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Demystifying the Carbon Markets | Episode 2

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Mark Lewis, Head of Climate Research at Andurand Capital, sits down with David Greely to discuss what's gone right, what's gone wrong, and what we can learn from one of the world's leading compliance carbon markets, the European Union's Emissions Trading System.

Mark Lewis (00s):

We now have an end game for this market. We know that the European Union has to get to net zero emissions by 2050. That's a legally binding target equally the target for 2030 now, which is a 55% emissions reduction versus 1990 levels. That's significantly higher than the 40% reduction that was the previous target. Also legally binding means that we really have to get serious about carbon pricing and this is what has driven the structural re-pricing in the EU ETS over the last 18 months. That's why we are where we are and that's why I'm saying we have finally got a market that works and is starting to send the right pricing signal.

Announcer (43s):

Welcome to Smarter Markets, a weekly podcast featuring the icons and entrepreneurs of technology, commodities, finance, ranting on the inadequacies of our systems and riffing on ideas about how to solve them. Together, we examine the questions are we facing a crisis of information or a crisis of trust and will building Smarter Markets be the antidote?

David Greely (01m 10s):

Welcome back to demystifying the carbon markets on Smarter Markets. I'm Dave Greely, Chief Economist at Abaxx Technologies. Thanks for joining me and Mark Lewis, the Head of Climate Research at Andurand Capital Management, as we discuss what's gone, right, what's gone wrong and what we can learn from one of the world's leading compliance carbon markets, the European Unions Emissions Trading System. Hello, Mark, welcome to Smarter Markets. I've really been looking forward to this conversation because the EU Emissions Trading System is the world's first major carbon market. It remains one of the biggest, and it's really a template for the type of carbon trade systems that more and more governments will likely create to meet their commitments under the Paris Agreement. Mark, you know, this market as well as anyone. Could you start us off today with a, just a brief overview of how the EU ETS works?

Mark Lewis (02m 05s):

The basic choice that any regulator has when they are trying to reduce emissions in the economy is to either go for a cap and trade system or for a carbon tax and the essential difference between the two is that a cap and trade system in putting a cap as the name implies on the absolute level of emissions and reducing that cap over time, guarantees you an outcome based on quantity. So you're controlling for quantity and you let the market figure out the right price. Whereas with a carbon tax, you are controlling for price and the price will determine the quantity. So I just, I think that's the simplest way to begin in terms of understanding what a cap and trade scheme is driving at and then within the cap and trade scheme, you fix the quantity of carbon allowances that you are going to have in the market over time.

Mark Lewis (02m 55s):

And as I say, you reduce the cap over time and then the trade part of it is really about allowing the companies who are in the market, as well as any investors, at least in the case of the European market who see carbon allowances and as an interesting investment opportunity and perhaps also want to have an impact on driving emissions lower to participate in the market and the idea behind all of that is that as the cap falls, the price rises and the limited amount of carbon allowances available in the market will be distributed to the companies that are most efficient in using it. So there is an incentive over time for companies to become more efficient in their use of the limited resource that that carbon emissions effectively have become once you've introduced this market. I mean, one way, I think just as, again, as, as an overall background statement to everything we're going to be discussing today, I think this is a great way to think about it.

Mark Lewis (03m 59s):

What are we really trying to do when we set a price on carbon, we're really trying to indicate that there is a limited amount of future carbon emissions that can go into the atmosphere and if you think back to economics 101, what is economics about, economics is about the allocation of scarce resources, and that's why we have a price mechanism. So what is the scarce resource that we are actually trying to allocate here, it's the amount of space left in the atmosphere for further concentrations of greenhouse gases and once you understand that you can see the logic for reducing the cap on emissions over time and allowing the companies that are most efficient in producing carbon intensive goods in the least carbon intensive way to triumph over the long term versus the companies that are less efficient. That's been a nutshell, the logic behind it.

David Greely (04m 47s):

That's great and this winner has in many ways been a real stress test of the system. I mean, we've all read the papers and seen the energy supply crunch with sky high, natural gas prices in Europe, the firing up of coal fired power plants, which seems to be going the wrong direction in terms of reducing carbon emissions and the allowance prices in the European system. I think they've more than tripled over last year. So, you know, hitting new records. So throughout the stress test, you know, how has the system performed, how is it holding up?

Mark Lewis (05m 19s):

Well, I think personally it's performing very well. It is finally doing what it was meant to do. I mean, a little bit of history here will probably help your listeners. This is a market that was introduced in 2005. It covers about 50% of the emissions in the European Union and it's all of the heavy industrial emitters, so it's the power generation sector, the steel sector, cement oil, refining chemicals, glass, ceramics and with all those sectors covered, you're covering 50% of the economy. Now for many years up until kind of 2017, the market was suffering under an oversupply of allowances and again, you have to go back in history to understand why that was the case, but essentially after the global financial crisis in 2008 Europe went into a recession. This meant that emissions declined rapidly, but the number of allowances available to the market had been pre-programmed if you like.

Mark Lewis (06m 21s):

So the same number of allowances was being awarded every year, over 2008, 2012 and then the cap for 2013 to 2020 was fixed on the basis of average emissions and levels in 2010 and in addition to that, the EU over the period, 2008, 2020 had allowed a large number of carbon credits to come into the system from outside Europe, under the Kyoto protocol. There's no need for us to go into depth on that point, but the fact of the matter is all of that coming together meant that there was a massive over supply of allowances in the system and prices were very low for many years, between 2012 and 2017 we were in single digits for most of that time effectively. We lost a decade of carbon pricing, sending a signal to emitters to reduce their emissions. So when I say the market over the last year, year and a half has finally started to deliver on what it was meant to be doing in the first place.

Mark Lewis (07m 21s):

What I mean by that is that two things have happened to generate this rapid increase in, in prices. Number one, the European Union introduced a technical mechanism within the EU ETS the European car market to remove this oversupply that had built up over time. Think of it, if you like as a form of Central Bank intervention, the European Commission acts in a quasi-central backed fashion via a mechanism that was introduced in 2019 known as the market stability reserve every year to take out a fixed proportion of the oversupply that has accumulated over time. So that change in of itself was already a big boost to the market from 2018 onwards. That's really when prices started to move, we went from €8 a ton at the end of 2017 to €25 a ton by the end of 2018, that was all driven by this technical mechanism, the market stability reserve.

Mark Lewis (08m 19s):

And then the really big change has been the legislation put in place by the European Union for net zero by 2050, which has brought with it a correspondingly higher target for 2030. So we now have an end game for this market. We know that the European Union has to get to net zero emissions by 2050. That's a legally binding target equally the target for 2030 now, which is a 55% emissions reduction versus 1990 levels. That's significantly higher than the 40% reduction that was the previous target also legally binding means that we really have to get serious about carbon pricing and this is what has driven the structural re-pricing in the EU ETS over the last 18 months that you referred to. That's why we are where we are and that's why I'm saying we have finally got a market that works and is starting to send the right pricing signal, not only for companies to reduce their emissions in the short run, but to think about making the right investments so that their investments over the longer term will also be structurally much lower and that therefore they will be able to cope with the lower cap that will be there in the future.

Mark Lewis (09m 35s):

Coming back to your previous question, Dave, in the sense that we know that the cap is going to fall aggressively over time, if you are not making the right investments today, you're going to find that in 5, 10, 15 years' time the infrastructure you've got is no longer fit for purpose and it won't be compatible with the more aggressive cap that we will have in place by that. So for me, and for many of us who've been observing this market over many years, we finally now have a market that is delivering on what it was meant to be doing in the first place.

David Greely (10m 06s):

And I really want to get back into that point, but you raised another point that I find very interesting, this notion of, you know, almost like the Central Bank of emissions allowances like that function and as you said, in the past, one of the issues was with the market stability mechanism, not enough allowances, I guess, were taken out of the system when the economy came down and there would naturally be less of a demand for them given the less economic and industrial activity, but there's also the point that what counts as an allowance or a credit in the system and I believe, you know, earlier there were a number of allowances from the clean development mechanism, the CDM of the UN that were kind of oversupplying the system for a while. So what lessons have been learned and how is that being handled in terms of, you know, the EU ETS being able to decide what will and will not count for its system.

Mark Lewis (10m 59s):

Yeah. Great question and it picks up on what I said in my previous answer, as you said. So again quick rewind for a very brief bit of history. You have to remember when the EU ETS came into being in 2005 its primary function at that time was perceived to be helping the European Union comply with its Kyoto protocol targets and a key part of the Kyoto protocol was that the developed countries of the world that had ratified Kyoto, such as the European Union would commit to absolute emissions reductions over the period 2008, 2012, but that there would also be an incentive for developing countries who themselves did not have absolute emission reduction targets on the Kyoto, but they would nonetheless have an incentive to reduce their emissions by hosting emissions reductions projects that could then sell carbon credits resulting from those projects back to the EU and to any other developed country that wanted to buy them.

Mark Lewis (11m 54s):

So, in effect, what happened was lots of projects were established in countries like China, India, Latin America, parts of Africa, et cetera and those projects the clean development mechanism, as, as you said, developed credits called certified emissions reductions or CERs and the EU said, we will allow a certain number of fixed number of these credits to be used in the EU ETS and they will have exactly the same compliance validity as a European allowance, a one for one exchange rate between CERs and EUAs, which was actually an arbitrage opportunity because the cost of producing CERs was much lower than the price for which EUAs were trading at that time in the EU ETS. Now the second important thing to understand is that when those rules were put in place about Kyoto and how the EU ETS would allow certain number of CERs to be used in the EU ETS, the expectation was that the global economy and the European economy would be growing at a certain rate over the period.

Mark Lewis (13m 00s):

Nobody foresaw the global financial crisis and so when the global financial crisis came along, it suddenly became apparent, wait a minute, emissions are falling very rapidly because of the recession that followed on hot on the heels of the global financial crisis. But as I said earlier, the number of allowances European allowances that were awarded every year was fixed in advance. You couldn't change that the legislation didn't allow for that to be changed and the number of CERs that were allowed into the system couldn't be changed either. So that's how we ended up with this very large oversupply. So what the EU then did in response to that was to say beyond the period 2020, we will not allow any more CERs or credits from the other kind of project that were established under Kyoto, the so-called joint implementation project to be used in the system.

Mark Lewis (13m 54s):

So in total, over that period, 2008, 2020 1.6 billion tons worth of CERs and emissions reductions units from the joint implementation projects were allowed to be used in the EU and to put that into context, that's about one year's worth of emissions in the European carbon market. So think of it almost as the EU, allowing an extra year's worth of emissions over the period, 2008, 2020, that's why we're still dealing with this legacy of the oversupply of allowances. Now, what lessons have been learned to come back to your question, I think the first is the introduction of this market stability reserve, which has been absolutely key because as we always used to say before the MSR existed, the EU ETS is the only commodities market in the world. We now have other carbon markets, so can't quite

make the same claim, but the, the whole point of a cap and trade scheme is that you have visibility on the supply, whereas in the oil market, in the gas market, the gold market, any normal commodity market, I can't tell you what supply is gonna be next week, never mind next year.

Mark Lewis (15m 03s):

And certainly not in 10 years' time, but with the EU ETS, the whole point is that you give long term visibility on the amount of supply that will be there in the market and what the MSR does in tightening up the oversupply that we inherited from the previous rules has given much more clarity to that supply situation going forward. So that's the principle lesson and then the second lesson is what to do about the use of offset credits in the EU ETS at this moment in time, there are no rules permitting the use of further offset credits from outside the European Union and there are no plans at the moment to allow that either, so as things stand at the moment, we have a very interesting situation because the European Commission has put forward its proposals for the reform of the EU ETS, which are being debated at this very moment over the next few.

Mark Lewis (16m 02s):

That process started in September and it will continue over the course of this year because the parliament and the European Council now have to validate what the commission proposed or amend it if they think it needs amending. As things stand at the moment, the European Commission has proposed a so-called reduction in the reduction in the cap, the annual reduction in the cap, what is known as the linear reduction factor should increase from 2.2% to 4.2% a year. So that's the, the speed with which the cap will fall over time. Now, what does that mean, it means that if there are no further changes to the legislation, if that passes and then in the future, we don't amend it and we don't allow, we continue not to allow offset credits into the system then in fact, it won't even be 2050 the time by which the EU ETS has to be net zero, it will be 2040, because if you just do the simple arithmetic, the cap will fall to zero by 2040 if you are reducing it at 4.2% per year and I think actually, Dave, that's still a not very well understood point and you know, we have to see how that plays out in the legislation as it is reviewed and potentially amended by the parliament and the council. But that's, that's where we're going at the moment.

David Greely (17m 18s):

And that's why I'm so glad to have you here because I think often that's a point that's not well understood and you know, in particular, when we look at a situation like this winter and what's happening both in the energy markets and the carbon markets, it's easy to say, oh, maybe it's transient, but there are real structural changes within the market that have occurred that you've talked about with the, you know, no more allowance of offsets at this point in time with the legally binding structure and I want to get to the legally binding structure because one of the big questions that I think hangs over compliance markets is a question of political will. That is when push comes to shove and people's home heating bills are going up companies are getting hurt by a rising price of energy that you will need to have happen.

David Greely (18m 05s):

You know, you'll need carbon prices to drive up energy prices if we're to reduce our use of fossil fuels, at least in the short term that when push comes to shove, politicians will respond to that political pressure by trying to, you know, say, raise the cap or do something to make the restrictions less onerous that they'll basically break their commitments. So I'm really curious about what the European approach has been in order to make these legally binding and make it very difficult for politicians to break those commitments when they come under pressure as they naturally will?

Mark Lewis (18m 41s):

This is the crucial question. I think it's fair to say very topical at the moment, obviously for all the reasons you mentioned with high gas prices leading to high power prices and politicians and policy makers looking at the carbon market in terms of, well, how much has the carbon market contributed to the current energy price crisis. So let's just stack back for a moment and analyze what's happened. First thing to say is recapping everything I've said up until now, in our view, in my view, having followed this market for as long as I have the rerating in prices, carbon prices is entirely justified by the fundamentals of the carbon market itself and by the long term need to align with net zero by 2050. So that's my starting point and our start starting point in terms of how we think about the long term structural dynamics of the market.

Mark Lewis (19m 34s):

That's just based on the simple supply and demand dynamics needed to get to net zero by 2050. So that's the first point. Having said all that it just so happens that we're having this debate about how we actually formally transpose the long term legislation, which is

already on the books, right. Those targets I gave you the 2050 net zero target, the 2030 minus 55% emissions reduction target for 2023. That's already on the books. What we're debating now, what is going through the European Parliament and the European Council of Ministers now is the Commission's proposal in terms of precisely how we redesign or reform the EU ETS to align with those goals and it just so happens that debate is happening right in the middle of a huge increase in energy prices in Europe, driven overwhelmingly by high gas prices and no need for us to get into the whys and where fors of why we are, where we are in terms of gas prices, but enough people have crunched the numbers, including ourselves to arrive at the conclusion that the increase in energy prices more broadly and power prices specifically that has been driven by the increase in gas versus the increase in carbon is that it's roughly 80% of the increase in power prices over the last six, seven months, which is where all this pain is, is coming from politically is down to higher gas prices.

Mark Lewis (21m 05s):

And about 20% is down to higher carbon prices, but that 20% is necessary to get us to the long term target. So I think if we didn't have a gas price, crisis, and carbon prices had done what they have done in the absence of a broader stress in the EU energy complex this would not be anything like the same political context. I think there'd be a lot more, isn't it great that the carbon market is finally delivering on what it's meant to be doing, but we are where we are. We have to deal with the situation as it is and the reality is there is political pressure from some quarters in Europe on the fact that carbon prices have risen so dramatically. So what happens next, well, first point to say, as you, as, as you rightly said, Dave, the targets themselves are legally binding.

Mark Lewis (21m 54s):

So there is actually a limit on what can be done if we are serious about reaching the target, but you can see that in some of the amendments that have been put forward by some members of the European Parliament and with some of the let's say off stage comments being made at the moment by certain European capitals there's a lot of concern about carbon prices and there are debates about how that can be addressed, whether it be in the form of putting forward some kind of proposal to limit the participation of purely financial entities in the carbon market that is something that's been a constant again, off stage noise that we've been hearing in the, in the last six months that might take the form for example, of position limits in the physical market that the California already has for example, or whether to your point, it ultimately might lead to some pressure to temporarily halt the reduction in the cap.

Mark Lewis (23m 05s):

And there certainly are some politicians in Europe who have voiced that as a potential short term solution, certainly that debate will rage over the next three months. However, I come back to this point, we have legally binding target, and if we are serious about achieving it, we have to stick with what we now have. That's the first point, the second point to say is, which is the more important point in terms of addressing the current short term stress, so my long term point would be we're either serious about achieving these targets, or we're not, if we're serious, we have to implement this reform of the carbon market so that the cap aligns with a net zero target by 2050 and minus 55% by 2030. But even in terms of addressing the short term problem of high energy prices, the rational way to think about this is if 80% of the stress in European energy markets is being driven by high gas prices.

Mark Lewis (23m 59s):

Surely the sooner we wean ourselves off gas and other fossil fuels the less vulnerable we will be in the future to these kinds of price squeezes. So I think any rational debate about how best to deal with the current stress that is in the EU energy complex would tell you that from both a long term perspective and a short term perspective in terms of explaining to European citizens, why they are currently going through this very painful period of high energy prices would say, look, we need an incentive. We need a price incentive, not only to switch from using fossil fuels to using cleaner energy sources, we need an incentive for consumers and companies to be much more efficient in their use of energy, you know and so when you have high energy prices, you become more incentivized to think about better insulation in your home or in your factories.

Mark Lewis (25m 00s):

I mean, energy efficiency is the biggest opportunity actually for reducing emissions, not only in Europe, but in every economy around the world, we lose a tremendous amount of energy from inefficient ways of consuming it and that should be at the top of the priority list for politicians explaining to citizens how they should be thinking about this. You know, I fear otherwise this will be a nonstop short term stock and start problem where every time there is a squeeze in energy prices or gas prices from whatever stress happens to be going on in the global gas market, we will have the same debate. The whole point of having a long term target is to take long term decisions that remove your exposure and vulnerability to high fossil fuel prices. So I hope that that rational approach to the problem will prevail and I'm confident that it will and that, of course, in the meantime, governments should be doing all they can to protect all

citizens and in particular, the most vulnerable citizens from high energy prices, but I repeat what I said earlier, overwhelmingly the high energy prices we're dealing at the moment with, at the moment in Europe are down to high gas prices, not to high carbon prices,

David Greely (26m 22s):

Right and it sounds like enshrining, the policy targets in law is one way to create that resilience of the system itself to the near term political pressure and keep things on target at the same time, like over the long term, getting serious, getting started down the road of the energy transition in a big way, will help reduce the stress. Is there something built into the system in the short term that creates some flexibility that can help alleviate some of the pain that people may be experiencing, is there some way with a central bank type operation of the system that can help with that?

Mark Lewis (27m 04s):

In terms of the market stability reserve this quasi central bank instrument that we've been discussing that does have the capability under the legislation to provide more allowances to the market, but only when the outstanding surplus has been reduced to a given level and that level is 400 million allowances at the moment, the outstanding surplus in the market, which is technically known as the total number of allowances in circulation or the TNAC for short, the TNAC at the moment stands at about 1.5 billion tons And until that number falls to 833 million, we will continue to see withdrawals from the market rather than injections into the market And then when it falls to below 400 million, which on our numbers happens in 2028, So that's still six years away, the market stability reserve starts re-injecting allowances into the market at the rate of 100 million a year.

Mark Lewis (28m 08s):

So in the short term, in terms of the way the carbon market itself operates, there is no leeway for the commission to provide to increase the total volume of allowances available in the market. Other than by means of something known as Article 29 A, which is a technical mechanism providing, I mean, I suppose this is the answer to your question, Dave, what Article 29 a does let's just be clear. Article 29A allows the commission to front load allowances from future year's auctions today if the price exceeds a given level over the preceding six months and that level is from memory twice the average price over the preceding two years over a six month period, then the commission can think about injecting extra volumes into the market in the short term, which would be taken from future years, auction allowances.

Mark Lewis (29m 07s):

So ultimately you know, you are borrowing from the future. Yeah, but they can also use unused allowances from the new entrant reserves So yes, I mean, they can provide a very limited amount of allowances that otherwise would not be made available to the market and they can more importantly, they can front load allowances from future years auctions and in the short term, of course, one would expect that that would have a price dampening effect. But of course, at some point the market would then look through that because effectively you've then reduced the amount available in the future. So, I mean, if you want to protect consumers from high energy prices at the moment, and specifically, you're trying to say, we need to protect them from the carbon element in, in high energy prices, you would need to do it by more targeted measures outside the market itself.

Mark Lewis (29m 59s):

You know, many governments around Europe are doing that. They can reduce value added tax on energy prices. I mean, there are numerous ways in which they can do that and we haven't even talked about the subsidies, the fossil fuels continue to enjoy from European policy makers. So you could reduce that, which would in a way, well, would, would actually make clean energy more competitive against fossil fuels. I mean, just as an aside, it never ceases to amaze me that people who tend to have a skeptical view about climate change and about the need to reduce emissions and the need to accelerate the deployment of clean energy are very fond of saying, you know, renewable energy wouldn't be able to compete if it were not for the subsidies. That's been out of date for some time because wind and solar have become extremely competitive with fossil fuels in the last five years and in many instances are the cheapest form of new energy build. The other side of that is they don't, they always forget that fossil fuels continue even today to enjoy very high levels of subsidization. So that should be a bigger part of this conversation.

David Greely (31m 08s):

Yeah and I wanted to ask you one of the other big questions for regional compliance markets. We look at the, the carbon problem, the greenhouse gas problem, more broadly, it's a global issue. It doesn't matter if the carbon's released in Europe or China or the us, or wherever at the same time, the EU ETS it's a regional market it's emissions capped in the EU. So when we think about that, one of the

questions is doesn't that put the European economy at a competitive disadvantage if its industry has to pay a carbon price that other manufacturers might not have to and how do you deal with being a regional carbon market in a global economy?

Mark Lewis (31m 51s):

First off at the moment, the way that the European unions has dealt with that is by giving industry most of its allowances for free. So we're having this conversation now about the so-called CBAM, the Carbon Border Adjustment Mechanism, which is effectively a carbon border tax, but until now, the way that Europe has protected its industry is by saying, if you are exposed to the risk of so-called carbon leakage, that is to say, if I carbon prices would reduce your competitiveness relative to companies from outside Europe who are selling into Europe and are not subject to any carbon price in their home jurisdictions, then you will receive the overwhelming majority of your allowances for free and actually if we bring this back to your previous question just for a moment, this is a very important point. The surplus that we were talking about earlier that has accumulated the TNAC of 1.5 billion.

Mark Lewis (32m 44s):

I mean, the vast majority of that TNAC was accumulated by European industry because what happened when emissions declined after the global financial crisis, over those many years where we had emissions declining, certainly 2008, 2009, 2010, even 11, then we had the Eurozone crisis which was a second kind of mini recession, which also what was happening in all of those years was that European industry was receiving more free allowances than carbon emissions that it was putting up into the atmosphere. So it was accumulating free allowances that had a market value effectively this was a transfer of free money from European taxpayers to European industry and again, that's a point that doesn't get enough coverage. So European industry has actually, so to date been a net beneficiary of this allocation method of free allowances being given for companies that are subject to common leakage.

Mark Lewis (33m 48s):

I'm not necessarily criticizing that as far as it goes, because obviously you have to protect European industry. I'm just saying that's an important contextual reminder before we get into the CBAM debate, that European industry has not been hit in terms of its competitiveness by carbon. Now you can argue about high gas prices having a negative impact on European producers because European gas prices are much, much higher than gas prices in the United States. For example, that's clearly a competitive disadvantage for European industry relative to us industry, but in terms of carbon, on the contrary to date, they have been net beneficiaries. It's only now going forward as the free allowances. The number of free allowances will decline, but they'll still be getting them for free. It's just that the total number distributed will be lower, that, that you can arguably say, okay, it's time that Europe European industry really starts having an incentive to reduce its emissions.

Mark Lewis (34m 45s):

So that's just by way of context. So far European industry has been protected by the free allocation methodology. Now, in terms of the carbon border tax, the idea there is that we need to phase out free allowances, because if you get free allowances, you have less incentive to reduce your emissions, right? That's the simple truth of it. In, the EU ETS it's really only been the power sector, which has had to pay for its allowances since 2013 in auctions that has had a significant incentive to reduce its submissions. So we have to put more of more pressure on industry to reduce its submissions. You do that by removing free allowances and forcing them to face the cost of carbon, but at the same time, of course, you can't do that without protecting European industry from unfair competition from companies outside Europe that do not have exposure to carbon pricing.

Mark Lewis (35m 39s):

And that's the idea behind the CBAM that Europe should put a tax at the border on products entering the European union from jurisdictions outside the European union that are not subject to carbon pricing, where they compete directly with the sectors in the EU that are covered by the EU ETS, so that's steel, it's cement, it's chemicals and oil refiners you know, so this is a question that has to be dealt with one way or another of course, it's politically very controversial, but the key point is this Dave, in my mind, this is really the number of it from a purely economic theory point of view industry should be indifferent in terms of whether they receive their allowances for free, or whether there is a border tax that protects them against foreign competition, because the free allowances are only there in the first place to protect them from competition from outside.

Mark Lewis (36m 39s):

Clearly there is always, you know, it's just basic human psychology, that if people are used to a certain way of doing things, and somebody comes along and says, we're gonna change it, that there will be suspicions and of course the CBAM will have to be introduced in a way that absolutely ensures European industry does not, you know, is not penalized, but that's something that can be

done technically it's complicated, but it can be done Technically. The fact though, is that European industry for the most part is resisting the idea of moving from free allowances to CBAM that in itself tells you perhaps that the current methodology is actually something the free allowances is something the European industry is very comfortable with.

David Greely (37m 22s):

Yeah. It's a, it's a surprising fact that they've been met beneficiaries a as you said so far.

Mark Lewis (37m 27s):

Yeah many people just aren't aware of that, right. They're just, aren't aware of it. It doesn't get covered enough in the debates around all of this.

David Greely (37m 35s):

And you know, another surprising fact that I heard from you is you and Pierre Andurand wrote a really interesting article this week. So I'm glad to have you on now. And you noted there, the surprising fact that despite the COVID lockdowns, the high energy prices, the high gas prices, the high allowance prices that emissions within the European union actually increased and increased significantly about 6% last year. What happened?

Mark Lewis (38m 00s):

Yeah. Okay. So this comes back to this, this really crucial point about short-term incentives and long term incentives, right. So the short answer to question is why are emissions going up when we've got record high carbon prices, I'll give you the short answer first. And then the sort of longer more theoretical answer, which is what we were addressing in our piece is that given where gas prices are now and given where carbon prices are, despite the fact that carbon prices are at record high prices, record high levels, gas prices are so much higher than they have been traditionally that even with that record, high carbon price gas cannot compete with coal in the European power generation mix. So power generators in Europe have an incentive to run coal before gas and coal emits for the same unit of output of electricity, coal emits twice as much CO2 as gas.

Mark Lewis (38m 52s):

So if the gas price is where it is and carbon price is not high enough to push gas into competition with coal, then coal will run ahead of gas and emissions will be higher. That's basically the story of last year. This year that's going to be compounded by the fact that Germany has switched off half of its nuclear fleet, and it will switch off the rest, the other 50% of its residual nuclear fleet at the end of this year and of course not all of that can be replaced with renewable generation in the short term, which means you're gonna have more fossil fuel fired generation and again, because gas prices are where they are and comprises are still not high enough to drive gas ahead of coal. That means most of that loss nuclear output will be replaced with coal and therefore emissions will go up again this year, as they did last year, perhaps not by quite the same amount, but you know, it's going in the wrong direction.

Mark Lewis (39m 48s):

So that's the short answer that despite high carbon prices, gas prices are just at such astronomically high levels that gas can't compete with coal. Now I make two further points. The first one is that tells you actually that the carbon market is actually there's acting as a shock absorber for the entire EU energy complex at the moment, because although we're currently trading at around €95, a ton as we speak here and now today, and that is an all time high price. In fact, I think we touched €97 briefly earlier today, despite carbon prices being at that record level. The carbon price, we would need today for a gas fire generator to displace a coal fire generator and if we talk in terms of the average efficiency for those kinds of power plants, carbon price you would need would be well in excess of €300 a ton, right.

Mark Lewis (40m 45s):

So when I say that the carbon market is acting as a shock absorb, but what effectively is happening is power generators are saying it doesn't make sense to pay €300 a ton to allow gas to run ahead of coal today, because our expectation is that gas prices will normalize on an 18 month, 24 month basis. So for the next year, next two years, maybe coal has to run ahead of gas and emissions will rise. I mean, of course it's all about gas prices. Dave, ultimately, if Nord stream to the big new gas pipeline between Russia and Germany comes on stream, that's, what's really been causing a lot of the stress in the European gas market. If that comes on stream in the second half of this year, then much of the problem in the in the European gas market will be resolved.

Mark Lewis (41m 32s):

Prices will fall and we'll go back to a situation where the carbon price can push gas ahead of coal, but that's what's happening in the short run and the carbon market is effectively saying doesn't make sense to pay €300 a ton to put gas ahead of coal today, and this brings me onto the second part of my response to your question, which brings us onto the article that Pierre and I wrote last week. Our argument is we need a new pricing paradigm anyway, because it's no longer sufficient to have a price that moves gas ahead of coal in the short run. So again, brief history lesson for the last 16, 17 years ever since this market has been in operation. The carbon price in Europe at any given moment has been the market's best guess of the common price we need in the short run for a average efficiency gas plant to displace an average efficiency coal plant to, to get technical for a moment from an economist point of view we would call that a short run, marginal cost based pricing paradigm, right?

Mark Lewis (42m 38s):

Because you are optimizing for the amount of carbon emissions in the system in the short run, by which I mean in terms of the power plants that are already in existence. So it's a static efficiency. Again, you use a bit of economic jargon, that's solving for the static efficiency of the system purely on the basis of what options are available today, but actually this market is about so much more than that. The carbon price we are really looking for if we're going to align with the long term net zero target by 2050, and indeed for the target by 2030, we need a dynamic pricing signal, not just a static pricing signal. We need to be optimizing for the infrastructure that we have in Europe, both in terms of power plants and industrial plants. So that over time emissions fall structurally and permanently, not simply for the next six weeks or next two months.

Mark Lewis (43m 33s):

And the argument that we've put forward in our piece is that to get to a dynamic pricing signal in the EU ETS we're moving away from a short run, marginal cost based system to a long run marginal cost based system. That is to say the carbon price needs to move in a range that solves for the long run marginal cost of abatement, both in the power sector and in the industrial sector and the range we gave in that piece is between €90 euros a ton and €150 a ton and how did we derive those two numbers. Well, the €90 a ton is our estimate of the carbon price you need today to incentivize a power generation company, to build a new gas fired power plant, to compete with the coal and lignite plants that are already in existence, right and that's different from saying what's the carbon price I need for a gas plant today to displace a coal plant today, because what I'm interested in when I'm thinking about the long run is I need for a gas plant today to displace a coal plant today, because what I'm interested in when I'm thinking about the long run is I need to build a gas fired power plant that's gonna come onto the system in 2025 and displace the most efficient coal and lignite plants, because if I can't be certain that my new gas plant will do that, I won't make the required rate of investment that I need to justify building it in the first place. And therefore I won't build it. Now you can make all kinds of assumptions.

Mark Lewis (45m 14s):

And this brings me back to the question, as you originally posed it. If the carbon price was solving for the short run static efficiency of the system today, as I said earlier, you'd need a carbon price of €300 a ton. However, the good news is the further out, down the forward curve for gas, you look the lower the price. If you look today at the gas price on the forward curve in Europe for 2025, it's currently around €27 a megawatt hour whereas at the front end, it's about €80 a megawatt hour. Now, as a result, I assume in our modeling that the long run gas price, a reasonable estimate for that is €25 a megawatt hour. So at €25 a megawatt hour as the developer of a new gas fired power plant and by the way, we're gonna need these new gas fired power plants.

Mark Lewis (46m 00s):

Because as I said earlier, we're phasing out nuclear in Germany, we're phasing out nuclear in Belgium, the UK, which although not part of the EU ETS is part of the broader European power grid right. So the UK is phasing out just closing down because they're very old some of its nuclear power plants in addition, many European countries are phasing out coal and lignite Germany included over the next 10, 15 years such that you are going to need some new base load firm capacity that can back up renewables until we have sufficient storage capability and that's probably at least a decade, maybe two decades away. So in the short run for the next 10, 15 years, we need some new gas fired power plants to back up renewables and the carbon price we think you need to have confidence to build a new, a new gas plant today would be €90, a ton over the long run, much lower than the €300 you would need to, to for a gas fired power plant to displace a coal fired plant today.

Mark Lewis (47m 11s):

But that, that's why I say the carbon market is actually looking through the current stress and is saying, okay, what's the price we need on the longer run. So €90 a ton we think is the start of that new pricing paradigm range and then the question for industry becomes

what's the carbon price I need to decarbonize industry and we think that the, the carbon price you need to decarbonize industry is the price that makes green hydrogen competitive with gray hydrogen as an industrial feed stock. That is to say when you're using it to make steel, when you're using it in oil refineries, in, in some chemical industry applications and so on and the two key variables, there are, again, the gas price because gray hydrogen, which is how we produce and use hydrogen today is very carbon intensive for every kilogram of gray hydrogen that you produce you emit 9 kilograms of CO2 that's because you use a lot of gas when you are making gray hydrogen.

Mark Lewis (48m 06s):

Which means again assumptions around the long run gas price are crucial to determining the carbon price you need to make green hydrogen competitive with gray hydrogen. No need to go into all the details here. You can look at our research. Anybody who's interested can look at, look at our research on it, but the basic point is this. If high gas prices mean higher carbon prices in the power sector is the inverse for industry, the higher, the gas price, other things being equal the quicker you can make green hydrogen more competitive with gray hydrogen and we estimate that by 2026, the middle of this decade, only four years away, if we can get the cost of producing green hydrogen down to €3, a kilogram it's currently around €5 a kilogram, then you'd need a carbon price of about €150 a ton.

Mark Lewis (48m 58s):

And we think that kind of reduction in the green hydrogen production cost is eminently doable and therefore, that's why we argued in, in the piece that we're looking at a new pricing paradigm, a range of between €90 and €150 a ton that solves not just for lower emissions this year, next year, the year after that for permanent long term decarbonization in the European union and the key point is this Dave, the quicker we get to being comfortable in that pricing range and we, as, as, as we are having this conversation, as I mentioned, we've, we've only recently in the last couple of weeks, got to this point where we're entering the 90s and we've gone from €90 a ton even a few days ago to touching €97 today, we need to establish the carbon price firmly within this range and then over the next year, two years, three years rise up through that new paradigm towards €150 a ton, so that the right signal is there for European industry to invest aggressively in green hydrogen and by the way, today, there's some very encouraging news in France that ArcelorMittal is looking at decarbonizing steel and is looking at investments in green hydrogen as part of the solution to that. So if prices are in this range and establish themselves there, the signal will be there for European industry to make the investments necessary, to get us on a trajectory consistent with net zero.

David Greely (50m 33s)

Thanks again to Mark Lewis from Andurand Capital Management. We hope you enjoyed the episode. Join us next week with Cameron Hepburn, Director of the Economics of Sustainability at the Smith School for Enterprise and the Environment at the University of Oxford, as we turn to the voluntary carbon markets and how to get net zero, right.

Announcer (51m 02s):

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