

mirova

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#09

Creating Sustainable Value

Understanding the markets

2022: 2021 can finally begin

Investing in the markets Circular economy increasingly rhymes with high-yield bonds

Getting involved Net zero: financing a carbon neutral world

Measuring impact Impact reporting

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Impact investing and sustainable finance finally meet

This year we will celebrate the ten-year anniversary of the Mirova brand. Looking back, it feels at once like yesterday and yet far away. Far away, because we embarked on a long road with many more pitfalls than the company's current success would suggest before [finally putting the idea of impact investing on the map](#). Yesterday, because the notion of impact that Mirova has carried since its creation remains so relevant and well-adapted to the challenges of tomorrow.

As we wrote in [the very first issue of our research newsletter](#) and in the book that accompanied the creation of Mirova as an asset management company (*For A Positive Finance*), what was then commonly referred to as ESG¹ only made sense to us if it was resolutely oriented towards

impact investment approaches by combining the search for economic, environmental and social performance. This definition corresponds almost word for word to [that adopted by European financial regulations on sustainable finance to describe its 'Article 9' funds](#). While the vast majority of European funds remain Article 6 funds (a product without sustainability objectives) or Article 8 funds (a product that integrates environmental and social characteristics, even if this is not its central focus, nor the central focus of the investment process), **momentum is clearly on the side of funds pursuing explicit and measurable sustainability objectives**, classified under Article 9. Why so? **Because this is quite simply the only product approach**

that can be specifically requested by end investors. In fact, the only real difference between the Article 6 and Article 8 approaches lies in the manager's conviction as to the value of considering environmental and social criteria to generate performance. The ultimate and only objective remains the same, namely, a quest for financial performance within a given investment horizon. Whether regulations or economic reality favours one or the other as the best way to achieve this result is ultimately of little importance: neither approach can possibly satisfy the individuals who want their savings to proactively contribute to addressing environmental and social challenges. Meeting this objective while aiming for market returns on savings has



1. Environmental, Social and Governance

been Mirova's raison d'être since the beginning. The fact that a European regulation applicable to all financial products recognises the specificity – and thus implicitly the relevance – of this approach can only make us proud of the path we have taken.

Is the story over? On the contrary! This recognition opens a new chapter. In our view, it now has two parts:

• **The quality of implementation, which must be reflected in a greater measurability of impact.**

It is no longer enough to declare intentions or to post objectives, it will increasingly be necessary to measure and report on material results, despite all the inherent difficulties that this may pose, particularly in terms of data collection and aggregation.

• **Shifting means for achieving impact: redoubling efforts to engage with companies.** When Mirova was founded, engagement was about convincing companies and the market that sustainable development could be something

other than an oxymoron in finance. Now that companies and the market swear by CSR² and ESG, the priority is to make sure that targets are equal to the challenges, which is, unfortunately, still far from being the case everywhere.

We will strive to make 2022 a pivotal year for the decade ahead, still, and always focused on impact, in keeping with our [mission](#).

Happy reading and best wishes to all.

2022: 2021 can finally begin

Who can remember times as distant as early 2020? It was just yesterday, and yet the past two years seem to have lasted far longer. The philosopher Henri Bergson warned that time was not as linear as our very spatial representations of it suggest, and it seems he was right. Ever since the West became aware of concerns from Wuhan about a tiny virus, time has been distorted by the weight of changes linked to the ensuing pandemic: people's relationship to

work, their willingness to accept the means of transport and commuting time needed to get there, the way leisure is consumed, aspirations to live in larger spaces or outside of densely-populated urban areas, public authorities' implementation of temporarily tighter controls, the mass use of messenger RNA³ technology, which opens up brilliant prospects for the future of health care, the prices of sea freight or the fluidity of logistic chains, and the list goes on. Among all these

changes, there is one that will come as a surprise: the interest that financial markets are finally taking in workers' pay levels, especially for workers with low wages. This subject could become one of the obsessions of the central banks in 2022, a year which is also well on the way to fulfilling all the expectations that the markets had for 2021.

A side effect of COVID-19: the market is taking an interest in workers' wages

Mounting shortages that built up because of measures adopted to counter the epidemic, combined with a rebound in consumption – sometimes after being thwarted for months – and made all the more possible by a glut of excess savings, has exacerbated underlying inflationary trends to the point that some fear potential episodes of stagflation. Even if few believe in such a scenario, which is by definition an unlikely and paradoxical situation, everyone is watching for it, as there is clearly every reason to fear a rise in wages that feeds inflation while

continuing to lag behind it. The risk of triggering of a wage-price loop is therefore becoming a focal point for central banks and, in turn, for investors.

We welcome the markets' sudden fascination with workers' wages. For one thing, it allows them to raise a question that has been too-long neglected, namely whether there are really such great advantages to keeping wages low for entire segments of the working world. Certain calculations may need to be revised. The quest to minimise wages based on global competition

between workers and unfettered mobility of capital and goods has had deleterious effects. Not all of these were foreseen, and they are becoming increasingly difficult – or paradoxically, increasingly costly – to compensate for. The frantic search for low-cost workers has i) reduced economic potential itself and ii) increased underlying risk levels:

• Economic activity is ultimately affected because a society that is polarised in terms of income and wealth – with wealthy or extremely wealthy classes on the one hand

2. Corporate Social Responsibility

3. Messenger ribonucleic acid

and impoverished classes on the other – appears destined not to achieve the prosperity that societies with strong middle classes can aspire to. The middle classes have suffered in particular from companies transferring industrial jobs to Asia, jobs that are often relatively well-paid for low levels of qualification at the beginning of a career. A society cannot generate healthy growth for very long, where only a few players, those who are already well-off, are in a position to increase their standard of living.

- The underlying risk is pushed

up, because, in a society where vast swathes of the population are subject to job uncertainty or instability, even among those in salaried positions, public authorities are forced to use government money – and deficits – to finance compensation mechanisms. Because these forms of instability lead to volatility in consumption and can prevent access to credit for many social categories who are in no position to look ahead to the future and invest, and whose implicit default rates prove to be prohibitive for creditors other than

the public sector. Because inequalities generate social tensions that can ultimately threaten institutions. So, if wages for the lowest-paid categories of workers increase, it is excellent news – as long as this does not amplify inflation at the expense of modest pensioners in particular – for these workers of course, but also for economic actors more generally. Paradoxically, this will even affect the richest, to whom greater income, beyond certain thresholds, returns an ever-diminishing increase in satisfaction.

2022 in short

So, will 2022 combine growth with wage increases at the low end of the spectrum in the West without fuelling an inflationary spiral? Most likely. There is some evidence to suggest this:

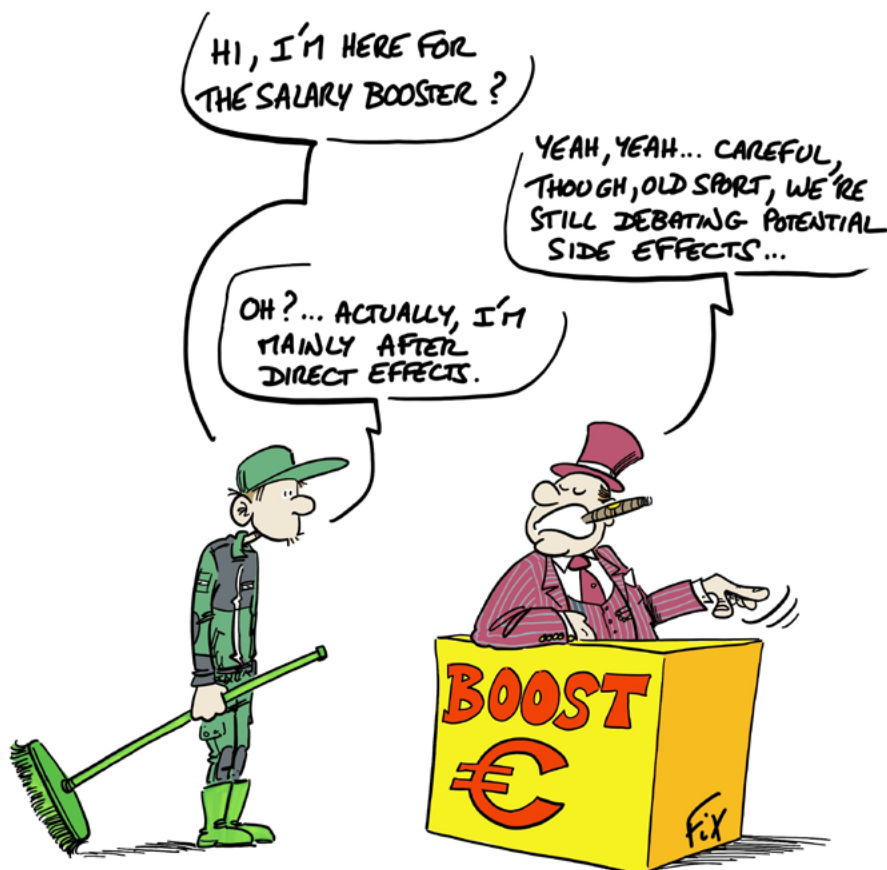
- Bottlenecks due to pandemic containment measures are

already resolving, although the Omicron variant, which is especially problematic because of its ability to reinfect previously infected or vaccinated individuals, could slow the return of better days,

- The production capacities of certain components that were

highly concentrated in Asia, are gradually moving to other regions, little by little reducing the risks of shortages,

- Employees in the service sector, particularly in the US, are in some cases willing to take up jobs only if the pay seems to them appropriate;



in other words, they are gaining bargaining power to the tune of 10.6 million unfilled vacancies⁴,

- Work-from-home schemes can relieve traffic in saturated urban centres where housing is prohibitively expensive. While lower costs may not be a given, stemming the continuous rise of the past 25 years in several large Western cities will relieve some of the pressure on people who have historically spent large portions of their income on housing,

- Relocation, though not yet a mainstream phenomenon, is on the rise in several countries, especially for small and medium-sized companies,

- A growing number of central banks have acknowledged the inflation risk and seem determined to monitor it, even unto raising their rates despite Omicron. The

Norwegian, Mexican, Russian, Brazilian and Chilean central banks have done so, followed by the Bank of England (BoE) and the US Federal Reserve (Fed), which is planning three rate hikes in 2022⁵, while the European Central Bank (ECB) is, as expected, stalling, due to the constraints specific to the Economic and Monetary Union, including inflation at 9% in Lithuania and 2% in Portugal⁶.

We do not, however, see inflation returning to its pre-crisis lows. Nonetheless, it should remain somewhere between 2% and 3%⁷ for a few years. Will the markets be able to cope with this? Yes. In such a context, which we see as favourable, we believe that:

- Equities are a more attractive asset class than bonds;
- Cyclical sectors are expected to outperform, both in equities and

bonds;

- For bonds, we favour high yield over investment-grade and subordinated debt, and while hopes of a 2021 yield-curve steepening were dashed in 2021, they may finally be fulfilled, at least in the eurozone, but probably not in the US, where upward pressure on the two- to five-year part of the curve could emerge.

In a sense, much of what the markets were anticipating for 2021, unrealised mainly because of the resurgence of the Delta variant and central banks' outright denial of inflation, looks like it could take place in 2022, and probably thanks to Omicron. The epidemic has, in a way, generated an antidote to itself. The good news for 2022? 2021 can begin!

Macro: Omicron, a bogus villain

Let us be clear from the outset: we believe that the Omicron variant will weigh on growth in the short term, but not derail it, as economic fundamentals remain solid. The

emergence of this variant should not jeopardise the recovery, but it is expected to cause a one-quarter delay. Moreover, its seemingly more benign nature, compared

to previous variants, could even remove the sword of Damocles that was hanging over the economy, due in large part to the Delta variant.

4. Source: [Les Echos, 01.04.2022 \(in French\)](#)

5. Source: [Le Monde, 12.16.21 \(in French\)](#)

6. Source: [Eurostat, 12.17.2021](#)

7. Source: [Les Echos, 01.07.2022 \(in French\)](#)

2022: After the first quarter, a rebound set to resume and continue

This latter variant may have partly explained why the latest indicators pointed to a loss of momentum in the eurozone economy at the end of 2021. Germany, in particular, was amongst the hardest hit. The combination of a Delta wave and the rapid spread of Omicron is expected to continue to affect activity in the first quarter, due to tighter restrictions, pressure on healthcare systems and consumer behaviour. Similarly, global growth is expected to slow at the beginning of the year, even though the latest manufacturing production figures from China and the United States, which are rather encouraging, seem likely to partially offset a decline in services. Thereafter, growth should resume.

The new wave caused by the latest variant therefore seems to be different from predecessors – although caution is still needed with this epidemic, as we have all learned since it first emerged two years ago. Omicron is characterised by faster transmission; however, it is also less dangerous, at least based on the low rates of hospitalisation compared to infection rates in the

most affected countries. Currently tearing through the United States and Europe, Omicron should see its rapid spread across the globe result in a more synchronised and potentially less virulent wave than the previous ones, due both to characteristics specific to this variant and to the increasing rate of vaccination on a global scale, particularly in Asia (Thailand, Vietnam, Japan, etc.). There is still the risk of the variant spreading in China and of the ensuing economic consequences, which we cannot rule out. The country's 'Zero COVID' policy ahead of the Olympic Games remains very aggressive, as illustrated by the 13 million inhabitants currently subject to forced lockdown in Xi'an⁸.

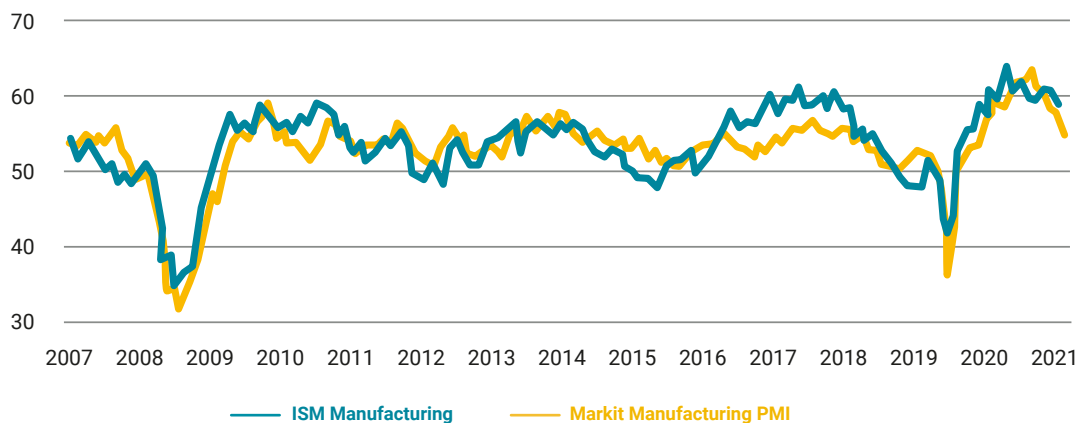
Moreover, even with restrictions, it is our view that supply chains could prove more resilient than they were last summer. We believe that the easing of bottlenecks – already evident in the latest global industrial production figures – will accelerate throughout 2022. Each new wave seems to have a less pronounced negative effect on economic activity.

In 2022 we expect real growth to be around 4.5% globally⁹, one point above potential, meaning nominal growth of around 7-8% given central bank inflation expectations¹⁰. This bodes well for corporate earnings. Global real GDP remains 2%¹¹ below its pre-COVID pace, with services, Europe and emerging markets lagging.

Purchasing managers' indices (PMIs) suggest that the underlying economy has a healthy pulse. All demand drivers are well geared for the coming quarters:

- consumers have high levels of savings and good employment prospects,
- business investment remains strong,
- financial conditions remain accommodating with largely negative real rates,
- the replenishment of stocks should continue to boost production, and it should be noted that disruptions in value chains slowed the recovery last year but should also prolong it.

US MANUFACTURING INDICATORS



Source: Bloomberg

8. Source: [France Info, 12.22.2021 \(in French\)](#)

9. Source: [Les Echos, 12.01.2021 \(in French\)](#)

10. Sources: Fed, ECB

11. Source: Les cahiers verts de l'économie

Central banks seek ideal inflation regime

In this context, the task of tightening their monetary policy to curb inflation while supporting recovery falls to central banks. Goodbye to the massive measures deployed following the crises of 2008, 2011 and 2020; now comes the time for subtle steering of contradictory factors!

It seems self-evident that inflation should mechanically slow down this year due to base effects and the gradual disappearance of bottlenecks, but not to the point of settling back to the levels of the 2000s and 2010s. Certain mechanisms could even, especially in the United States, spread it more widely within the economy, via wage increases, which would not per se be a negative development (see our introduction).

With inflation in many countries reaching levels unseen for several years, and with 30-year highs seen recently in the US, Germany, Spain, etc., the topic has become a major concern for policy makers, central bankers and investors.

At the same time, however,

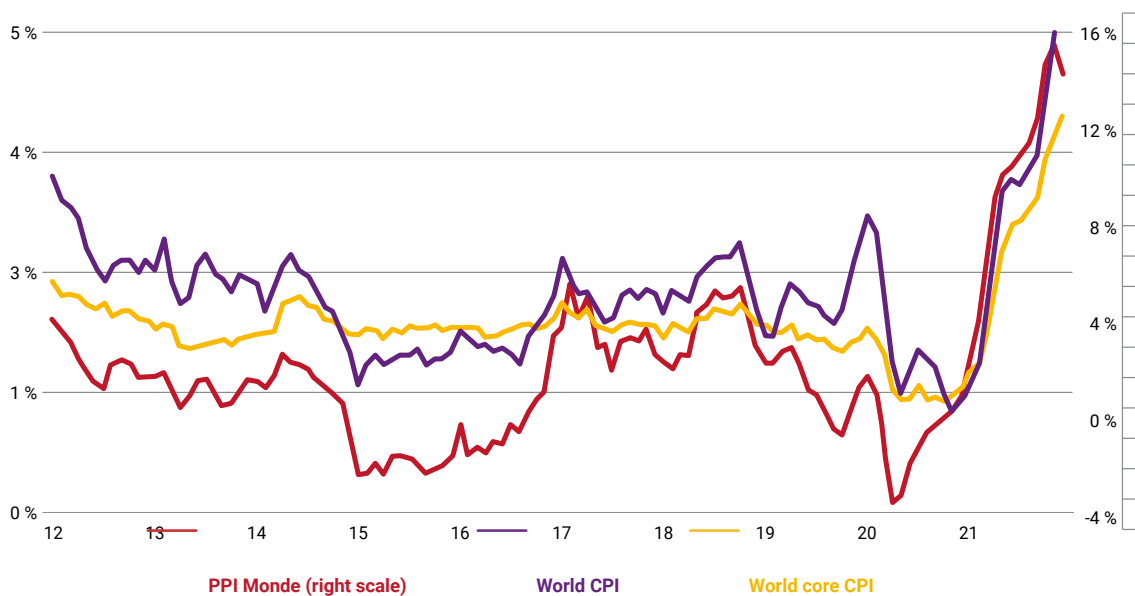
any overly abrupt tightening of monetary policy would likely weigh on the recovery and generate financial instability. Central banks are therefore faced with a dilemma, but one they appear equipped to manage.

Effectively, they have tools to curb any rise in prices above certain thresholds, including raising key rates, reducing asset purchases or even lightening their balance sheets. At this stage, the Fed has announced that it will end its bond-buying programme at the end of the first quarter of 2022 and is considering three rate hikes in 2022 and three more in 2023, in line with its vision of full employment by the summer of 2022. The ECB, meanwhile, has confirmed that it will stop the Pandemic Emergency Purchase Programme (PEPP) at the end of March 2022, as planned. To secure the transition, it will increase its regular asset purchase programme (APP), which should remain open until 2023, subject to observed inflation levels. Overall, the monetary environment

will become less favourable for investors and could be a source of volatility in the short term, but we do not expect a major monetary shock in 2022 that would seriously destabilise the markets. We believe that the central banks, which are obviously very aware of this risk, will do what is necessary to avoid the risk of an inflationary spiral (uncontrolled price-wage loop), which we do not include in our scenario (see [Mirova: Creating Sustainable Value #8](#)).

Inflation, including food and energy inflation, is likely to fall in the US during 2022, given a significant drop in the contribution of energy prices, even in the case of a moderate rise in the price of oil per barrel, and given lower budgetary support for households, an easing of tensions in sea freight and all value chains, a rebalancing of supply and demand in favour of services, and even a potential return of Americans to the labour market once the epidemic is over. This last point is key, and closely monitoring how wages evolve if participation rates remain

WORLD: VARIOUS MEASURES OF INFLATION



Producer Price Index (PPI): measures the average change in prices received by domestic producers for their output
 Consumer Price Index (CPI): measures the cost of living for a typical person
 Core Consumer Price Index (CPI): a measure of the cost of living for a typical person, excluding energy and food expenditures

Source: Les Cahiers verts l'économie



below pre-COVID levels along with the contribution of housing to inflation figures will be critical. In Europe, fallout from the surge in gas prices could delay the easing of overall inflation, but core inflation should stabilise and then fall again. Moreover, the situation in the eurozone remains very different from the situation in the US, as real wage growth is not expected alongside the rise in consumer prices. With the exception of the Netherlands and Germany, we are still far from full employment. Inflation can be mainly attributed to a rise in energy costs (which is unlikely to be repeated this year) and a shortage of goods on offer, a direct consequence of measures implemented to curb the pandemic. In China, the political and monetary

situation appears quite different. The People's Bank of China intends to maintain an accommodating monetary policy over 2022 – partly offsetting its desire to purge the property market – in order to stabilise growth in the context of increasing economic difficulties following the near bankruptcy of the property developer Evergrande. It will not exclude any macroeconomic instruments for this purpose. Generally speaking, the inflation shock we have been witnessing over the last few months is partly the result of the measures taken to try to counter the pandemic: the distortion of the consumption structure in favour of goods at the expense of services, the low participation rate in the US labour market, disrupted value chains in Asia, etc.

All of this is expected normalise, perhaps not completely, but to a large extent.

So, will inflation return to the low levels of recent decades? We don't think so. We expect a higher level – certainly not that observed in recent months, but not the almost flat situation of the 2010s either. This new inflation regime may prove beneficial to multiple economic actors, enabling more inclusive growth via the rise in low-end wages, and facilitating climate transition through a rise in the price of CO2. In the long term, it should of course push the real equilibrium rate upwards and place increasing pressure on central banks, given the current extremely accommodating interest rate levels.

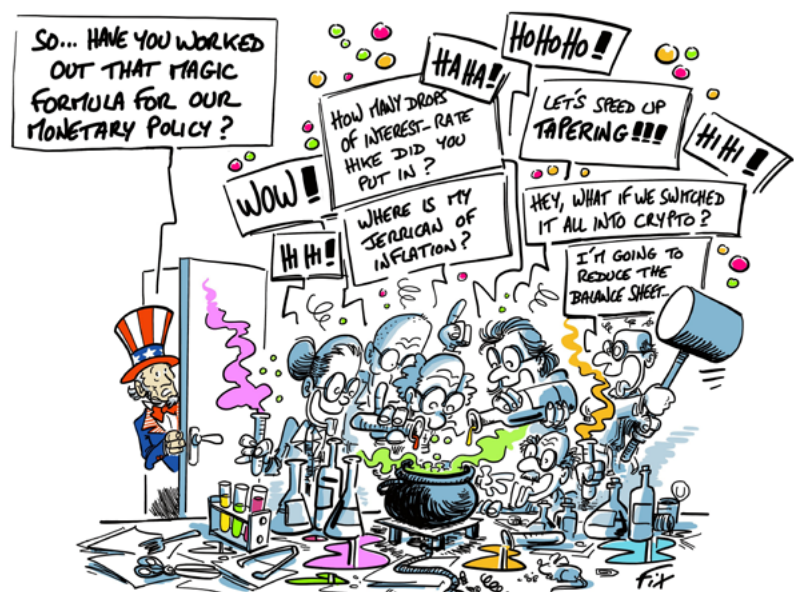
Market: recurring rotations are out, greater convictions are in

During 2021, we saw high volatility in yield curve movements and/or equity investment style and theme rotations, with the evolving health situation generally driving all trends, or rather, all trend reversals.

Tendencies like the shift upwards of long-term interest rates, the steepening of the curve and the value/cyclical rotations witnessed at the beginning of the year and in September systematically came to a halt when outbreaks resumed and new variants appeared. As, for instance, Delta last spring and Omicron this autumn. With each rebound of the pandemic, investors turned their backs on the riskiest areas in favour of high-margin, high-visibility companies of the quality/growth type, while continuing to favour equities over bonds due to low interest rates. Lastly, European and US equities delivered excellent performance

in 2021, with gains of around 25% and sectors such as banks and technology taking top honours. Although taking profits at the start of 2022 might appear tempting,

we remain positive on the equity asset class, which we favour over bonds¹².



12. Past performance is not indicative of future returns. All investments involve risk, including the risk of capital and sustainability losses.

2022: will new variants cease to dictate market behaviour?

Fundamentally, we believe that the macroeconomic environment, seemingly rid of the most aggressive variants, favours equities over bonds, as mentioned previously:

- Overall, the growth/inflation mix could prove more advantageous than in 2021 due to a gradual normalisation of supply vs. demand and more fluid supply chains, which should help boost activity in several sectors.
- Equity risk premia remain comfortable, especially in Europe and Asia, with capacity to absorb a gradual rise in long-term rates.
- The main driver of the equity

markets in the medium term will continue to be earnings momentum, and on this point, expectations for 2022 seem rather conservative with consensus expectations of a 7% increase¹³ worldwide.

In terms of valuation, there are wide disparities within the market. Valuation multiples remain high in absolute terms, particularly in the US, but have dipped in recent quarters on the back of strong earnings growth (EPS growth in 2021 close to 65% for the eurozone and 50% in the US)¹⁴.

As regards our expectations for interest rates, we believe that a

steepening of the curve and a gradual rise in long rates should materialise in the eurozone in 2022 as the horizon clears from a health perspective and real growth is able to deliver upside surprises, i.e., when the economy can fully re-open. In the US, on the other hand, the Fed is preparing to raise its tone and its rates, and some caution should be exercised vis-à-vis the intermediate part of the curve.

We therefore anticipate a US 10-year rate of 2.5% and a German 10-year rate of +0.2% by the end of 2022¹⁵.

Which sectors? Which regions?

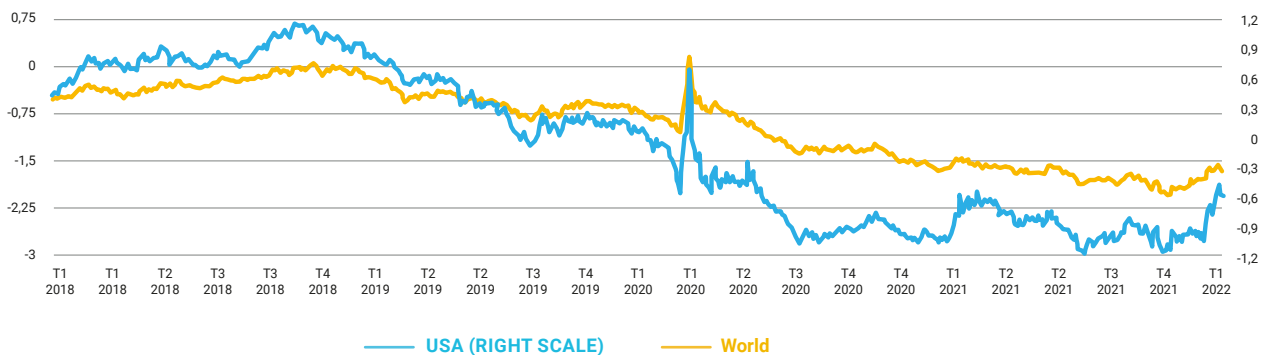
In terms of geography, we are predisposed to favour European stocks over US stocks:

- valuations appear more attractive, with an average discount of around 30% compared to the US market, and a German 10-year rate that is still negative for an average yield of around 3%, whereas the US 10-year is now higher than the average yield of the S&P 500¹⁶.
- The eurozone will benefit from a more favourable net fiscal impulse, a

more accommodating ECB and lower inflationary pressures. It remains to be seen to what extent the strength of the dollar will or will not continue to attract flows into US assets and how much traction the US tech giants (a quarter of the S&P 500's capitalisation) will have. We also believe that emerging market securities should perform well. China's growth momentum may be bottoming out. The country's authorities seem determined to counteract the slowdown in activity with more accom-

modative monetary and fiscal policies, while remaining intransigent towards sectors they consider speculative or sources of unnecessary inequality. Other emerging countries, which have had to cope with rising inflation and higher policy rates, should also see their situation improve. In the realm of fixed income, it is also worth noting that, while we still consider Western sovereign and quasi-sovereign debt to be expensive, we find emerging market debt attractive. As a reminder, we are

WORLD : REAL LONG RATES (VIA TIPS)



Treasury Inflation-Protected Security (TIPS): a bond that offsets the effects of rising prices by adjusting the value of its principal to inflation.

Source: Les Cahiers verts l'économie

13. Source: Goldman Sachs

14. Source: Goldman Sachs

15. The information provided herein reflects Mirova's opinion at the date of this document and is subject to change without notice.

16. Sources: Bloomberg, Mirova

interested in exposure to green bonds only in this asset class.

As for the sectors we like, we take a similar view on equities and debt, as rising rates have clear consequences a priori, both on the equity and bond side:

- We are therefore overweight cyclicals relative to defensives and stand ready to add to our positions if investor sentiment towards China starts to improve and the health crisis eases. We are looking particularly at industrials, construction and materials companies seeing upside from the stimulus and green infrastructure plans, increased capital spending, cyclical recovery and infrastructure plans and, to a lesser extent, technology (cyclical and structural growth, digital transition), although we are aware that the sector has less upside potential given its strong revaluation in 2021;
- we prefer stocks with strong pricing power that can maintain their margins in the currently inflationary environment;
- We also favour banks, whose net interest margins should increase with rising interest rates. Their valuations remain attractive on the equity side, as does senior debt, but we are moving away from their subordinate CoCo¹⁷ instruments, which have become expensive, particularly due to the recovery of dividends;
- Among defensive sectors we lean towards healthcare, where we see attractive growth prospects and

decent share valuations, as well as utilities, which should benefit from the Green New Deal and from upcoming supply chain improvements in the second half of the year;

- We are underweighting the subordinated debt of other defensive stocks. We see it likely to lose its appeal for players buying opportunistically and we prefer High Yield debt on its own merits.

What events and risks might thwart our expectation of virtuous and controlled inflation? There is no shortage of candidates, revolving primarily around three themes:

- various sources of soaring inflation, e.g., that fuelled by materials shortages or a developing energy crisis, leading to interest rate hikes well beyond our estimates, this time with the power to curtail growth;
- the emergence of a dangerous variant that supplants Omicron and is resistant to currently available vaccines;
- renewed geopolitical tensions: the markets have gradually taken to ignoring the latent conflicts apparent between China, Iran or Russia on the one hand and the United States and its Western allies on the other. This desensitisation is problematic, as none of the perceived disputes of recent years has abated, on the contrary. Unfortunately, the stumbling blocks are piling up between the United States and powers that are establishing 'red lines' that

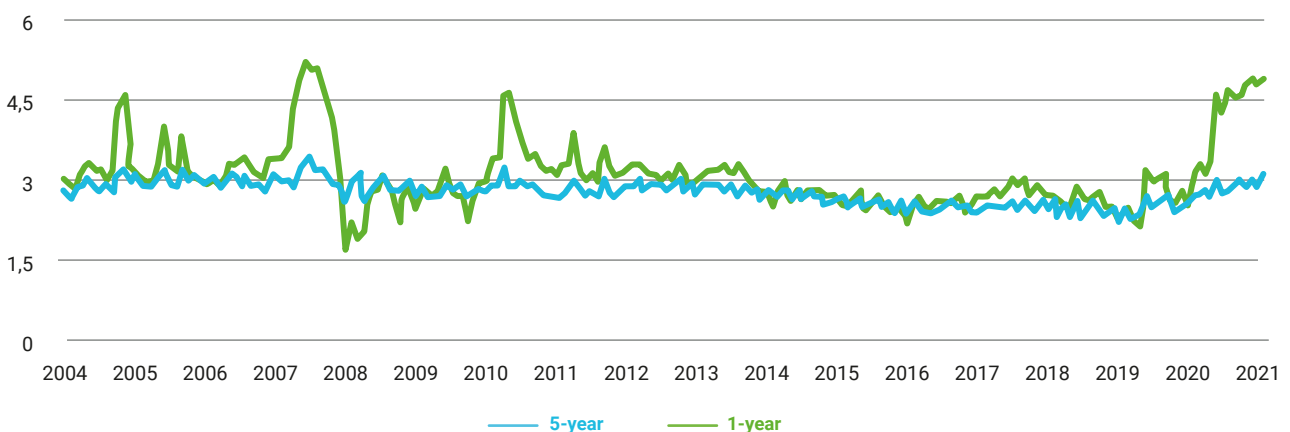
they demand the West not cross; the problem is that the US administration is not used to being in such a position, making it impossible to anticipate its reactions;

- major mergers and acquisitions deals, which will add spice to interpretations of the outlook for many companies.

We will therefore have to keep an eye on these potential disturbances to a year that is otherwise destined to finally mark the beginnings of a form of post-COVID life. At Mirova, in any case, we will continue to monitor them closely. We will also continue financing those entities involved in the environmental and social transitions underway who seem to us best positioned to benefit. We remain fully committed to these transitions through the capital allocation strategies we build for our clients.

As we wait to see whether our (attempted) forecasts correspond to what 2022 holds in store for us on the economic and financial fronts, Mirova's Fixed Income & Equity teams wish you an excellent year. May it be one of great satisfaction for you and finally relieve us of the burden of COVID... And may it also bring the wage increases for less privileged workers our economies will need to regain a more sustainable prosperity. Happy new year, and best wishes for 2022!

UNITED STATES: HOUSEHOLD INFLATION EXPECTATIONS (UNIVERSITY OF MICHIGAN)



Source: Bloomberg

17. Mandatory conversion bonds (or contingent convertible bonds, known as 'CoCo bonds')

Plug Power: the leader in global hydrogen economy



'Plug Power is building the hydrogen economy as the leading provider of comprehensive hydrogen fuel cell (HFC) turnkey solutions.'

Energy transition is expected to create a major market opportunity in hydrogen. Total addressable market is estimated to reach US\$2.1 trillion by 2050, of which fuel cells for transport is expected to be US\$350bn, electrolyzers US\$215bn and stationary power US\$200bn, while the remainder of US\$1.3bn is expected to consist of green hydrogen¹⁸.

Plug Power is the only major company in the hydrogen space with a full ecosystem. Its product offering includes fuel cells for transport, electrolyzers for producing green hydrogen and supplying green hydrogen. Plug understood early that many companies are keen to switch to using hydrogen, but lack of infrastructure and uncertain hydrogen supply were preventing them from doing so. By offering the full ecosystem, Plug has made it easier for customers to make the decision.

Plug Power started in the US material handling business, where hydrogen fuel-cell powered forklift trucks have become a highly competitive option due their low emissions and high efficiency. Its flagship customers include Amazon, Walmart, Home Depot and General Motors. Plug Power's GenDrive supplies fuel-cell forklift trucks, but the company also supplies increasingly green

hydrogen fuel. Plug Power remains under 1% of global forklift truck sales¹⁹. Given increases in e-commerce and the environmental targets of most major players in the sector, Plug, with 95% market share²⁰, looks well placed for decades of growth.

The company also has an offering for transport via ProGen. In 2020, the company started a joint venture with Renault, called HYVIA, which has already launched its first light commercial vehicles. Two freight vans and a city bus with ranges of 250 to 500 km. The HYVIA ecosystem also includes green hydrogen production, storage, distribution and refuelling stations. HYVIA will be based in France and will sell its vehicles and services to fleet operators in Europe. Plug has also partnered with Korean-based Edison Motors to develop and bring to market a hydrogen fuel-cell powered electric city bus. The companies expect to have a prototype ready in the second half of 2022. Korea is targeting 6 million fuel-cell EVs on the road in 2040²¹. The company has said that it is negotiating with a partner to cover the US transport market.

The stationary power market could also become a major opportunity for Plug Power's GenSure. Through a joint venture with Korea's SK Group, the company is targeting Korea's power market. Korea has

18. Source: Bernstein February 2021

19. Source: Plug Power

20. Source: Plug Power

21. Source: Bernstein February 2021



one of the world's most ambitious hydrogen targets. The government is aiming to decarbonize the power sector with fuel cells and green hydrogen and targeting 15GW of fuel cell power generation by 2040²². The joint venture is building a Gigafactory to produce fuel cells and electrolyzers for the Asian market.

Through the acquisitions of United Hydrogen and Giner EXE, Plug Power entered the electrolyser market to become a low-cost producer of green hydrogen. In Europe, Plug has partnered with the French company Lhyfe to develop green hydrogen plants. In Australia, Plug's partner for building a 'gigafactory' electrolyser plant and green hydrogen supply is Fortescue. We expect the company to have 4.5GW of electrolyser manufacturing capacity by 2025, 1GW in New York, 2GW in Australia with Fortescue, 1GW in France with Lhyfe, and 1GW in South Korea with SK Group²³. We expect additional capacity announcements to follow. At the end of 2021, Plug announced a 100MW electrolyser order for a green ammonia project in Egypt. This is one of the largest electrolyser orders to date, and the timing of the project is also very tight, only two years.

Green hydrogen refuelling, GenFuel, will initially be used at Plug's existing material handling refuelling stations, which currently purchase hydrogen from purveyors of industrial gasses. The company has partnered with renewable producers, such as Brookfield in the US and Acciona Renewable Energy

in Europe. It is building a liquid hydrogen distribution system to connect supply with key customer hubs. It has a long-term contract with Certarus, North America's leading transporter of compressed natural gas to scale and expand green hydrogen infrastructure.

Plug Power has been by far the most ambitious company in building a 'one stop shop' for hydrogen by acquiring or developing all major hydrogen-related technologies. Furthermore, through joint ventures and co-operation globally in the Americas, Europe and Asia, Plug has built a global marketing platform based on partnerships with leading local players. This has unquestionably made Plug Power the current global leader in the hydrogen economy.

The hydrogen market is in its early innings, with an excellent growth outlook. This means, however, that companies operating in the sector are in the midst of a heavy investment phase. Plug is well positioned for the growth phase with approximately \$4bn of cash on its balance sheet²⁴. Currently, most of its revenues come from the material handling business. However, the company has indicated that it expects high growth from new business areas, and revenues from electrolyser business are expected to be higher than material handling revenues in 2023 (\$700m expected), while revenues from hydrogen sales are expected to exceed material handling revenues in 2024 (\$850m expected). Most analysts expect

Plug's sales growth (CAGR) to be nearly 50% during the 2021 to 2030 period and about 10% in the following decade. This would result into Plug's sales reaching \$15bn in 2030²⁵.

Plug Power is still loss making, but there is a clear path for margin improvement as increasing volumes lead to cost reductions in the hydrogen production and electrolyser business. Lower costs will lead to higher customer demand creating a virtuous cycle. Consensus estimates expects gross profits to turn positive during 2022 and EBITDA to be in the black in 2023. The company targets 20% EBITDA margins by 2024²⁶.

We are at early stages of hydrogen becoming a major part of the energy transition. Over the last two years, the sector has seen dynamic development, as hydrogen is now included as a part of the toolbox for achieving net zero targets. In 2019, only 3 countries had hydrogen strategies, whereas in 2021 that number had risen to 26. These countries have targets amounting to nearly 70GW of electrolyser capacity by 2030. This target does not include any Asian countries, or the US, which we expect would multiply the total considerably.

We see Plug Power as one of the key companies to follow as the hydrogen economy grows and develops. We only expect the speed of development to increase as costs continue to decline and more and more countries and companies sign net-zero targets.

22. Source: Bernstein February 2021

23. Source: Plug Power

24. Source: Plug Power

25. Source: Bernstein February 2021

26. Source: Plug Power

Afyren: a sustainable and innovative approach to chemistry



Afyren is a sustainable chemistry company created in 2012, which offers innovative solutions, designed with a circular economy approach from the get-go.

Since its creation, Afyren has focused on Research & Development (R&D), to develop a technological platform called 'AFYNERIE®' based on **anaerobic fermentation** (non-oxygenated environment) and capable of producing a family of seven carboxylic acids, as well as a natural fertiliser rich in potash and usable in organic agriculture. Carboxylic acids commonly

An innovative concept

Afyren is able to offer consumer industries (food, cosmetics) a **bio-sourced alternative** that is fully in line with the circular vision and **uses non-food biomass that are coproducts of sugar-beet processing** (molasses, pulp), to avoid direct competition with human food. This technology makes it possible to produce

A technology that makes the most of natural micro-organisms

The technology developed by Afyren, unlike that of other players involved in biobased solutions, is based on a **non-GMO²⁷ fermentation**. A natural fermentation, i.e., requiring no modification of micro-organisms' DNA. This simplified fermentation process reduces **production costs on an industrial scale** and represents an attractive commercial argument for the most demanding customers and those reluctant to use GMOs. The manufacturing process is based on the group's know-how,

address the needs of many sectors (food, textiles, lubricants, cosmetics, etc.). Currently, **carboxylic acids are mainly manufactured by petrochemical means** (based on petroleum derivatives, mainly ethylene and propylene). The supply of bio-based products is still in its infancy, and Afyren is a leading player in this field.

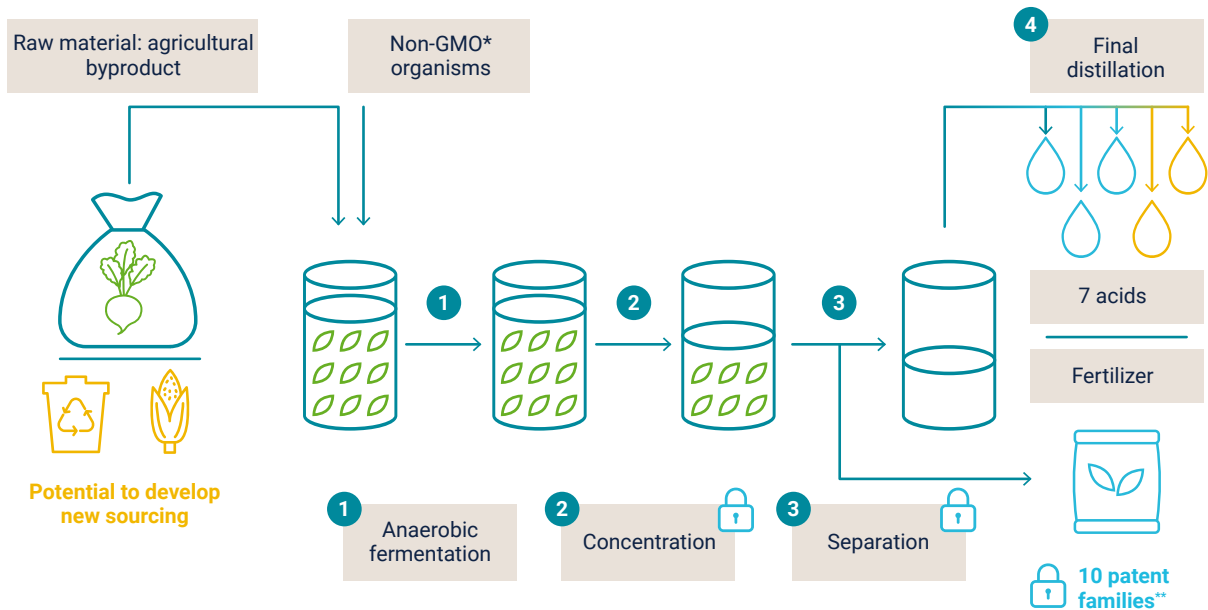
substitute molecules by fermentation in an entirely natural way, with **specificities perfectly identical** to the molecules obtained by petrochemical means. In other words, end customers do not have to modify or adapt their own manufacturing processes to substitute for acids made from petroleum derivatives.

in particular its **ability to select suitable micro-organisms**, and on nine families of patents registered internationally and a tenth in the pipeline.

27. Genetically modified organism

A simplified 5-step industrial process

PROPRIETARY TECHNOLOGY RELYING ON PROVEN INDUSTRIAL PROCESS



Note(s): Brevets; To be developed

*Genetically Modified Organism

**9 patents have been approved, with 1 additional patent in the approval process

Source: Afyren

A production facility operational by 2022

Afyren provided proof of its technology in 2014 via a pilot, and then successfully produced batches to feed R&D. The group has achieved commercial success and more recently launched the construction of its first plant ('Afyren Neoxy') on the Carling-Saint-Avold platform (in France's Moselle region). Afyren Neoxy will

be the company's first operational site, with ramp-up in the first half of 2022 for production and to serve customers under contract. The first part of the plan is particularly secure as it is based on:

- a first factory that is already financed and well advanced in its construction (production expected in H1 2022);

- secure access to raw material supply under a 5-year contract,
- contract agreements covering a significant part of its turnover (~60% to date²⁸), with the ability to accompany the increase in production by contracting 100% of capacity.

Economic sustainability

The group's model will be **competitive**, to guarantee economic sustainability, with the ambition of marketing molecules at prices relatively similar to petrochemical

counterparts, with **an average premium of 5%** for the most common molecules, so as not to erect a possible barrier to adoption by industrial prospects. The group

is also counting on a significant premium to market molecules of higher interest (high value-added uses).

28. Source: Afyren

Near-shore production

The group has begun its transition to the industrial stage with the construction of its first plant on the Carling-Saint-Avold industrial platform since September 2020. This first facility should produce **16kt of carboxylic acids and 23kt of fertilisers per year** by the end of a two-year ramp-up after it launches in the first quarter of

2022. The factory is expected to generate ~€35m of sales in 2024, with an EBITDA >25%²⁹. It will be operated by a JV formed with SPI funds (Bpifrance) and represents an investment of ~€60M which has already been financed.

The success of the first production site will allow the group to expand internationally by building new

wholly owned factories. The group is currently considering locations in North America and the Asia Pacific region. The business model is capital intensive in nature but should deliver high returns. The group also plans to leverage debt to >60% for these future sites.

Target 2027

Afyren aims to reach cruising speed by 2027 with three factories, for a production capacity of 72kt per year, including two international factories of 28kt each. Management expects to reach €150m in sales, and an EBITDA margin of 30%. This plan is based on strong commercial traction, the absence of R&D risk, and reduced industrial risks (standard equipment, process flexibility, etc.).

However, financial risks, access to resources and price volatility cannot be excluded from the equation.

The Afyren group has many assets to its credit in markets dominated by petrochemicals, which make up 99% of the current market and are widely used in many sectors (food, textiles, lubricants, cosmetics, etc.). Thus, carboxylic acids form an addressable market

estimated at US\$13 billion in 2021 and expected to grow by +5.7% per year between now and 2030³⁰.

In this market, Afyren offers a truly differentiating positioning:

- 100% natural non-GMO fermentation;
- Zero waste approach;
- Multi-product with a unique and scalable technological process
- Price competitiveness vs. petrochemical industry.

29. Source: Afyren

30. Source: Transparency Market Research

Circular economy increasingly rhymes with high-yield bonds

Amongst the good news for sustainable investment in 2021 was the arrival of more circular economy players in the bond markets, in this case on the High Yield segment.

We note in particular an issue in March by the world's largest aluminium recycler Novelis (Ba3*/BB)³¹, one by its competitor, Constellium (B2/B)³², in May, as well as by France's leading waste recycler Paprec (B2/B+)³³ and France's largest metals recycler Derichebourg (NR/BB)³⁴ in June, followed by hazardous waste management specialists, Itelyum (B2/B)³⁵ and Séché Environnement (NR/BB)³⁶, in September and October.

What these issuers have in common is that they provide a serious response to one of the key issues of the ecological transition and benefit from the favourable underlying trends of increasingly strict regulations on greenhouse gas emissions and waste management on the one hand, and a rapid increase in awareness of climate issues by direct and end-customers on the other. We are particularly interested in two of these names, Derichebourg and Séché Environnement.

31. Credit rating – Sources: Ba3 Moody's 07.27.2021; BB S&P 07.22.2021

32. Credit rating – Sources: B2 Moody's 05.06.2021; B S&P 05.17.2021

33. Credit rating – Sources: B2 Moody's 07.09.2021; B+ S&P 06.18.2021

34. Credit rating – Sources: NR Moody's; BB S&P 06.07.2021

35. Credit rating – Sources: B2 Moody's 09.23.2021; B S&P 10.21.2021

36. Credit rating – Sources: NR Moody's, BB S&P 10.25.2021

References to a rating or ranking are no guarantee of future performance of the fund or the manager.

Derichebourg, rich prospects



In June, Derichebourg issued a €300m green bond which, together with the €225m of cash already available, was used to finance the acquisition of competitor Ecore (closed in December). As a result, the company is strongly consolidating its position in the French market. Owned for 41% by the Derichebourg family, the group has a very strong position in France with market share of around 35% in metal³⁷ recycling. The group has a strong local presence in terms of waste collection centres, which enables it to significantly minimise

transport costs and maintain close proximity to customers, some of whom it worked with for over 50 years.

We believe that the group's metal-recycling business will continue to benefit from strong growth catalysts, not least because of increasingly stringent regulations regarding greenhouse gas emissions, and recycling of vehicles – and indeed of all end-of-life metal products.

It is important to know that steel can be produced in two different ways:

- in a blast furnace, from iron ore and coke with carbon reduction in a converter, which is of course an extremely energy-intensive process;
- in an electric furnace, using steel recycled by companies like

Derichebourg – these electric furnaces produce up to 75% less CO2 than blast furnaces³⁸.

We expect the market share of steel created in electric furnaces to increase sharply at the expense of the alternative, and Derichebourg stands to be among the main beneficiaries of this trend.

Growth in recycled volumes should therefore remain strong through the cycle, and margins should remain at relatively good levels due to the group's ability to pass on price increases to customers. We believe that this will result in good cash generation allowing the group to quickly pay down debt and achieve the short to medium-term rating upgrade management is aiming for.

Séché Environnement: hazardous waste, reassuring profile



In October 2021, Séché Environnement issued €300 million in sustainability-linked bonds (SLB)³⁹ to which greenhouse gas emission reduction targets are specifically appended. Séché Environnement is involved in the entire value chain of hazardous and non-hazardous waste treatment, from sorting to landfill, including recycling and energy-recovery methods for waste. Its expertise includes chemical distillation, infectious medical waste, treatment of industrial sludge,

asbestos treatment and industrial gas recovery. The group has a 25% market share in France for hazardous waste management. The business has high barriers to entry, due to the highly technical nature of hazardous waste management and the Seveso⁴⁰ classification of many of its treatment sites.

We expect healthy growth due to population increase, urbanisation and increasingly strict regulations all over the world, which are pushing public authorities and industries to rely on the services of companies such as Séché. Indeed, regulatory changes are also very favourable, particularly in calling for a drastic reduction in the landfilling of raw waste, and instead rehabilitating, recycling or converting it into energy. Moreover, there are no

end of international growth relays for Séché – which still derives close to ¾ of its turnover from France – notably in countries that are less advanced in terms of waste management and still very dependent on landfills and open dumps. Historically, the group had set up abroad to meet the demand of industrial clients that did not feel they could find the desired expertise in certain emerging countries such as Peru or South Africa. In the future, the group is expected to make bolt-on⁴¹ acquisitions in emerging countries where regulations are converging with the European model. We are reassured by management's stated intention to maintain a conservative financial policy aimed at keeping debt ratios at levels in line with current ratings.

37. Source: Derichebourg

38. Source: Derichebourg

39. Sustainability-Linked Bonds ('SLBs') aim to develop the key role that bond markets can play in financing and encouraging companies that contribute to sustainability (from an environmental, social and/or governance, 'ESG', perspective). Source: [ICMA, 2020](#)

40. The Seveso Directive is the generic name for a series of European directives that require EU Member States to identify industrial sites with major accident hazards, known as 'Seveso sites', and to maintain a high level of prevention

41. A type of acquisition in which the acquiring company merges the acquired company with a division of the acquiring entity.



The advent of a more sustainable economy will inevitably require strong recycling, reprocessing and conversion of materials and waste, ultimately on a global scale. The players capable of serving these trends already exist and have a known history of growth and of managing their acquisitions

and balance sheets. They will need financing: Mirova will not hesitate to invest a portion of the capital entrusted to it by its clients in those players we believe most likely to benefit from prospects that we consider to be clear and promising. Our SRI⁴² analysts and our credit analysts consider Derichebourg

and Séché to be among these. Other players may come to join their ranks, who knows? In any case, it is currently the High Yield segment that offers the best opportunity to finance such players in the credit markets... before they become Investment Grade a few years hence.

42. Socially responsible investment

FOCUS

Net zero: financing a carbon neutral world

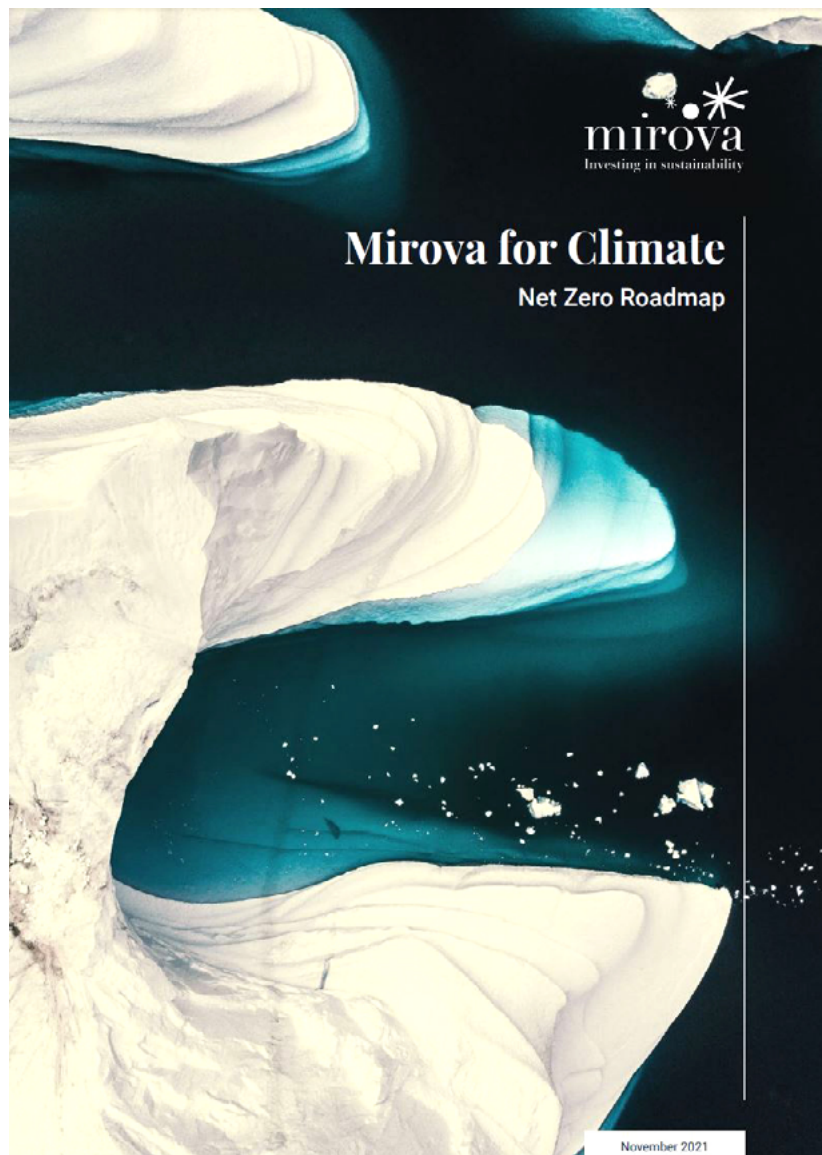
Mirova recently published its [climate roadmap](#). In a context where the proliferation of initiatives and working groups related to the subject of climate in finance can make it difficult to understand the real commitment of various actors, we feel it is important to recall the basics of our investment approach for a carbon neutral world.

Carbon neutrality is a concept that only makes sense on a global scale. It will be achieved when carbon sinks absorb at least as much greenhouse gases (GHG) as are caused by human activity. An infinite number of different trajectories can lead to carbon neutrality, depending on technological developments, the contribution of each state, the efforts made by each sector, the balance found between efficiency and reduced consumption, etc.

While the trajectory is not precisely known y in advance, science does give us certain weigh points that cannot be ignored, as, for instance drastically reducing our dependence on fossil fuels – no new drilling project can be deemed compatible with the climate objective – improving the efficiency of our transport and

buildings, producing our electricity from low-carbon sources, reducing the pressures we exert on the land and living organisms... To address this emergency via the investments we propose, we have been developing alignment measures for several years based on a few central principles. The first is to conduct a life-cycle analysis – and thus the impact of the entire value chain – for each company we invest in, one

that covers all the way from use of inputs to the end of a product's life. The second is to measure positive impacts, and therefore the contribution each player makes to the much-needed energy transition. Aligning an investment strategy with a carbon neutrality scenario means enabling a reallocation of capital from brown to green while pushing the companies themselves to make this transition.



Sustainable finance regulations and policies: maintaining momentum without losing sight of the goal!

Following on from 2020, 2021 was a particularly intensive year in terms of sustainable finance at the European level, but also at an international level. A number

of countries have adopted or discussed a tremendous number of texts and initiatives. Beyond the abundance of information, we at Mirova have drawn up a

few major observations that took shape in 2021 and raise significant questions for 2022.

Politicisation of the debate over what should or should not be financed for climate

At the European level, the year was marked by debate over the EU green taxonomy and the details of delegated acts covering the activities considered eligible as contributing to the fight against climate change. France and Germany were particularly active in pushing nuclear and fossil natural gas, respectively, joined by a few other countries. After the first-semester release – and

recent adoption – of a first consensual text that did not deal with these two energy sources, a second text was only finalised on 31 December with a Commission proposal integrating natural gas and nuclear under specific and draconian conditions. **For Mirova, respect for the principles of the taxonomy⁴³ and for scientific criteria must prevail.** If confirmed, the inclusion of natural gas, which

goes against the very philosophy of the European taxonomy, since it is itself a greenhouse gas, will absolutely have to be subject to drastic conditions. To maintain the taxonomy's credibility, it is critical to ensure compliance with the objective of reducing greenhouse gases (GHG), as well as increased transparency at the level of companies and financial products.

Beyond principle, getting down to the nitty-gritty of implementation

The year was also marked by debates over methodology and implementation provisions concerning the taxonomy and the Sustainable Finance Reporting Regulation (SFDR)⁴⁴. The translation of the main principles into practice, the difficulties of making certain provisions operational, and questions regarding roll-out showed how the implementation of a clear and relatively simple

framework to promote a more sustainable finance, understood by all, remains a multi-dimensional challenge. Take, for example, the choice of indicators for reporting on opportunities and risks. Or how to define high levels of sustainability ambition with a strong grasp of what the impact levers are for different investment products, especially listed equities. In this area, Mirova's hopes for

an ambitious but realistic, and therefore useful, eco-label were put on hold in 2021, with prospects for 2022 uncertain. Crafting solid definitions, free of greenwashing, for what constitutes a company in transition and for that matter, a 'transitioned' company, will be one of the challenges essential to building consensus for the implementation of sustainable finance provisions.

43. These are: significant contribution to the environmental objective, no significant detriment to another environmental objective, compliance with minimum social clauses

44. Regulation (EU) 2019/2088 of the European Parliament and of the Council of 27 November 2019 on sustainability reporting in the financial services sector)

Battle of the standards⁴⁵

These European efforts are part of an overall dynamic that can be described as a 'battle of the standards' at the international level, with Europe and the Anglo-Saxon world exhibiting very different conceptions. Europe is affirming its philosophy of 'double materiality' – in other words, taking into account companies' risks (consequences of the climate and nature on companies) and impacts (consequences of companies on the climate and biodiversity). The United States is

also tackling the issue of corporate climate transparency via the Securities Exchange Commission (SEC). The UK is preparing to reveal its own taxonomy. The International Financial Reporting Standards (IFRS) Foundation, which already governs financial accounting standards worldwide, announced at COP26 its creation of an International Sustainability Standard Board (ISSB), with the aim of issuing standards that take into account only financially material risks for companies. This

battle has only just begun, and Europe has the means to win it. On several occasions, the EU has proved that it can set the global standard. The Investment Funds Directive (UCITS), the General Data Protection Regulation (GDPR) and the Registration, Evaluation and Authorisation of Chemicals (REACH) have inspired regulations around the world and become de facto international standards.

Keeping the goal in mind

2022 will see many more provisions from the European sustainable finance package applied, not only based on the SFDR and taxonomy, but also those associated with the implementation of MIFID 2⁴⁶ provisions to take into account the sustainability preference of savers. It will be as important to sustain

forward momentum as to avoid letting sustainable finance slip into becoming just another compliance exercise. 2021 has allowed us to 'get into the swing of things' as regards implementation. Now is the time to strike. In 2022 and in the years to come, supporting public authorities in their efforts

must be combined with a constant bird's-eye distance to remind us of the final goal we keep sight of: redirecting investment towards assets that will enable us to change our real economy and address the climate, environmental and social emergency.

45. [Extract from the text 'Sustainable finance: an essential challenge for the ecological transition, assessment of the five-year period and prospects' by Philippe Zaouati, Managing Director of Mirova.](#)

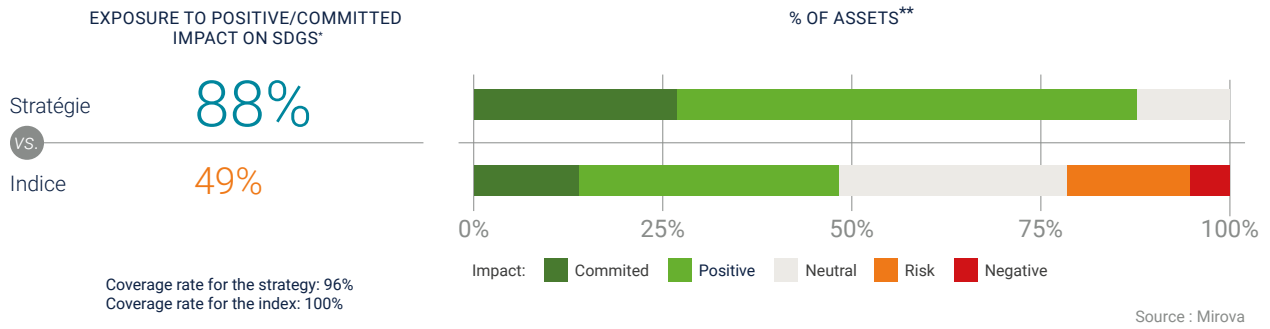
46. Directive 2014/65/EU of the European Parliament and of the Council of 15 May 2014 on markets in financial instruments and amending Directive 2002/92/EC and Directive 2011/61/EU Text with EEA relevance

Measuring impact

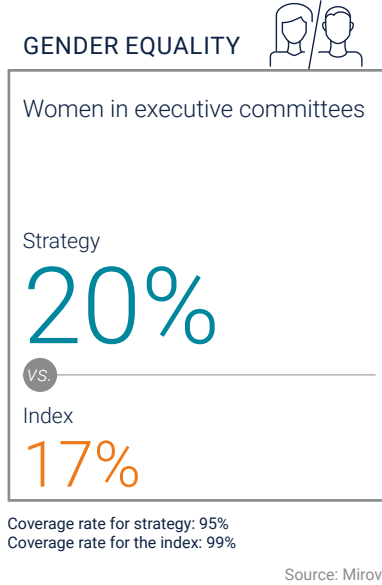
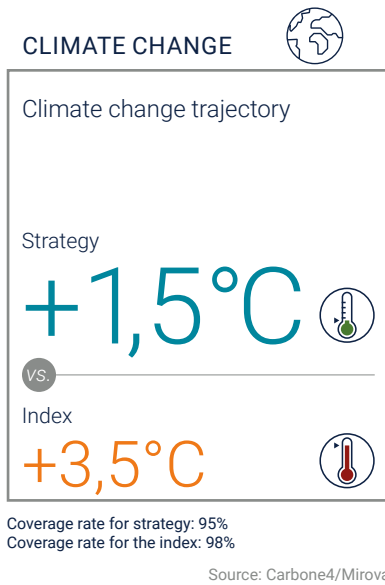
Mirova Consolidated Equity

31/12/2021 – Index: MSCI Europe

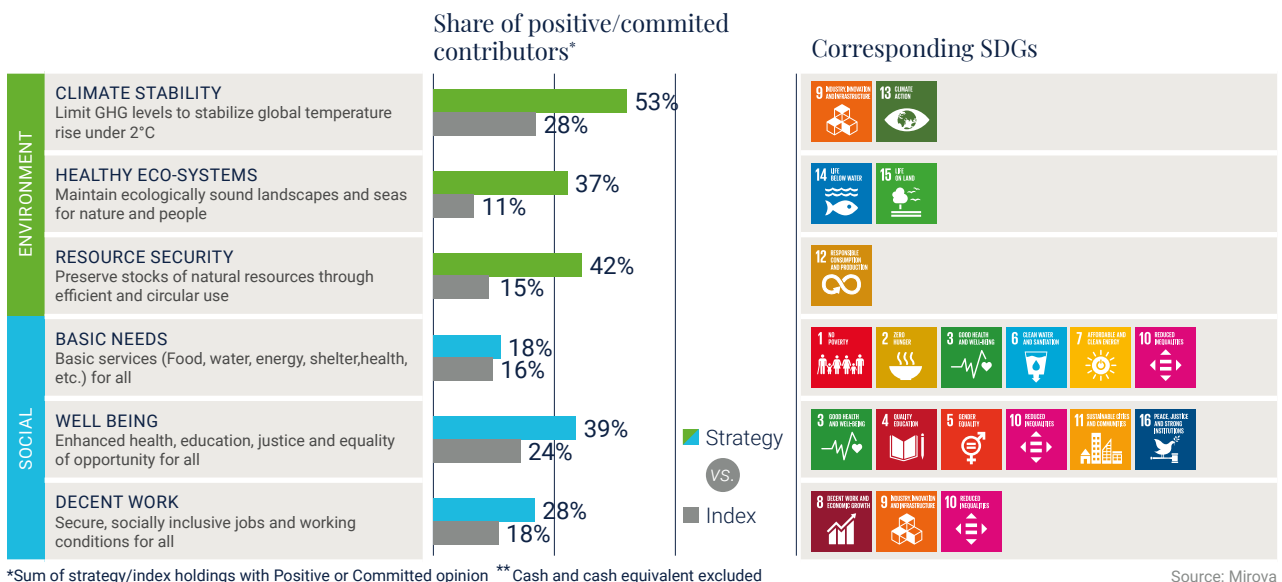
Impact on the achievement of the SUSTAINABLE DEVELOPMENT GOALS (SDGs)



Key impact indicators



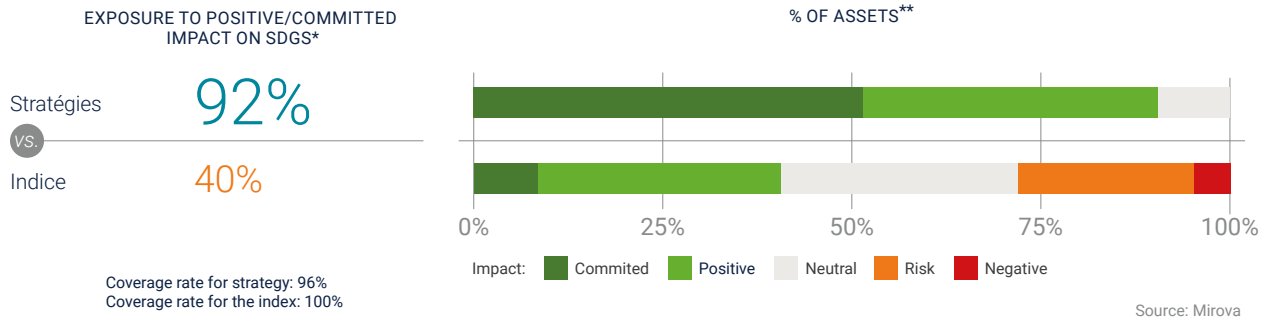
Impact mapping to the SDGs



Mirova Consolidated Fixed Income

31/12/2021 – Index: Barclays Euro Aggregate Corporate

Impact on the achievement of the SUSTAINABLE DEVELOPMENT GOALS (SDGs)



Key impact indicators

CLIMATE CHANGE



Climate change trajectory

Strategy

+1,5°C

vs.

Index

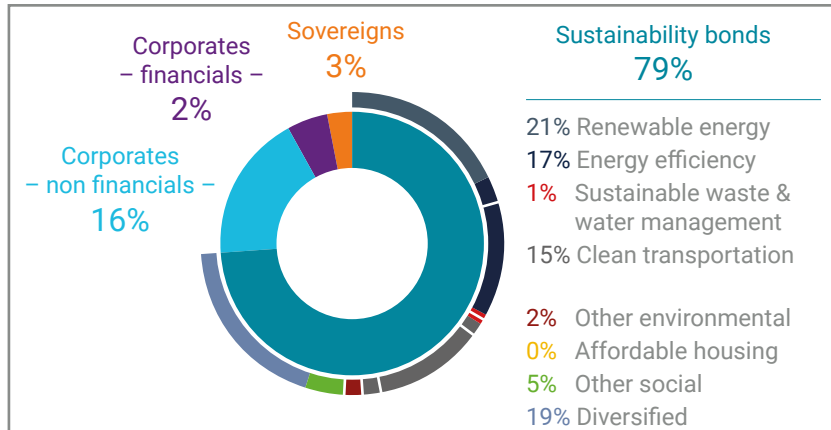
+4,1°C

Coverage rate for strategy: 68%

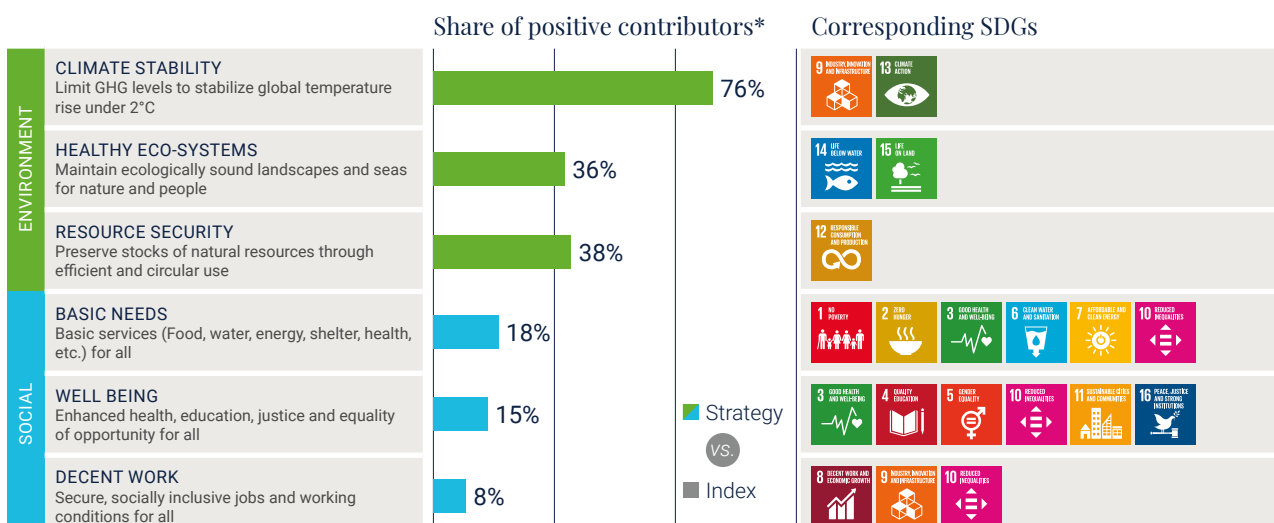
Coverage rate for the index: 84%

Source: Carbone4/Mirova

SUSTAINABILITY BONDS



Impact mapping to the SDGs



February 2022

Non-contractual document, issued in January 2022

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