

## **Transcript for #88. Innovation in Advanced Biofuels and eFuels**

**Guest: Marko Janhunen, Director, Public Affairs , UPM**

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Introduction (00:01):

You are listening to Fueling the Future of Transport, hosted by Tammy Klein, the founder and CEO of Transport Energy Strategies. We'll talk all about the fuels and energy it takes to keep the world moving forward.

Tammy Klein (00:17):

Welcome to the show today, everyone. It's great to have you. I am really super pleased to have with me today, Marko Janhunen, who is Director of Public Affairs for UPM, and he is also Chair of the LSV, that's the Advanced Biofuels Coalition in the EU. Marko, welcome to the program.

Marko Janhunen (00:38):

Thank you. It's great to be here.

Tammy Klein (00:39):

So, for the listeners who may not be familiar at the outset, I'm so excited to talk to you about a number of topics, a number of things that are going on in the EU right now but starting at the beginning. For the listeners who may not be familiar, can you talk about what UPM does and its foray into biofuels and now hydrogen and the eFuels spaces?

Marko Janhunen (01:06):

Thanks definitely. UPM is a very old traditional forest industry company and we're one of the largest producers of magazine papers. We're one of the largest producers of pulp. We produce label stock wood products and others. And around 2006 we started developing biofuels, advanced biofuels. We had a number of technologies. We had several projects, but finally in 2012, we decided to invest into advanced biofuels. And since 2015, we've been producing at our Lappeenranta Biorefinery currently 130,000 tons of renewable diesel and renewable nafta for mainly the passenger transport and heavy-duty sectors and it's been a great success. So we've really enjoyed coming from the traditional forest industry, you know, making our, our footprint in the biofuel sector, creating advanced biofuels, which is specifically mandated, bringing in our history with the forest as we are using a residue of pulp production so crude to oil to make these fuels that reduce emissions by over 80%.

(02:34):

So, this is our core in advanced biofuels. We're the largest producer of only advanced biofuels in the EU and in the world I presume and this really was a positive experience. We started already some years ago to look at the growth options and about two years ago, we announced that we're looking for a project and we were

assessing two options, one in Finland, one in the Netherlands. And about a year ago, we announced that we shall continue the planning and preparations for a possible investment in Rotterdam, which would be up to 500,000 tons of renewable fuels which should obviously make us a significant player in the advanced biofuels segment. While, of course other companies are much, much bigger in the biofuel sector, what we want to do is really bring in the RDNA with using different types of residues.

(03:42):

So, residue duality is an extremely important, obviously, renewability and we are developing new kinds of regenerative ways of doing agriculture or agri-forests to create new feedstock for the plant for possible investments. So in this space of advanced biofuels where we want to be, we consider that the most attractive, most long-term, and most sustainable category of the biofuel sector. And this is where we focus obviously. You asked about hydrogen eFuels. We have actually quite interesting assets to study. Also, our entry into eFuels or chemicals you may have as well as we are actually the second largest electricity producer in Finland. We have a lot of nuclear and hydro assets. So, this creates a certain advantage in the emerging hydrogen business.

(05:03):

We also have actually enormous amounts of biogenic CO<sub>2</sub> which will be the preferred option for CO<sub>2</sub> sources for synthetic fuels. We have about 10 million tons coming from the pulp mills that we have or paper mills and this is a very, very interesting path that we're studying. The regulation is not quite ready there. We're looking at the different end-use markets for eFuels or chemicals. So, there's a lot of assessment going on. We have a team actually dedicated to this energy transition where they are looking at the various options. But it is a very exciting time. These policies that are being put in place to promote the use of hydrogen or hydrogen derivatives is definitely going to give interesting opportunities here.

Tammy Klein (06:07):

So, can you tell us more about the LSB and what is the state of advanced biofuels in the EU right now, today?

Marko Janhunen (06:22):

LSB is what we call the Advanced Biofuels Coalition. LSB comes from Leaders of Sustainable Biofuels. We changed the name to Advanced Biofield Coalition as we consider that all biofuels are sustainable, because otherwise they can't be put in the market. That's why the change of name. But we kept the acronym. We founded our coalition about 10 years ago. A group of companies coming from very different backgrounds met and had a meeting. We decided to start working towards creating a mandate for advanced biofuels within the European Union Renewable Energy Directive. We were actually successful in the sense that this mandate was introduced in 2015 as an indicative target. Many member states already then made it actually binding and then it, with RED2 in 2018, was actually made mandatory.

(07:34):

So, since that time, we have a mandate to use a certain amount of advanced biofuels in the fuel mix in each and every member state. The RED3 proposal by the European Commission increased slightly this mandate or

will increase as it hasn't been finalized yet and we see there is quite a lot of room for growth in the sense that the mandate for 2030 is around 7 million tons. Two years ago, the latest data there was about 1 million ton used in the EU. and that was before the mandate kicked in. So we will see actually a number of investments are needed to fulfill the gap to reach the target in 2030 and obviously that's what a number of companies are doing at the moment. So all in all the commission and the European Union Parliament and the member states are clearly committed to the use of advanced biofuels up to 2.2% in 2030. but of course, we also have opportunities in sustainable aviation fuels and in the maritime sector. So it's not only the transport sector with passenger transport and heavy-duty, but it's also very much an opportunity in the aviation and maritime sectors.

Tammy Klein (09:15):

So, in your view, what are the biggest, both opportunities and challenges to growing the advanced biofuels market in the EU? And, and same question for eFuels.

Marko Janhunen (09:30):

For the advanced biofuels, I guess we've seen a certain challenge with the changing regulations. So that's, that's certainly one. I think what we also see is that there's an increasing amount of secondary legislation, meaning the Commissioner's proposing delegated acts or implementing action, they create quite tough regulatory frameworks. So that's one. But then again, I shouldn't cry about it too much because this is a regulated business. If you want to operate in the advanced biofuels or in the eFuels, this is what you need to do. I mean, you have to then be able to predict sufficiently long term than the need of these fuels. Our key driver is not necessarily actually the renewable energy directive. And the mandate there is actually the effort sharing regulation, which is a binding regulation for member states to reach a certain target of emission reduction by 2030.

(10:49):

And obviously, our markets are most likely to be in those countries that have up to 50% reduction in the non-ETS sector. And this means that biofuels are needed and advanced biofuels are needed to reach your emission reduction targets in the transport sector and that this is where we come in and we can provide as a company the product to reach those targets. So, all in all, for the advanced biofuels, I see a lot of opportunities. There's room and space to invest. we are looking at it. Many other companies are considering their investments. I think we are coming to a stage where the technologies are ready. A number of new technologies have been developed for making municipal solid waste into bioethanol or diesel, green diesel, there's a number of technologies for transforming residue, woody biomass, for example, sodastore or forest harvesting residues into a liquid form, which can be hydrotreated into renewable diesel. So, on the technology side, again, I think we are progressing quite well and the technologies are starting to be ready.

Tammy Klein (12:28):

What about eFuels?

Marko Janhunen (12:32):

That's a tricky one in the sense that we are really creating very high expectations for eFuels. We are creating regulations actually for a product that really doesn't exist in the market. I think, you know, one really big challenge is if you're looking at your potential eFuel production, what are the prices? How do you estimate the price development of eFuels which is a product which really is not trading too much in the markets yet. There are a number of initiatives and a number of companies entering. So it's actually quite a unique situation in my opinion, that we are setting very high mandates for 2030, which is very soon for a product that is really at a very early stage, though promising. And I think there's a number of opportunities, I think something that I can mention that relates to both of these.

(13:42):

And that's the recent decisions by the EU to ban the sale of internal combustion engine cars by 2035. And also a recent proposal by the European Commission to set quite stringent targets for the CO2 standards for heavy-duty vehicles. I think these are kind of, they are sending a very strong message to the industry. And I think some people may wonder whether it is feasible to start producing eFuels for the transport sector, because in eFuel production as well, you're not just producing one. You can't just produce only, you will normally have different types of fuel grades, and of course, you need to have an outlet for all of it.

Tammy Klein (14:39):

Precisely my question to you. So yeah, how do you do that with these targets that have now just been agreed for light duty and proposed for heavy?

Marko Janhunen (14:55):

Well, I think we're going to have a very heated discussion on the heavy-duty side. I think, you know, these heavy-duty vehicles are essential for the European economy. we cannot bet on something which doesn't exist. Yes, certainly hydrogen will play its part and electrification, but it's going to take some time. so, I think we will see an interesting debate in the next year on what the member states really want from the heavy-duty sector and the European Parliament. it is very regrettable that the proposal is not complying with the technology neutrality aspect. So we believe that these decisions are extremely political and not respecting the fact that with eFuels or renewable fuels like our renewable diesel, you can reach the same environmental impact. We should really measure the full life cycle impact of both hydrogen, electricity and renewable fuels. We've been making a lot of noise about this but unfortunately, the Commission has come with a proposal that does not recognize the role of the fuel itself and that's something that we need to talk then further with the co legislatures deciding on the proposal.

Tammy Klein (16:36):

So, I want to ask you more about RED3 and something you've said recently, but I want to stay with this because it seems so, and maybe it's because I'm only an observer of the European situation. I'm only an analyst. And of course, you know, I'm American, and we have our own situation here, <laugh>, as you well know. But it seems so just terribly logical to me that you would want to have the full life cycle accounted for as a basis. Now that we have the tools, we have the knowledge, we have the experts, we have the ability to do that and we're going for net zero, we're going for the real world, everything's real world these days in terms of emissions reductions, whether it's common air pollutants or greenhouse gas emissions. So, I fail to understand what is the problem here?

(17:45):

Why is this, you mentioned it was political, but it's really hard to - and I'm no stranger to politics for sure - but I fail to really grasp that because to me, without doing that, the policy runs the risk of not working. And the commission, in my view, doesn't have, in terms of the fuels and transport energy, I would say has maybe I would argue a mixed record in this regard. I mean, don't you want a long-term policy to work? And isn't the full life cycle sort of the basis of that? Like, what am I missing here?

Marko Janhunen (18:34):

Well, you started by saying that you don't understand. Well, I don't understand either, so that's the short answer. But really the fact is that we need all sustainable means to reach our targets. there's no one trick pony. We really, really need all of these to support the goal of reaching carbon neutral Europe eventually in 2050 and we have the most stringent sustainability criteria in place for advanced biofuels. And in biofuels in general. There are not too many sectors similar to this that would be equally regulated. and therefore, it is a great frustration obviously to the industry that these opportunities are not recognized. we do see though, that many member states obviously are, are not exactly going the same way. We see that in...while there is some discussion now in many member states about the price of fuels at the pump and the role of these blending mandates on the price.

(19:57):

But nevertheless, we've seen that obviously those countries that really need to do the most and are most committed to becoming carbon neutral they are actually using the most advanced biofuels store or biofuels in general, whether it is Finland with a 34% target biofuels by 2030, whether it is Sweden, which is a high mandate as well. It's a different type. and a number of other countries where we see a strong pool for the use of advanced biofuels. I think there is a good example in Germany where it is a very controversial discussion. The discussion there relates to first-generation biofuels. But again, for whatever reasons, some ministries are proposing to dramatically cut the first-generation biofuels usage for the reasons I presume that relate to food versus fuel, then there are other ministries saying that "hey, we can't do it because otherwise, we do not reach our targets."

(21:11):

And it is also true that Germany has already had to buy allowances from Romania and Bulgaria for not following the transport targets. And this is going to get even tougher because the electrification actually will impact the real emission reduction quite long term. Another reason why, I mean, there's always reason to be optimistic and another challenge with the proposal or with the kind of attitude or policy of the European Commission is that even, you know, when we have a hundred million electric vehicles we'll have 200 million, which are non-electric vehicles. And these legacy fleet needs, renewable fuels, needs policies to support. And we are actually, with the policy approach of the Commission, we risk that there won't be sufficient investments. And then the only alternative is fossil fuel. So sending this message from Brussels is risking a number of investments that could contribute to the de-fossilization of the legacy fleet. and this should be a real concern for the politicians.

Tammy Klein (22:39):

Do you believe along those lines that there could be also that a situation that occurs, you know, we have the Inflation Reduction Act here in the US, it's already attracting investments in a range of different areas, eFuels, hydrogen, HVO, other low carbon fuels. Do you think that project developers will conclude, "ugh, this is too difficult a situation, we are not assured of how the market is going to be, let's just do our project in the US." Do you believe that that situation could occur because they will simply conclude the competitive environment is, is better and easier to develop projects in the US rather than in the EU?

Marko Janhunen (23:39):

It's a valid question, and I do think that the discussion that has emerged in the EU after the Inflation Reduction Act was published is quite interesting. And I think it will have quite long-term consequences on European Union policies. And I predict that it will actually have quite a profound impact on the next commission agenda because the reaction of the European Union has been, "okay, we need to support our industry equally, we need to, you know, change our state aid rules. We need to look at competition policies, we need to look at trade policies, we need to create new funding." What I really regret is that in this debate, there has been very little discussion on the framework conditions, on the regulations that we have in place in the EU and there's a good example actually that relates to hydrogen, you know, the US grants or, or fiscal reductions for the hydrogen production are quite lucrative.

(24:53):

And the rules for defining what type of hydrogen is allowed are very relaxed compared to what we have in the EU and what we really should have done as a reaction to this is consider, well, do we really, do we really have the right regulations in place that will foster these investments? Unfortunately, the main discussion was that, okay, do we need new funding? Do we, you know, compete with the US on the funding side, but we should have reacted saying, "Okay, we've been for now, the last two years, and more than a year late, discussing the definition of green hydrogen," that now recently has been published. but it took a lot of time. I mean, over a year delay on writing a paper to define the conditions. What should be your electricity source for producing green hydrogen.

(25:56):

So, I think these kinds of examples are important when we discuss the competitive situation between the US and the EU. I'm not sure how many of these investments...it's easy to say that. "Okay, it's not easy here in the EU. I'm going to go into the US." It takes a lot more than just buying a flight ticket. so, you know, it's not an easy operating environment either if you're not established in the US. So, it remains to be seen, but I think this IRA discussion will reflect in a much more profound way. And let's see if it even has an impact on the role of biofuels, advanced biofuels and the eFuels. Will it, will it create a new understanding of the need that, "Okay, if we don't do it here, then there is a risk." Let's see. I think it's too early to give any firm answers on that question, but it's certainly creating a lot of discussion here in the EU.

Tammy Klein (27:07):

So, I want to turn a little bit to RED3, RefuelEU, and RefuelEU Maritime. And I want to quote to you a comment that I thought was really interesting that you've said recently. You said, and I quote, "if I go back the 10 years that the Advanced Biofuels Coalition has existed, and if I started counting how many months when we were not in the process of either revising or anticipating the revision of the directive, that wouldn't leave too many

months. And that's not a positive signal. We need a longer-term view." In your view, again, why doesn't the commission understand this? And do you actually expect that under this Fit for 55 framework or constellation as I've been calling it, that there would be more certainty finally provided to the industry for RED3, for SAF under RefuelEU and for maritime shipping fuels under RefuelEU maritime? Do you expect that certainty to come finally?

Marko Janhunen (28:20):

Well, first of all yes, in the sense that the RefuelEU Maritime and Refuel Aviation regulations that are not directives, they're regulations. So, they are binding by each word in each member state. They actually set the targets for 2050. Now, it's obvious that those targets will be revised many, many times over before 2050, because today you can only give a guess on what is the cost and availability of sustainable aviation fuels in the 2040s but it is a good signal that they set it until 2050. This is obviously what would be needed also for RED3. And this is not the case. and I also am slightly concerned that a number of files will be revised during the next commission. We have an extensive discussion in the EU currently on electricity prices, on gas prices.

(29:34):

There's electricity market reform initiative. whether we will get this ready in a post-war in Ukraine kind of situation before the new commission starts. I doubt it. So, I would presume that the whole kind of electricity, gas, market reform-related topics will be quite an important part of the next commission agenda as well. Because it is a key backbone of the EU industry. So, I would presume that maybe within RED, they won't revise all of it. It is a challenge for us, of course, that there are all the time these revisions. but I also turn it around in the sense that I've said that, you know, we've been, we've been operating, or we made the initial investment decision in 2012. That's over 10 years in this time. And the regulation has been revised a number of times.

(30:41):

And as I said, it's been open for more than it's been closed or confirmed. You know, in principle, UPM has benefited from each reform or review. So, we've been better off after this. So that's also a reason that if you choose the right category, if you choose the right sustainability credentials and approach, and if you are doing the best possible product for the customers, then you are actually quite safe. quite a lot, we discussed today, not the nitty gritty of the regulation, but the direction, what are the big drivers, and how do we reach the 2050 targets? And before 2030, 2040 what is the role? What is the space for advanced biofuels or hydrogen, or if you'll see chemicals? So, if you look at the big picture, it's quite self-evident that there's a huge need.

(31:51):

But then of course you have these directives and regulations that are creating, of course, a relatively complex operating environment. I'll give another example actually. If I had to explain to our top management in 2012, when we made the investment decision on our Lappeenranta Biorefinery, it was pretty simple. We had a renewable energy directive, then we had double counting for certain types of residual feedstock, and then we had some member states who set a higher target than the one of EU that was 10% only back then for biofuels. Today, we are considering a major investment in Rotterdam. Even though I work, you know, full-time on EU policies and regulatory issues related to UPM businesses it is quite a challenge to explain the regulatory frame of advanced biofuels. Today, you need to talk about RED3, you need to talk about ETS, you need to talk about emission trading schemes, you need to talk about RefuelEU, maritime and aviation, you need to talk about alternative fuels infrastructure, you need to talk about taxation. It's a long list. And then there's a lot of these

implementing acts and other regulations. So, it's actually relatively complex. and each of these directives or regulations actually has interlinkages with each other. So, it's quite a complex environment. but again, that's also the regulation that creates your business opportunities. So you have to be active, you have to understand, you have to engage and you have to talk to a lot of people so that they understand what the drivers that you're trying to convey.

Tammy Klein (34:10):

So, fun and last question. You've been doing this for a long time. What excites you most about this space and why?

Marko Janhunen (34:23):

I think it's been fantastic to be part of this transformation. UPM, as I said, it's a traditional forest industry company. We've managed to create a completely new industry business within UPM. Regulation is obviously a key part of this business strategy. We created a product that has extremely interesting and strong environmental sustainability credentials. and, you know, being part of a journey with a team, with colleagues where we've actually succeeded very well. And that's exciting. I think obviously also the opportunity of the hydrogen-related, or the hydrogen economy and the assets that we have at UPM, it's extremely exciting to be engaged in these discussions. It's a tremendous opportunity. A complex one as well but being able to support and discuss, you know, with a lot of different types of people, it's really multidisciplinary. you need to understand a lot of different aspects. And I guess that means that you're learning something all the time.

Tammy Klein (35:48):

Marko, thank you so much for being on the show today. It's been great to have you. And as things develop, I hope you come back.

Marko Janhunen (35:55):

Thank you. My pleasure.

Closing (35:58):

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