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Higher risks, higher costs, higher wages

If the Russia-Ukraine crisis escalates further, expect much higher commodity prices and Europe could be worst hit. As inflation ticks up, so do wages; we investigate. We drill deep to uncover the carbon market's future. And James Knightley in New York reflects on the lessons learned from last year as we forecast America's growth prospects for 2022

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Commodity prices could soar if the Russia-Ukraine crisis escalates

As tensions between Russia and Ukraine grow, so does the risk that it spills over into global commodity markets. Russia is a commodities powerhouse, with it being a key supplier of energy, metals and agri. A conflict against the two nations and/or tough sanctions against Russia has the potential to significantly tighten commodity markets

US Secretary of State Antony Blinken (L) and Russian Foreign Minister Sergei Lavrov (R) attend bilateral talks on soaring tensions over Ukraine in Geneva

Tough sanctions would rattle commodity markets

It appears that a number of commodity markets are starting to at least price in some geopolitical risk around the growing tension between Russia and Ukraine. There is still plenty of uncertainty over how the situation will evolve, but it is still worthwhile to look at what the potential impact could be should tensions boil over to a conflict.

A scenario where the West fails to react with tough sanctions against Russia if it were to invade Ukraine means that the potential impact for commodity markets would be more limited, although the uncertainty would still likely be bullish in the short term. There would still be a risk to Russian gas flows via Ukraine to Europe. While, depending on the scale of any invasion, it could also potentially have an impact on the production and export of Ukrainian agricultural commodities,

including corn and wheat.

Reaction to any aggression could have far-reaching consequences for commodities

However, in a scenario where the West reacts strongly with sanctions that target key Russian industries, this could have a far-reaching impact on the commodities complex. It would affect more than commodity flows that go through or originate from Ukraine. It could potentially lead to a significant tightening in energy, metal, and agri markets, which would provide only a further boost to an asset class which already has an abundance of positive sentiment in it.

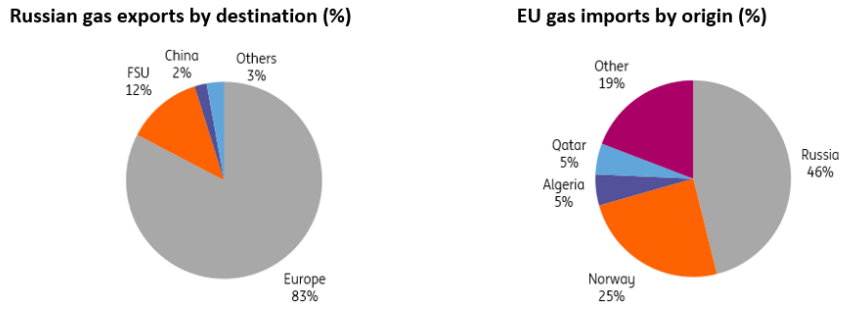
Even if sanctions are not imposed on certain industries, financial sanctions could still make trade difficult, as it would be an obstacle for making payments.

Energy related sanctions would hit Europe the most

Natural gas would likely receive the most attention, particularly in Europe. The region is already dealing with an extremely tight gas balance. Therefore, any further reduction in Russian gas flows to the region would leave the European market vulnerable. Russia is the dominant supplier of natural gas to Europe, with it usually making up anywhere between 40-50% of European gas imports. Pipeline flows come through several pipelines via Ukraine, the Yamal-Europe pipeline via Belarus, the Nord Stream pipeline and the TurkStream pipeline. Nord Stream 2, which is now complete, is awaiting regulatory approval before Russian gas can flow through it. However, the US has already made it clear that in the event of sanctions, Nord Stream 2 would be targeted.

It would be difficult for Europe to stomach sanctions which effectively cut off Russian gas supply, or at least a large portion of these flows, given the region's dependency on Russian gas and the ongoing energy crisis.

Gas exports and imports



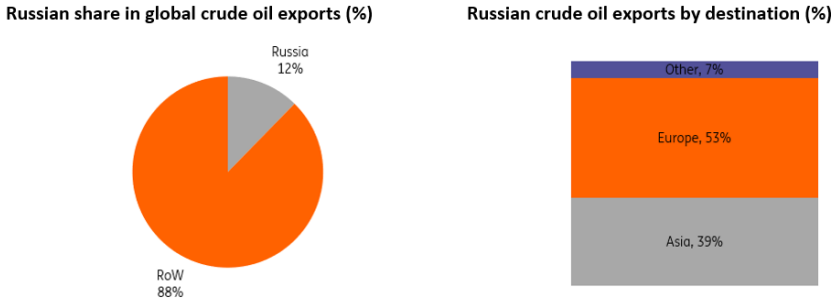
Source: Gazprom, Eurostat, ING Research
Note: 2020 data. Gas flows to the EU from Ukraine and Belarus assumed to be Russian gas

Crude oil impact

Sanctions would also be a risk for the crude oil and refined product markets. Russia is the second-largest oil producer in the world, with production averaging around 10.5MMbbls/d in 2021. Russia is currently producing below capacity, given that it is taking part in OPEC+ supply cuts. A large part of this crude is processed in domestic refiners, but a sizeable amount of it is still exported, with crude and condensate volumes averaging in the region of 5MMbbls/d. This also makes Russia the second-largest crude oil exporter after Saudi Arabia. Any potential action taken, which impacts a large share of these exports, would likely push the global market into deficit and would be extremely bullish for oil.

Europe would once again likely feel the impact the most, with around a quarter of its imports coming from Russia. While Asia, and in particular China, is a large importer of Russian oil. However, Western sanctions would unlikely have a significant impact on flows to China. In fact, sanctions could lead to increased Russian oil flows to China.

The importance of Russia and crude oil



Source: BP Statistical Review 2021
Note: 2020 data

The aluminium market: Memories of 2018

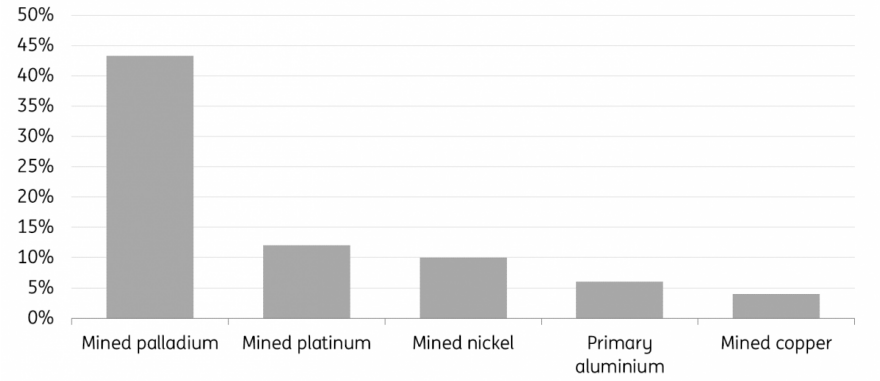
While a proposed package of sanctions from the US Democrats does not explicitly recommend specific sanctions on the metals' side, it does suggest that the US President could identify and impose sanctions on industries which he feels pose a risk to national security, which includes minerals extraction and processing.

We don't have to go back too far to see the impact that sanctions on Russian aluminium producer, Rusal had on the global aluminium market. US sanctions against Rusal rattled the aluminium market in 2018, with Russia the largest aluminium producer, after China. Russian primary aluminium production makes up around 6% of global output, and 15% of ex-China output. The global aluminium market is in deficit at the moment and so any disruption to these flows would only push the market further into deficit. Given that Europe is a large destination for Russian aluminium, a move which restricts aluminium flows would be bullish for European premiums.

Sanctions could also possibly have an impact on output from European aluminium smelters. As we are currently seeing, smelting capacity in Europe is having to shut down due to high power prices. In a scenario, where sanctions impact Russian gas flows, this would only drive European energy prices higher, risking even further capacity restrictions in the region.

The potential impact in the metals space isn't limited to aluminium. Russia is a sizeable producer of nickel, copper, palladium and platinum. Therefore, this could tighten up these markets significantly. Russia is the world's largest palladium producer, while it is also an important nickel producer, a market in which there are already concerns over tightness, given the strong demand dynamics.

Russian share in global production for selected metals (%)



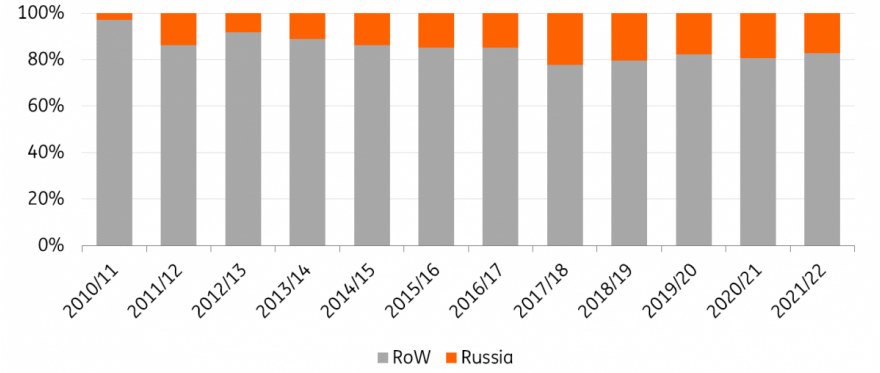
Source: USGS
Note: 2020 data

Russia is the world's largest wheat exporter

In recent years, Russia has climbed the ranks to become the largest wheat exporter in the world. The country has produced more than 85mt a season in recent years, and annual exports amount to close to 40mt, which makes up almost 20% of global wheat trade. Turkey and Egypt are amongst the largest buyers of Russian wheat, according to recent trade data.

In the proposed sanction package from the US Democrats, the food & agricultural industry is not mentioned. However, sanctions against financial institutions (and possibly even cutting Russia off from the SWIFT system) could make trade more difficult. Therefore, tough sanctions could still have an impact on agri exports, even if they're not specifically sanctioned.

Russia's share in global wheat trade (%)



Source: USDA

As we write this, talks are taking place in Geneva between the US Secretary of State and the

Russian Foreign Minister. America has warned Moscow there'd be grave consequences if any of its forces moved into Ukraine. Few people are expecting any major breakthrough today, but at least both sides are talking.

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Article | 20 January 2022

Stars align for eurozone wage growth rebound

A combination of labour shortages, high inflation, and increased minimum wages, means 2022 is set for a decent recovery in nominal wage growth

Everyone in Frankfurt and beyond is looking at the labour market to see whether second-round effects of the current inflation shock are already visible in the data. We, and the European Central Bank (ECB), don't see evidence of that so far as the ECB's index for negotiated wages actually reached its lowest wage growth figure in decades in 3Q21 (1.3% year-on-year). If the labour market is a lagging indicator, however, wage developments are the mother of all lagging indicators. Looking ahead, we expect wage growth to significantly accelerate in 2022 and 2023 to around 3.5%, as most important wage growth drivers point to a sharp increase.

Labour shortages continue to rise

The past few months have seen surprisingly rapid declines in unemployment and the economy has recovered quicker than expected, which has resulted in a stronger-than-anticipated labour market rebound. Furlough schemes – key for keeping unemployment relatively low in 2020 – saw a sharp

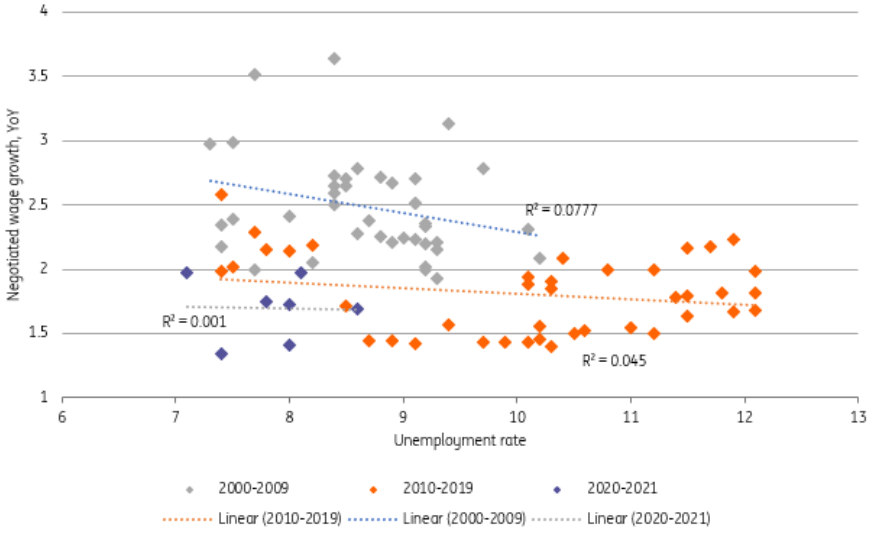
decline in take-up in 2021, even though global supply chain frictions led to renewed demand for furlough schemes in the manufacturing sector. A significant increase in structural unemployment has fortunately not materialised and we now expect unemployment to continue its downward trend in the coming year as employers' hiring expectations remain very strong for the beginning of 2022.

At the end of last year, we wrote in depth about labour shortages emerging, and since then new data shows that the labour market has tightened further. Vacancy rates are now higher than before the pandemic, while businesses have already indicated that worker availability has never been so problematic for their production as it is right now. In the eurozone, there are still fewer people active than before the crisis, which means that there is still some slack on the fringes of the labour market that could help cushion these problems to a degree – unless people drop out of the labour force for good. In any case, it looks as if labour shortages are set to remain a dominant economic theme of 2022.

> *It takes longer for wage growth to emerge from low unemployment and it leads to less wage growth as well*

The relationship between wage growth and unemployment has weakened over the past decade, fuelling the debate about whether the relationship between unemployment and inflation – the Phillips curve – is dead. It looks as if the relationship between unemployment and wage growth is still alive, at least, but with a year lag and flatter than seen before. In layman's terms: it takes longer for wage growth to emerge from low unemployment and it leads to less wage growth as well. It's important to note that the past decade has seen lacklustre employment developments and mild shortages. Now that labour market tightness has become more pressing, it seems logical that this will have more impact on wage growth again. Look back at 2019, for example, when shortages also resulted in a modest run-up in wage growth, which was halted by the pandemic. It is possible that with labour shortages back to pre-pandemic levels, wage growth will pick up where it left off in 2019.

The Phillips curve has flattened over the past decade



Source: Eurostat, ECB, ING Research

Inflation empowers union demands

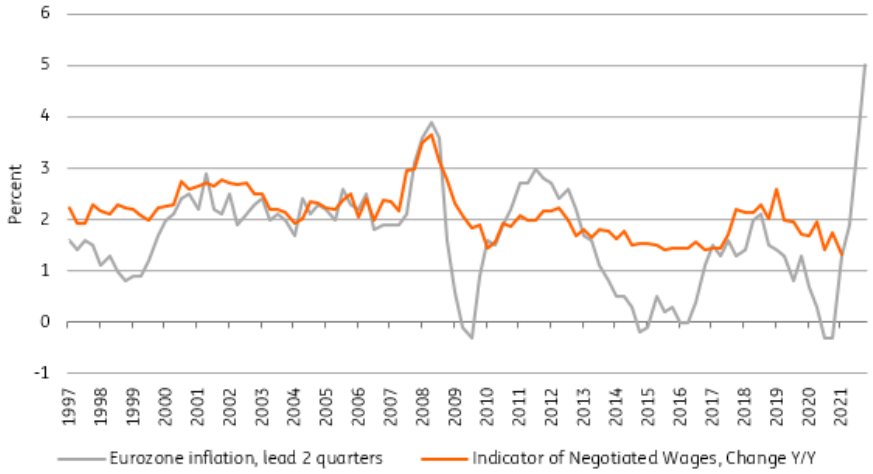
It's not just labour shortages that point to higher wage growth though. Another key driver of wage growth in the eurozone is inflation, especially since wage-setting in the eurozone is predominantly done through collective bargaining agreements and inflation is an important input used in these negotiations. Purchasing power is currently being squeezed by inflation at its highest level since the 1980s, and negotiated wages in the eurozone have historically followed inflation developments closely.

In some countries, like Belgium and France for example, inflation has a direct impact on wage growth through indexation. Other countries see inflation passed through via higher union demands that, in turn, result in better negotiation outcomes for workers. In the past, unions have either used actual inflation rates or the ECB's medium-term inflation target in the bargaining process. Both used to be very close to each other. In the current bargaining rounds, expectations are that current inflation rates and the loss of purchasing power will play a more important role than in the past. Labour market shortages are likely to add to the bargaining power of unions, which can prioritise higher wages over job security.

Overall, the relevance of wage settlements depends on how much of a country's employment is covered by collective bargaining agreements, and in the eurozone, that's a lot. Also, collective bargaining agreements, centralised or decentralised, have a strong signalling effect on private-sector wage agreements. This results in a strong relationship between overall wage growth and 'negotiated' wage growth.

For the eurozone, we find the correlation between negotiated wages and inflation to be the strongest with a two-quarter lead for inflation. This means that wage growth historically trails inflation by about half a year.

Inflation leads wage growth as it is an important driver of wage negotiations

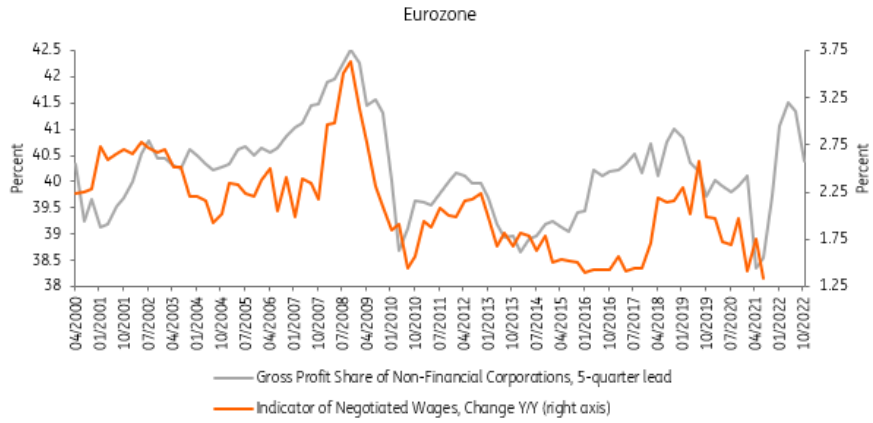


Source: Eurostat, ECB, ING Research

Corporate profits have been strong, allowing for wage growth

Besides factors such as labour shortages and purchasing power, another important driver of wage growth in the eurozone is whether businesses can afford any salary increases. If corporate profits have weakened, softer wage growth can be expected. However, healthy corporate profits should increase the likelihood of wage increases, sharing corporate profits with employees. The relationship historically shows a five-quarter lag. At the current juncture, corporate profits have shown a particularly strong rebound since the reopening of economies in mid-2020, suggesting ample room for higher labour compensation over the course of 2022.

A high corporate profit share brings room for compensation growth



Source: Eurostat, ECB, ING Research

Minimum wage increases have been generous this year

Another important factor contributing to higher wage growth in 2022 is the sizeable increase in minimum wages in several countries. Germany is the most notable of course, with an expected

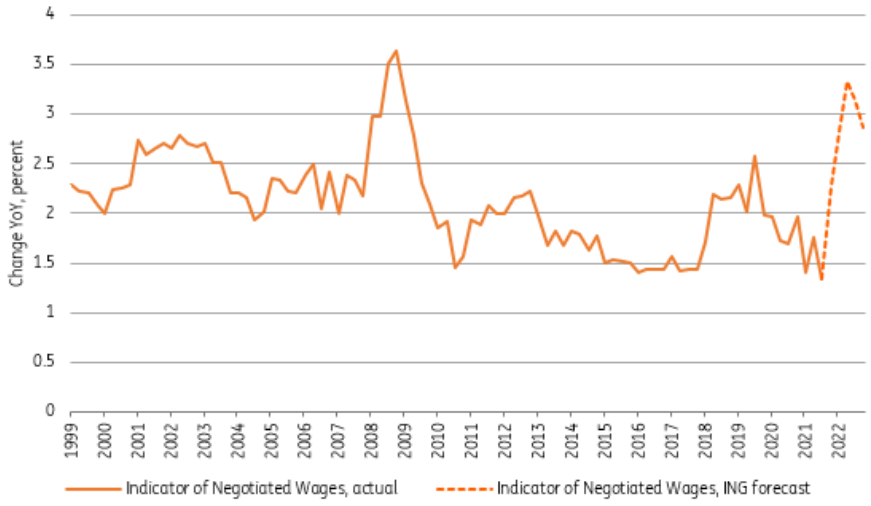
increase to €12 per hour promised by the new coalition (an almost 30% increase). Other countries have also seen minimum wages increase, such as Portugal with a rise of 6%, while France and Belgium will adjust for inflation, which will result in a sizable jump. The Netherlands has also agreed to increase the minimum wage by 7.5% but will do so in steps over the duration of the government's term. The impact of higher minimum wages works through to the average of course, also because it generally impacts wage categories above the minimum as well.

Expect wage growth to rebound to around 3% this year

A simple empirical model that has performed well historically would suggest nominal wage growth will recover to about 3-3.5% over the course of 2022, but relationships in economics are rarely mechanical. We have to keep in mind that Germany has relatively few wage negotiations coming up, which dampens the growth in negotiated wages. Also, a key question is whether unions – whose positions have weakened over recent decades – can convert the better negotiation positions into higher wage growth.

On the other hand, overall wage growth in sectors without collective bargaining already seems to be significantly outpacing negotiated wages in some eurozone markets, although data on this is severely distorted at the moment due to compositional effects in the labour cost index data. Overall, therefore, we think that wage growth of around 3% seems like a fair number for wage growth to rebound to, possibly over the next two years.

We expect wage growth to rise into the 3-3.5% range this year



Source: ECB, ING Research calculations

So, is the Phillips curve alive and kicking then? It seems so, although it looks like it needed supply shock therapy to be revived. The current high inflation is, of course, hardly a result of low unemployment, but will in turn feed through to the wage growth channel which in turn boosts medium-term inflation estimates. It's very early days, but it looks like the relationship between unemployment and inflation is becoming more significant again.

For the ECB, this will be an important argument for a rate hike in early 2023. For the current inflation spike, policy is not so relevant. The ECB can hardly fill gas reserves or add to the container shortage. What it can do is act on cyclical developments that look favourable, and with an

economy recovering quicker-than-expected and wage growth which is set to rebound this year. With inflation expectations around 2%, ECB President Christine Lagarde will have the luxury that former President Mario Draghi never had: hiking interest rates.

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Article | 18 January 2022 United States | Video

Knightley: The lessons learned as we predict America's economic future

Our Chief International Economist in New York, James Knightley, on what we got right and what we got wrong in our US forecasts for 2021. And he looks ahead to what you can expect - hopefully - this year

The lessons learned as we forecast America's economic future

A new year brings new economic forecasts. And ING's James Knightley in New York says 2021 can teach us a lot about our outlook for this year. We were pretty close with our US growth forecast and spot on with the level of the ten-year Treasury yield. We thought that inflation would rise but few predicted the 7% we got at the end of last year.

We're still optimistic about 2022. Growth should be robust and inflation should fall. We predict at least three interest rate rises from the Fed and as it reduces its balance sheet that 10-year yield should finally hit 2%.

Watch video

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Article | 19 January 2022 Energy | Transport & Logistics | Corporate Sector Coverage | Sustainability

Rising carbon prices increase viability of low-carbon technologies

Carbon reduction strategies will be a key focus for many businesses this year. But challenges await, as both mandatory and voluntary carbon markets are far from perfect. In Europe, current carbon price levels support the business case for green technologies like Carbon Capture and Storage (CCS), unsubsidised solar PV systems and wind energy

Carbon pricing: a priceless solution to the tragedy of the commons

A healthy and sustainable climate is a common good that requires everyone to do their part. Yet so often, companies pursue their own short-term gains at an ultimate cost to the many, a problem in economics known as the 'tragedy of the commons'.

This is a particularly pressing concern for carbon emissions. In most cases, the emitting company does not pay in full for the damage it causes, like air pollution, or the physical impact of climate change. In economic terms, the cost of carbon emissions to society is higher than the private cost to the polluter, which all but guarantees higher emission levels than the climate can sustain.

The solution is simple, in theory. By putting a price on carbon equal to its social cost, emissions are likely to be reduced to levels that the earth can sustain. That's a solution corporate leaders and policymakers are increasingly relying on in their race to a net-zero economy, as it provides them with a tool to reduce emissions in a cost-effective way, as seen in Europe and China.

This article provides a quick guide to carbon pricing for corporate decision-makers who will have to address this issue head-on in the coming years.

Mandatory carbon markets are increasingly a topic for corporate decision-makers in manufacturing and the energy sector...

Governments around the world are starting to price carbon by imposing mandatory carbon markets on energy-intensive sectors, notably the power sector and manufacturing such as steel, cement, plastic and petrochemical industries. According to the World Bank, the number of carbon pricing schemes around the globe increased from 19 in 2010 to 64 today.

In theory, these carbon pricing schemes are effective for two reasons. First, they are mandatory, with governments forcing the targeted industries and companies to comply. Second, the emissions reduction target is met by design. The yearly emissions cap is decreased over time in line with the targeted level for emissions in the future.

Carbon pricing schemes are also efficient, as the market decides the mechanism for reducing emissions. Companies will first apply the most cost-efficient measures, such as cheap energy efficiency technologies (think of insulation, led lighting or recycling) and behavioural change.

More costly technologies are employed when the reduction targets cannot be met with the cheapest options. As the overall emissions cap is reduced over time to limit carbon emissions, the carbon price rises. And with higher carbon prices, the business case for low carbon technologies becomes more viable.

Europe's carbon price tripled in 2021 to €90

European carbon price in mandatory EU ETS market in euro per ton carbon

Source: ING Research based on Refinitiv

In Europe for example, the business case to capture and store carbon (CCS) is becoming feasible at current carbon prices, above €80 per ton of CO2, particularly in carbon-intensive manufacturing clusters where governments and grid operators build the infrastructure to transport carbon.

Carbon pricing favours emission reduction strategies with low abatement costs

Indicative carbon abatement costs in euro per ton CO2 in Europe*

Power sector**	Manufacturing	Built environment	Road transport	Agriculture and land use
Very low cost emission reduction technologies (below 50 euro/ton)				
• Large scale solar plants in open fields • CCS on coal power plants	• Recycling • Energy efficiency improvements	• Behavioral change • Foil for radiators • Weatherstrips to prevent draft • Energy efficient appliances • LED lighting • Large scale rooftop solar energy on commercial buildings	• Behavioral change (lower speed) • Improved airodynamics • Right tyre pressure • Increase emission standards for truck manufacturers	• Prevention of deforestation • Increase ground water level in meadows to lower peat emissions • Led lighting in greenhouses • Replace gas- by geothermal heating in greenhouses
Low cost emission reduction technologies (50-100 euro/ton)				
• Substitute coal for gas • CCS on gas fired power plants • Mandatory closures of coal fired power plants • Onshore wind energy	• Substitute coal for gas • CCS steel and cement factories • CCS production hydrogen and ammonia • CCS refineries	• Optimisation of existing heating and cooling systems (optimal adjustment) • Heat recovery in commercial buildings	• Increase emission standards for car manufacturers	• Increase carbon absorption of land e.g. with olivine sand • Advanced land fertilisation (injection instead of manure spreading) • Reforestation
High cost emission reduction technologies (100-150 euro/ton)				
• Biomass power plant • Offshore wind energy	• CCS waste incineration plants • CCS biomass (negative emissions) • Biomass • Wind energy • Solar energy	• Rooftop solar panels on houses	• Electric vehicles	• Biomass heating • Change diet of animals so they emit less methane
Very high cost emission reduction technologies (>150 euro/ton)				
• Bio gas • Synthetic fuels like hydrogen	• Bio gas • Synthetic fuels like hydrogen • CCS: direct air capture	• Renovation / insulation • Rooftop solar • Heat pumps • Geothermal heat • District heating • Wind energy • Green gas	• Blending biofuels	• Bio gas from manure fermentation

*Abatement costs are indicative as they are highly dependent on the specifics of a project. Table indicates whether strategies are cheaper or more expensive compared to each other. **In 'normal' energy markets with gas, coal and power prices around long term average.

Source: ING Research based on PBL, Aurora, CE Delft and SEO

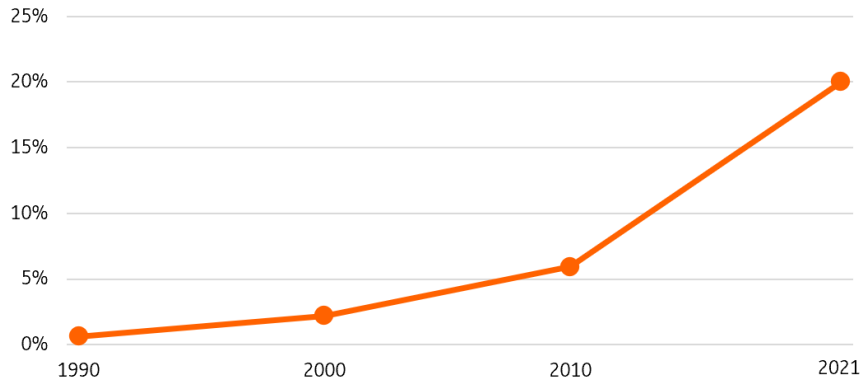
The European Commission is exploring ways to extend mandatory carbon pricing to other sectors such as shipping, road transportation and buildings. If it follows up with action, carbon pricing will also become relevant for corporate decision-makers in sectors like shipping, road transportation and real estate. Note however that the abatement costs (the cost of removing undesirable byproducts created during production) for many technologies in these sectors are generally much higher compared to manufacturing and the power sector.

...and carbon markets need to be strengthened to reach the Paris Climate Goals

21.5% of global greenhouse gas emissions were covered by carbon pricing instruments in 2021, according to the World Bank's carbon pricing monitor. That represents a significant increase from 2020, when only 15.1% of global emissions were covered.

One fifth of global greenhouse gas emissions are currently covered by mandatory carbon pricing

Share of global emissions covered by mandatory carbon taxes and emissions trading schemes



Source: ING Research based on World Bank and DNB

However, just under 4% of these emissions are priced within the €35-70 range per ton of CO2 that is currently needed to meet the 2˚C temperature goal of the Paris Agreement. No emissions in carbon pricing schemes are priced around €130-140 per ton of CO2 that the World Bank considers to be in line with the 1.5˚C target.

So, the vast majority of global greenhouse gas emissions (almost 80%) is not priced at all. And the carbon price is usually too low to bring emissions in line with the climate goals. Corporate decision-makers should anticipate an increase in carbon pricing if policymakers stick to the Paris Climate Goals.

Carbon border taxes could become an issue in competition with foreign companies

Mandatory carbon markets are local by definition as governments cannot act outside their jurisdictions. There is no global carbon market as a result.

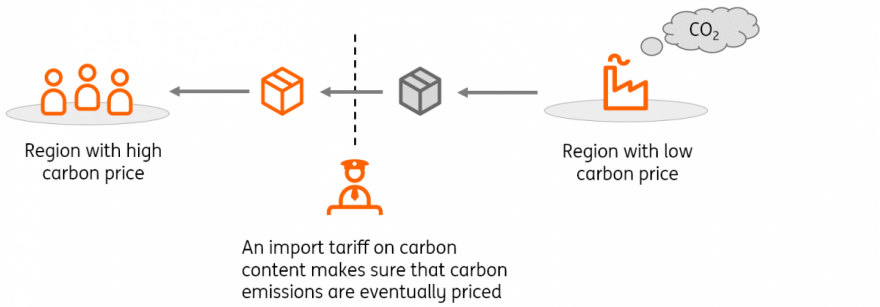
Jurisdictions across the globe have their own carbon pricing mechanisms that result in different carbon price levels. For example, carbon prices currently stand at around €90/ton in the EU, about €72/ton in the UK, about €28/ton in California and around €6/ton in China.

Different prices levels create incentives for corporate decision-makers to relocate carbon-intensive activities towards regions with no or low carbon prices. It also works the other way round, providing incentives to keep existing activities in those regions. In both cases, carbon-intensive products are then imported back into the jurisdictions with higher carbon prices, a process called carbon leakage.

Hence the need for Carbon Border Adjustment Mechanisms (CBAM, a proposition by the EU Commission) to ensure a level playing field between major production and trade regions such as the European Union, the US and Asia (notably China and India). Of course, there wouldn't be a need for border adjustments if all major production regions in the world priced emissions locally and

more or less at the same price.

A carbon border adjustment mechanism prices carbon emissions equally across the globe



Source: ING Research

The CBAM is a tariff on imports in line with the embedded carbon content of the product, which has not been taxed in the country where the good is produced. It ensures that the carbon emissions are eventually priced.

It also provides governments in producing countries with an incentive to increase carbon prices, as the CBAM would allow them to reap the tax benefits of the carbon policies themselves rather than allowing other countries to benefit from import taxes. That could bring about much-needed global coordination between countries to align climate policies and carbon prices. In the meantime, corporate decision-makers might include CBAM in their competition and pricing strategies.

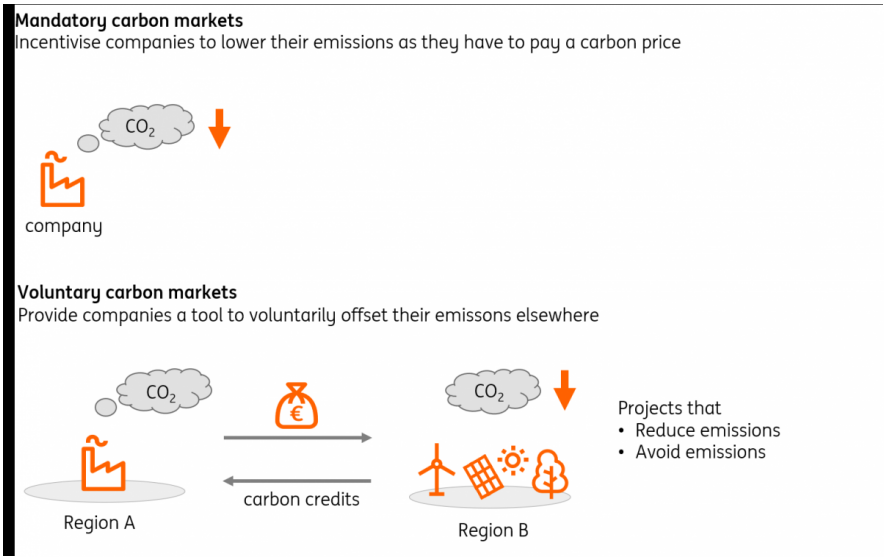
Voluntary carbon offsetting schemes could be on the agenda...

Currently, most mandatory carbon pricing schemes apply to the power sector and manufacturing. Still, with increasing pledges to net-zero strategies, a growing number of companies are looking for ways to reduce or offset their emissions, whether or not they are already subject to mandatory schemes. They can do so in voluntary carbon markets.

Voluntary carbon markets (in short VCMs) are initiatives that facilitate trade in emission units, called carbon credits, generated from emission reduction activities. Companies can participate in a VCM either individually or as part of an industry-wide scheme, such as the CORSIA.

Two ways to incentivise companies to lower carbon emissions

Mandatory versus voluntary carbon markets



Source: ING Research

VCMs are often initiated by non-governmental bodies, as opposed to mandatory carbon markets that are set up by governments. VCMs often involve multiple countries. Usually one country has much lower abatement costs than the other country. Hence, VCMs provide a way to offset emissions in regions with the lowest abatement costs and direct green investment from richer to poorer regions.

Main differences between mandatory and voluntary carbon markets

Differences on goals, instruments and economics

	Mandatory carbon markets	Voluntary carbon markets
Aim	Reducing carbon emissions. Each participant is attributed allowances which they can then trade to meet their carbon budget	Offsetting carbon emissions by preventing or reducing emissions elsewhere
Regulator	Government	No regulator. Independent standard-setters certify projects
Region	Within the jurisdiction	Often outside the jurisdiction
Scope	Mostly energy-intensive sectors (power sector and manufacturing)	Broad range of projects in all kinds of sectors
Instrument	Carbon allowances	Carbon credits
Climate impact	Uniform: every allowance taken out of the market saves a ton of carbon	Different: credits could mean a reduction but also a prevention of carbon emissions)
Effectiveness	Emissions reduction target is guaranteed by the overall cap	Problems with quality of credits and double counting
Efficiency	Target is met at the lowest costs (with the cheapest technologies within your company).	Emission reduction and/or avoidance happens in regions with the lowest costs (cheapest projects outside your company)
Moral hazard	No: it pays off to lower emissions if you are subject to a mandatory scheme	Yes: will companies reduce their own emissions forcefully if they can 'simply' offset their emissions?
Current market size	~10 gigaton CO2 globally	~0.2 gigaton CO2 globally

Source: ING Research

Carbon credits can be grouped into two categories dependent on the type of offsetting project that generates the credits:

Avoidance projects avoid emitting greenhouse gasses. Projects to prevent deforestation are a case in point; they don't reduce emission levels but they prevent net emissions from rising as felled trees can no longer capture carbon.

Removal projects aim to actually reduce current emission levels.

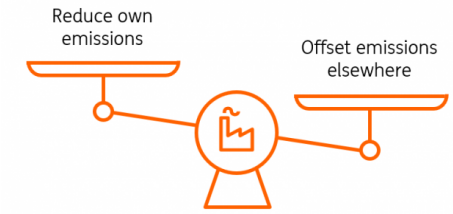
So the quality of carbon credits differs in VCM. Removal projects tend to trade at a premium to avoidance credits. Corporate decision-makers need to take this into account as not all carbon credits are considered effective and credible emission reduction strategies by shareholders, like NGOs, or employees.

One possible drawback from VCMs is that companies may behave less responsibly towards climate

change if they can simply offset their emissions instead of having to reduce emissions themselves the hard way (moral hazard). Mandatory carbon markets simply force companies to lower their emissions or to pay a fine for it in terms of the carbon price.

Will companies voluntarily reduce emissions if they have the option to offset elsewhere?

Moral hazard dilemma in voluntary carbon markets



Source: ING Research

...now that COP26 reconnects mandatory and voluntary carbon markets

In the past, under the Kyoto protocol, there was a link between mandatory and voluntary carbon markets. In Europe for example, owners of power plants and factories in heavy industries could convert offsetting credits (Certified Emission Reductions, CERs) to carbon allowances in the EU Emissions Trading System.

This link was removed due to long-standing double-counting concerns about the quality of offsetting projects, mismanagement of projects, double-counting of credits and even fraud.

After years of negotiations, in the autumn of 2021, COP26 agreed on a rulebook to eliminate most of these issues, referred to as Article 6 of the treaty. This is a little known, and technically complex, set of rules to strengthen VCMs. Hence we dedicate a separate article to it.

If implemented well, Article 6 could re-establish the conversion of offsetting credits to carbon allowances, putting both on the agenda of corporate decision-makers.

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Voluntary carbon markets are changing for the better

After years of wavering, voluntary carbon offsetting schemes are likely to be back on the agenda of corporate decision-makers. Here's a reminder of what corporate leaders need to know before considering whether to use them or not

Why carbon offsetting makes sense for corporate decision-makers

Currently, most mandatory carbon pricing schemes, like the EU Emissions Trading System, apply to the power sector and manufacturing. We unravelled the economics of these schemes and why they matter for corporate decision-makers here.

But many companies are not part of mandatory carbon pricing schemes, like retailers, wholesalers, contractors, carriers, farmers. They too want to make their businesses more sustainable, and an increasing number is committing to net-zero emission strategies.

In some of these industries, particularly outside the power sector and manufacturing, the cost of reducing emissions with today's technologies might be prohibitively expensive or impossible.

That's precisely where offsetting schemes could play a role in achieving a company's voluntary

climate objective: neutralising residual emissions that are still deemed unavoidable today until a technological alternative becomes available on the market. In the absence of mandatory carbon schemes, they can participate in voluntary carbon markets. These voluntary carbon markets have recently attracted a growing number of entrants such as oil companies alongside companies like Alphabet or Disney, which have been using carbon offsetting for many years.

How voluntary carbon markets work

So, voluntary carbon markets allow corporate leaders to offset carbon emissions that can only be reduced at a high cost or to offset unavoidable emissions. It works by purchasing carbon credits aimed at averting greenhouse gas emissions or permanently removing them from the atmosphere – typically by planting trees, the most popular type of offset project.

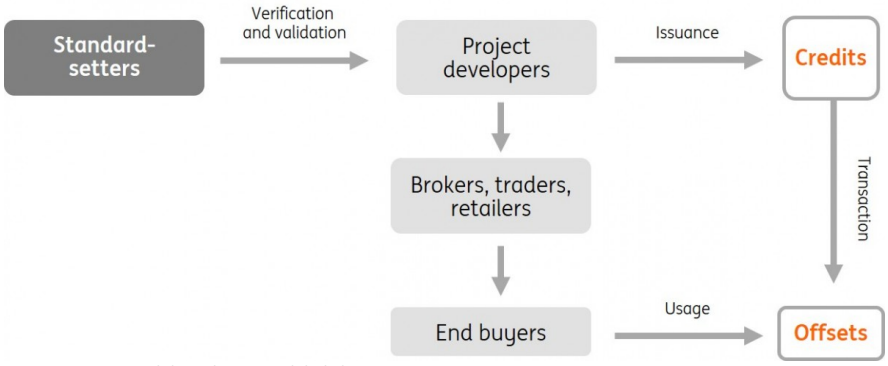
Such offsetting schemes are 'voluntary' and unregulated, unlike 'compliance' markets such as the EU's Emission Trading System (ETS), with legal obligations and public interventions to push prices up.

Voluntary carbon credits, which are also referred to as offsets, are financial tools issued by project developers that avert or remove GHG emissions from the atmosphere. Each offset must demonstrate that one ton of CO2 (or equivalent GHG) has been averted or removed from the atmosphere.

For a carbon reduction project to generate credits, it needs to respect a set of criteria certified by independent standard-setters like Gold Standard or Verified Carbon Standards (Verra). Once the credits are generated, they can be either traded over the counter or used towards a corporate climate target. The price of a credit is originally determined by the cost of the offsetting project, and to a large extent, by supply and demand.

Four types of participants make up voluntary carbon markets

Schematic overview of voluntary carbon market



Source: ING Research based on S&P Global Platts

Credibility is the key challenge

Concerns over the quality and the integrity of carbon offsetting schemes have plagued them since their early days, some 20 years ago following the Kyoto Protocol.

Critics often argue that offsets do not deliver the environmental benefits they promise and that the unregulated and fragmented markets offer companies a licence to pollute. They may, in theory,

create a false incentive for companies to believe they can continue with their current business model.

But they also have the potential to bring capital flows into the global south where it is crucially needed. Carbon credits could also be additional tools for companies to offset more emissions than they have historically created, provided that credible offsetting projects of high quality are used.

Another critical question is whether offset-generating renewable energy projects truly depend on carbon finance. Indeed, one of the most important criteria required by the major certification bodies of offsets (so-called 'standards' like Verra or Gold Standard) is that of 'additionality'.

The concept of 'additionality' is a crucial criterion for the credibility of offsets. It is the assurance that the reduction in emissions resulting from a project is additional to what would have occurred if it had not gone ahead. Financial additionality is key for the credibility of offsets, meaning that an offsetting project could not have gone ahead without the extra revenues resulting from the sale of carbon credits.

Permanence is another key criterion to ensure that offsetting activities, such as tree planting, will last in perpetuity. Recent forest fires in the American west, burning vast expanses of protected forest which were part of carbon offset projects have illustrated the challenge of ensuring such criterion (once a tree burns, it releases all the carbon it captured back into the atmosphere).

Two dynamics are driving growth in voluntary carbon markets

Despite criticism for failing to deliver the climate benefits promised, some reports suggest that global demand could rise by 15 times by 2030 and 100 times by 2050. Growth is mainly driven by airlines through the sector-wide CORSIA market, by companies especially in hard to abate sectors, and by governments. The latter could use offsetting strategies to reach NDC targets, either by buying credits themselves or requiring corporate leaders to do so on behalf of their companies.

However, voluntary carbon markets are still marginal right now, covering less than 1% of global greenhouse gasses in 2020, though the market momentum cannot be ignored, with the volume of offsets sold rising above $1bn for the first time in 2021. Two dynamics are likely to follow:

- First, civil society led initiatives are working on guidance to inform companies on when and how carbon credits can be used as part of credible corporate climate commitments.

In a nutshell, they should only be used to compensate for a small volume of residual pollution that cannot be eliminated otherwise. The Science-Based Targets initiative (SBTi), the global green gold standard for businesses, now allows companies to factor in carbon offsets as part of their transition journey to net-zero – but only after science-based goals covering the next five to ten years have been adopted and once groups have slashed 90% of their emissions. The IFRS Foundation is also working on providing guidance for the treatment of offset credits in corporate financial and non-financial statements.

- The second dynamic aims to secure the quality of offset credits and to expand their quantity.

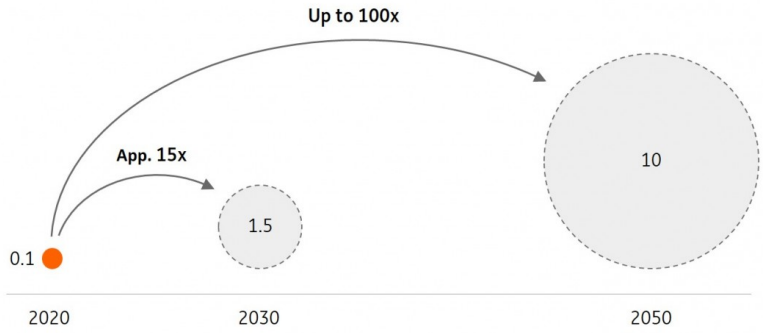
The Taskforce on Scaling Voluntary Carbon Markets (TSVCM), headed by former Bank of England Governor Mark Carney, thrashed out a set of core underlying features that carbon credits should adhere to, called the core carbon principles, in an attempt to harmonise carbon certifications. The

five core principles are additionality, permanence, exclusive claim, overestimation and the provision of additional co-benefits in line with the UN's Sustainable Development Goals.

The next steps should be about developing standardised contracts and trading infrastructure to help overcome known shortcomings like low liquidity, scarce financing and limited data availability. A series of newcomers, like asset managers, could offer the liquidity and transparency markets crucially need.

Global demand for voluntary offsets is expected to boom

Voluntary demand for carbon credits, gigatons of CO2 per year



Source: ING Research, expected figures are approximated from McKinsey scenarios

Article 6 of the Paris Agreement is likely to boost government-to-government carbon transactions

Article 6 of the Paris Agreement has made it possible for countries to purchase emissions reduction abroad and use this towards their own targets, as long as a set of rules are respected. It also agrees that entities other than governments could do so (which includes voluntary carbon markets). After six years of negotiations, this was finally agreed in the very last hours of the COP26 in Glasgow.

The text sets a framework to ensure that any emissions reduction units generated by projects abroad may only be used towards a country's nationally-determined contributions (NDC) if there are corresponding adjustments in place. In other words, when an emissions reduction unit is sold abroad, the host country (where the project takes place) must cancel out the impact on its own carbon inventories accordingly to mirror the transfer.

This solution was one of the stickiest points of the negotiation, but it avoids one emissions reduction unit being counted by two countries. Practically, it means that only credits which are adjusted for under Article 6 can be used towards another country's NDC, which guarantees credibility.

Article 6 in the spotlight

Article 6.2 provides an accounting framework for international cooperation, such as linking the Emissions Trading Systems of two or more countries. It also allows for the bilateral transfer of carbon credits between countries and other entities (so-called Internationally

Transferred Mitigation Outcomes, 'ITMO').

Article 6.4 establishes a centralised UN mechanism (successor of the Clean Development Mechanism from the Kyoto Protocol) to certify tradable credits from emissions reductions generated through offset projects.

For example, an investor in country X could fund solar panels in country Z to replace electricity generated by a coal plant. Emissions are reduced, country Z benefits from the clean energy and, as long as the emissions reductions exceed country Z's Paris target, the investor can sell the credit to country X to use towards its Paris target.

Watch out for greenwashing

However, Article 6 does not make corresponding adjustments mandatory for all voluntary market initiatives. It provides a framework where both would be allowed but doesn't say what they can be used for. Importantly for corporate decision-makers, it means that voluntary offsets without corresponding adjustments can still be used by companies claiming carbon neutrality, keeping the door open for greenwashing (eco-friendly marketing spin).

In the past, companies like Volkswagen and Shell have been accused of reporting their carbon emissions incorrectly and being too heavily reliant on offsetting strategies. It is clear that NGO's like Greenpeace are no fans of carbon offsets.

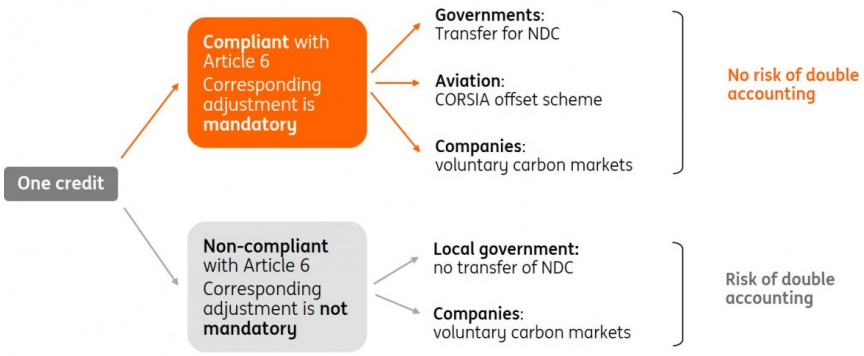
The big question coming out of the COP26 in Glasgow is to what extent private voluntary carbon markets comply with the new Article 6 framework.

Ultimately, companies will have the freedom to use offsets towards carbon neutrality claims that do or do not have a corresponding adjustment. Additional guidelines from civil society initiatives and regulators are therefore needed.

The reputational risk that comes with it is already an incentive to focus more on offsets involving a corresponding adjustment. Plus, the Article 6 framework may further encourage improvements of third-party standard setters like Gold Standard or Verra to require corresponding adjustments in voluntary markets, leading to a greater level of credibility.

But it might not be enough. Reputational risk will not drive change on its own. With a large number of voluntary market standard-setters of various quality and little institutional oversight, offsetting schemes could continue to be perceived as the wild west – leaving some room for additional guidelines and more stringent standards.

Corresponding adjustments are mandatory under the Article 6 framework, but not for all offset credits



Source: ING Research

Price of carbon credits is still inconsistent with the economics of carbon reduction

Companies buying carbon credit in voluntary markets can already choose credits stemming from avoidance or removal projects through nature-based or tech-based solutions.

The latter category tends to trade at a premium to avoidance projects as the investment level to reduce emissions is generally higher. Demand for these projects from sustainable companies or investors is also generally higher as they are more powerful tools than avoidance projects.

Right now, credits can be bought with or without a corresponding adjustment. The two types of credit result in another price differential for voluntary market participants, based on whether an offset credit implies a corresponding adjustment (sold at a premium) or not.

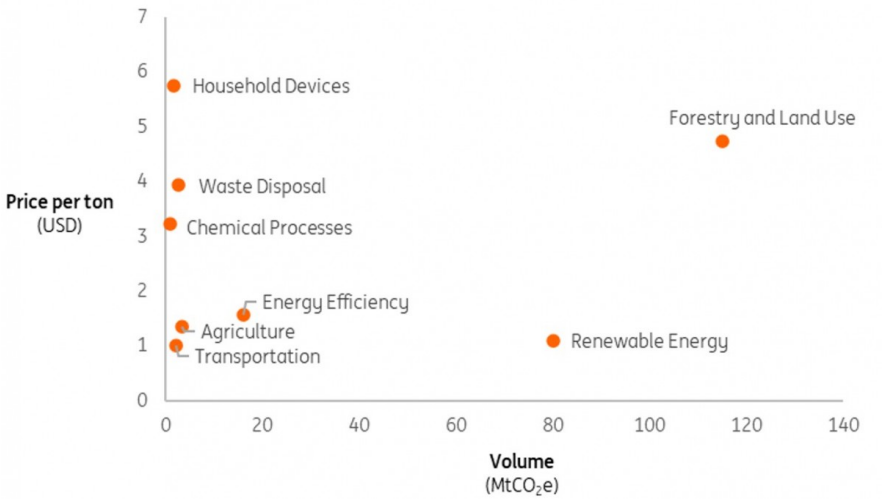
We show in the graph below that the volume and average price of offsets already vary significantly per category of projects due to differences in quality. Forestry and land use projects and renewable energy projects are by far the most popular categories for offsetting. With land use projects trading at prices five times higher than renewable energy projects.

Note that qualities and options also vary within each project category. Unfortunately, due to the lack of transparency in voluntary carbon markets, price spreads data within each category are hard to get hold of.

The result is that most of the offset credits are available for less than €5 – much cheaper than the cost to reduce a ton of carbon with current technologies. In Europe, those costs are represented by the carbon price in the EU ETS, which currently stands at around €90/tCO2. This is much lower than the global price of carbon needed to be consistent with the temperature goals of the Paris Agreement, which should be between €100-€150 per ton CO2 by 2030.

Prices and demand for offsets differ widely between project categories

Average price and volume of carbon offsets per project category in 2020, MtCO2e



Source: ING Research based on Ecosystems Marketplace

Concluding remarks

From the current market dynamics and latest developments at COP26, we conclude that the lines are changing within the offsetting world, putting carbon credits on the agenda of corporate decision-makers:

- Voluntary carbon offsetting makes sense as a last resort to neutralise a company's residual emissions until a technological alternative becomes available on the market or becomes financially viable.
- Public and private initiatives are flourishing to scale up voluntary carbon markets. They bring more credibility and liquidity to offsetting schemes – two characteristics particularly praised by private actors. There is still a lot of room to improve transparency and data availability.
- The new Article 6 framework could further improve the credibility of voluntary markets.
- It is misleading to believe that voluntary carbon markets are the solution to the climate crisis. Corporate decision-makers need to avoid accusations of greenwashing. Even if offset credits become more credible with corresponding adjustments, prices are likely to remain much lower compared to mandatory carbon markets that are focused on reducing companies' emission levels.

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Zero-Covid strategy threatens Hong Kong's growth prospects for 2022

Having its border with mainland China reopened is crucial for increasing economic activity in Hong Kong

Hong Kong's zero-Covid strategy has hurt its economy

The outlook for Hong Kong is mixed in 2022

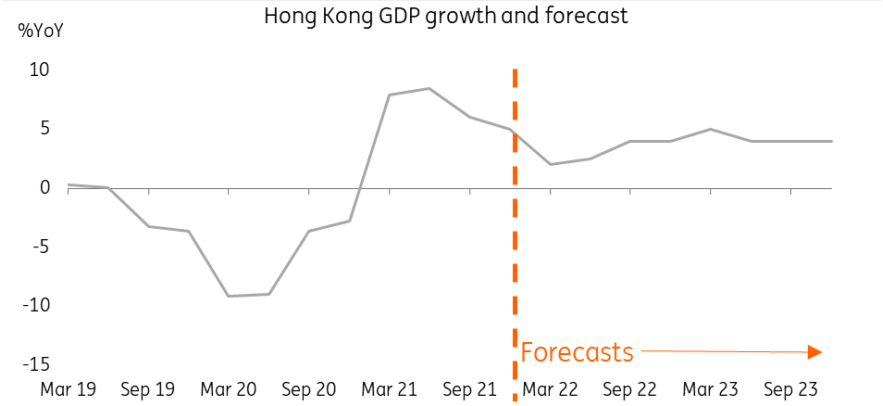
There is a chance that the border between Hong Kong and mainland China will reopen with a limited quarantine period if Covid cases subside. This should increase economic activity in Hong Kong. Further border-opening measures depend on the infection rate of Covid in both Hong Kong and mainland China.

Unfortunately, the new year started off with a new Covid wave and a tightening of social distancing measures. Activity in 1Q22 is going to be affected by this. The government still has the scope to hand out subsidies to some of the most affected industries, but handing out a new round of consumption vouchers looks very uncertain.

As the port in Shenzhen's Yantian is affected by Covid from time to time, some logistics throughput has been re-routed via Hong Kong, which helps port throughput in Hong Kong from falling further during global freight delays.

GDP growth is expected to be more moderate at 3.3% for 2022 compared to 6.3% in 2021 (which was mainly a base effect phenomenon). Growth prospects very much depend on Covid. Hong Kong

is a service-based economy and does not have manufacturing activity, which is positive in the current supply chain disruption environment. Goods and food are delivered as normal, as many of those come from mainland China.



Source: Hong Kong Census and Statistics Department, ING

Hong Kong's job market facing challenges

The jobs market is again going to face challenges from the tightening of Covid measures from mid-January. Many people will be living on 80% of their usual wages from government subsidies if their industries are affected by social distancing measures. Covid could spread again even if this wave subsides. Consequently, the jobs market will remain fragile, so there is a pessimistic outlook for catering businesses and other retail sales.

The wealthy aren't immune to this uncertainty, either. The stock market index fell 14% in 2021, while home rentals fell nearly 10%, which means lower incomes for people living on rental income. This may continue in 2022 as zero-Covid measures have deterred some expats from staying in Hong Kong, leading to a fall in demand for rental apartments.

Retail sales and unemployment

Source: Hong Kong Census and Statistics Department, ING

Hong Kong as an international financial centre is its biggest strength

Loan growth is expected to pick up this year. The loan-to-deposit ratio went up to 85.74 in

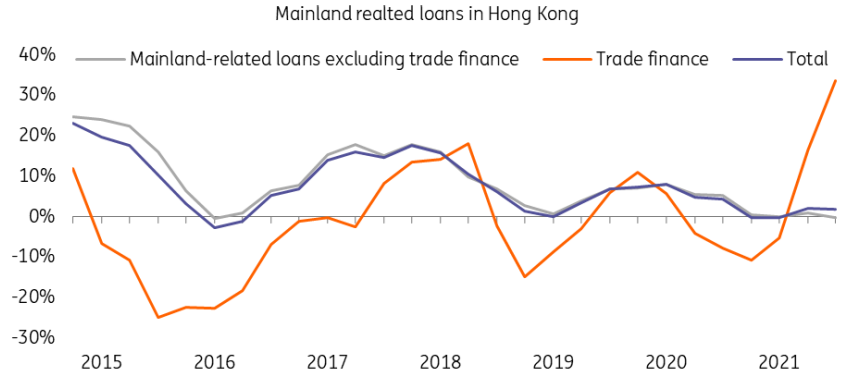
November 2021 from 82.60 in May. Loans overdue by more than three months were 0.5% of total loans at the end of 3Q21, which was quite flat during the year, but up from 0.46% at the end of 2020. We expect past-due loans to be flat for most of 2022 if social distancing measures don't continue for another quarter.

Some banks in Hong Kong have lent to mainland real estate borrowers. They should have made provisions. Overall, mainland-related loans (non-trade finance) contracted by 0.2%Year-on-Year in 3Q21. This fall is due to the real estate developer default events on the mainland. We expect that mainland-related loans will pick up gradually in 2022 when the real estate developer default issues fade.

Domestically, loans for residential mortgages increased between 2020 and 2021, as the property market partially recovered. This demand comes from both self-use and investments.

Trade finance related to mainland China increased 34% in 2021, which was the result of both a strong yuan and the low interest-rate environment in Hong Kong. This should continue at least for 1H22. But as the China-HK interest rate gap will gradually narrow in 2022, growth in trade finance might not keep up this pace.

Mainland related loans in Hong Kong



Source: HKMA, ING

Mainland related non-trade finance loans contributed over 90% of overall Mainland related loans in Hong Kong in 2021

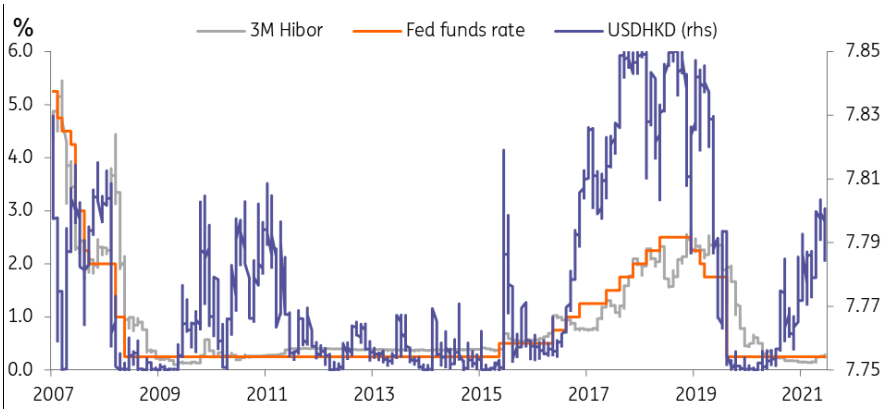
Government subsidies should reduce the number of business liquidations

In terms of the financial markets, mainland China's real estate developer defaults have not fuelled any big market moves in Hong Kong, illustrating that only a few financial institutions are involved in the default events.

In mid-January, the government provided subsidies for some industries affected by the latest Covid wave, which should reduce the number of business liquidations. The government still has ammunition to hand out more subsidies this year if the Covid wave persists, though it is hard to imagine that the government will be able to hand out the same size of subsidies if Covid lingers for years. The approved government subsidies for Covid are HKD250bn, which is around 8.7% of GDP in 2021. The government had used up 80% of this at the time of writing.

Delivery services and online shopping will be the main spending channels. This at least helps the retail industry to some extent.

The linked exchange rate system



Source: CEIC, ING

Fed funds rate affects the HKD and the HKD interest rates

Fiscal and monetary policies and the HKD exchange rate

Fiscal spending is going to increase because of Covid. Another round of HK$250 billion of Covid relief government spending is unlikely, but a smaller amount between HK$50 billion to HK$100 billion is still possible, and is also more manageable for the government.

For monetary policy, HKD interest rates will follow their USD counterpart closely. As the Fed hikes, HKD interest rates will rise and the HKD should approach USDHKD 7.85 as the US dollar strengthens.

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