audi Q8 e-tron from CHF 499.– / month

including 15% SME discount

Audi Q8 50 e-tron advanced quattro

Gross price	84 900.–
4.2% compensation	– 3560.–
11% EnterprisePlus (after compensation)*	– 8940.–
Your special price	72 400.–
Your discount	12 500.–
Annual interest for leasing	2,99%
Leasing rate per month	499.–

STOCK EXCHANGE

All about share buybacks

More and more companies are buying back their own shares, both across the Atlantic and in Switzerland. This mechanism restores value for shareholders without diluting the capital. BY JULIE ZAUGG

It was yet another share buyback, and it hardly went unnoticed. In late 2021, Nestlé announced that it was beginning a share buyback programme of up to CHF 20 billion, equal to 5.5% of its capital. Running until the end of 2024, the programme is the latest in a series of buybacks that have recaptured CHF 100 billion in shares since 2005 for the Vevey-based giant. "Nestlé has reduced the number of its shares by a third during this period, from 3.9 billion to 2.8 billion," says Jean-Philippe Bertschy, an analyst at Vontobel who covers the firm.

And Nestlé is not the only one doing it. Share buybacks are popular with Swiss companies. Other large-scale programmes include Novartis, which repurchased CHF 15 billion worth of shares, and Sonova, which bought back 6.3% of its market capitalisation. ABB, Holcim, Lindt & Sprüngli, Logitech, Lonza, UBS, Swiss Life and Zurich Insurance have also recently made use of this tactic. "More than 20 buyback programmes are currently under way in Switzerland," says Jean-Luc Chenaux, associate professor at the University of Lausanne and expert in commercial and business law.

The trend is global. We see even more mind-boggling amounts in the United States. Chevron recently announced a $75 billion share buyback programme, while Facebook is taking steps to buy back $40 billion in shares. In 2022, Apple spent $90 billion to repurchase 3.5% of its shares.

So, why would a company buy back its own shares? "It's a way of redistributing money to shareholders," says Dušan Isakov, professor of corporate finance and governance at the University of Fribourg. "If a company decides to destroy its shares (ed. note: see inset on p. 20), it reduces the number of shares outstanding, automatically inflating earnings per share." Buybacks tend to have a positive impact on share value for the remaining shareholders.

Earnings per share is a key metric used by analysts to measure investment quality. A higher EPS makes a stock look more attractive. Buybacks also drive up the share price, creating demand for the stock. "Nestlé, for example, repurchased its shares for an average price of CHF 66. Now they're worth CHF 108, signalling significant value creation for shareholders," Jean-Philippe Bertschy says.

Companies buy back shares when they have surplus capital. This is the case for Lindt & Sprüngli, which has no immediate plans to acquire, nor does it need to invest in research and development. Similarly, Glencore tripled its net profit attributable to shareholders in 2022, on the back of sky-rocketing commodity prices. These freshly generated funds prompted the firm to initiate a $1.5 billion share buyback programme.

A company has the option of keeping the shares it has repurchased. They can be put to use to attract talent as part of compensation packages offered to new employees. Or, these shares can be used in a share swap. "For instance, UBS announced that it would use the shares it had repurchased in its latest buyback programme to finance the takeover of Credit Suisse," Jean-Luc Chenaux says.

Companies clearly appreciate the flexibility of buybacks. "Unlike a dividend, which, if reduced, generally causes the share price to fall, a share buyback programme can be interrupted at any time without any real consequences if circumstances change," Dušan Isakov says. Credit Suisse discontinued its share buyback programme in March 2022, just two months after launching it, in the aftermath of the Greensill debacle. And Adecco interrupted a €600 million buyback programme in 2021 to buy AKKA. →

"The reduction in the number of shares outstanding automatically inflates earnings per share"

Dušan Isakov, professor of corporate finance and governance at the University of Fribourg

A booming trend

Share buyback programmes are on the rise. Vontobel Bank estimates that these programmes totalled CHF 800 billion in the United States, CHF 330 billion in Europe and CHF 34 billion in Switzerland. Buybacks have shot up over the years. Between 2009 and 2018, companies listed on the Swiss stock exchange bought back an average of CHF 8.7 billion per year. Proportionately, the practice is more widespread in Switzerland. In 2022, buybacks amounted to 3.7% of the total market capitalisation of Swiss companies, compared with 2.4% in Europe and 2.2% in the United States.

... but they have their critics

Buybacks draw their share of criticism. In mid-March, French President Emmanuel Macron criticised companies that generate record profits and use the money to buy back their own shares. Democratic US presidential candidate Elizabeth Warren dug into such practices, calling them "paper manipulation".

For example, buybacks can be used to elevate the share price if the company feels that it is undervalued. That is how Warren Buffett justified Berkshire Hathaway's share buybacks in 2021. This logic also motivated buybacks carried out by some tech groups and property funds in the United States in 2022, when markets were glum.

For example, buybacks can be used to elevate the share price

In Switzerland, share buybacks have only been authorised since 1992. However, rules apply to limit the practice, which could effectively constitute price manipulation. For example, companies are not allowed to repurchase more than 10% of their shares, and the buyback must be spread over a certain period.

By buying back shares instead of investing in new products, talent or acquisitions, a company also risks sending "a negative signal" to the markets, Jean-Luc Chenaux says. "It could be construed as the company admitting to a lack of strategic opportunities ahead."

Repurchase or destroy?

After buying back its shares, a company can decide to keep them or destroy them. If it chooses the second option, which is by far the more common one in Switzerland, it must then cancel the shares. Consequently, they cannot be reissued, and they are worth nothing.

It is worth noting that if shares are destroyed, the seller is taxed at source at 35%. This prohibitive rate generally discourages private investors from engaging in the practice. "In Switzerland, entities selling their shares under a buyback programme are therefore typically institutional investors, as they pay much less tax," says Dušan Isakov, professor of corporate finance and governance at the University of Fribourg.

Share buybacks can be carried out either at the market price or at a fixed price equal to the share value plus a premium, for a defined amount and time period. "This second solution is chosen when the company is in a hurry, as the buyback can be done within a few weeks rather than having to wait one to three years," Dušan Isakov points out.

Plastic: The World's Growing Addiction

Global plastics' use will have tripled by 2060 if nothing is done to curb the current binge-like consumption. Even in the best-case scenario, production volumes will practically double. BY BERTRAND BEAUTÉ

30 Infographic: Wild growth

32 Interview: Julien Boucher
Plastic expert and co-CEO of EA - Environmental Action

36 Are bioplastics really so fantastic?

38 Breaking the recycling deadlock

44 10 companies that are revolutionising plastic

→
Founded in 1946 by American engineer Earl Tupper, the famous Tupperware company revolutionised the lives of housewives with home demonstrations of these plastic containers. Here, a brand advertisement from the 1950s.

© TUPPERWARE

Plastic has permeated every aspect of our lives. We package our food with it and can find it in most everyday objects, such as our computers, cars, clothes and toothbrushes. Plastic is also omnipresent in the medical field, where its properties make it the ideal material for keeping catheters and transfusion bags sterile. Less visibly, it also contaminates the air we breathe, the water we drink, and the soil we cultivate.

In 2021, global plastic production totalled 390.7 million tonnes, estimates the trade association Plastics Europe. The Organisation for Economic Cooperation and Development (OECD) sets this figure at 460 million tonnes. The experts we consulted cut it somewhere in the middle, estimating production at “more than 400 million tonnes per year”.

But whatever the source, one fact is generally agreed upon: the world has never used as much plastic as it does today, and the curve is not about to flinch. “Consumption and production will continue to increase, because we need this material,” says Tzoulianna Leventi, investment and ESG analyst at Abrdn. Everything even seems to be gathering pace. Although the first plastic was invented at the end of the 19th century (see p. 26), almost 60% of all plastics produced were invented after 2000.

In its “business-as-usual” scenario, “Global Plastics Outlook: Policy Scenarios to 2060”, an OECD report published in June 2022, predicts that global plastics use could triple by 2060 to 1,231 million tonnes per year. “Around the world, lots of regulations are being passed to curb this expected growth,” says Clément Maclou, thematic asset manager at ODDO BHF.

But despite increasingly hardline measures, the use of plastic will continue to rise. The OECD’s Regional Action policy scenario would rein in plastics use to 1,018 million tonnes per year by 2060. In the unlikely scenario of global, coordinated action, the use of plastics would come to 827 million tonnes per year. Although lower than the baseline scenario, that is still an 80% increase from current levels. “The plastics industry is a huge market, generating almost $600 billion a year,” says Kokou Agbo-Bloua, Global Head of Macro Research at Société Générale. “And most studies size the industry at $800 billion by 2030.” This outlook is corroborated by Grand View Research. The firm estimates that the plastics market will grow from $609 billion in 2022 to reach $811 billion in 2030, a growth rate of 3.7% per year.

What other material can boast of being flexible or rigid, transparent or opaque, strong or brittle, soft or rough, depending on how it is made?

This colossal pie is divided among a handful of multinationals that produce most of the world’s plastic. They are mainly oil giants, including the US firm Exxon Mobil and the Italian group Eni, as well as chemical behemoths, such as BASF from Germany, Ineos from the UK, LyondellBasell from the United States and Sabic from Saudi Arabia.

But how can we explain why the use of plastic continues to rise, when awareness of the problem appears to be growing? “The consumption of plastic is strongly linked to GDP. The richer a country is, the more it uses,” Kokou Agbo-Bloua explains. In other words, the emergence of a middle class in some countries, namely China, will stoke up plastic consumption for years. Meanwhile, rich countries are unable to curb their appetite for the material. Plastics Europe →

reports that annual demand for plastics continues to grow on the Old Continent: 50.3 million tonnes in 2021, up from 49.9 million tonnes five years earlier. Consumption is therefore still on the rise, despite the measures taken in Europe to limit the use of plastic.

> “Many small and very innovative companies are taking on the plastic challenge and putting out viable and sustainable solutions”
>
> **Tzoulianna Leventi**, analyst at Abrdn

“Reducing the use of plastic is difficult because it is a great material,” admits Julien Boucher, president and founder of Environmental Action, in our interview with him (see p. 32). Plastic is lightweight, easy to produce, cheap and has excellent properties.” Precisely, what other material can boast of being flexible or rigid, transparent or opaque, strong or brittle, soft or rough, depending on how it is made? Glass, for example, is always heavy and breakable. Cardboard, on the other hand, is not waterproof and falls apart. But the dilemma does not only concern the packaging industry. In fashion, for example, plastic fibres (polyamide, polyester, acrylic and nylon) provide much needed functionality. They are elastic and soft to the touch, dry quickly and are more lightweight than natural fibres like cotton.

Lightweight and therefore transportable

Another key advantage of plastics is that, over their entire life cycle, their carbon footprint is often better than that of alternative materials. “If you account for transport, a plastic product generates comparatively little CO_2, over its entire life cycle” says Pieter Busscher, senior portfolio manager for the Smart Materials investment strategy at Robeco in Switzerland. “For this reason, the versatility of plastics and the fact that we use them in almost all areas, it is difficult to replace them with other materials.”

One of the most striking examples is PET bottles, which are much lighter than their glass counterparts and therefore require less energy to transport. In another example, Switzerland’s Federal Office for the Environment (FOEN) writes on its website how plastic films for mailing magazines generally have a better environmental footprint than paper envelopes. In terms of greenhouse gas emissions alone, plastic is therefore sometimes the best choice compared to other options available.

But there is a problem with that. “Plastic has many advantages, but it also has many drawbacks,” Kokou Agbo-Bloua reminds us. “The most glaring disadvantage is its disastrous impact on biodiversity.” Environmental pollution due to plastic is by far the biggest problem. The OECD estimates that 353 million tonnes of plastic waste was produced worldwide in 2019. →

→
On 3 June, 2021, a giant «STOP» filled with plastic waste was installed at the entrance to the Plage des Eaux-Vives in Geneva. Each year, nearly 5,000 tonnes of waste on average is collected from the streets, a third of which is thrown on the ground – not in the bin.

A CENTURY OF PLASTIC

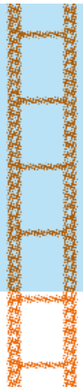
The most common plastics were invented between 1850 and 1950. Their properties were then improved by integrating additives.

1862

Initially named “Parkesin” after its inventor, Alexander Parkes, the first plastic is presented in London at the Universal Exhibition.

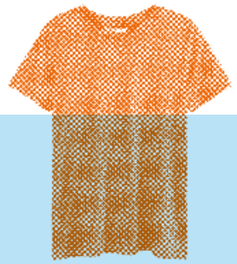
1869

John Wesley Hyatt develops celluloid. This plastic replaced the ivory in billiard balls. It subsequently became extensively used in the film and photography industries.



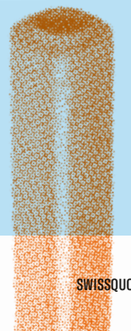
1892

Charles Cross, Edward Bevan and Clayton Beadle patent viscose. Sometimes referred to as “artificial silk”, this plastic offers a cheaper alternative to silk for the textile industry.



1908

Swiss chemical engineer Jacques Brandenberger invents cellophane, which is used widely for packaging food.



Out of that eye-popping pile, only 32 million tonnes (9%) was recycled (see also p. 38). What happened to the rest? Estimates show that 19% was incinerated, 50% went to landfill and 22%, or 77 million tonnes, was dumped. Despite its legendary cleanliness, Switzerland has not been spared. The FOEN reports that 14,000 tonnes of plastic is thrown away in our country every year.

Because of their long lifespan (sometimes several hundred years), plastics then accumulate in the environment, with catastrophic consequences for biodiversity and probably for human health. And the worst may be yet to come. According to the OECD, the amount of plastic waste could triple by 2060 if no action is taken, in line with the increase in production.

Fortunately, things are starting to change. "Even if global plastic production continues to rise, we are moving in the right direction," says Clément Maclou of ODDO BHF. "Consumers are increasingly aware of the issue and more and more countries are passing regulations to reduce the use of plastic. Europe, which adopted its green deal during the pandemic, is well ahead of the game in this area." And since investors also have a role to play, the feature story of this issue of *Swissquote* focuses on small, innovative companies that are tackling the plastic problem (see p. 44 to 53). So are they good investments? "The adoption of regulations to limit the use of plastic and societal pressure will be favourable to companies offering solutions that address the issue," Clément Maclou says, "whether they aim to reduce the use of plastic, promote its reuse or improve its recycling."

Tzoulianna Leventi agrees. "The good news is that many small and very innovative companies are taking on the plastic challenge and putting out viable and sustainable solutions," the Abrdn analyst says. "Some are finding new uses for centuries-old traditional materials, such as cork and pine resin. Others are concocting sustainable, even biodegradable, products in the lab to replace the petroleum-based products we are so dependent on." Many of these companies are still in the early stages of development and therefore represent a risky investment. But the best may be yet to come, as Tzoulianna Leventi suggests. "As the demand for these sustainable products increases, these companies may have promising growth opportunities in the future." ◢

→ In 1948, the Eames Plastic Chair – the first real plastic chair – won second prize in the "Low Cost" competition organised by MoMA. It has been mass-produced since 1950.

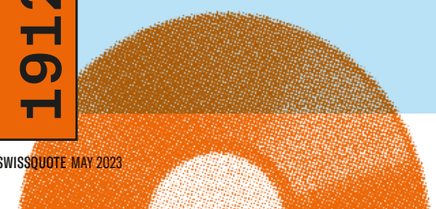
What is plastic anyway?

The term plastic refers to a set of synthetic materials made by polymerisation, a process involving a series of chemical reactions carried out on organic compounds (i.e., containing carbon). Although 90% of plastic is currently produced from hydrocarbons, it can also be made from other materials, notably plants. Its properties differ depending on the type of polymerisation. For example, plastic can be hard or soft, opaque or transparent, flexible or rigid. Most plastics were invented between 1850 and 1950, but their properties have since been improved with the addition of chemical additives such as plasticisers, flame retardants and dyes to make them more flexible, stronger and less flammable.

The first plastics had a limited market but the sector really took off after World War II. The material developed further thanks to the positive image of plastic prevailing in the 1960s. It began to squeeze out other materials until it was present almost everywhere. A turning point came in 1978, when Coca-Cola replaced its iconic glass bottle with a PET container. The era of disposable plastic had begun.

1912

German chemist Fritz Klatte patents polyvinyl chloride (PVC), the use of which soared after World War II. PVC has applications in the construction industry and is used to make vinyl records.

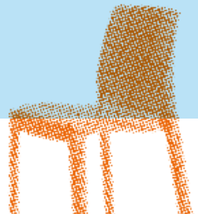


1945

The US company DuPont de Nemours comes out with Teflon, a plastic that became popular for use in kitchen utensils and textiles.

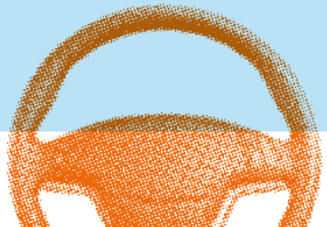
1953

German chemist Karl Ziegler discovers a process for the synthesis of high-density polyethylene (HDPE), a durable plastic used in a variety of applications, such as making outdoor furniture.



1954

Italian chemist Giulio Natta and German chemist Karl Ziegler come up with a process for synthesising polypropylene. The polymer became ubiquitous in the automotive industry, in bumpers, dashboards, interior trim and more.



1965

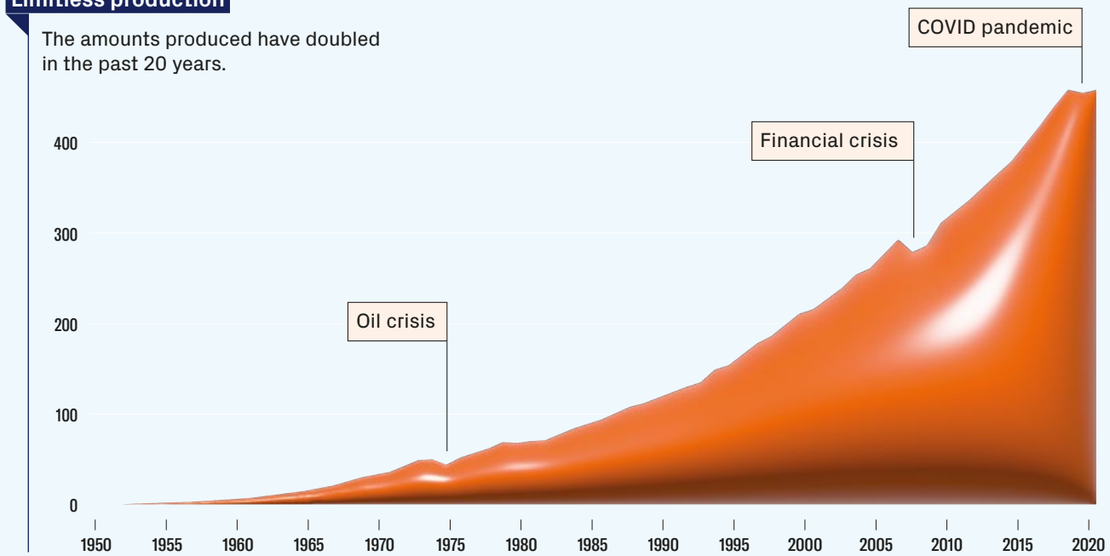
Researchers at DuPont de Nemours invent Kevlar, a particularly resistant plastic fibre used to make helmets and bulletproof vests.

Wild growth

The production and use of plastics has increased dramatically since the beginning of the 20th century.

Limitless production

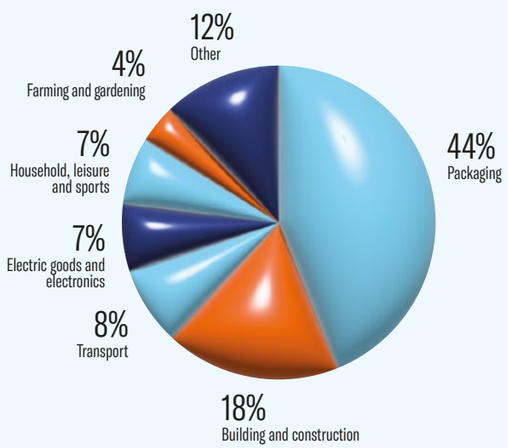
The amounts produced have doubled in the past 20 years.



Worldwide production in millions of tonnes

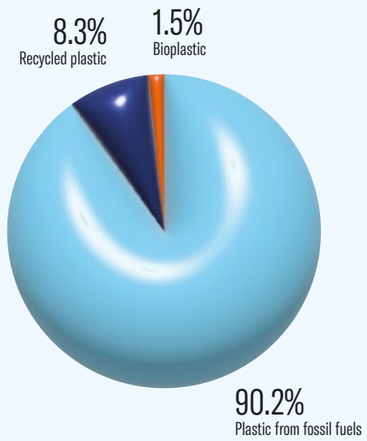
Packaging, where most plastic goes

While plastic is found in most consumer goods, almost half of the world's plastic production goes into packaging.



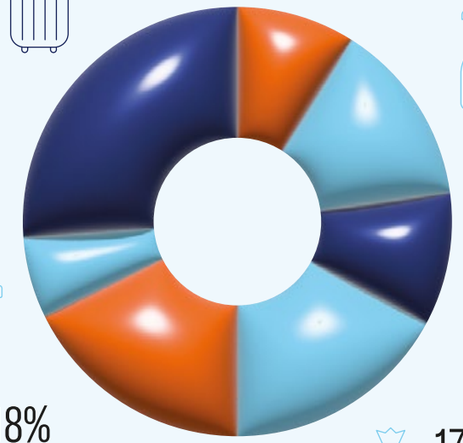
Not much recycling

Almost 90% of the world's plastics are sourced from fossil fuels.



The many forms of plastic

There are several types of plastic, each with different properties.



9% PET (Polyethylene terephthalate)
In addition to bottles for beverages, PET can be found in credit cards, some polyester fibres (clothing) or food packaging.

14% HDPE (High Density Polyethylene)
HDPE is mainly used in packaging for detergents and milk and shampoo bottles. It is also used as a hard plastic, for example in canoes and kayaks.

10% PVC (Polyvinyl chloride)
PVC is used in pipes, floor coverings, electrical cables, some credit and loyalty cards, as well as in sex toys.

17% LDPE (Low Density Polyethylene)
Highly resistant, LDPE is used to make rubbish bags, various containers, plastic bottles, coatings and is found in some computer components.

18% PP (Polypropylene)
Polypropylene is widely used in the automotive industry, notably in making bumpers, dashboards and interior trim. It is also used in food packaging and DVD cases.

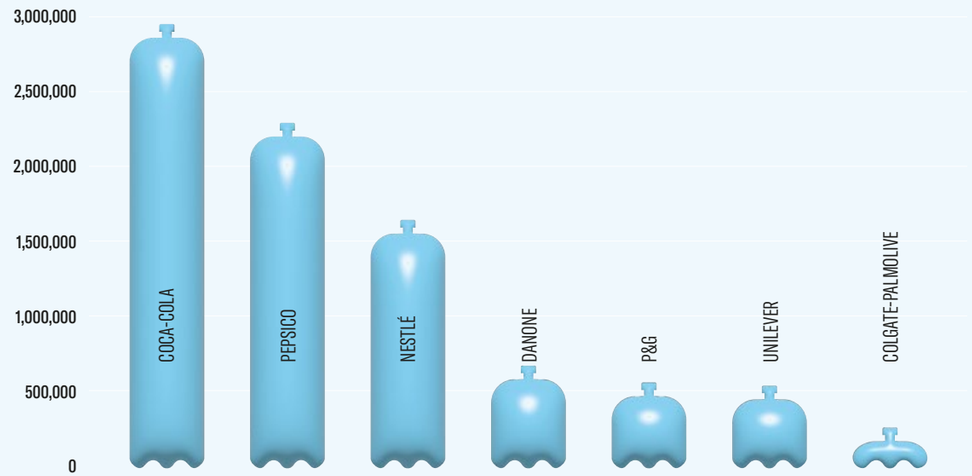
6% PS (Polystyrene)
Sagex is widely used in logistics to protect fragile products during transport. It is also used as thermal insulation in the building industry, as well as in food packaging.

26% Other
Many other plastics exist (PC, PA, PMMA, PU, ABS, etc.). They are used in various fields such as to make suitcases, toothbrush bristles, toys and cases for electronic devices.

Coca-Cola, the world champion

Food giants are by far the biggest users.

Amount of packaging in tonnes



SOURCES: PLASTICS EUROPE, CHANGING MARKETS FOUNDATION, OECD, ATLAS DU PLASTIQUE

“There’s no miracle material to replace plastic”

Plastic expert and co-CEO of EA - Environmental Action, Julien Boucher warns how microplastics are everywhere and pollute even the food we eat. We spoke to him to find out more...

BY BERTRAND BEAUTÉ

Based on research from 17 of the world’s most pre-eminent experts in the field, “Breaking the Plastic Wave”, a July 2020 report published in the esteemed journal *Science*, provides a “first-of-its kind” analysis of plastic pollution worldwide. This “IPCC of plastics” predicts that plastic flows into the ocean could nearly triple by 2040. But solutions exist to reverse the trend, says Julien Boucher, co-author of the report and co-CEO of EA - Environmental Action (a Lausanne-based sustainability research and consulting centre). As this trusted expert says, we need to be more ambitious than ever to shift the trajectory. →

The 2020 study you participated in estimates that the flow of plastic into the ocean will nearly triple by 2040. Has anything changed since then?

Commitments made by governments and the private sector in recent years, such as the ban on disposable plastic bags, straws and other single-use utensils, will reduce these projections by 7% by 2040.

However, these measures are still far too inadequate to offset the figures presented in this study. It says that 40 million tonnes of waste flow into our environment every year. If no action is taken, this amount could triple by 2040. This means that 29 million tonnes of waste would be dumped into the oceans alone. So, current commitments fall woefully short, as plastic waste is produced at an alarmingly faster rate than our ability to manage it.

Is ocean pollution the main problem with plastics?

It's true that in recent years much focus has been directed to the "seventh continent" of plastic waste and its impact on biodiversity. This is a serious problem. Plastic, which can take hundreds of years to disintegrate, has a calamitous impact on wildlife. Birds, fish and many other species are found dead with their stomachs full of plastic.

But new issues are emerging on top of ocean pollution. The main concern is the impact of microplastics on human health. Microplastics are tiny pieces of plastic measuring less than 5 mm in size. And they're absolutely everywhere: in the air, in the water, and they also spread through the food chain. In other words, we eat and inhale plastic microparticles every day without realising it. Their harmful effects have not yet been formally demonstrated, but this issue will be central to future considerations about how to deal with plastic waste. Another issue is the chemical additives incorporated into plastics to improve their properties. But once out in the environment or food, these chemicals are potentially toxic.

More than 90% of plastic is derived from fossil fuels. What is the impact on climate change?

Global plastic production generates about 5% of greenhouse gas emissions, almost as much as air transport (7%). However, replacing fossil fuel-based plastic with another material is not always the best solution for the climate. Some plastics, but not all, actually have a better carbon footprint over their entire life cycle than the materials that could replace them. For example, if all plastic bottles were to be replaced with glass, the carbon footprint would explode, as the lorry, container ship or aircraft transporting the heavier container would burn more fuel.

All research predicts that plastic production will increase over the next few years. Do you see any hope?

Current forecasts show that the production and use of plastic will continue to grow. This is because plastic is an efficient material in many respects: it is light, cheap and easy to produce. There are also major economic interests associated with it. But let's be clear, there's no miracle material to replace plastic, so it's not about demonising them, but about using them better. Yet while the environmental outlook seems bleak, we have ways to reverse the trend. Our report shows that by taking a bold strategy, the best-case scenario could reduce plastic pollution by 80% by 2040.

→ Pieces of microplastics washed up on a beach.

"We eat and inhale plastic microparticles every day without realising it"

What solutions do you recommend?

The current debate is polarised with one side wanting everyone to stop using plastics altogether and the other side believing that recycling plastics is the only way forward. Fruitless opposition will not get us anywhere. Let's face it. There will always be plastic, because it's impossible to do away with it completely. But also, recycling cannot solve everything. Our study shows that if we want to make any progress, we need to advance on all fronts at the same time. First, we must reduce plastics use, by removing all unnecessary plastic or replacing it with another material whenever possible. Next, we should promote reuse and ecodesign.

Waste management and recycling infrastructure must also be developed. What's more, the global plastic waste market should be regulated. A substantial amount of our waste is recycled in Asia, which is tantamount to a social and environmental disaster. Finally, plastic should be given a value. The real problem with plastic is that it is far too cheap. If the price goes up, more people will be around to collect the waste. And the recycling rate will also increase. There is currently no demand for recycled plastic, except for PET, because virgin plastic is still much cheaper.

Even with all these efforts, 20% of waste will still be released into the environment in 2040...

A significant portion of this 20% is due to microplastics resulting from the breakdown of certain products. That includes wear from tyres, paints and textile fibres, which release microplastics every time they are washed in a machine. We currently do not really have a large scale solution to this problem. ◢

Are bioplastics really so fantastic?

Biopolymers are often presented as an environmentally-friendly alternative to traditional plastics. However, they are not always as virtuous as we might think. Behind the name lurk diverse realities. We take a closer look... BY BERTRAND BEAUTÉ

© DANIELE FRANCHI

Bio-... The prefix means "life" or relates to living things and therefore conjures in our heads the promise of living sustainably and on a healthy planet. Bioplastics have gained traction in recent years, replacing thin plastic bags (banned since 2016 in the European Union but still authorised in Switzerland) and offering a guilt-free substitute for certain packaging and everyday items, such as straws, water bottles, toys, pens and glasses frames.

Plastics Europe estimates that bio-attributed plastics now account for 1.5% of the world's plastic production. The figure is relatively modest but is rising steadily. Global production capacities rose from 1.792 million tonnes in 2021 to 2.217 million tonnes in 2022, an increase of almost 25% in one year. And that's not all. European Bioplastics, the European umbrella organisation representing the bioplastics industry, forecasts that supply will triple to reach 6.291 million tonnes in 2027, an average increase of 50% per year over five years!

The largest market for bioplastics remains packaging, which absorbed 48%, or 1 million tonnes, of production in 2022. Meanwhile, other fields of application are developing, such as the automotive sector, transport, agriculture, electrics and electronics.

This fast-growing demand is attracting not only a myriad of small, innovative companies, such as Origin Materials from the United States and the firms Avantium and Corbion from the Netherlands, but also industry giants. For example, the petroleum group Total aims to become a leader on the bioplastics market. In 2019, Total teamed up with Corbion to open a plant in Rayong, Thailand, that can produce 75,000 tonnes of bioplastics per year.

But is the "bio-" in bioplastic as natural and good for living organisms as the name suggests? The answer is not so simple. On paper, these materials look as though we should be able to use them guilt-free. But in reality, they do not always meet the claims. How so? The ambiguity comes from an overly broad definition. "First of all, we need to define what bioplastics are," says Pieter Busscher of Robeco. "The term covers two different types of materials: bio-based plastics and fossil fuel-derived plastics that are biodegradable or compostable."

Now, let's get one thing straight: just because a plastic is plant-based does not mean it is biodegradable or compostable. Some are, some aren't. In October 2021, the US giant Coca-Cola came out with its prototype PlantBottle, a PET plastic bottle made with 100% plant-based content (sugar from corn and forestry waste). If it ever hits the market, the bottle will offer the advantage of being renewable and probably reduce greenhouse gas emissions compared to fossil fuel-derived PET. But the fact that the bottle is plant-based will not change anything at the end of its life. Chemically, plant-based PET has the same structure as PET made from fossil fuels. That means it can be recycled, but if it is dumped, it will remain in the environment for several hundred years before breaking down.

The petroleum group Total aims to become a leader on the bioplastics market

In contrast, bioplastics made from fossil fuels are all biodegradable or compostable. But they have the disadvantage of being petroleum-based and therefore contributing to global warming. Various estimates set the share of the global oil supply that goes into producing plastic at between 4% and 8%.

European Bioplastics reports that 48.5% of all bioplastics produced in 2022 was not biodegradable. We could face another issue. As with biofuels, bioplastic production could take away land from food production. According to European Bioplastics, only 0.8 million hectares is currently used for bioplastic production, or 0.015% of the world's farmland. But this figure could rise fast as the sector develops. For example, to produce one tonne of PLA bioplastic, 2.39 tonnes of corn, 0.37 hectares of land and 2,921 cubic metres of water are needed, based on figures from Plastic Atlas.

"It's very dangerous to think that bioplastics offer the perfect solution," says Kokou Agbo-Bloua, Global Head of Macro Research at Société Générale. In fact, all experts agree that the important thing is to put the right material in the right place. "The origin of plastics is often used as a way of influencing consumer decisions, but we must be aware that a plant-based and/or biodegradable plastic is not necessarily less harmful to the environment," says Clément Maclou, portfolio manager at ODDO BHF. The important thing is to further develop the classification and recycling chains for plastics at the end of their life cycle, to ensure that recyclable and/or biodegradable plastics do not end up in the same landfill as non-recyclable ones. Otherwise, there is little point in investing in biodegradable plastics." ◢

→ PET bales of pre-sorted bottles in Mueller Recycling's sorting centre in Frauenfeld.

Breaking the recycling deadlock

Currently, less than 10% of plastics are recycled worldwide. And there is no easy way to raise that rate.

BY BERTRAND BEAUTÉ

Solution or illusion? Plastic recycling is a controversial issue. Its supporters, the plastics and packaging industries, are pitted against its detractors, for the most part environmental NGOs. A Greenpeace USA report published in October 2022 bluntly stated that plastic recycling is a "dead end street", a "myth" promoted by the industry to protect its business.

> **"Recycling is part of the answer, but it's not a miracle solution"**
> **Kokou Agbo-Bloua**, Global Head of Macro Research at Société Générale

At the other end of the spectrum, the trade association Plastics Europe, for example, believes that "plastic is a key material" and will endeavour to "harness the power of innovation and technology to significantly increase reuse and recycling by, for example, creating more recyclable products and more innovative recycling techniques".

So what's really happening? Can recycling be developed to solve the problem of plastic waste? "Recycling is part of the answer, but it's not a miracle solution," says Kokou Agbo-Bloua, Global Head of Macro Research at Société Générale. That said, recycling has been developing rapidly in recent years. "The share of recycled plastic in global consumption has risen from 2% in 2016 to 10% today. In this market, that's rapid growth considering the volumes to be processed," says Clément Maclou, a portfolio manager at ODDO BHF.

This percentage is expected to continue climbing over the next few years due to both growing consumer demand for sustainable products and the adoption of legislation to promote recycling. For example, on 1 January 2021, the European Union passed a "plastic tax". As currently applied, the richest EU Member States must now pay a contribution of €0.80 per kilogram of non-recycled plastic packaging waste (yoghurt pots, water bottles, etc.). The legislation targets a 55% recycling rate for plastic packaging in the EU by 2030.

The biggest plastic users are also pushing demand upward. "All companies, such as Coca-Cola and Evian, want to buy recycled plastic to improve their image in the eyes of consumers," Clément Maclou says. "As a result of consumer awareness, new regulatory incentives and motivation from companies that use plastic to change their image, the whole recycling chain is getting organised." However, many hurdles stand in the way of developing recycling. Below are the five main challenges. →

“For far too long developed countries like the US and Canada have been exporting their mixed toxic plastic wastes to developing Asian countries”

Sara Brosché, scientific advisor to the International Pollutants Elimination Network (IPEN)

1

Capacity

The production of new plastic is growing faster than treatment options. “Today, recycling capacity is still too limited to accommodate the volumes to be managed,” says Paul de Froment, Equity Research Vice President, Cleantech & Energy transition, at Bryan, Garnier & Co. As a result, increasingly large amounts of plastic end up being incinerated, sent to landfills or dumped. These rates have shot up since China – which long acted as recycler of the world’s plastic – closed its doors to foreign plastic waste in 2018. Greenpeace USA estimates that recycling rates in the United States fell to around 5% to 6% in 2021 from 9.5% in 2014 and 8.7% in 2018, when “the U.S. exported millions of tonnes of plastic waste to China and counted it as recycled”.

Instead of developing adequate capacity on their land, Western countries have sought out new dumping grounds, namely Vietnam, Malaysia, Kenya and Turkey, which recovers large volumes of plastic waste from Europe. This phenomenon exasperates NGOs. “For far too long developed countries like the US and Canada have been exporting their mixed toxic plastic wastes to developing Asian countries claiming it would be recycled in the receiving country. Instead, much of this contaminated mixed waste cannot be recycled and is instead dumped or burned, or finds its way into the ocean,” Sara Brosché, scientific advisor to the International Pollutants Elimination Network (IPEN), lamented in 2020.

To change the situation, the European Union has toughened its regulations. As of 1 January 2021, the EU has banned Member States from exporting unsorted or hazardous plastic waste to non-OECD countries. This should boost both recycling capacity on the Old Continent and business for waste collection and recycling giants like Suez and Veolia.

↑ A worker sorts polyethylene terephthalate (PET) bottles at a recycling plant in Dhaka, Bangladesh, in 2021.

2

Recyclability

“Corporations like Coca-Cola, PepsiCo, Nestlé, and Unilever have worked with industry front groups to promote plastic recycling as the solution to plastic waste for decades,” says Lisa Ramsden, Greenpeace USA senior plastics campaigner, in the NGO’s report. “But the data is clear: practically speaking, most plastic is just not recyclable.”

Why not? The reason is either technological or economic. For some plastics, there is simply no way to recycle them. For others, the process is so expensive (see also section 5) that recycling cannot be implemented on an industrial scale. On its website, Switzerland’s Federal Office for the Environment (FOEN) states, “There is no recycling process covering all these different collected plastics, nor is recycling always worthwhile for technical or economic reasons. And/or there may not be a worthwhile market.”

“Unlike glass, which is an infinitely recyclable material, plastic can only be mechanically recycled six or seven times”

Pieter Busscher, portfolio manager at Robeco

In practice, only a few plastics, such as PET, high- and low-density polyethylene (HDPE and LDPE) and PVC, are actually recycled. Of the 780,000 tonnes of plastic waste produced each year in Switzerland, more than 80% (around 650,000 tonnes) is incinerated with household waste and 6% in cement factories. In the end, only 80,000 tonnes (10%) are recycled. And even then, not completely. “Unlike glass, which is an infinitely recyclable material, plastic can only be mechanically recycled six or seven times,” says Pieter Busscher of Robeco. “Any more than that, and its properties are altered.”

3

← A sorting line at a household waste recycling site in Mornac, France.

Sorting

Different types of plastic cannot be treated together. That is why, for example, Switzerland has separate collection channels for PET bottles and for polyethylene containers (milk or shampoo bottles). “To increase recycling rates, collection systems have to be improved,” says Tzoulianna Leventi, an analyst at Abrdn. The problem is that the amount of different plastic waste is so high that it is extremely difficult to collect them all separately. As Greenpeace sums up, it is impossible to sort thousands of billions of products. Adding to the problem is that many objects use more than one type of plastic, making it impossible to recycle them in practice. “Products containing several layers of plastic are really the worst,” confirms Pieter Busscher of Robeco.

And the development of bioplastics (see also p. 36) makes the problem even more complex. A case in point is polyethylene furandicarboxylate (PEF). Its promoters claim that this highly promising plant-based polymer could gradually offer an advantageous replacement for the PET (derived from fossil fuels) in our plastic bottles. However, recycling PEF could disrupt PET recycling, as the two materials cannot be treated together. Will that mean developing two separate collection channels? How will consumers be able to tell the difference between PEF and PET bottles, which are indistinguishable at first glance? →

Contamination

Manufacturers add chemical additives to improve the properties of plastics, such as antioxidants, antistatic agents, flame retardants, plasticisers and pigments. In 2019, the European Chemicals Agency (ECHA) listed the 400 most commonly used additives in the plastics industry. But there are many others. And the problem is that these additives are not eliminated in the treatment process. Recycled plastics therefore contain a cocktail of chemicals with unknown properties. "These chemical compounds are suspected of causing health problems," says Kokou Agbo-Bloua of Société Générale. "That's why recycled plastics cannot be used in food packaging, except for PET bottles."

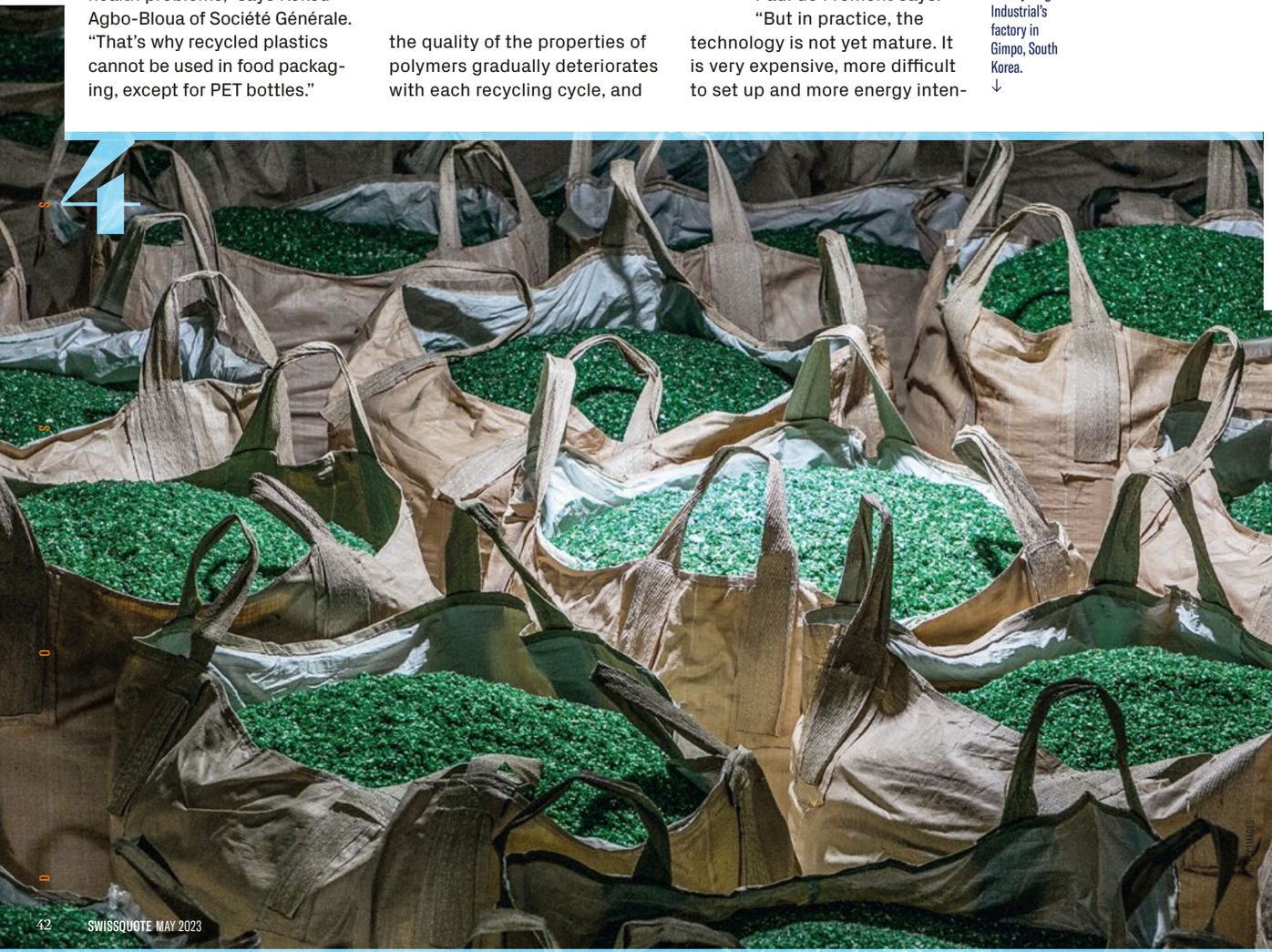
To solve the problem, manufacturers are trying to improve recycling techniques. Mechanical processes are for now the most widely used, i.e., sorting waste by type of plastic, colour and quality. It is then washed, shredded, melted into flakes and transformed into resin. The resin can be used as a component in making other items. This relatively straightforward method has two main problems. First, the quality of the properties of polymers gradually deteriorates with each recycling cycle, and second, the process does not eliminate chemical additives. The other main technique is chemical recycling. Different technologies are used (high heat, chemical reaction) to transform plastic waste into virgin-grade materials. The Quebec-based firm Loop Industries and Eastman from the US are on the leading edge in chemical plastic recycling (see p. 49 and 50).

> **"This is the most promising technology for the future of recycling"**
> **Paul de Froment**, analyst at Bryan, Garnier & Co

"In theory, chemical recycling, which currently represents barely 1% of the market, produces cleaner plastics than mechanical processes," Paul de Froment says. "But in practice, the technology is not yet mature. It is very expensive, more difficult to set up and more energy intensive, and it uses solvents that can pollute the environment." In 2022, the US NGO Natural Resources Defense Council (NRDC) analysed eight chemical recycling plants. It found that the majority of "chemical recycling" facilities are not recycling any plastic and that they release hazardous air pollutants, states the report's lead author, Veena Singla.

According to Paul de Froment, the solution could come from a third way: "One of the major innovations emerging in the plastics sector is enzymatic recycling," the Bryan, Garnier & Co. analyst says. "This technology would allow plastics to be recycled infinitely by using enzymes to break down polymers into monomers and then use these monomers to produce virgin-grade plastic. This is the most promising technology for the future of recycling." Spearheading the field is the French company Carbios, which has signed partnerships with big names such as L'Oréal, Patagonia and Tommy Hilfiger (see p. 44).

Bags of recycled plastic flakes photographed at Junyoung Industrial's factory in Gimpo, South Korea. ↓



© GETTY IMAGES / SHUTTERSTOCK / AHMED SALAHUDDIN

→ The cosmetics brand Nivea intends to use 30% recycled materials in its plastic packaging by 2025.

Cost

The issue of PET recycling hides the bigger picture. "The market for recycled PET is saturated because all major companies want to incorporate the material to enhance their image," says Clément Maclou of ODDO BHF.

> **"Recycled plastics remain more expensive than virgin plastics"**
> **Kokou Agbo-Bloua**, Global Head of Macro Research at Société Générale

But demand for other recycled plastics is restrained by the often prohibitive cost. "Recycled plastics remain more expensive than virgin plastics," says Kokou Agbo-Bloua, Global Head of Macro Research at Société Générale. "Companies that use them therefore find themselves at a competitive disadvantage." This is a complicated economic challenge to solve, said Vincent Warnery, CEO of the German group Beiersdorf, owner of the cosmetics brand Nivea, in an interview with the newspaper *Les Echos* on 30 March: "Everyone wants sustainable products but no one wants to pay more. We have to be careful because the organic crisis proves that consumers are watching their purchasing power. (…). Recycled plastic, for example, is more expensive. For our Nivea shower gels, we have switched to recycled plastic but we have had to reduce our consumption by 25% by using thinner packaging." ◢

10

companies that are revolutionising plastic

Small caps are tackling the thorny problem of plastic. Here's our take on the most promising solutions.

BY BERTRAND BEAUTÉ AND STANISLAS CAVALIER

© AFP, THIERRY ZOCCOLAN

↑ Jean-Claude Lumaret, CEO of Carbios, at the launch of the company's demonstrator, in Clermont-Ferrand on 29 September, 2021.

Carbios
the enzyme recycler

Is a French start-up in the process of resolving one of the flaws of traditional recycling? Carbios has generated buzz around the world after partnering with large-scale users of plastic such as L'Oréal, Nestlé Waters, PepsiCo, Patagonia, On Running and Puma. These giants, that all use significant amounts of recycled PET, hope that Carbios is the solution to the inherent problem in traditional recycling. "Mechanical recycling – a technique used in 99% of reprocessing facilities – damages polymers, which lose their mechanical properties over time. This is why PET can only be recycled a limited number of times," says Paul de Froment, vice president of Equity Research Cleantech & Energy at Bryan, Garnier & Co. "Carbios' technology promises to produce 100% recycled and 100% recyclable PET with no loss in quality."

The company has reached a 90% PET depolymerisation rate

Essentially, Carbios uses enzymes (proteins present in cells) to split polymers into individual monomers, while the colours and additives end up as residue. In its demonstrator project, the company has reached a 90% PET depolymerisation rate and hopes to achieve 95% soon. The next step is to take the technology from the laboratory to the industrial scale. This year, Carbios will begin work on a plant in Meurthe-et-Moselle at facilities owned by Indorama, the largest global producer of PET resin, which will use the recycled material produced at the plant. The site is expected to be up and running in 2025 with a processing capacity of 50,000 tonnes of waste per year. In addition to PET bottles, Carbios technology is expected to be capable of recycling clothing that was not previously recyclable. Of the 70 million tonnes of PET produced annually worldwide, two-thirds are used to produce textile fibres (polyester fibres) and the remaining third is used for packaging. This is a potentially massive market. The two analysts that follow the company recommend purchasing shares, which have increased 350% over the last five years.

FOUNDED: 2011 **HEADQUARTERS:** CLERMONT-FERRAND (FR)
EMPLOYEES: 100 **2022 REVENUE:** €70,000 → ALCRB

© AVANTIUM

↑
An Avantium employee in the company's pilot plant.

Avantium
the inventor of PEF

The story of Gert-Jan Gruter is worthy of a Hollywood film. For years, the Dutch chemist worked in the plastics processing industry, improving traditional plastics made from hydrocarbons. But as he became aware of the environmental effects of plastic, he decided to develop an alternative material that was better for the planet. In 2000, he founded Avantium – a spin-off from oil giant Shell – where he created a plant-based bioplastic called "PEF" (polyethylene furanoate), a bio-based substitute for PET that requires no oil-based components, is completely recyclable and is able to reduce CO_2 emissions caused by bottle production by 50% to 70% compared to PET.

"PEF is very promising, because it has better properties than PET, which means it can replace multi layer plastics." says Pieter Busscher of Robeco. According to its advocates, this plant-based material is also more rigid than its oil-based equivalent.

PEF is very promising, because it has better properties than PET

As a result, bottles require less plastic, which reduces production costs. It is also more airtight. PEF blocks 10 times more oxygen and six to ten times more CO_2 than PET. In February 2023, Avantium entered into a partnership with US company Origin Materials in order to accelerate the mass production of PET. Most analysts recommend buying shares.

FOUNDED: 2000 **HEADQUARTERS:** AMSTERDAM (NL) **EMPLOYEES:** 250
2022 REVENUE: €17.8 MILLION → AVTX

Corbion
in partnership with Total

Currently representing 1.5% of global plastics production, bioplastic manufacture is expected to triple in volume in the next five years, reaching 6.3 million tonnes per year in 2027, compared to 2.2 million tonnes in 2022, according to European Bioplastics. This growth is primarily driven by the success of one bioplastic in particular: PLA (polylactic acid). Made from renewable raw materials (such as sugar and starch), PLA is both recyclable and compostable. Furthermore, its properties make it a real alternative to plastics made from fossil fuels in many applications (floor and wall coverings, plastic bin bags, smartphone and computer cases, dashboards, etc.).

Aware of the potential of PLA, Dutch group Corbion has partnered with French oil giant TotalEnergies to form a joint venture named TotalEnergies Corbion, with the goal of becoming "one of the leaders in the bioplastics market". With a plant in Rayong, Thailand, TotalEnergies Corbion produces 75,000 tonnes of PLA per year, while global production sits at 240,000 tonnes per year. In 2024, the company will open a second facility in Grandpuits in France to produce 175,000 tonnes of PLA annually. With this strong development, the joint venture expects to hold a 10% share in the biopolymer market by 2030.

With a plant in Rayong, Thailand, TotalEnergies Corbion produces 75,000 tonnes of PLA per year, while global production sits at 240,000 tonnes per year

But PLA does have its critics. In order to be recycled or composted, it needs to be collected in specific recycling systems. And since those systems are uncommon, PLA waste often ends up in incinerators. Furthermore, the "100% compostable" claim that PLA proudly advertises is misleading for consumers. In fact, PLA can only be composted under industrial conditions: it must be heated to 60° Celsius for several weeks to break down into usable compost. In reality, this is often too expensive for companies and they end up burning it. Half of the analysts who cover Corbion recommend holding shares, and the other half recommend buying.

FOUNDED: 1919 **HEADQUARTERS:** DIEMEN (NL) **EMPLOYEES:** 2,600
2022 REVENUE: €165.8 MILLION → CRBN

PureCycle
the polypropylene expert

Plastics recycling plants seem to be cropping up everywhere. In January 2023, the US company PureCycle Technologies announced that it would be investing $250 million to build a recycling facility in the port of Antwerp in Belgium. PureCycle's most advanced plant to date is located in Ironton, Ohio. Operations at the new plant planned to launch in the first quarter of 2023. Another facility is under construction in Augusta, Georgia, and another is planned for Asia in 2025.

The PureCycle purification process cleans, decontaminates and decolourises recycled polypropylene (the second most produced and used plastic in the world). Here, recycled propylene flakes. ↓

Unlike many recycling companies, which focus primarily on PET, PureCycle has developed expertise in transforming polypropylene (PP). This thermoplastic is used in the automotive industry (bumpers, interiors, glove boxes), in food packaging and to make tableware suitable for microwave ovens. If dumped, polypropylene takes several hundred years to decompose, which is why it is so important to collect and recycle it. This would be a big win for the environment in more than one way, as one tonne of recycled PP saves the equivalent of 830 litres of oil. The sole downside is that the current techniques only enable polypropylene to be recycled a few times, as the process alters the plastic. After a handful of cycles, the PP becomes too damaged and eventually has to be incinerated.

If dumped, polypropylene takes several hundred years to decompose, which is why it is so important to collect and recycle it

PureCycle Technologies claims that its patented pyrolysis and purification technology can produce "recycled polypropylene with properties equal to virgin polymer". The next step is to move from the laboratory to industrial production. The opening of PureCycle's first plant in the first quarter of 2023 will give an indication of the economic potential of this technology. Most analysts recommend buying shares.

FOUNDED: 2015 **HEADQUARTERS:** ORLANDO (US)
EMPLOYEES: 120 **2022 REVENUE:** 0 → PCT

© PURECYCLE/ LOOP INDUSTRIES

↑ Artistic rendering of a future Loop Industries plant.

Loop Industries
recycling chemicals

And that makes three! In February 2023, the Canadian company Loop Industries announced that it was investing €450 million to build a PET chemical plastics recycling plant in Saint-Avold (France), in partnership with the French giant Suez and the South Korean firm SK Geo Centric. Offering a capacity of 70,000 tonnes once it comes on stream in 2027, the site is Loop Industries' third project. At the same time, Loop is building a plant in Canada, scheduled to open in 2024, and a plant in South Korea, planned for 2025 and also developed with SK Geo Centric. The aim is to supply Loop's customers, such as the French cosmetics brand L'Occitane, with a locally sourced recycled PET resin.

To produce this recycled plastic, Loop does not use the traditional mechanical recycling process, which damages the plastic, but a chemical process: methanolysis. Compared to other chemical recycling processes (glycolysis, pyrolysis), methanolysis has the advantage of not altering the PET materials because it works at a lower temperature, around 80°C. According to company claims, this could pave the way to full recycling of PET. This process would also make it possible to treat PET that could not previously be recycled, such as polyester fibres in clothing.

This process would also make it possible to treat PET that could not previously be recycled, such as polyester fibres in clothing

For the time being, PET is only recycled mechanically. But chemical recycling is beginning to shift into industrialisation mode, as shown by the projects of Loop Industries, the US chemicals company Eastman, which announced a $1 billion investment to build a PET chemical recycling unit in France in 2022, and the Dutch firm Ioniqa, which is building a plant in the Netherlands. Tightening European regulations – certain packaging will have to be made of 30% recycled materials by 2030 – explain this race to develop chemical recycling, which produces recycled plastic of better quality than that obtained through mechanical processes. The only drawback is that chemical recycling remains more expensive than its mechanical counterpart. Most analysts recommend buying Loop shares, which lost 60% in value between April 2022 and April 2023.

FOUNDED: 2014 **HEADQUARTERS:** TERREBONNE (CA)
EMPLOYEES: 100 **2022 REVENUE:** 0 → LOOP

Biome
British bioplastics

In November 2022, Biome Technologies signed a partnership with UK chemical manufacturer Thomas Swan & Co. to bring new bioplastics to market.

Its bioplastics division generated £4.4 million in revenue in 2022

This collaboration is expected to boost the company's sales, which have slipped over the past two years for this small British company and developer of natural plastics. Its bioplastics division generated £4.4 million in revenue in 2022, compared with £4.8 million in 2021 and £4.9 million in 2020. However, European Bioplastics predicts that demand for these materials, which offer an alternative for oil-based polymers, will triple over the next five years. This could help to lift Biome Technologies, despite intensifying competition within the industry. Another company division, Stanelco RF Technologies, develops fibre optics solutions, among others. Stanelco's revenues doubled from £0.9 million in 2021 to £1.8 million in 2022. No analysts are currently tracking the stock.

FOUNDED: 1984 **HEADQUARTERS:** SOUTHAMPTON (UK)
EMPLOYEES: 30 **2022 REVENUE:** £6.2 MILLION
→ BIOM

Eastman
the chemicals convert

"We are globally focused on sustainable materials and the circular economy," Eastman CEO Mark Costa told *L'Usine Nouvelle* magazine in an interview in 2022, speaking of the new direction the company is taking. Around for more than a century, the US firm has in the past few years been launching all sorts of projects in the plastics sector. For one, in September 2021, Eastman won the Innovation in Bioplastics Award from the Plastics Industry Association for its cellulose-based compostable plastic, Aventa. The company sells other bioplastics and is working to become a leader in the sector.

Once it comes on stream, the 30-hectare facility will have a capacity of 160,000 tonnes per year

Meanwhile, Eastman is also pouring money into chemical recycling. In March 2022, the company announced that it was building the world's largest molecular recycling plant in Port-Jérôme-sur-Seine, France – an investment worth $1 billion. Once it comes on stream in 2026, the 40-hectare facility will have a capacity of 160,000 tonnes per year and treat hard-to-recycle plastic waste, such as soiled, opaque or multi-layer PET or polyester textiles. The aim is to reuse these materials infinitely, as this waste cannot currently be recycled using traditional mechanical processes.

FOUNDED: 1920 **HEADQUARTERS:** KINGSPORT (US)
EMPLOYEES: 14,000 **2022 REVENUE:** $10.5 BILLION
→ EMN

Tomra
the king of recycling

How can we increase the rate of plastics recycling? One key way is to encourage consumers to sort their waste and bring it to dedicated collection points, rather than throwing everything away with household rubbish, or worse, littering. In Switzerland, good consumer habits have resulted in a PET recycling rate of more than 80%, but a small incentive could be needed to encourage consumers around the world. And to do just that, Norwegian company Tomra Systems has developed bottle collection machines. Often installed in supermarkets, these machines offer consumers a reward (cinema tickets, discounts in shops, etc.) for returning bottles via the machine. Equipped with sensors, the machines automatically sort glass bottles separately from PET bottles. In 2022, Tomra managed 82,000 collection systems, primarily installed in European countries, that collected 45 billion cans and bottles.

In 2022, Tomra managed 82,000 collection systems, primarily installed in European countries

In addition to its supermarket recycling machines, Tomra Systems also offers industrial recycling machines that are used in food manufacturing (PepsiCo, Nestlé). Most analysts recommend holding shares, which have risen 65% in the past five years.

FOUNDED: 1972 **HEADQUARTERS:** ASKER (NO)
EMPLOYEES: 4,610 **2022 REVENUE:** €10.67 BILLION → TMRAY

A Tomra bottle sorting machine installed in a grocery store. ↓

© ALAMY

Danimer
the PHA producer

"The future of plastics is here." The slogan that appears in large print on the website of the US company Danimer Scientific immediately sets the tone. Founded in 2004, the company develops and sells plastics derived from plants and billed as 100% biodegradable. The company's flagship product is PHA (polyhydroxyalkanoate), a polyester synthesised by microbes from soy or rapeseed oil. PHA is approved by the US Food and Drug Administration (FDA) for food packaging and boasts a wide range of applications, including packaging, bottles, kitchen utensils, rubbish bags, toys and nappy linings.

The global PHA market will grow at a compound annual growth rate of 15.3% from $18 million in 2022 to $167 million by 2027

The sector research firm Markets and Markets predicts that the global PHA market will grow at a compound annual growth rate of 15.3% from $81 million in 2022 to $167 million by 2027. With more than 430 patents, Danimer is one of the key players in the sector. However, the company has stiff competition to contend with. A plethora of companies, such as Bio-on (Italy), Mango Materials (US), Genecis Bioindustries (Canada), Shenzen Ecoman (China) and Tianjin GreenBio Materials (China), are also active in the PHA market. This does not discourage analysts, who all recommend buying Danimer shares.

FOUNDED: 2004 **HEADQUARTERS:** BAINBRIDGE (US)
EMPLOYEES: 500 **2022 REVENUE:** $53.2 MILLION
→ DNMR

Employees inside a factory of the American company Danimer. ↓

© DANIMER / EMERSON

Origin Materials
sustainable PET

In February 2023, US company Origin Materials completed construction of its first Origin 1 production facility in Ontario, Canada. The purpose of the site will be to produce chloromethyl furfural from wood residues. This chemical is a precursor that can then be used to manufacture a range of materials, including PET bioplastic.

"PET produced using Origin technology is functionally identical to petroleum-based PET, but with a lower carbon footprint since it is made from sustainable wood residues which capture carbon," the company said in a statement. Origin Materials boasts partners and customers including major plastics consumers such as Nestlé Waters, Danone, PepsiCo and LVMH Beauty.

Origin Materials' PET is made from sustainable wood residues which capture carbon

In addition to developing its plant-based PET, Origin Materials entered into a strategic partnership in February 2023 with the Dutch company Avantium to accelerate the production of two other bioplastics, PEF and FDCA. Most analysts recommend buying shares.

↑ The Origin 2 plant, scheduled to be commissioned in 2025, will produce biomaterials from wood residues. It will use automation technologies designed by American software specialist Emerson.

FOUNDED: 2008 **HEADQUARTERS:** WEST SACRAMENTO (US)
EMPLOYEES: 200 **2022 REVENUE:** $78.6 MILLION → ORGN

PORTRAIT

Tata: India's behemoth is picking up speed

The massive conglomerate, which is over 150 years old, is refocusing on the domestic market, with investments in high-growth sectors such as renewable energies, electric vehicles and semi-conductors. We take a closer look at this giant that has stood the test of time. BY JULIE ZAUGG

↗ The formidable chairman of Tata Sons, Natarajan Chandrasekaran, here during the presentation of the Tata "Avinya" concept car, in Mumbai on 29 April, 2022.

Massive rectangular buildings with solar-panelled roofs span more than 2 square kilometres. Welcome to Hosur, an industrial city 40 km from Bengaluru, India's tech capital. This brand new factory, in which Tata Group invested 53 billion rupees (560 million Swiss francs), currently has 10,000 workers and plans to employ up to 60,000, primarily women. "No one knows exactly what is being made in there, or if production has even started yet," says Arun Mampazhy, an expert on India's electronics industry. "All we know is that some components are going to be used in the latest generation of iPhones."

Yet another venture for this unusual conglomerate, which is widely known for its IT services, steelworks and car brands, but has a total of nearly 300 subsidiaries, of which 29 are publicly listed!

Founded in 1868 by Jamsetji Tata, a Gujarat-born member of the Iranian Parsi community, Tata originally focused on industrialising India, building steel and textile factories and developing the electricity grid. It also invested in hotels, opening the luxurious Taj Mahal Palace in 1903. Starting in 1945, Tata began manufacturing vehicles.

Taking advantage of his status as an outsider – as an outlier within India's rigid caste system – Jamsetji Tata always had his eye on international expansion. "Until India gained independence in 1947, Tata was one of the most well-connected companies internationally," says Mircea Raianu, a historian at the University of Maryland, who has published a book on Tata. "It raised funds in London and New York and had satellite offices in Japan and China."

But this global perspective was quickly brought to a standstill when Jawaharlal Nehru came to power and implemented policies of economic self-sufficiency. "Tata became one of the members of the Bombay Club, a cartel of Indian conglomerates that managed to distance themselves from any foreign competition," says Raianu. During that period, which lasted until the start of the 1990s, →

A commemorative postage stamp of founder Jamsetji Tata, issued in 1965 by India Post. ↓

NUMBERS

935,000
The total number of Tata employees.

$128 BILLION
The revenue generated by all of the Tata group's entities during the 2021/22 financial year.

286
The number of subsidiaries owned by the Tata group, of which 29 are publicly listed.

© SHUTTERSTOCK, ASHISH VAISHNAV / DR

Tata developed its sprawling structure, inserting itself into all sectors of the Indian economy, including salt, software, airlines and chemicals.

But then India began a new era in which it was once again open to exterior influences. This coincided with the arrival of a new CEO, the flamboyant Ratan Tata, who remained CEO until 2012. "He transformed Tata Consultancy Services (ed. note: an administrative unit founded in 1968) into an outsourcing giant," says Raianu. "All by himself, Ratan Tata practically invented the model of Western companies outsourcing software development and IT support to developing countries." This subsidiary is now the group's primary revenue driver.

At the turn of the century, Ratan Tata also began a sweeping wave of foreign acquisitions, hoping to penetrate new markets, access raw materials and get its hands on prestigious brands. He acquired UK tea company Tetley in 2000 for £271 million and Corus Group in 2007 for £6.2 billion. Then, one year later, he acquired Jaguar and Land Rover for $2.3 billion.

Tata also purchased a portfolio of prestigious hotels, including The Pierre in New York, the Ritz-Carlton in Boston and 51 Buckingham Gate in London. In addition, the group set out to conquer emerging markets, releasing the Nano, a car with a retail price of $2000, in 2009.

The conglomerate will invest $90 billion over the next five years

But while some of these transactions – which took place at the cost of massive debt – were beneficial for Tata, others were less profitable. "Jaguar Land Rover benefited from the booming middle class in China, who are particularly fond of SUVs," says Raianu. "However, Tata Steel found itself in a precarious position in the face of competition from Chinese steel companies and ArcelorMittal due to high workforce costs in the UK and export struggles caused by Brexit."

In 2012, Tata generated two-thirds of its sales internationally. But the company was about to undergo further upheaval. That year, Ratan Tata appointed Cyrus Mistry, heir to another Indian dynasty that owns 18.4% of Tata, to the role of company CEO. For the first time, the company had been separated from its founding family.

The result was a serious governance crisis. "Cyrus Mistry wanted to refocus Tata and get it out of debt by selling off less profitable international entities," says Raianu. "But Ratan Tata did not agree." In 2017, Tata fired Mistry, replacing him with Natarajan Chandrasekaran, CEO of Tata Consulting Services. The fight went all the way up to India's Supreme Court, which ruled in favour of Tata in 2021.

But the new CEO continued the refocusing work that was started by his predecessor. "Tata chose to focus on the Indian domestic market, which is characterised by a population of 1.4 billion, many young consumers and a growing middle class," says Mampazhy, an expert on India's electronics industry.

In 2022, Tata reacquired Air India – the airline it founded in 1932 before its nationalisation in 1953 – for $2.36 billion. The Group hopes to transform it into the leading national airline for Indian travellers. In early 2023, Air India purchased 540 aeroplanes from Airbus and Boeing, the largest order ever recorded.

Tata has also invested in e-commerce and owns established brands in household appliances (Voltas), watches and jewellery (Tital) and fashion (Trent). Last year, the company launched Tata Neu, a super-app inspired by China's WeChat, which allows Indian consumers to do their grocery shopping, book a hotel, contact a doctor, or take out financial products online.

Tata's many ventures in India are also a reflection of the evolving geopolitical situation, which the group considers to be an opportunity: "The pandemic, during which Chinese factories remained closed for many months, and the US-China trade war forced Western companies to revisit their supply chains," says Mampazhy. "Many companies left China for new destinations, such as India." This was compounded by India's desire to distance itself from Russia, its primary weapons sup- →

Presentation of the Tata Motors "Avinya" electric concept car, on April 29, 2022 in Mumbai. ↓

Two Boeing 787 Dreamliners from Air India, acquired last year by Tata. Here on the tarmac at New Delhi airport. ↓

The Tata group stand during the Aero India 2023 show, at the Yelahanka Air Force Base in Bengaluru, on 14 February. Here a model of the future C-295 jet, intended in particular for transport of Indian Air Force paratroopers. This aircraft will be built by Tata Advanced Systems, in collaboration with Airbus Defense and Space. ↓

By 2025, one in four iPhones is expected to be manufactured in India, compared to one in twenty currently

plier. "The situation benefits Tata Advanced Systems, a subsidiary which produces drones, artillery and tanks," says Raianu. Some of its armoured vehicles are already being deployed on the disputed border with China.

But Tata has even loftier ambitions. The conglomerate will invest $90 billion over the next five years to establish itself in new and growing sectors – including electric vehicles. In 2019, Tata Motors unveiled its first green model, the Nexon EV, and plans to release 10 others by 2026. The company "already dominates the domestic market, boasting an 85% penetration rate, a figure that's expected to increase," says Himanshu Singh, an analyst at Prabhudas Lilladher who covers Tata Motors. It also owns a line of electric buses and plans to build two gigafactories producing electric vehicle batteries: one in India and the other in Europe. The European factory will manufacture batteries for Jaguar Land Rover's electric models.

Renewable energies are another growth opportunity for Tata: Tata Power will invest $10 billion in the sector over the next five years. The company, which has at least 3 gigawatts of installed capacity – 2.07 in solar and 0.93 in wind – specialises in solar energy systems installed on roofs of corporate buildings and private residences, as well as solar water pumps.

Tata has a few big projects in the works, such as a 255 MW hybrid solar and wind farm in Karnataka, in central India. In the future, the company aims to develop its presence in the photovoltaic cell market, which is currently dominated by China. It already has a factory in Bengaluru, which has a production capacity of 1135 MW. The Indian government supports these ambitions: in 2021 it established a 40% import tax on photovoltaics produced in China.

More recently, Tata has also invested in the electronics industry, creating a dedicated subsidiary in 2020. "The goal is to start with the least complicated processes, such as assembling smartphones and manufacturing simple components such as cases, before advancing to manufacturing electronic parts and eventually chips," says Mampazhy. →

© ALAMY

Tata Steel's massive steelworks in IJmuiden, the Netherlands. ↓

TATA: THE FOUR KEY PLAYERS

TATA CONSULTANCY SERVICES
The cash cow

Tata Consulting Services is a globally-renowned IT services supplier. "Its revenue reflects consistent organic growth and its margins, which exceed 25%, are among the highest in the industry," says Sameer Pardikar of ICICI Direct Research. He points out that the group's share price has more than doubled over the last five years, increasing by a factor of 2.25. Growth comes primarily from the US and UK markets, which make up 69% of revenue. He has issued a BUY recommendation.

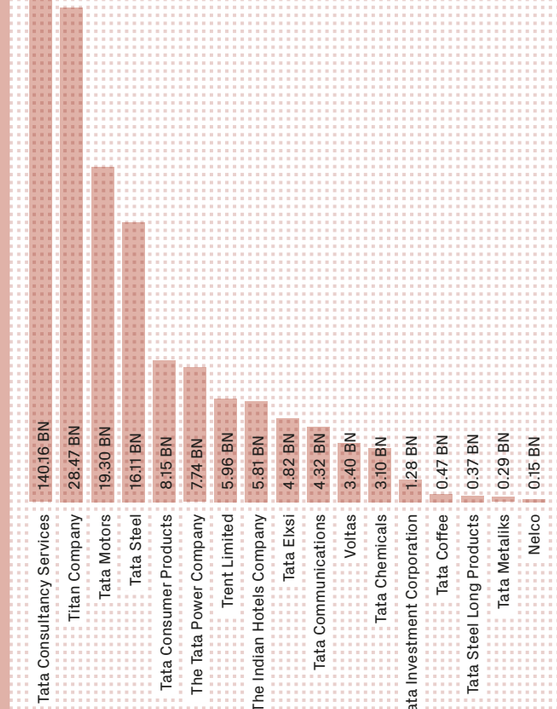
FOUNDED: 1998
HEADQUARTERS: MUMBAI, INDIA
EMPLOYEES: 613,974
2022 REVENUE: $25.7 BILLION
→ TCS

TATA MOTORS
A well-oiled machine

Tata Motors dominates the Indian car market and is experiencing high growth, particularly in the SUV and electric vehicle markets. However, Jaguar Land Rover is suffering from the slowdown in China and delays in electric vehicles actually going to market. But volume has recently begun to tick upwards once again in China, and Land Rover has six electric vehicle models in its pipeline, according to Himanshu Singh of Prabhudas Lilladher. He has issued a BUY recommendation.

FOUNDED : 1945
HEADQUARTERS : MUMBAI, INDIA
EMPLOYEES : 52,351
2022 REVENUE: $36.8 BILLION
→ TATAMOTORS

THE GROUP'S MAIN COMPANIES
Here, classified according to their capitalisation, in dollars*



*as of April, 2023

TATA POWER
The solar king

Tata Power's profits are growing thanks to strong demand for roof-installed solar energy systems. Sales were up 41% last quarter, reaching 5.3 billion rupees (59 million Swiss francs). In the same period, revenue from solar pumps doubled. Despite its difficult start, the Mundra electric power plant, which has a capacity of 4 gigawatts, also contributes to the company's revenue, say analysts from HDFC Securities, who recommend purchasing shares.

FOUNDED : 1919
HEADQUARTERS : MUMBAI, INDIA
EMPLOYEES : 8,613
2022 REVENUE : $5.6 BILLION
→ TATAPOWER

TATA STEEL
An unsteady model

Tata Steel's European operations are dampening its profits. In the UK, the group hopes to close its Port Talbot location in Wales due to high payroll expenses and the need to equip the facility with electric arc furnaces, which are more environmentally friendly. In Q4, the company was also affected by "the recession in Europe and the rise in coal prices", says Alok Deora, of Motilal Oswal Financial Services. In India, demand is actually increasing significantly and the ROI is better. He has issued a neutral recommendation.

FOUNDED : 1907
HEADQUARTERS : MUMBAI, INDIA
EMPLOYEES : OVER 65,000
2022 REVENUE : $32.8 BILLION
→ TATASTEEL

In addition to the Hosur campus, in Tamil Nadu, Tata acquired a Bengaluru factory previously owned by Apple supplier Wistron in late March. By 2025, one in four iPhones is expected to be manufactured in India, compared to one in twenty currently, according to the bank JPMorgan.

The company will also spend $300 million building a factory to assemble and test semi-conductors. Eventually it hopes to have a fab – a chip foundry. "To do so, it will likely need an international partner, as it would be too costly to develop the necessary knowledge and skills internally," believes expert Arun Mampazhy.

The government is supporting this endeavour as well. "It covers up to 50% of costs associated with establishing a semi-conductor plant in the form of tax rebates and zero-interest loans," Mampazhy adds.

The new entity in charge of these projects, Tata Electronics, also hopes to produce telecommunications equipment for 5G technology. To this end, it acquired a 56% stake in Indian group Tejas Networks in 2021. "The government wants to develop a native 5G solution so it doesn't have to depend on the Chinese company Huawei, since New Delhi and Beijing are in conflict over certain border zones," says Mampazhy. He believes that Tata could rise to this challenge.

If the 155-year-old company can successfully bring these projects to fruition, it will once again have reinvented itself in an ever-changing world. "I firmly believe that this decade belongs to India," CEO Natarajan Chandrasekaran recently declared. ◢

Natarajan Chandrasekaran (left) with Ratan N Tata, now Chairman Emeritus of Tata Sons, at a show in 2020. ↓

© AFP, INDRANIL MUKHERJEE

Family and philanthropy

Passed down in 1938 to JRD Tata, the son of the founder's cousin, Tata very quickly established itself as a family dynasty, and the family is still omnipresent in the corporate structure. Its many entities belong to Tata Sons, a company that is 66% owned by a series of philanthropic trusts held by members of the Tata family.

This setup has encouraged a culture based on respect for workers and charitable acts within the company. Tata employees received minimum wage, paid time off and a pension system. The conglomerate has also invested millions in building schools and hospitals, combating HIV and researching tropical diseases.

There is also another unique aspect: "Tata has always remained at a distance from the government, unlike its peers such as Reliance Industries or Adani," says Andrea Goldstein, an OECD economist who specialises in India. "It's a strategy that hasn't always been easy, particularly when Jawaharlal Nehru, the Prime Minister at the time, nationalised Tata Airlines (which was founded by Tata in 1932) in 1953 and renamed it Air India."

Havaianas

A BRAND A STORY

Wearing Brazil on your feet

Originally designed as footwear for the poor, the Brazilian rubber flip flop sold 247 million pairs worldwide in 2022. And it has no intention of stopping there. BY ANGÉLIQUE MOUNIER-KUHN

Don't get it wrong. This footwear is much more than a flip flop. Not just because it's the ultimate cool factor: you can almost feel the sand under your feet. Havaianas is also a shining symbol of Brazilian entrepreneurial creativity and its ability to push boundaries. The Y-strap sandal is an emblem of national pride in Latin America's most populous country. In fact, "in Brazil, people never say, 'I'm going to buy a pair of flip flops'. Instead, it's 'I'm going to buy some Havaianas'," says Marizete Thevoz, manager of Boutique Brasil in Geneva.

Since she opened the shop, which sells exclusively Brazilian-made items, 18 years ago, Marizete has watched sales of Havaianas soar. This year, she has ordered 1,200 pairs from the brand's Zurich representative, which her cosmopolitan clientele will snatch up at prices ranging from about 20 Swiss francs for the classic "Slim" or "Top" sandals, to nearly 150 Swiss francs for the most elaborate models bejewelled with Swarovski crystals.

In 2022, Havaianas sold 247 million pairs, all from its four factories in Brazil. Of those, 214 million were sold on the domestic market alone (around 70% of its revenue), where the company has more than 150,000 sales outlets. This is slightly less than the record of 260 million pairs set in 2021, but inflation has crippled demand in Brazil. This is a mere setback in the incredible ascent of the rubber-soled flip flop, which is now distributed in more than 130 countries online, in multi-brand retail outlets and in more than 700 own-brand shops. Currently accounting for 3% of the international flip flop market (excluding Brazil), the company aims to secure a 10% share. "We believe in the strength of the Havaianas brand and its acceleration potential," said a confident Roberto Funari, CEO of Alpargatas, the parent company of Havaianas, in February.

Currently accounting for 3% of the international flip flop market, the company aims to secure a 10% share

© HAVAIANAS

↑ "Havaianas Brazil" – a style with a small Brazilian flag on the strap.

And with Alpargatas is where we must start to trace back the history of the Brazilian flip flop. In 1907, Robert Fraser, a Scotsman who had arrived from Argentina, set up his espadrille ("alpargatas" in Spanish) factory in São Paulo. These light but sturdy canvas shoes were worn by farm workers, especially on coffee plantations. In 1913, Alpargatas was listed on the São Paulo Stock Exchange. The firm was included in the Bovespa, the index of Brazil's 100 leading stocks, in 2021.

Half a century after it was founded, the destiny of Alpargatas pivoted thanks to a new stroke of genius. Legend has it that an employee brought back the idea of a sandal inspired by the Zori, the traditional Japanese footwear made of rice straw and cloth straps, from his holiday in Hawaii. The first pairs of Havaianas left the Alpargatas workshops in 1962. Although the slightly textured surface of the sole resembled the original rice straw design, the footwear was made from rubber, the white gold of the Amazon forest, and secret ingredients that gave them remarkable flexibility. Simple, robust and cheap, this new poor man's shoe was originally manufactured in white and blue, and it met with immediate success. In the first year, more than a thousand pairs were sold every day in shops across the country.

None of them match the quality of the Havaianas, which strictly guards the details of its manufacturing process

This good fortune attracted attention, and imitations flooded the market. None of them match the quality of the Havaianas, which strictly guards the details of its manufacturing process. But to stand out from the competition, which would hinder its expansion, the brand decided to move upmarket. It continued to make shoes for the poor with low-priced models, while broadening its target market with a more creative selection. Collaborations were set in motion with leading designers and advertising campaigns featured big-name stars. Havaianas went from being a basic product snubbed by the upper classes to a fashion accessory. The 1998 football World Cup offered a new springboard. The sandals in the colours of Brazil and stamped with the star flag were all the rage. Those were the days of grandiose globalisation. The South American giant consolidated its integration into the global economy, and holidaymakers worldwide could not get enough of the Brazilian-made footwear. The successful internationalisation of Havaianas became a case study in marketing classes.

But turmoil hit in the 2010s. Embroiled in the corruption cases that shook the country, Alpargatas passed through the hands of several shareholders. Today, the group is 29.4% owned by the Brazilian conglomerate Itausa, and in recent years seems to have made a fresh start. The firm has shed its sportswear brands and redirected its focus back on developing Havaianas. Meanwhile, in searching for a complementary fit to its iconic brand, Alpargatas invested in Rothy's, a rising San Francisco shoe company that makes elegant (closed!) shoes from recycled plastic bottles. It also bought a technology company to accelerate its digital transformation.

"Designed for a Free Life!" sounds out Havaianas' slogan. "That's the only shoe I wear all summer," Marizete Thevoz, who owns at least 10 pairs, agrees. The Geneva shopkeeper has only one concern: that her orders arrive in time for the summer season launch. But with the current tensions on supply chains, delays have been announced. Perhaps success comes at cost. ◢

KEY DATES

1962
Havaianas production is launched. They are inspired by traditional Japanese Zori sandals, made of rice straw and cloth straps.

1980
The Brazilian government includes Havaianas flip flops in a list of fundamental products (along with rice and beans!) to control inflation.

2021
The listed company Alpargatas, owner of Havaianas, joins the Bovespa, the index of the hundred leading stocks in Brazil.

FOUNDED: 1962 | HEADQUARTERS: SAO PAULO
EMPLOYEES IN 2021 (ALPARGATAS): 15,663
2022 REVENUE: 4,120.8 MILLION BRL | → ALPA3, ALPA4

R E A D

How to F*ck Up Your Startup

The science of why 90% of companies fail–and how you can avoid it

BY KIM HVIDKJÆR
MATT HOLT, 2022

This book reviews the pitfalls that cause 90% of companies to fail and offers remedies to avoid them (or fix the mistakes). Author Kim Hvidkjaer draws on his experience as a serial entrepreneur. At age 29, he made his first million, proceeded to build a reputation as a rising star in Denmark, then went bankrupt by the time he was 31. Hvidkjaer has since rebuilt his fortune by founding several successful companies.

CHF 30 HARD COPY
CHF 15 DIGITAL COPY

L I S T E N

The ECB Podcast

BY KATIE RANGER

With almost a million listeners, the European Central Bank's podcast offers a weekly programme covering current issues that impact the eurozone economy. One highlight is that journalist and host Katie Ranger features women economists from all walks of life. ECB President Christine Lagarde is the invitee once a month to comment on the central bank's decisions.

WWW.ECB.EUROPA.EU/PRESS/TVSERVICES/PODCAST

F O L L O W

Steve Burns

@SJOSEPHBURNS
I tweet about trading, financial markets & financial freedom. I also share what I find inspiring & motivating. I'm a trader & the founder of http://NewTraderU.com

TWITTER **220** FOLLOWING **528,000** FOLLOWERS

Steve Burns began investing in 1993 and boasts over 30 years of trading experience. His account is full of trading tips and amusing memes about stocks and the stock market. This easy-to-understand feed is useful for both experienced and novice traders.

D O W N L O A D

NewProfilePic

Cartoon profile pictures

Considered one of the most popular applications in 2022, with more than five million downloads, NewProfilePic lets users transform their profile photo into a comic book character or an offbeat artistic drawing. Its immense success is largely due to its simplicity. Once the image is uploaded, artificial intelligence takes care of turning it into a hand-drawn portrait, which users can then post as a profile picture on social media. Several filters are also available to capture, for example, a person's current mood or state of mind. The app also has the advantage of being updated regularly with new styles. A similar app, developed subsequently, exists for iPhone, called New Profile Pic Avatar Maker.

GOOGLE PLAY, FREE,
IN-APP PURCHASES

Swiss startups in this edition

BY GRÉGOIRE NICOLET

Synhelion
Green petrol

NUMBER OF EMPLOYEES
40

HEADQUARTERS
LUGANO

FOUNDED
2016

This ETH Zurich spin-off develops carbon-neutral fuels that are compatible with all internal combustion engines. It enjoys backing from Lufthansa, the Italian oil giant ENI and AMAG, Switzerland's largest car importer. December's 22-million Swiss franc funding round brought the total amount of funds raised by Synhelion to nearly 60 million Swiss francs.

Synhelion's technology starts with solar panels, which it calls heliostats. These mirrors power a thermochemical reactor that can heat CO_2 to more than 1,500°C and convert it into synthetic fuel. This "syngas" is then processed into fuels – petrol, diesel or kerosene – using standard gas-to-liquid technology.

The next step for the Lugano-based company is mass production, as CEO and co-founder Philipp Furler explains, "We are currently building a plant in Jülich, Germany, which will launch operations this year, and our first plant for very large-scale production is planned for 2025 in Spain. Over the next 10 years, we plan on producing 875 million litres of solar fuel a year." Despite Synhelion's announced price of €1 per litre in 2030, these synthetic fuels are still two to four times more expensive to produce than oil-based fuels. The airline SWISS has announced that it will start using the fuel produced in Jülich in 2023, but the considerable price difference will force SWISS to mix only small amounts of Synhelion fuel with regular jet fuel in its aircraft.

Unit8
Tailored AI

NUMBER OF EMPLOYEES
120

HEADQUARTERS
LAUSANNE

FOUNDED
2017

The year 2022 was remarkable for this company specialising in artificial intelligence services. Not only did it make it into the top 20 of Europe's fastest-growing companies in the *Financial Times*' 2022 ranking, but it was also named Swiss Partner of the Year by Microsoft in the data & AI category.

One of Unit8's specialties is to develop bespoke data analytics platforms that improve operational decisions. For example, to address supply chain and ingredient availability issues for a flavouring company, it developed an algorithm to determine optimal alternatives to the molecules used in certain formulas, which reduced costs by up to 50%. Unit8 also develops its own solutions, such as Darts, a forecasting tool based on statistical models. The open-source platform has been available since 2020 and has been downloaded over a million times, according to the startup.

With more than 130 completed projects to its name for organisations such as Daimler, Firmenich, Merck and WWF, Unit8 increased its workforce by 60% in 2022 and, according to its CTO and co-founder Michal Rachtan, that development is not about to stop. "Amid rising inflation, projects focused on optimising efficiency and reducing costs quickly are now taking precedence for companies over long-term innovation initiatives with uncertain chances of success."

IS YOUR APPLE SHARE ORGANIC?

NEW: Check out the ESG score of shares
and invest according to your values!

swissquote.com/esg

Swissquote

Advertising

IS YOUR TESLA SHARE SUSTAINABLE?

NEW: Check out the ESG score of shares
and invest according to your values!

swissquote.com/esg

Swissquote

AUTO

Intro to drift

These days, finding a manual transmission with over 200 horsepower and priced at a mere 40,000 Swiss francs takes some wishful thinking. But Subaru grants that wish. Report from the Anneau du Rhin.

BY RAPHAËL LEUBA

It is a wondrous March day at the Anneau du Rhin in Alsace. The Easter Bunny has come early, not even hiding the few eggs left out on the square. The blue, red, white and black Subaru BRZs are ready to wow the journalists in attendance at this press presentation which promises to be packed with action and with sport. No egg race on the schedule today, but a driving session on the track. As it's going to be a rough ride, we avoid filling our plate too much at the buffet. Also, we want a few minutes to spare so that we can carefully choose just the right helmet and head sock. Our groin protector tucked under our arm, we now get to glimpse our rides. Beautiful, discreetly curved coupes with the feel of future classics that are ahead of their time.

Subaru had accustomed us to fighter jets with its Impreza WRX and other STIs. With the BRZ, the Japanese carmaker has shifted gears into aerobatics. Gone are the rally-inspired, gas-guzzling, turbocharged four-wheel drive boxers, the sport in sports cars goes back to basics: rear-wheel drive with a naturally aspirated front engine, not too heavy, and powered with a manual transmission. The alternative automatic gearbox is not our business here. As the twin of the Toyota GR 86, the BRZ is a throwback to the sporty DNA of the Subaru Corporation, formerly known as Fuji Heavy Industries. If only because of the purr of its proprietary layout featuring an opposed-piston engine.

Sent to the front line without any briefing, I'm supposed to kick in by doing doughnuts on the heavily watered track. While Ken Block is laughing his head off at the sight of me, other seasoned drivers wield their mastery of counter-steering and the BRZ's predisposition for controlled drift. With its 250 Nm of torque, the new 2.4-litre engine offers higher power than the old model's 2.0-litre counterpart, as if just waiting to rev up and shake its rear axle around.

Finally, it's time for a few laps around the track, as one does. The machine's low weight (1,282 kg) means it effortlessly veers through curves. In "Track" mode, the traction control system still keeps an eye open and maximises the thrill of drifting. The car handles well, and if it sometimes feels as though it could slip into a spin when re-accelerating due to the load transfer, it is easy to regain control.

The alternative automatic gearbox is not our business here

No time to dawdle by glancing at the meters, you have to follow the instructor who throws it into full throttle. And if possible, thrust ahead of any followers who are still bridled with a bit in their teeth. The gears upshift with a nice clacking sound in just the time it takes to see the digital needle hit more than 7,000 rpm on the straight line. Then, deceleration, apex, and pedal to the metal. This track is tough on the brakes, but ours survived through the 10 or so laps offered. That's another advantage of the contained mass centred close to the ground. The 234 horsepower is more than enough for me to feel exhilarated. It's a pity that the festivities ended so early. I would have gladly gone for another 20 laps, or even for a long escapade, at the wheel of "my" Subaru.

The car is still a travel-friendly pleaser of broader audiences, with its pared-down but well-equipped interior, its beautiful alcantara upholstery and its small rear seats with folding backrests. And the icing on the cake: the BRZ is shipped to Switzerland with the STI styling kit for an unbeatable price of 40,500 Swiss francs (43,500 for the automatic). Any decisions will have to be made quickly, as the model will only be available for one spring season, and stocks will likely be limited to 100 units. ◢

ENGINE
4-CYL. 2,387 CC, 172 KW (234 HP)

TRANSMISSION
REAR-WHEEL DRIVE, 6-SPEED MANUAL OR AUTOMATIC

PERFORMANCE
0-100 KPH IN 6.3 SECONDS, MAX SPEED 226 KM/H

PRICE
STARTING AT 40,500 SWISS FRANCS

T R A V E L

DOLOMITES

HIKING, CULTURE AND GOURMET FOOD

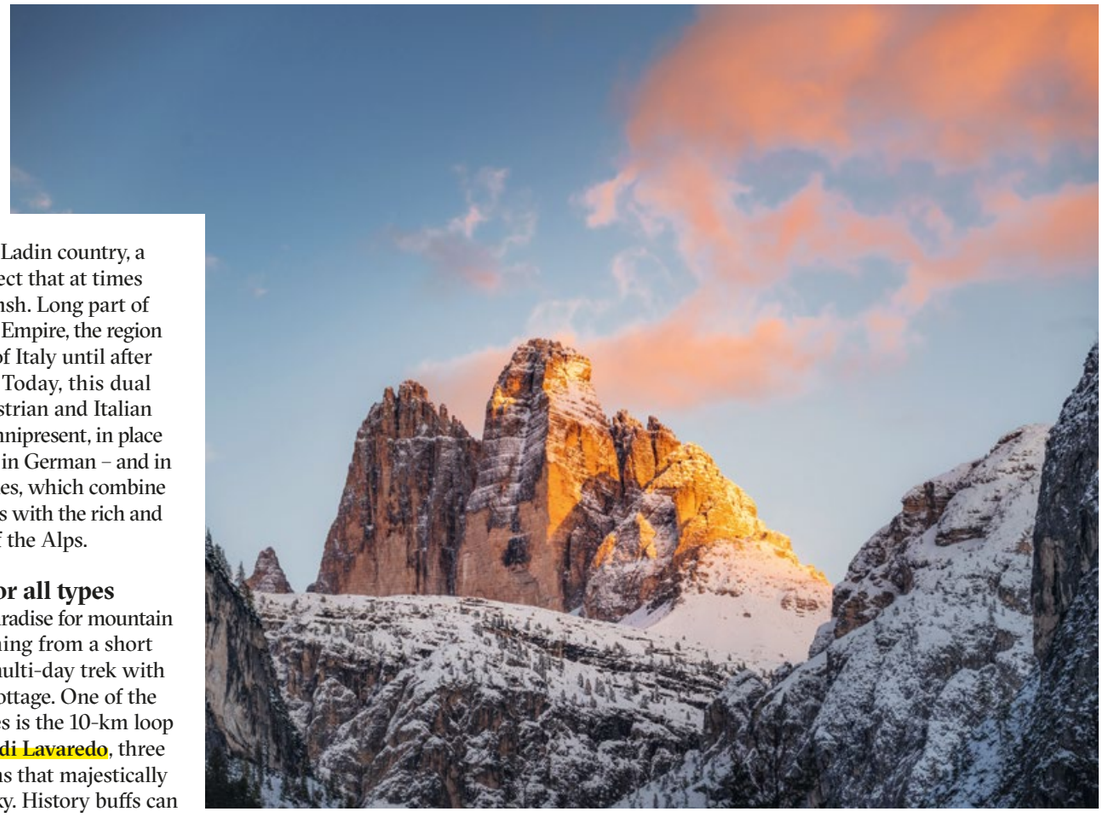
One of the mountains of the Gardena Dolomites, the Sassongher stands at 2,665 m high, and belongs to the Puez group located in the Puez-Odle Natural Park: with its imposing mass, it dominates the villages of Corvara and Colfosco, in Alta Badia.

© ALTA BADIA, ALEX MOLING / CRISTINA GOTTARDI

Straddling the border of Italy and Austria, the Dolomites have preserved the age-old charm of the Alps of long ago. But the region also boasts enthralling museums and restaurants featuring Michelin-starred chefs.

BY JULIE ZAUGG

The vertigo-inducing road winds through peaks of pale rock that point to the sky like bony fingers. You brave a seemingly never-ending series of hairpin turns until you reach the Gardena Pass, at 2,121 metres above sea level. Once past this point, you dip back down into the Val Badia, a land of steep mountains and vivid green pastures overlooking medieval hamlets. At sunset, the mountains take on striking red, pink and purple hues. Known as **enrosadira**, this phenomenon comes from the high amounts of dolomite (double calcium carbonate and magnesium carbonate) in the rock that has chiselled this Alpine landscape. →



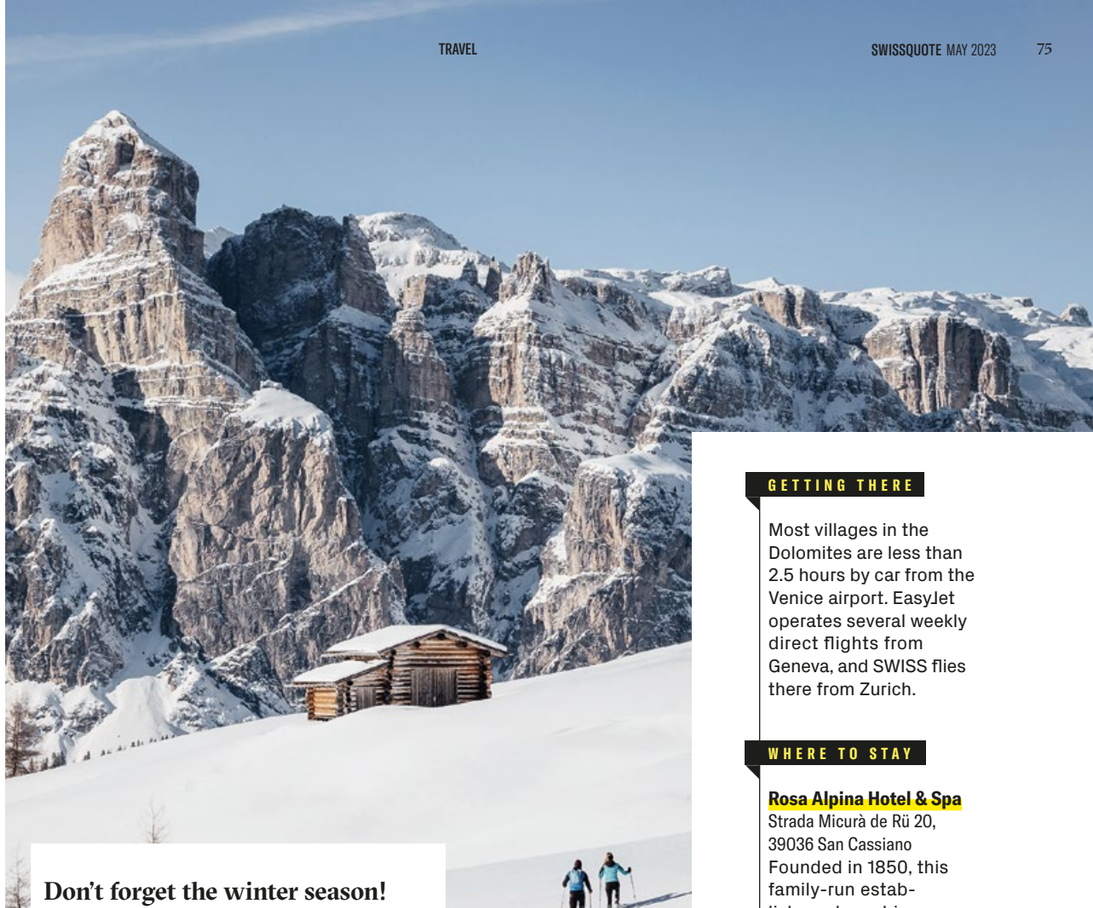
We are in the heart of Ladin country, a Rhaeto-Romanic dialect that at times can sound like Romansh. Long part of the Austro-Hungarian Empire, the region did not become part of Italy until after the First World War. Today, this dual influence from its Austrian and Italian backgrounds is still omnipresent, in place names – in Italian and in German – and in the local culinary dishes, which combine Mediterranean flavours with the rich and creamy ingredients of the Alps.

Mountain hikes for all types

The Dolomites are a paradise for mountain hikers, offering anything from a short two-hour walk to a multi-day trek with overnight stays in a cottage. One of the most spectacular hikes is the 10-km loop around the **Tre Cime di Lavaredo**, three jagged rock formations that majestically stretch towards the sky. History buffs can also explore the maze of tunnels used by soldiers during World War I.

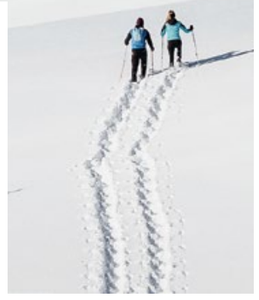
Nestled between the mountain slopes lush with spruce trees, **Lago di Braies** is another top destination for walkers. The trail around the shimmering turquoise lake takes about 1.5 hours, but it can get crowded in summer. To escape the crowds, Lago di Carezza or Lago di Sorapis are worthwhile alternatives.

The picturesque Val di Funes, an alpine valley dotted with medieval churches standing amid pastures and traditional chalets, also features spectacular hikes. One is the 9.2-km Adolf Munkel Trail. It takes you to the foot of the Geisler/Odle Mountains and can be done in about 2.5 hours. More adventurous hikers can tackle Alta Via 1, meaning "high route", a 125-km-long trail where you can take the opportunity to stop off at charming mountaintop lodges.



Don't forget the winter season!

The **Dolomiti Superski** ski area includes 12 resorts and 1,200 km of slopes, as well as toboggan runs and countless winter walking trails that are doable with or without snowshoes. The site caters to all levels of ability, and the lifts are modern and fast. Sellaronda is a circuit that connects the Gardena, Badia, Livinallongo and Fassa valleys in a 27-km downhill journey. →



GOURMET RESTAURANTS

St Hubertus
Strada Micurà de Rü 20,
39036 San Cassiano

This three-Michelin-starred restaurant is the home of chef Norbert Niederkofler, who prepares local ingredients – fresh dairy products, mountain fish, alpine vegetables – using haute cuisine techniques.

La Stüa de Michil
Strada Col Alt 105,
39033 Corvara in Badia

Nestled in a 17th-century wooden Stube, this restaurant infuses Asian flavours into traditional dishes to create an inventive menu that explodes with flavour.

Rifugio Edelweiss
Strada Altonn 18,
39033 Colfosco

Located near the cable car station used by skiers in winter, this lodge serves carefully prepared alpine dishes. Once a week it opens in the evening and serves wood-roasted game.

GETTING THERE

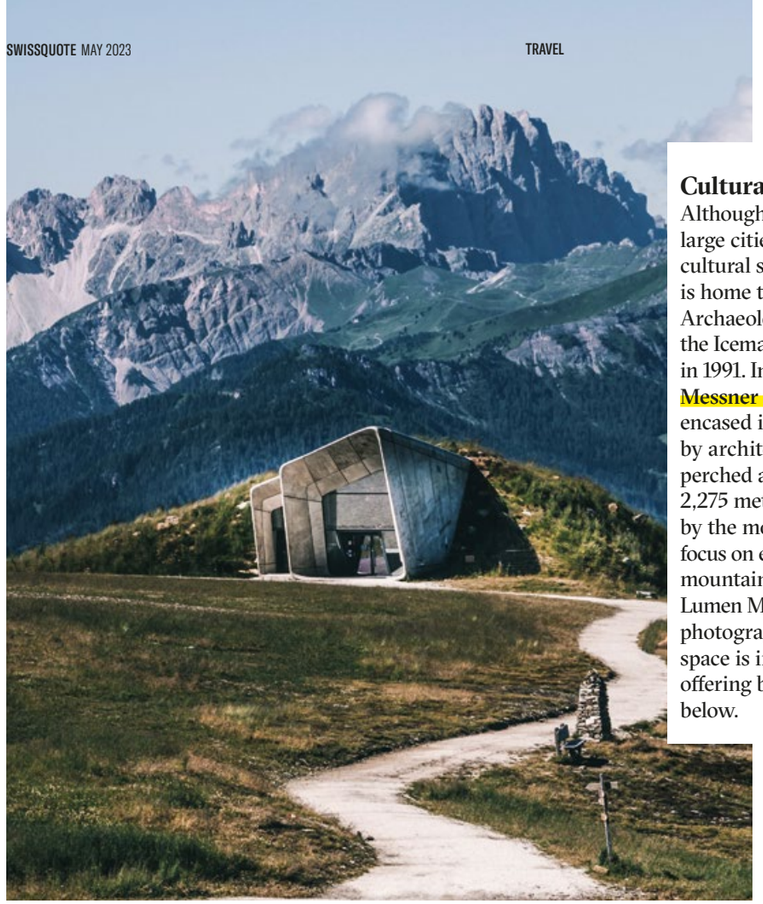
Most villages in the Dolomites are less than 2.5 hours by car from the Venice airport. EasyJet operates several weekly direct flights from Geneva, and SWISS flies there from Zurich.

WHERE TO STAY

Rosa Alpina Hotel & Spa
Strada Micurà de Rü 20,
39036 San Cassiano
Founded in 1850, this family-run establishment combines traditional charm with high luxury. Most of its 52 light-coloured wood rooms feature fireplaces. Guests have access to two spas and a swimming pool.

Berghotel Ladinia
Strada Pé de Corvara 10,
39033 Corvara in Badia
This former mountain lodge has been tastefully renovated into a charming hotel with 13 rooms filled with Tyrolean antiques.

Adler Lodge
Via Piz 11, 39040 Castelrotto
Perched at an elevation of 1,800 metres, in the middle of the idyllic Alpe de Suisi pasture, this hotel inspired by African lodges has a thermal pool and spacious rooms with panoramic views of the mountains.



Cultural stop-offs

Although this mountain region has no large cities, it boasts several important cultural sights. Bolzano, in the valley, is home to the South Tyrol Museum of Archaeology, where you can view Ötzi the Iceman, a glacier mummy discovered in 1991. In a completely different style, the Messner Mountain Museum Corones is encased in a futuristic building designed by architect Zaha Hadid at Kronplatz, perched atop a plateau at an altitude of 2,275 metres. Its exhibitions, created by the mountaineer Reinhold Messner, focus on everything about mountains and mountaineering. Not far from there is the Lumen Museum, or museum of mountain photography. This light-filled angular space is in a converted funicular station, offering breathtaking views of the valley below.

Original cuisine

Ladin cooking is so inventive that it alone justifies a trip to the Dolomites. On the menu you can try a wide assortment of typical dishes, such as canederli (bread and bacon dumplings served in a delicate broth), casunziei (ravioli filled with beetroot, squash or smoked ricotta), barley soup garnished with tutres (small fried savoury fritters filled with spinach, ricotta or sauerkraut) or spinach spaetzle with cream and bacon. The main course generally spotlights game, featuring venison, capriolo (roe deer) or camoscio (chamois), served with blueberry sauce and grilled polenta.

Mostly Austrian-inspired, the desserts are delicious, including luscious apple strudel and the Kaiserschmarren (small pancakes) served with applesauce and cream. To go with this fine cuisine, the region produces many exceptional wines, as well as artisanal grappas flavoured with cumin, pine, gentian or juniper.

Relaxing glasses

Already a wellness leader for its massage guns, the Californian giant Therabody has diversified its product range with its new SmartGoggles, a face wearable designed to alleviate stress and improve sleep. The device combines heat, massage and vibration to release facial tension around the temples and on the forehead. A biometric sensor tracks the wearer's heart rate, for ultra-personalised therapy.

therabody.com
CHF 189.90

Mini computer

In the shape of a cube, measuring 7 cm on each side and weighing 450 g, the latest addition to the line-up by the Toulouse-based brand Bleu Jour is nearly twice as small as its predecessor, the KUBB. The miniature case comes in a selection of bright colours or more muffled tones (blue, pink, white or black) and encloses an Intel Celeron N5105 processor packed with 8 GB of RAM and 64 GB of storage space. Fitting into the palm of your hand, the machine runs in perfect silence and provides enough power for light tasks. Its 65 watt power supply consumes about four times less than a traditional desktop.

bleujour.com
Starting at CHF 257.-

The Rolls Royce of barbecues

Small does not mean cheap. Despite its compact size (60 cm x 40 cm), meaning it can fit nicely onto balconies, El Maestro from the Swiss brand Azado is a top-of-the-range stainless steel grill that can cook with charcoal or gas but can be fired up quickly and efficiently with its gas ignition. The hand crank can be used to adjust the height of the grill and achieve the perfect heat level.

azado.ch
Starting at CHF 5,200.-

h o u t i q u e

Curling at home

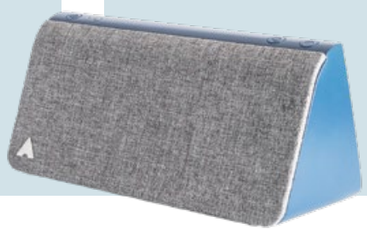
POK is an original game of skill that looks like some sort of tabletop curling set. How does it work? On a rectangular table, resembling those of the popular North American game shuffleboard, players toss mini blue and red pucks into targeted areas to try and chalk up as many points as possible. The table was designed in Geneva and handcrafted in Portugal from varnished birch wood and also comes in a black and white version.

pok-games.com
Starting at CHF 590.-

Fooling burglars

This original device, called Kevin.3, discourages potential burglars by giving the impression that you're at home when you're not. Convincing sound, light and shadow effects simulate everyday activities such as watching TV, playing music or cleaning. Sounds and conversations can also be uploaded for a customised presence. A smartphone app controls the device remotely.

mitipi.com
CHF 499.-



A cockpit for the Batcave

As long as there's enough space for it, the Playseat Trophy Logitech G Edition racing seat makes a good case to win over fans of simulated racing. Comfort, design, finish and numerous settings... the device ticks the right boxes. A reasonable weight of 17 kg makes it relatively easy to move and store. Steering wheel and pedals are sold separately.

logitech.com
Starting at CHF 590.-

A LOOK INSIDE THE LAB

A birth control pill for men: coming soon?

Two American researchers are working on a contraceptive pill that temporarily deactivates sperm. They hope to have it on the market by 2031. BY JULIE ZAUGG


Spermatozoon

Generally speaking, contraception is something that falls to women to deal with. But that could soon change, thanks to a discovery by Dr Lonny Levin and Dr Jochen Buck, two researchers from Weill Cornell Medicine in New York. For the past 20 years, the scientists have been studying soluble adenylyl cyclase (sAC), an enzyme found in every cell, and five years ago, a lucky discovery set them on a path towards finding a contraceptive solution for men.

"One of our post-graduate students was afraid of laboratory mice, so she asked a colleague to examine them for her after she injected an sAC inhibitor," says Levin. "Her colleague had to finish another task first and performed the exam an hour later. Imagine her surprise when she discovered that the mice's sperm were no longer active." And this information led the researchers to determine that sAC plays an essential role in finalising sperm maturation and enabling them to move. "This enzyme works like a switch that turns sperm on or off," says Buck.

A huge advantage is that the process is fast and reversible. "In mice, infertility occurred after 15 minutes but the sperm regained its regular function after 24 hours," says Levin. This discovery has opened the door to a male contraceptive that would be taken only as needed right before sex, unlike hormonal treatments for women, which cause many side effects, particularly with long-term use.

But there is still one significant challenge. "sAC is present everywhere in the body and serves multiple functions on a cellular level," says Levin. "We generally try to avoid enzymes like this in contraceptives, because they're given to healthy people. Serious side effects would be ethically unacceptable."

But an article in a scientific journal eased the two researchers' concerns. "The paper described the case of two men suffering from infertility due to a genetic mutation that led to a deficit of sAC," says Buck. "Other than that mutation, the men were healthy. That information told us that having this enzyme is not essential for the human body to run smoothly."

> "We hope to start the first human clinical trials in the next two to three years"

The next step is to conduct trials on other animal species and find the most effective sAC inhibitor. "We hope to start the first human clinical trials in the next two to three years and have a product on the market within eight years," says Levin.

And the two researchers are already thinking further ahead. "If we administer an sAC inhibitor to a woman, she would have a sufficient amount of the inhibitor in her reproductive system to deactivate her partner's sperm, even after ejaculation," says Buck. The long-term goal is to develop a "partner pill" that would replace existing contraceptive solutions for both men and women.

AUDEMARS PIGUET BOUTIQUES : CRANS-MONTANA | GENEVA | ZURICH