

**Transcript for #95. Chevron: The Future Is Lower Carbon Energy
Kaustav Sinha, Director, Global Strategic Partnerships, Chevron
June 19, 2023**

Tammy Klein (00:01):

Hi, everyone. Welcome to the show today, I am super, super excited to have with me, Kaustav Sinha. He's the director for strategic partnerships for Chevron, and we're going to talk about low-carbon fuels, low-carbon strategy, and Chevron's renewable gasoline product. You may have seen the news about the Chevron-Toyota collaboration, a tour around the south, around the Louisiana area for their renewable gasoline project. And we're going to get into all of that. Kaustav, welcome to the program.

Kaustav Sinha (00:54):

Thanks, Tammy, for having me.

Tammy Klein (00:56):

It's great to have you. So before we get into renewable gasoline, can we first like, take a step back and can you talk to us about Chevron's lower carbon strategy in general?

Kaustav Sinha (01:11):

Thanks, Tammy. Glad to do that. At Chevron, we believe the future of energy is lower carbon but energy needs to be reliable and affordable too. What that means is we are pursuing many new and different ideas and technologies at the same time, while reducing the carbon intensity of our current operations. For example, our Chairman talks about our upstream assets, like our Leviathan project based in the Mediterranean, our recent acquisition announcement of our PDC Energy in financial terms, of course, but in the same breath, he also talks about how these are in carbon intensity. These are lower carbon assets than others that we might have otherwise developed, and that is intentional. So our strategy is clear, leverage our strengths to safely deliver lower carbon energy to a growing economy. What that means is focusing on two key areas. The first one is making sure we are reducing the carbon intensity of our operations.

(02:08):

We call it the portfolio carbon intensity reduction. lowering the carbon intensity of our assets, prioritizing the projects that returned the largest reduction in carbon emissions at the lowest cost to customers in society. We have set some targets and aspirations. I would highly recommend your listeners to go to [chevron.com](https://www.chevron.com) to read more about it. The second one is investing in lower-carbon technologies. That is to enable commercial solutions, which we believe will also generate attractive returns and cash flows while leveraging our capabilities and operations to advance technologies such as renewable fuels, carbon capture, and hydrogen. And to support all of this lower carbon strategy, we are deploying 10 billion dollars towards that, 2 billion in carbon reduction projects, and 8 billion in lower carbon investments I mentioned earlier by 2028. Again, I recommend your listeners to go to the website as much more detail towards it talking about our recently announced public corporate sustainability reports and much more information.

Tammy Klein (03:14):

So can you talk a little more specifically about the renewable gasoline product itself? What is it for the listeners who may not be familiar?

Kaustav Sinha (03:26):

Tammy, I'm really excited to talk about renewable gasoline blends, as you can imagine, but in a very, very concise way. In a very simple way. Chevron's renewable gasoline blend is a mix of renewable components and traditional petroleum blend stocks. It contains more than 50% renewable components and delivers a carbon intensity reduction of more than 40% compared to traditional gasoline on a lifecycle basis. Our fuel is a drop-in solution, meaning it can be produced using today's infrastructure, and it can be put in today's vehicles allowing virtually all of us to be part of the solution. As you know, Tammy, as a reference, every gasoline is a blend of multiple components. This blend is partly renewable, and we have worked with Toyota in partnership to develop this product and also test this product before we deploy that in the field.

(04:20):

So it has great performance and is also environmentally friendly. It also builds on our expertise in bio feedstock processing and biofuel production to create renewable gasoline blends built on our existing experience in low-carbon fuels, including biomass-based diesel and sustainable aviation fuel. We developed this option over the past year or so and have demonstrated it recently to the public. We have not yet commercialized as we are still working through it. There are some important hurdles yet to be taken care of, but we believe these kinds of fuels can play a crucial role in reducing the carbon intensity from the transportation sector providing policy framework.

Tammy Klein (05:05):

So how does, and we're going to talk a little bit more about the policy, the framework, policy framework as it pertains to renewable gasoline, this product, and in general the overall gasoline pool in general light-duty fleet. But first I want to ask how Chevron views this product, renewable gasoline in general as an alternative to electrification. Can you talk a little bit about that? Or a compliment to electrification even?

Kaustav Sinha (05:43):

That's a question we get quite a bit. Let me start by saying Chevron is technology neutral. What it means is Chevron is supportive of multiple technologies that can help reduce transportation emissions while meeting the energy needs of a growing planet. So if you think about it, more than 95% of light-duty vehicles on the road in the United States today rely on gasoline fuel, right? This equates to about two 65 million gasoline-powered vehicles in the US. We believe that renewable gasoline blends can play an important role in reducing the right lifecycle carbon intensity of gasoline-powered vehicles thinking in another way. We have about 1.3 billion light-duty vehicles on global roads today generally with a lifespan of 10, 15 or even 20 years, they're being replaced by other internal combustion engines right now. And that will continue for a decade or two if that holds up, even with significant new battery electric vehicle adoption fuels, like the renewable gasoline blend will be a pathway to decarbonize these vehicles. So in a nutshell, we need all solutions, multiple solutions in the decarbonization platform.

Tammy Klein (06:55):

So can you talk about how the Chevron-Toyota partnership came about, and especially the road trip, and tell us how did it go. What were the consumer's reactions and policymakers' reactions when Chevron and Toyota interacted with these folks? You had this whole cool mobile sort of...I don't know what you call it...display, and people could kind of touch and feel and see and talk and do. So what was all that like for you guys?

Kaustav Sinha (07:29):

First of all, I would say the Chevron-Toyota partnership is built by people. There's been people between the two corporations, many, many of them from different functions coming together and making this happen. But let me take a step back in how Chevron is thinking around this and how we came in partnership with Toyota. As you all know, transportation accounts for approximately 27% of total US emissions. As I said before, Chevron believes the future of energy is lower carbon and that multiple solutions will be needed to reduce the carbon emissions of the transportation sector. And for that, we believe strategic partnerships with automotive companies and OEMs - original equipment manufacturers - are really key to developing and deploying these lower carbon solutions. Many of our low-carbon fuels that are used in hardware electrify parts of the transportation segment like trucking, rail and marine. We have deployed solutions there, but we've been thinking and searching for ways to reduce the carbon intensity for the gasoline-powered vehicles that most of us strive for on a daily basis. Especially in that aspect we collaborated with Toyota for the last couple of years to bring together some of the best minds in fuel and powertrain technologies to develop lower-carbon solutions. Our April renewable gasoline blend demo with Toyota is an output from that collaboration, which can leverage today's vehicles and infrastructure to help reduce the carbon density of the transportation sector. The demonstration with Toyota further builds on existing efforts that we have between the two corporations where we are undertaking the use of hydrogen as a transportation fuel. The feedback from the demo was exhilarating, I would say, in lack of a better word. The one-week road trip started from Canton, Mississippi and covered one thousand miles across the US Gulf Coast making stops at Baton Rouge, Louisiana, Houston, and Plano, Texas engaging various stakeholders from the local communities.

(09:33):

Three different Toyota in-production vehicles, Rav4, Camry and Tundra that some of you guys saw in pictures, powered by hybrid powertrain technologies were used for this road trip. The goal of this demo, when we were discussing with Toyota, was to create awareness around renewable gasoline blends. And this is not the first and the only demo. There'll be subsequent activities to make sure that we help people understand this pathway to decarbonization. The demo captured something in the public imagination too. We had some glowing media coverage on the trip because journalists and the public are deeply interested in reducing carbon intensity from today's technology. There are some stereotypes that battery electric vehicles are expensive and can be only afforded by a certain segment of society. Hopefully, that will change. but right now most car buyers are still buying combustion engines, and that's a fact.

Tammy Klein (10:30):

Yeah. It's,

Kaustav Sinha (10:31):

But those cars will be in service, as I said before, for 10, 15 or even 20 years. So what do we do in the interim to cut the carbon intensity? We cannot wait. So how do we avoid leaving different segments? How do we bring everybody together in reducing the carbon density of these vehicles right now? and so we thought about renewable gasoline blend, put that together, and then finally we believe that the renewable gasoline blend can help answer not only for many Americans but also many drivers around the world who are driving and buying these combustion engines.

Tammy Klein (11:08):

I think it was really a brilliant move on Chevron's and Toyota's part to actually go and do this. I hope there'll be other road trips because I think there is a, there's a vacuum of, I don't know,

leadership and also, you know, consumers sort of seeing alternatives and seeing, you know being able to interact with people to see it, to feel it, to talk to people, to learn, to see other alternatives. You know, they may not be ready for BEV, but they might really care about sustainability and cutting their carbon emissions. And so this gives another alternative and, and entree into that. And, you know, the one person that we really associate a lot with electric vehicles is really Elon Musk. but on the fuel side, there's all these great things that are going on in low-carbon fuels. This renewable gasoline product being a, a great example from the feedstocks to you know, to the actual production. And there's just a giant vacuum. So I think it's great to get out there and show people what the options are.

Kaustav Sinha (12:28):

Correct. I completely agree. It's just and that's what the thought process was, that right now on the light-duty segment, there are no options other than the battery electric vehicles. So the idea was for the two organizations to come together and figure out what can we do to develop a technology that could be used and deployed for current vehicles, ICE engines, and how can we decarbonize that.

Tammy Klein (12:58):

So when might we see the product at the pump? What's sort of the next step when it comes to... you said that there are hurdles, there are, there are things that need to be worked out. What would be the timeframe? When might we see a product like this at the pump? What are the next steps in terms of commercialization?

Kaustav Sinha (13:18):

Again, a great question. We got this question also during our road trip <laugh >. Just in a nutshell as I said, Chevron recently developed several formulations of renewable gasoline blends based on the technical advances that we have seen in the industry, and we put together. So we are producing the fuels in limited quantities for testing and demonstration purposes, having proven the carbon reduction potential renewable gasoline blend, our focus is now on securing the policy enablement. I needed to bring this emerging technology to broad commercial scale. There are important tax policy considerations as we push to commercialize and market these kinds of fuel blends. Right now, as you know, California provides incentives for the kinds of biofuels that make car GB so effective. But even there it's more about renewable and biodiesel more than gasoline. So we need to level that playing field to make renewable gasoline as competitive with other options in the market. Having said that, as I said, we'll continue to do small-scale demonstrations, test the market to get some feedback while we focus on securing some policy enablement to drive the scale-up.

Tammy Klein (14:35):

So I want to talk about that a little bit. So, first of all, what's been the government's reaction to the renewable gasoline blend, both in California where Chevron is headquartered and really serves the market and also at the federal level? And, and how concerned is Chevron about, you know, whether the product gets a shot in the market, whether you get that policy enablement when the focus, you know, at least of the current administration is so heavily on electrification?

Kaustav Sinha (15:31):

Government officials in states where we demonstrated renewable gasoline blend, were really enthusiastic about it. Although those were admittedly energy-producing states in the Gulf Coast, we introduced the demo the same week as the Biden administration still by {inaudible}. We can't say what the result of that process will be. but we firmly believe we can achieve carbon density reductions using liquid fuels and our existing infrastructure. Battery electric vehicles are an

answer for some consumers. Others would like to still stick with internal combustion engines. So we think that markets should decide what the technology would consumers want.

Tammy Klein (15:59):

So what's been the reaction? I mean, you just talked about, you just brought up the tailpipe standards, which Yeah, ironically, I don't know if you planned that, they planned that or if that was just a really interesting coincidence. but it was interesting that it's so telling, like here are these two pathways coming together in one week. What's been the reaction by Chevron to these new tailpipe standards that EPA says will lead to 54 to 60 or 67% of EV sales by 2032? You know, and again, how do you see the market development growing? Is, is the answer to...in my view, an answer would be for me we have, we have successful state clean fuel standard programs. Perhaps that's a pathway in some of these states that haven't put one in place yet that are interested, you know, maybe not really feeling a hundred percent electrification, but seeing the opportunities to achieve carbon reductions from the transport side of the equation to offer policies like that. Do you see that as a pathway and how concerned are you all about those tailpipe standards?

Kaustav Sinha (17:28):

So, Tammy, we do not believe the rules are the best way to reduce carbon dioxide intensity. And the proposals have significant deficiencies which need to be addressed before they are finalized in our view. First, these rules would undermine consumer choice, as I mentioned before. Big players among the technological improvements which we believe is accounting for lifecycle emissions, not just tailpipe metrics, is a more appropriate and more robust count for carbon intensity. We have talked in the past about setting carbon standards, carbon prices and letting market forces work towards environmental goals. Battery electric vehicles, as I said, are great in some markets and for some consumers, but not for all. it's not like one size fits all. The rule as proposed requires massive investment, as we all know, including metals. Now having said that the ICE infrastructure is there. The liquid fuel infrastructure is there. I think renewable gasoline blends provide another pathway to decarbonize with the current infrastructure and the current vehicle.

Tammy Klein (18:42):

So is the support offered in the Inflation Reduction Act? There were a number of incentives, everything from increasing carbon capture and storage credit, which I see as very key for further lowering the carbon in really conventional fuels, but also in low and no carbon fuels. You can create a no-carbon fuel through the use of carbon capture, you know, green hydrogen, renewable electricity, but there also was a clean fuel production tax credit. Are those types of enablements kind of enough? If, if not, you talk about policy enablement. What other kinds of policies do you see as being needed?

Kaustav Sinha (19:31):

I'm glad, Tammy, you, you asked that question. So, in a very simple nutshell in a simple format we support market-based mechanisms that promote lowering the carbon intensity of fuels. Additionally, feedstock flexibility is critical to growing the supply of lower carbon-intensity biofuels. policies should also support the core processing of traditional and bio feedstocks. limits on ethanol blending in certain jurisdictions could be increased to maximize carbon intensity reduction. policy should also utilize a full lifecycle approach when contemplating the carbon reduction benefits of transportation alternatives. the specific policy constraints and the renewable NAP that is produced using whole processing would not qualify for federal excise tax credits. It also would not generate federal lenders' tax credits when used as a gasoline

feedstock. California tax credits would not accrue to renewable NAP. So these are some of the constraints that we need to look into.

Tammy Klein (20:37):

So, any final comments or thoughts? You've been working on this project for quite some time. It's pretty unique, it's going to continue. Any final thoughts or comments you want to add?

Kaustav Sinha (20:51):

These are exciting times for all of us. Tammy. You have been in this industry for long,

Tammy Klein (20:56):

<laugh> the best of times and the worst of times <laugh>.

Kaustav Sinha (20:59):

Correct. So I tell folks who are joining the industry, this cannot be a better time than now to join this energy industry. Cause we need,

Tammy Klein (21:10):

Yeah. It's very exciting.

Kaustav Sinha (21:11):

Exactly. And I would say Chevron has a long history, as you know, for over 40 years, we've been offering a portfolio of energy solutions to society needs. Our culture is built around people, partnerships and performance. It's not something new. and we are well-positioned to lead through this energy transition. Renewable gasoline plan demonstration was just one such example. I mean, you have, if you go to our website, you can see multiple different examples across the entire portfolio where we're lowering the carbon intensity and growing new businesses, as I mentioned. So what I would say is we need to continue to learn from our past, plan for the future, but most importantly, act now on what is in our control. and we believe working collaboratively with fuel producers and innovators in the automotive, agriculture and technologies sectors can promote adoption of these low-carbon technologies like renewable gasoline blend.

Tammy Klein (22:08):

So Kaustav, thank you so much for joining the show to talk to us about this initiative. And I look forward to continuing to follow it and to have you back as things develop.

Kaustav Sinha (22:21):

Thank you so much, Tammy, for having me.