

## Transcript for #91. Europe Needs Clean Fuels for Net Zero

Guest: John Cooper, Director General, FuelsEurope

April 24, 2023

Tammy Klein (00:03):

Welcome to the show. I'm so pleased to have with me John Cooper. John is the Director General of FuelsEurope. John, welcome to the show,

John Cooper (00:16):

Tammy, thanks. It's great to be here.

Tammy Klein (00:18):

So I don't even know where to start. There is so much going on in Europe. I mean, you, you name it. I don't even know if an hour is even going to be enough to cover the things <laugh> I want to talk about with you. But I guess what we'll do is dive in and start at the beginning. So for the listeners who may not be familiar, can you talk about what FuelsEurope does, your role, and who your members are? Let's start there.

John Cooper (00:47):

Sure. Thanks. So, FuelsEurope is actually the business association for fuels manufacturers in Europe. And we have, as our members, all of the companies you would think of as refiners, but we also have companies doing renewable fuels now. And in terms of that production, we are almost all of that production in the business association as members. And that includes many of the big international oil companies: Total ExxonMobil, Shell, bp, Total, Repsol, and lots of smaller, national, and regional players in Europe. And also right down to some of the specialty product producers doing things around asphalt, bitumen, lubricants, et cetera. but we, as an association, our members provide fuels for almost everything that moves in Europe, actually, apart from obviously electric trains and the growing number of electric cars. But after that, it is aviation fuel, road diesel, gasoline, petrol as we call it in Europe, marine fuels, petrochemicals, feedstock, et cetera. We're based in Brussels. You might call that the eye of the storm. We thought the storm might be calming down by now, but not at all. It keeps reinventing.

Tammy Klein (02:05):

Like a category seven or something like that.

John Cooper (02:07):

Oh yeah, it's up there. Yeah. And also, we have a science organization as part of the legal entity, as part of the overall association. CONCAWE is well known to some, ConcaWE is now over 60 years old. A strange name, but it's a contraction of the words Conservation of Clean Air and Water for Europe for the fuels industry. And together they are an association. We are an association of around 55 people covering the FuelsEurope side and CONCAWE. And I am the director general for both of those. I've been there about eight years now. It keeps growing. I keep saying I'm eight years into a three-year term <laugh>. Oh, yeah, I'm still there.

Tammy Klein (02:51):

So can you talk about FuelsEurope's Clean Fuels for All campaign and what it's about? So what was the genesis and how is it resonating with policymakers and consumers in the EU?

John Cooper (03:06):

So, we should go back to 2015, actually, the year I started. I started at the beginning of 2015, and towards the end of 2015, we had the Paris Agreement which was really a landmark for the country's businesses, and citizens. And soon after that, the European Commission, which is kind of the civil service for the European institutions, did a key piece of work that was called Clean Planet for All, where they looked at a range of scenarios for how to meet both two degrees of stabilization and 1.5 stabilization. To cut a long story short, they chose one of those scenarios that they're called the 1.5 Tech Scenario. It meant the heavy deployment of technology to maintain more or less the life, the quality of life standards that the standard of living for European citizens, but to achieve a transformation consistent with 1.5 degrees or Europe's share of that if you like.

(04:04):

And our work started very soon after the Paris Agreement to look at what can the transformation of the fuels industry look like and what kind of technologies, feedstocks, and what kind of trajectory is implied by that work. And we turned that into essentially a strategy for our industry to provide a pathway for by 2050, all of the remaining liquid fuels demand to be climate neutral. And we could see that some of that could go into each of the sectors, and it meant that both those objectives of meeting quality of life and also climate neutrality could be met with those remaining products that we would produce. And so we decided to call it Clean Fuels for All inspired by that name, Clean Planet for All.

Tammy Klein (04:57):

So how have policymakers and consumers resonated? What's been sort of the outcome since the launch? to date?

John Cooper (05:08):

I think I'd say over a very large constituency in Europe, it's mixed, to be honest. And I think it's fair to say up until maybe a year ago that the strategy for electrification got more attention. More for sure. More political support. And that was for not only industry, but for transport as a whole. And so the feedback we got was often lukewarm. And in fact, it's probably the best character, right?

Tammy Klein (05:45):

We're electrifying. So what is this about?

John Cooper (05:50):

So I think it's fair to say that the sort of simple mental model of electrification, of imagining that car connected to a windmill is compelling. You know, we are an industry of engineers and scientists and economists and very fact-based people. And you look at that simple notion, it absolutely is a great idea. And there's no doubt that electrification should be well supported in policy for the transition. We sometimes feel it's a little strange that our proposals for renewable fuels have been in competition with that. And we think that's unfortunate. I think as the COP process has gone on and the urgency for climate action has become clearer, and let's be clear, we've been very explicit all the way along that we support Europe's objectives, the need for climate action.

(06:47):

It absolutely must happen. Our members are committed to that. That probably up to about a year ago, the focus on electrification grew, and that what we kind of heard repeatedly something along the lines of, okay, we understand you've got a transition, but in terms of refineries overall, essentially, we are expecting you to close. In fact, sometimes even was said more explicitly, we need you to close in order to meet the 2050 objectives. And we always felt that that was simplistic and it kind of overlooked the potential for you to remain with some liquid fuels. Also worth saying, of course, we've understood from the beginning with the understanding of science that we have of the advantages and disadvantages of liquid fuels. The main disadvantage is obviously that, currently they are largely based on petroleum fuels, and therefore you have net release of CO<sub>2</sub> and also the efficiency challenge from the electric motor. But nevertheless, we also understand very well energy density, the ease of transportation, and low costs of transportation and storage, which means that in many applications, some liquid fuels could compete and went into different uses, and so we were always realistic that the volume of petroleum would need to decline and would need to decline quite rapidly towards zero by 2050. But that's a different question from what's the right amount of liquids to be used in that strategy. And yet we saw people struggling with that and assuming that really any liquid fuel was likely to be petroleum, and in order to meet the objectives in therefore has to trend towards zero. So it was disappointing. But it's, as I said, it's been mixed. I'm focusing on the reaction there from some of the European institutions.

(08:51):

We've also had the growth of activist and campaign groups that attended to side with the full electrification story quite strongly. And they have gradually grown to be very well-resourced, more so than the business groups overall in Brussels. And I think what I'm saying here is that all of the main industry business groups across energy-intensive industries, as well as fuels and automotive, have noticed that the resources available to the campaign groups have grown substantially beyond what the businesses are, are, are ready to do. Now, there's also something about the way the conversation is pursued, businesses tend to think twice or three

times before they say anything and are really quite calculated. And well-calibrated in what they say. And sometimes, in particular, the Brussels bubble is now full of press coverage of more provocative comments that actually don't stand up under scrutiny. But unfortunately, some of that scrutiny doesn't come. So it's been quite hard work in a number of places. So that's where we are. It is fair to say that in some of the countries we have a different response. Europe is a block of 27 member states, the European Union, and there are some quite wide variations. And so, we get some different feedback in some parts of Europe, it's fair to say.

Tammy Klein (10:28):

So I'm going to come back to that, but I want to go a little bit further into the policy - that's policies - that are evolving. So as you very well know and that you are sort of getting to, so you know, that the EU has announced just a massive package of policies that are very, definitely going to affect the fuels and refining industries under Fit for 55 and under their new green deal and the express purpose is to achieve net zero by 2050. So coming back to what you were just saying, and maybe going a little further, do you think that policymakers really actually want a liquid fuels and refining industry in your view, given what's been proposed and is their vision strictly electrification at this point, I mean, given everything that's unfolded, it's not just about the new green deal and Fit for 55, there's a war in Ukraine, there's been an energy crisis. You know, I look at it as an analyst, not based in Europe, and to me it would seem logical, plausible, all on deck, all sources, all to not only reach net zero but there's like now an energy security element that has kind of gone by the wayside. So has that aspect kind of changed the game a little bit or pretty much not <laugh>?

John Cooper (12:13):

No, that's the great question and if I was to summarize where we are with the conversation with European Commission, and quite a lot of the institutions actually right now, it goes something like this, and look, and I'm just a sort of, you know health warning here. This is an extreme simplification that the conversation that we are hearing back is something like, 'well, yes, we still need you to close down, but in the meantime, could you produce some more diesel, please?'

Tammy Klein (12:42):

Oh, dear <laugh>, how does that work?

John Cooper (12:45):

It sounds absurd. So those are words that I've picked, but genuinely represent what's been said, and they are exact words that have been used. I've done an extreme shortening there, but that is essentially what we've heard. Of course, there are some nuances around that. But yes, indeed, something significant has changed, at least for the short to medium term. And the focus on energy stability for the short term, and medium term is very much there. We've been through some key moments since the invasion of Ukraine. We've had the events around gas, the North Stream pipelines being destroyed, and the political choice to move very substantially away from Europe, from Russian gas. And also the same with Russian crude oil. And it's fair to say that there have been some real moments of tension there, but actually, this industry, and we've always said the industry would cope.

(13:53):

It's coped well. There's been actually very little price volatility when you consider the sort of 10 times factor that was being applied to gas prices 10 times and above and short-term electricity prices in parts of Europe we're going up by a factor of a hundred or a thousand for the next 30 minutes of power supply, et cetera. When you consider that the crude oil and the product prices may have varied by a factor of 1.5 or 1.8 or something like that, and that actually the market worked to correct any regional shorts, actually, we've done what we've always done as an industry, which is we've provided energy security, and we've done it in what we call in the industry silent running. We just kind of get on with it, and it happens, and to us, sometimes we reflect that it's kind of so easy and we're taken for granted sometimes. Another thing that we reflect on is that really the big industrial policies over the last few years from the EU has been actually led from the climate agenda rather than the energy security or the industrial agenda. And we see that political balance changing across Europe. You know, sometimes we'll say China has a great industrial policy.

Tammy Klein (15:15):

Oh yes.

John Cooper (15:15):

Europe has a climate policy, and there's a little bit of it is an industrial policy. China seems to have a great industrial policy. And a part of that is its climate policy. And by the way, part of that is also for China to supply Europe's needs for various essential components, whether it's photo volta xls windmill facilities, or electric car batteries. Congratulations to China. They have a strategy and it's delivering. We are seeing that Europe has overemphasized climate at the expense of industrial strategy. And it's actually not only refiners that are seeing that. Now, there are other, other countries that are starting to really, really struggle with how Europe competes as a region compared with the other parts of the world.

Tammy Klein (16:02):

So I'm going to come back to you on that, especially when it comes to the US's Inflation Reduction Act. But going back to, okay, here's what the situation is. Here's how the policy is moving or unfolding, this is what it's like to engage. But let's say that it wasn't that way, let's say that the industry was really more received as, you know a partner and that the refining and fuels producing industries were seen as, okay, these are assets we need to make the most of these assets, we know that these can contribute to our as a region achieving net zero. What would that look like then for your members for refiners? And what kinds of policies either would need to go or may need to be created to better support the industry? What does the alternative vision kind of look like?

John Cooper (17:16):

Great question. The first thing I'd say is that the way many member states look at us is significantly different from how it's looked at from Brussels. Member states have got direct responsibility to make sure that their national economy, their citizens, are supplied with energy. They don't have price shocks or supply shocks. And we know from deep experience over many years that when a refinery announces a stoppage or a closure, it's a major political difficulty for a government at the time. And that's something that has shaped national politics much more than it's shaped European politics. Also noticeable that in Europe, in the European institutions, it tends to be environment and climate departments and environment ministers that come to the European Council mini-meetings that make those critical policies that determine the future of our industry. It is usually different in member states. So what does it look like and what would we need?

(18:25):

Well, we've shown, and we've got a few examples in Europe of refinery. Refinery is going through deep conversions with very substantial investments on their sites, where there are facilities for ccs, there's green hydrogen being produced, there are conversions of units to do HVO or renewable diesel as it would be called in the US or renewable sustainable aviation fuel. We've got sites now with e-fuels being produced or alternative advanced biofuels as well. All of those things were set out ourselves by well, working with concurrent. We, some five years ago where we described the refinery becoming an energy hub. Noting that most refineries have all already got very large connections for gas power. Deep water jet in many cases, pipelines, rail.

(19:25):

So everything you need for large movements of goods. And that means they can be a very good site for a number of different low-carbon technologies in the future. So that's starting to emerge. We've got companies like Total, Neste already with standalone bioproduction sites based on the old refineries. Now, what kind of policies do you need to make that happen? Well, interestingly, all of those sites were converted before there was a vision hatched by the European Union or of road transport fuels going down to zero as a liquid volume by 2050. And I'll have to say, if you're making an investment case, if you look at that as your demand profile, it's not very attractive. Europe has tended to set its policies based very much on aggressive targets, technology bans, and less in the form of support mechanisms to make the investments in the nearer term.

(20:36):

And if you combine tough targets and technology bans, a trajectory going towards zero. And dare I say it, and this is you know, quite a difficult one, windfall taxes on companies that are announced on profits retrospectively, with a somewhat open-ended law that allows lawmakers to potentially come back in the future. Our industry, certainly as we've experienced it in the recent past, has been cyclical. Maybe one good year

outta four or five, if you think there's a chance of windfall tax coming back next time you have a good year, then looking five or 10 years ahead, you may make a decision that others would regret earlier. Refineries have to go through turnarounds, and those are very expensive events every four years or so. And we know that demand will shrink in Europe over time, and Europe will have to find a way of making a sensible matching of supply and demand and also growth of the renewables.

(21:42):

And so, yeah, it's become quite a challenging environment. One of the things we've said consistently is that to make these energy transition investments, we need policy mechanisms that allow you to have a clear long-term demand at a fair price for that new technology. And that new technology usually means a price higher than the equivalent petroleum product. This is what worked for deploying wind and solar with contracts for different 10-year contracts or something like that. It's very simple. If you're an engineer, you draw, draw a spreadsheet for 10 years for your finances on your top line. You're looking at your demand and the income that you get, and you've got to have a clear view of the policy mechanism that gives you that top line of your spreadsheet to say, here's the income for the project. And if you can describe that policy simply in one chart, you have a much better chance of getting that investment than if you go in and saying, well, we're not sure how after what happens you know, three years after this. This could be challenged, this mechanism could change. What I've just described is actually what an investment made under the IRA would look like in the US versus what a case might look like in Europe. Too much reliance on targets, too much reliance on policies that can change at short notice. Not enough thought given to how do I get the investment decision on that project this month, another one in six months, another one in six months where the investors, the shareholders of a company are all happy that the policy risk there is low and that there's a good chance that that project will make money. We've got ideas on that. We've presented those ideas. It sometimes feels as if policymakers, again, they kind of, they're not sure whether they really need the liquid fuels and whether they should go to that extra stage to give us those policies. Clearly, we have some in aviation now, and some companies are finding ways to make those investments, but there's no doubt we could go further if the policies were more stable, clearer in the signals they were giving.

Tammy Klein (24:00):

So I want to ask you a couple of follow-up questions. One is, do you see, you talked about the member states not all of the member states are really in lockstep with the European institutions. And so you can certainly see that with what's been happening with the CO2 standards that were pretty much all but done until <laugh> Germany and Italy and a couple of other member states went, whoa, whoa, whoa. Wait, what are we doing here? What's about to happen? <laugh> No, we're not doing this. And that's, in my experience following what happens in Europe is pretty unprecedented. So my question is, do you see a balance of power maybe beginning to tilt back a little bit or, even on these kinds of things where these big, structural complicated policies are being set, and then the member states are like, wait a minute, this is about to get real for us. This is what our market looks like this is what's happening in our member states. This doesn't make sense for us. Do you see that happening or is the CO2 e-fuels standards question more of an isolated sort of issue? Do you, could you see it happening across other sorts of policy proposals?

John Cooper (25:34):

We think we can, and there are one or two other examples. We've recently had farmers in the Netherlands protesting because of this was national-level implementation of European policies restricting the nitrogen emissions from farms in the Netherlands. And that's created very significant protests across the Netherlands. We sense that there is something happening with pushback of implementation of European policies, policies certainly, and the fact that we've ended up with something like nine countries with many of those across the east of Europe, joining in with what was started by Italy and then famously joined and then led by Germany. In terms of opening up, again, this whole question of the future of light transport it's also been notable that these countries have stood firm. And so far, we are just a couple of weeks into this and things may well progress the in next few weeks, but it looks like we're heading towards an endpoint with a clear commitment and signed declaration from the Commission to make that proposal to include likely e-fuels and renewable climate-neutral fuels as an option post-2035.

(27:11):

It is notable that this happened at an extremely late stage. We also see though that the Commission has really put a huge amount of pressure on many states to fall into line on these different policies. And there has been a great expectation that everyone follows the same line. It appears, and this is a personal judgment, that there may be an element of overplaying their hand there. It also certainly comes back to this point about setting targets. That really what the European Commission seems to be looking for here is the achievement of setting very ambitious targets. And in reality, setting the target is not the hardest part of the achievement. The achievement is the rate of progress. And in the case of deploying electric cars, that rate of progress would have to be achieved largely by the member states through the application of subsidies and tax breaks, delivering what now looks like more expensive cars to consumers anyway.

(28:20):

And when you then add into the mix what is now happening live in Europe, which is the reduction in the total number of jobs in the auto industry, we don't think it's surprising. We've actually been pointing out these challenges for some 2, 3, 4 years, that it is simply true that while the operating cost of an electric car is lower, all of the other costs around it is higher. And so setting their targets and expecting countries to implement that in front of their citizens is now a more apparent challenge. And so there you are with eight or nine countries, including some of the poorest in Europe now, pushing back.

Tammy Klein (29:02):

So yeah, I mean, it's, it's interesting to observe. I mean, you had the yellow vest movement in France, which I don't think has really gone away. Maybe it's just not as publicized. Equity is a big thing here in the US, equity in terms of the application of and the impact of regulations, incentives, policies on the citizenry, especially those that are low income. I do wonder about the potential impact are we going to see more yellow vests because people are just going to throw up their hands and say, these are not for me. This does not reflect my life. And you know, will there be more outcry on that? And they'll be right. Because it doesn't really fit these folks lives. So I don't know if you have a view on that in terms of the potential impacts that we could see as Fit for 55 pieces of it really begin to move toward final passage, enactment if you will. And then implementation,

John Cooper (30:32):

The politics are emerging. I mean, it's fair to say that most of the work that's been done on Fit for 55 has been done in the Brussels bubble, and probably the average European citizen will not know very much about that. This is one of those policies that actually has risen to the top of the headlines, because ultimately this regulation that is legally applicable to car manufacturers is actually really a regulation on what citizens can and cannot buy. And also on, of course, on the jobs that they can and cannot have, and it's notable as well also in the last 20 years that the car industry in Europe has actually shifted towards the East with major factories in Hungary, Poland, Slovakia I guess because of lower labor costs there. But that has been a fact.

(31:35):

And those regions are clearly seeing that jobs are at risk, and in future the competition will be with China. That has a clear advantage also in terms of access to the raw materials and a starting advantage in having more rare metals processing facilities and refining for those key materials. So that's clearly emerging. We actually looked at the economics of car purchases. We asked the small consultancy in the Netherlands to do this for us, looking at a number of countries. And what's really interesting is that already the evidence is that the countries on that eastern border, those that mostly have joined this coalition already, most of those citizens cannot afford a new car - full stop - and are reliant almost entirely on a secondhand car market from Germany and other wealthier countries. And if you then jack up the price of your starter car by 10 or 15,000 euros, that changes much in a much worse picture. And now that we can see more clearly that the EV is likely to be either significantly more expensive or significantly less capable than your 15 to 20,000 starter ICE car. And I think that's part of the factor that you now see.

Tammy Klein (33:05):

So the last thing that I want to ask you about is coming back to the Inflation Reduction Act in the US. So as you know the Americans were sort of, I don't know where we all were, but we were not on the climate bandwagon for about the last four or five years. And then last year, I would say actually in 2021, we passed the bipartisan infrastructure law, which had lots of provisions related to energy, clean energy and climate. And then the IRA last year, which is probably the...which I know it is the single biggest climate down payment on energy ever

really undertaken in the US...\$369 US billion dollars. So you know, it's a massive package, right? It covers everything from batteries, carbon capture and storage, low-carbon fuel, sustainable aviation fuel, hydrogen, clean energy, clean electricity production.

(34:14):

So I look at the US and I look at the treatment by the EU policymakers about batteries, oh, I no electric vehicles. And it's do you want to make any changes? And the Americans are going to be like, no, <laugh>, this is not happening. I do not see reopening or anything like that. There, like, this train has left the station. The Americans did this on purpose. They don't necessarily care about the WTO, they, this is about what you were talking about with China. It's having an industrial plan. It's about energy security. It is also about the climate. But it is about bringing the US into competitiveness in these areas. So how concerned are you and your members about what the IRA could do to the competitiveness of the industry in general and what is your reaction to what the commission has proposed so far? I mean, I just look at like, reallocation of funding. We're like, oh, okay, that's, that's already on the books, but whatever. Permitting could be interesting because I think that's a real pinch for the US, but I look at the response and it's like, that's not really, I think, going to overcome what I think is about to happen in the US. So what's your reaction and what are the members saying because I think this could be really interesting for the industry at least.

John Cooper (35:58):

Well, first of all, I'd just like to say I do agree with your assessment of the politics. I'm certainly not an expert on US politics. I do follow. I spent a portion of my career in New Jersey and another portion in Cleveland, Ohio, and I've continued to follow US politics. One of the first points is that this was a finely balanced conclusion of that whole discussion. Ultimately well supported across the politics of the US. And the other point that I would make is, let's look at the headline number. What is the headline number? It's an amount of money that will get spent. I'm sure it'll get spent on making progress. Whereas your equivalent number in Europe is a target number. And back to my earlier point, that setting an ambitious target does not make an investment case. And so that emphasis, it's the complete opposite. And it's exactly what we've been pushing for in Europe is to give us a reason to make the progress. And the fact that it's a clear price signal that can go into a spreadsheet with some degree of certainty that that'll remain for years, some years to come with a low likelihood of a political shock that would, that would change that because of the fact that it was a basically a cross-party support that got us there. I come back to my situation, imagine walking into the CEO's office with your team saying, here we've got this proposal for an investment. It costs a billion dollars or a billion euros. And you get to that section where you say, well, what's the policy risk in this for a US-based US production of renewable or low-carbon technology? You are looking at a slide, that is one slide that explains that and gives you a very positive message. Whereas if you're doing that in Europe, you're likely walking in with 20 or 30 slides with a lot of Fs and bucks and identified risks, which are things like a review of this comes up at this point, this feedstock or this technology is not guaranteed to be accepted as sustainable beyond such and such.

(38:21):

Or, we don't know what price point this regulation creates in the market, even though the demand may be there, if the fair price is not going to be there, you would choose another place to make that investment and in today's modern world, many countries, and I'd also be safe, I think, in saying the money that Europe needs to see to flow into Europe to achieve, achieve its objectives is mostly money that is globally mobile. And it has choices as to where it gets invested. And right now I'm hearing time and time again that if you are looking at how to do CCS or green hydrogen or sustainable aviation fuel or renewable fuel for road transport, it looks more attractive in the US because of the safety of those long-term signals that translate into our rate of progress.

(39:17):

That's the sad thing that we have to look at in Europe. We are making that clear and we're trying to bring forward solutions to that. One thing we can immediately identify as an advantage in the US is the fact that the US has a federal tax code based on this huge taxation system for the US. And they're able to do that. The EU does not have a common tax code. Tax is very, very fiercely protected as an individual country responsibility.

And that means we can't replicate the same. So we are simply pushing for things that can have the same effect at the investment spreadsheet business case level.

Tammy Klein (40:01):

Do you think the Commission is listening or gets this and the potential? You know, I mean, I think there could be some real fallout over the next year or two as investment as there is clarity brought into. And some of the way the provisions are interpreted by the treasury department here in the US and the tax credits begin to get implemented and people are making their investment decisions. So let's say one to two years do you think the commission really gets the severity of this situation? Because I look at it, and I don't think I'm overstating it to say that this is potentially really <laugh> problematic.

John Cooper (40:53):

We think it is, and I should say all of the energy-intensive industries that we are talking to are saying the same thing. I have been involved in meetings with the commission where we jointly say that I do believe the commission are listening. I'm not sure we're seeing yet any route toward significant remediation if you like. I think a lot of focus so far has gone into trying to persuade the US to make some changes and allowances come back to your assessment earlier that I think we agree with that. Such changes are likely to be really minimal. The nature of the political balance around this in the US really would make it extremely difficult. You know, we work with politicians on the other side of the Atlantic, but we know just how it works. It's very, very, it's going to be very, very difficult to reopen things.

(41:47):

So right now we don't see what is the route forward. At least we do feel as if we're being heard, the chemicals industry, the steel industry, fertilizers, cement, ceramics, et cetera, they're all saying the same thing, that if you've got the money, the members would likely more than likely put it into a US-based project if they have that choice. So yeah, it's a strange time for European industries. We are amongst those we have the added complication of the unconditional love for the electrified vehicle. I should say somewhere, let's be really clear where engineers, we absolutely realize electrification should make a major contribution to decarbonization. In many applications, it is excellent. It will continue to improve. It's just a question of whether it really has earned and justified the need for essentially banning a perfectly scientific alternative or complement to that which is vehicles running with renewable fuels. And we remain concerned about what the real drivers are behind a proposed ban of the internal combustion engine. And that for US is that added complication that makes it a stage harder to make a major investment in transition in Europe.

Tammy Klein (43:15):

Yeah, I think...and we'll leave it at this. I mean, I've been involved in bans before they really backfire. There are ways to deal with issues like that without a ban. And I fear that by going that route instead of really working, focusing on the positive of the scale-up and making the infrastructure work for consumers and so on and so forth, that yeah, we could see some real backlash there. Bans just never work. And there's ways to deal with those issues without going that route. And it just leaves out technology of which efuels I think is an interesting one we don't know what technologies are going to come out of the void and I think that's the thing that we need to create the policy environment and the incentive environment that allows those to come forward. I think I might be in the minority <laugh> on that, but I've been in the business for a long time. I've just seen it happen so many times and I just, I've never seen a ban situation except for lead in transport energy that was really executed well and really achieved it. Its purpose. I think lead is the only one I can think of.

John Cooper (44:54):

That's a good example. The one thing we haven't mentioned here is what happened in terms of our industry and what was needed to respond in Ukraine. And there are several of our members around the east that have been involved in changing logistics and obviously they've had to change their crude supplies, but they've also been deeply involved in making sure that Ukraine and all the associated logistics get supplied as well. Those thoughts are already starting up as to what does the rebuilding of Ukraine look like? What would the logistics look like? But already today, just as a factoid that Bloomberg reported a few weeks ago since the start of the war, there's been over half a million diesel generators put into Ukraine. You know, liquid fuels remains the most flexible ready solution that can step in for industry during the gas crisis when gas prices were at the highest, we saw significant shifting out of gas into liquid fuels for industry for more chemical feedstock including also in

our own refineries using portions of the barrel rather than gas and liquid fuels is always there. It's actually a form of backstop for energy security. And it's performed extremely well in what it's done for Ukraine. And we still struggle to understand how people can make an assumption that you can move away from a system with that's currently got, we have 90 days stocks, emergency stocks, spread across Europe and we can move that from A to B overnight, <laugh> in many cases. We have the pipelines, networks we have multiple ways of importing and exporting. It's an incredibly flexible system. And the system together with the market gives you that energy security and stability. The countries, the member states we think are understanding that very well. Now, it still hasn't really made it into the core of European policies, but let's be optimistic. I think the direction is slowly going in that way. And we hope we'll have a better conversation around energy transition and how our industry plays into that, as that develops as a subject.

Tammy Klein (47:23):

Well, John, thank you so much for being on the show today. It's been a real pleasure to have you and to really talk very frankly about the issues.

John Cooper (47:32):

Thank you. It's been we've covered quite a lot of ground in the last half an hour or so. Thanks. Thanks for the opportunity. Thank you.