



Theme: Emission rights

In 2022 the price will finally make a difference

Since 2005 the EU has had a trading system for emission rights. Its purpose is to reduce greenhouse gas emissions, and it sets an emissions cap linked to the climate goals in the Paris Agreement. During 2021 the price of emission rights rose by more than 165 per cent, and we believe 2022 will be the first year that the price level of emission rights will begin to have a significant impact on industry.

Since 2005 the European Union has had a trading system for the emission rights known as European Union Allowances (EUAs). This European Union Emissions Trading Scheme (ETS) aims to reduce greenhouse gas emissions from factories and power plants. According to the Swedish Society for Nature Conservation, the factories and power plants included in the system together account for about 40 per cent of total EU carbon dioxide emissions. The ETS is based on setting an emission ceiling (or cap) linked to the climate goals stated in the 2015 Paris Agreement. For 2021, the emission cap was set at 1.5 billion tonnes. It will be lowered gradually in order to reduce emissions. The approved emission cap will then be divided among those included in the system, using EUAs. Each allowance confers the right to emit one tonne of carbon dioxide (or the equivalent amount of certain other greenhouse gases). EUAs can either be allocated for free or bought via an auction procedure.

During 2021 the price of one EUA rose from EUR 30 to EUR 80/tonne, or by more than 165 per cent. We expect an average price of EUR 100/tonne during 2022-2023 as the total emission cap is lowered. In addition to EUA price increases, steps will be taken in such areas as energy efficiency and renewable energy sources, all with the aim of reducing greenhouse gas emissions. Measures to improve energy efficiency are not always easy to identify, while investments in renewable sources – such as solar and wind power – are easier to see and evaluate. Solar energy systems can be installed quickly, whereas wind power systems require longer lead times. We believe that the European Union and the United Kingdom will need to triple the number of renewable energy facilities and that higher EUA prices will accelerate and facilitate this expansion, which is part of their purpose.

A lost decade, with largely irrelevant EUA prices

An artificial market system will always have shortcomings. When it was launched in 2005, the ETS began a three-year test phase for emission rights, with the aim of eliminating all shortcomings, but this proved impossible. The so-called Kyoto Period (countries that signed the 1997 Kyoto Protocol committed themselves to reducing greenhouse gas emissions by 5 per cent during 2008-2012 compared to 1990 levels) began in 2008. The price of emission rights was EUR 25/tonne during the first half of 2008. Then the global financial crisis struck. European industrial activity came to a virtual halt, and emissions fell sharply. But the issuance of EUAs continued without interruption, leading to a surplus equivalent to more than one year of emissions. Since there was no mechanism in the system for regulating this surplus, it lingered for several years. EU governments were busy dealing with the ongoing debt crisis. The price of one EUA averaged EUR 9.3/tonne for nearly a decade, from 2009 to 2018. It averaged only EUR 5.8/tonne in 2017. Because of these low prices, emission rights were of very limited relevance.

A failure that had to be fixed twice

The surplus of emission rights and their very low price were of course a failure for EU political leaders, who were well aware that the market was not working as intended. In 2014, "back loading" was thus implemented in an attempt to allocate the surplus over time. This did not have the desired

effect either. The EU thus designed the Market Stability Reserve (MSR), which turned out to be a much better solution and had a major impact. MSR is a rules-based system that adds or subtracts emission rights to the market according to a mathematical calculation of the balance between supply and demand. MSR was launched in 2019 and the EUA price began to rise. The lost decade was over.

Well-timed and urgent – the Green Deal

Late in 2019 the European Commission adopted the European Green Deal, with the ambition that the EU would be carbon neutral by 2050, and including an intermediate goal of cutting emissions 55 per cent by 2030 compared to 1990. One important driver behind this ambition is that fulfilling it is now both financially feasible and technically possible. The price of sustainable energy production has fallen sharply, and it is now also possible to electrify the important transport sector.

More and more signs of urgency, especially all the worrisome reports about global warming, are other important factors. This is illustrated by the increased emission-lowering ambitions presented at last autumn's COP26 climate conference in Glasgow. These factors are probably also important drivers behind China's decision less than a year after the EU Green Deal to announce its own goal of emission neutrality by 2060.

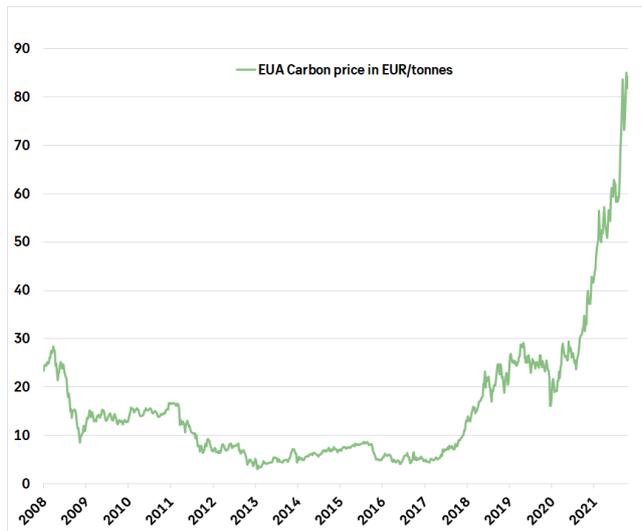
An extreme price increase

Last year saw an extreme increase in the price of emission rights – more than 165 per cent, from EUR 30 to EUR 80/tonne. The most important explanation was the tightening effect created by the MSR mechanism. Another key factor was significant inflows of capital from investment funds, and especially the surge in European natural gas prices, which helped to accelerate the upturn in the EUA price.

Natural gas is a far cleaner fossil fuel than coal, which emits 2-3 times as much carbon dioxide per unit of energy produced. The purpose of emission rights is to ensure that the cleanest alternative is also the most cost-competitive. The total cost of fuel is affected both by the cost of fuel commodities (such as coal or natural gas) and the cost of emissions, which is affected by the cost of EUAs and the degree of emissions per unit of energy produced. When pricing of fuels such as natural gas and coal reverts to more normal levels, more carbon-intensive coal will be less economical, since the cost of EUAs will be higher. When the price of cleaner alternatives like natural gas soars, the use of coal becomes relatively more attractive – contrary to the purpose of EUAs. The price of an EUA must therefore be raised in order to restore the relative economic advantage of natural gas.

At present, natural gas prices are very high. Although they will probably remain high during 2022, they will eventually fall back to more normal levels. There is also a risk that the short-term EUA price will fall, though temporarily. The battle between coal and natural gas will not be the main price-setter for emission rights over the next few years. The biggest impact will undoubtedly come from the yearly lowering of the emission cap, pushing up the price of EUAs and eventually forcing everyone to reduce emissions, but a price struggle in the energy sector is far from sufficient to achieve emission targets.

The EUA price has surged in recent years



Source: Macrobond

Because the price of emission rights (EUAs) was low for many years, there was little pressure on factories and other EUA users. As the EU has imposed relatively aggressive reductions in its emission cap – in keeping with its ambitious timetable – EUA prices have soared in the past couple of years. Eventually this trend will force emission-intensive energy users to make the desired transition to greater sustainability.

2022 – the year when EUA prices will have an impact

Last year the price of emission rights reached a whole new level, and 2022 will be the first year when the price level begins to work as the “invisible hand” of the carbon dioxide market and have a significant impact on emissions. Within the EU, the price of emission rights affects all major industrial activities, as well as the energy sector. More than 40 per cent of all emissions in the EU are covered. Generally speaking, the actions taken this year will probably include improving energy efficiency, restructuring industrial processes and accelerating the expansion of renewable energy supplies. Measures to improve energy efficiency may be both large and small, with varying lead times. Industrial processes take a long time to change, with typical lead times of 5-10 years. What we will most likely see is an accelerating pace of renewable energy development projects.

The EU's ambitious energy transition

The EU's energy transition is all about electrifying the energy system away from fossil-fuel energy sources, or in some cases using fossil energy in combination with carbon capture and storage. Current and expected electricity consumption in the EU and the UK points to large future power generation needs. At present, most electricity is generated using fossil energy sources, which will gradually be phased out and replaced by renewable sources. A rough estimate indicates that the EU and the UK need to build new non-emitting power plants that can supply 6,700 TWh of electricity yearly by 2050. This represents more than a tripling of today's production and means investing in new plants with a price tag of about EUR 1 billion

per year, equivalent to 1.5-2 per cent of GDP. Annual renewable energy production growth in the EU and the UK during 2018-20 was about 70 TWh/year and looks set to total about 85 TWh/year by 2025. This growth rate must be tripled in order for the region to achieve its zero emission target by 2050. Whether it will triple remains to be seen, but our assessment is that we will see much stronger renewable energy expansion in the coming years both in the EU and the UK. The EU is laying the groundwork for a dramatic expansion of sustainable energy.

Replacing all the fossil fuel-based energy being used today in all parts of the economy with renewable energy is the key to the energy transition plan. One challenge of renewable energy was previously its high production cost, combined with the relatively low market price of energy – that is, high production costs and low compensation.

The cost of producing solar energy, for example, has fallen sharply in recent years worldwide and is expected to continue falling. In the EU, this cost declined to EUR 36/MWh last year and is expected to fall to EUR 23/MWh by 2030. Meanwhile the average energy price has climbed from EUR 39/MWh in Germany during 2009-2018 to the current EUR 170/MWh, largely due to extremely high natural gas prices. When these prices normalise, probably within a year or two, the price of energy will fall to the EUR 70-100/MWh range, but it will still be well above the historical average.

Because the cost of production has fallen and compensation has risen, solar energy plants on an industrial scale have become highly profitable. There will thus probably be very strong growth in solar energy installations in the future. The same applies to wind power.

What is a reasonable cost for carbon dioxide emissions?

There are various ways to make theoretical estimates of what carbon dioxide emissions actually cost today, based on a forecast of their future impact and costs. Classical economic theory dictates that if an economic activity has a negative external impact, the solution is to tax that activity in proportion to the damage it causes. What will be the cost in the year 2100 of the damage caused by emitting one tonne of carbon dioxide today? If we assume that USD 500/tonne is a fair estimate, we can establish a present value of that cost. The present value that we calculate will depend on what interest rate we assume during the intervening period. Because of falling real interest rates (interest rates minus inflation) during the past decade, this theoretical value – which ended up at around USD 50/tonne a number of years ago, is instead now at USD 100-200/tonne, based on a real interest rate of 1.25-2 per cent.

Another way to estimate the value is to calculate the cost of the energy transition, compared to the emissions. According to our estimates, the cost turns out to be EUR 250 billion per year – or a total of EUR 7 trillion – to enable the EU and the UK to reach net zero emissions by 2050. If their emissions decrease linearly from today's level to zero in 2050, the sum of emissions will be around 50 billion tonnes. Dividing EUR 7 trillion by 50 billion, we end up with a cost of EUR 140/tonne. If we should

choose, for example, to impose this amount as a carbon tax on all emissions, it would cover the costs of achieving net zero emissions. This would provide an indication of the theoretical value of EUAs.

The EU's tougher emission targets call for a 50 per cent reduction in carbon dioxide emissions by 2030 for the affected sectors, or an annual reduction of 7 per cent. Although this plan is sensible in theory, it will be problematic in reality. It calls for a rapid rate of emission reduction, and most industrial emission reductions require very long lead times. As the coercive mechanism in the Emissions Trading Scheme reduces the issuance of emission rights, this suggests that demand will increase and the EUA price will thus rise.

The purpose of EUAs is to ensure that emission reduction measures are profitable and are thus implemented, but also to ensure that clean alternatives make more financial sense than dirty ones. Today the EU economy is 80 per cent fossil fuel-based. Because the EU's political ambition is to achieve a rapid energy transition, emission rights will be a vital element of efforts to drive change in the right direction and at the right speed.

There are a number of uncertainties about the future price of EUAs, since they are affected by political decisions as well as turbulent energy prices and largely unpredictable demand. Several factors – ranging from strong political pressure to falling supply due to the coercive ETS mechanism and heavy demand due to long lead times for replacement investments – thus suggest that the price of emission rights will rise over time. Most forecasters foresee higher EUA prices ahead. Our assessment is that a level of at least EUR 100/tonne during the coming year is not only reasonable, but can serve as something of a cautious forecast.

Contact information

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Contributors to this issue of *Investment Outlook*

Fredrik Öberg

Chief Investment Officer
Asset Management
fredrik.oberg@seb.se

Jonas Evaldsson

Economist
Investments
jonas.evaldsson@seb.se

Esbjörn Lundevall

Equity Analyst
Investments
esbjorn.lundevall@seb.se

Kai Svensson

Portfolio Manager
Asset Management
kai.svensson@seb.se

Henrik Larsson

Portfolio Manager
Asset Management
henrik.y.larsson@seb.se

Sofia Magnér

Investment Communication Manager
Investments
sofia.magner@seb.se

Johan Hagbarth

Economist
Investments
johan.hagbarth@seb.se

Stefan Cederberg

Equity Analyst
Investments
stefan.cederberg@seb.se

Cecilia Kohonen

Investment Communication Manager
Investments
cecilia.kohonen@seb.se

Bjarne Schieldrop

Commodities Analyst
Trading Strategy
bjarne.schildrop@seb.no

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SEB
SE-106 40 Stockholm, Sweden