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SPEAKERS

Adam B. CzyÅ¼ewski, Michael LaBelle

M Michael LaBelle 00:00

Beyond oil carbon neutrality by 2050 interview with Adam Schiff Netsky episode 44. Welcome to the My energy 2050 Podcast, where we speak to the people building a clean energy system by 2050. I'm your host, Michael LaBelle. This week we speak with Adam Schiff Netsky, the chief economist at PKN Orlen. I'll describe PKN Orlen. As a Polish, oil and gas firm actively diversifying into lower and zero carbon fields. I got the opportunity to sit down with Adam while I was in Warsaw. And I'm extremely grateful for his time and Willian willingness to share his thoughts on the energy transition. One of the reasons I wanted to start a podcast was to share some of the interviews I have with experts. While doing my own academic research. I've interviewed Adam in the past, and I always found him very knowledgeable and holding a broad view of energy markets. In this episode, you'll get more than an insight into the workings of oil and gas markets, you'll get a thoughtful discussion on where companies are heading. As they lower their carbon outputs, and invest into more lower and zero carbon technologies. It is possible that some listeners may object to my conversational Sit down sit down style, with a representative of the oil and gas world. I remember a conference I attended in 2019, when the chief economist for equinor got not only a frosty reception, but a hostile one from the academic and policy audience at the conference. I was a bit surprised as a person may work for these organizations, but we still need their expertise to move away from fossil fuels. I think Adams big picture thinking demonstrates how fossil fuels are seen as unsustainable, even by the companies producing them. Thus, the bigger structural question is, how do we change the energy political and economic system, so we don't have fossil fuels. My approach to understand and assist in the energy transition is to listen to a range of opinions. This is why I do the podcast. In this interview, you'll learn that Adam before he joined PKN, Orlen 12 years ago, was an outsider himself. He shares his perspective and questioning of the sustainability around not just fossil fuels, but global consumption of energy and materials. Even as he points out, the benefits of plastics are too good even for plastic. That is plastic turns out to be too cheap and too good for consumer society, and of course, bad for the environment. Nonetheless, the lightweight and durable properties of plastic, make it useful for the energy transition. So there's a lot of complexity, we'll say in this transition. Adam provides a pivotal acknowledgement and voice that says yes, our present consumption patterns are not environmentally sustainable. But he also outlines how an oil and gas firm can make the transition to be carbon neutral by 2050. This seems unbelievable from an oil and gas firm, at least I was highly skeptical before speaking to him. But as you'll hear this could actually be achievable. I'll just say also, if we could change our political and political system, and kind of the structural support that keeps fossil fuels in the mix, particularly when we when you consider how the firm is diversify into wind farms is PK and Arlene, and they're investing into

developing new technologies that are not just reliant on fossil fuels or reduce emissions for fossil fuels. Depending on where you live and your background, you may be dismissive of what can we learn from oil, Polish oil and gas firm. as dedicated as the Polish government appears to be towards coal, it is important to understand the world technology and firms are changing regardless of what is in the headlines. It may be a question of how fast we make the transition or if fossil fuel firms will really move away from oil and gas. These are points four arguments. But at least from this interview, you'll gain an understanding of the market forces at work that keep fossil fuels as petrochemical feedstocks in the near, if not distant future, for good or for bad, or probably both. The intent of the my energy 2050 podcast is to spread the knowledge about how the energy system can assist our transition towards a greener future. And now for this week's episode. I'm here today with Adam Joseph ski. He's the chief economist at PKN or lean. And Adam, welcome to the My energy 2050 podcast.

A Adam B. CzyÅ¼ewski 04:31

Welcome. Thank you for invitation.

M Michael LaBelle 04:33

I'm really I'm really happy to have you. We had a bit of time beforehand to discuss the world and oil markets and gas markets. And we're going to get to all that. But my first question to you is how did you get involved in the oil and gas sector or the energy sector in general? And why is it so interesting for you?

A Adam B. CzyÅ¼ewski 04:55

I mean, that was quite tricky because I joined the company 12 years ago, as a person who can predict exchange rates, all prices, etc. because my background is I'm econometrician by profession. I studied econometrics, I made my PhD in econometrics, I completed the government at the University of which Poland, but also studied at Stanford, and the University of Pennsylvania. Set Fulbright, oh, grantee, a long time long time ago. And then after, let's say 1415 years work at the university, I move gradually to more applied economics. And first, it was Joint Center for central Statistical Office and the Polish Academy of Sciences, where I work on introduction of system of national accounts to the Polish statistics, because before transition, we have the Russian material product system. Then I work for the World Bank, or as a macro economist for Poland, you know, the assisting gone. Poland's government on reforms, various reforms. And I also run my own think tank, which was called Nabil independent Center for Economic Studies with two of my colleagues. And we were basically doing impact assessment of European integration. But we also because we established this think tank in 1992, we were very much interested in macro in GDP, in inflation, etc. And we published quarterly forecasts, which were at the time published by Reuters, and the National Bank of Poland in 1998, when assume direct inflation targeting it, needed to have a tool, a forecasting tool. And this is a nice forecasting tool, but it actually macroeconomic to forecast the inflation but as an input, you have to have GDP forecast. So just to begin with, they ask Nabil to provide the GDP forecast. And actually, instead of providing the forecast as a service, I decided to be employed by National Bank of Poland asset advisor to the governor. But then I, after a year, I became a head of Research and Economic Analysis at the National Bank of Poland. And this capacity responsible for inflation reports. And you know, that for inflation, at that time, the most important factor were oil prices, which were called the mother of all of all prices. Yes. So this was the 1980s. Yes, yes. And, and and actually pick a Nolan when I was looking for Chief Economist, they were looking for someone who was able to predict exchange rate, and let's say oil prices, which actually, I mean, meaning predict, literally, and when I joined the company in 2007, it was just before a crisis, and in came up, out very, you know, quickly

that, you know, I can't predict any prices. So that was the big question mark, what they would be doing there, but no, I find out. Of course, I'm doing things with regard to oil prices, exchange rate, interest rates, etc. But because we need it for financial operation for financial plans, as an industry, different horizons, but I, I just was very interested in economics of climate change. You know, in 2008 2009, everyone I met and asked about this, you know, so people were divided into two groups, they were believers and non believers. And I wanted to know, what is behind that? No. And

M Michael LaBelle 09:41

so you join an oil and gas company because you're interested in climate change.

A Adam B. CzyÅ¼ewski 09:45

I became interested in climate change after joining the company, because I find out that this is something which must be, you know, very crucial for us in long term. And actually in 2010, I wrote the internal report The big N against, you know, climate change challenge, and how we should position ourselves. And my advice from this report was, you know, first that focusing on whether, you know, climate change is anthropogenic or not, is the wrong question. Because, you know, we may spend life on it. And it's difficult. And as in science, they are people who say, Yes, it is. There are other who say, No, it isn't. But I find out very quickly, that this is the quite different issue, that the world is going this direction, it has a lot to do with environment, pollution, etc. is a, you know, it's a product of economic model, and increasing number of people. So, you know, when I was younger, there was, you know, like, two millions or less people, billions people all over the world. So you could throw away things to the forest and the forest. Could you know, the job, actually, there was no plastic to throw away or, you know, plastic was, quite, let's say, not that expensive, but valuable, because when plastic was invented, it was invented as something which would protect the environment not to pollute the environment is yes, yeah. So different.

M Michael LaBelle 11:30

Yeah, I want to go back to because it was really something that you ended up in the United States, as you would know, in the 1970s, and 80s. And how did you get to Stanford University, and then Penn State? And it was Pence, Penn State, but

A Adam B. CzyÅ¼ewski 11:46

yes, yeah, yeah. I mean, Poland participated in Fulbright programs, but at the time, this full, both programs were organized in different way, you know, it was not like it simply because now you can apply it from the street, No, we just apply and at that time, it was organized by mainstream by, you know, the end, every university is now could provide candidates for this scholarship. I mean, I was a student who completed, you know, my study with Diploma of excellence, my my professor was, was not only dean of faculty, but then became a rector of the University of which he, he had a very good contacts abroad. And actually, I first I got the place to go. And second, we were looking for a way to how to finance it. Yes, you know, so because usually a Fulbright grant, you apply, and then you indicate to places where you want to go and the Fulbright foundation, you know, tries to locate it. But I've, I've got the, let's say, letters that I will be simply admitted to, to the, to the Stanford it'll say, Department of Economics, and the and to the Pennsylvania University of Pennsylvania, because I work on on macro models, econometric macro models of the Polish economy. And at that time, there was a link project ran by Professor Lawrence Klein, who got

the Nobel Prize for it. And this link project was a project where simulation of behavioral global economy was done using country models, and my job was to link the model into the, into the system. So therefore, I was at the University of Pennsylvania, but before I went to Stanford, just because these models were connected through import export, so at the time trade notes, and part of my PhD thesis was, you know, modeling of International Relations traits. And the guy who really did a lot in this field was presser Lawrence law with a Chinese guy who was a presser at Stanford. And I wanted to really go there because there was a lot of knowledge and as, as a matter of fact, a kind of a source of this type of, of things.

M Michael LaBelle 14:51

So but that really sets you up quite well. I mean, to become in your current job, but through all these different different roles then as well And because so you've been your entire life and look almost been looking at the flow of trade and currency as part of that and the behavior of countries then yes, actually,

A Adam B. CzyÅ¼ewski 15:09

I must say that my I mean, from the prospect when I look back, so actually I was doing all the time, more or less the same thing. But at the university, I was as econometrician you know, I was much more focused on models, you know, so the economy was kind of a source of data. But, you know, the clue was to make a model, you know, the database, paid in model, etc. So, estimators prepare this mathematical statistics, this type of, of influence, then I move gradually to apply economics just to apply this model. And then finally, I find out that it's not so easy, because, you know, if you have a model, which is very elegant, in, let's say, scientific, by scientific conditions, you know, it's very often not very useful, for example, we had, I constructed the model for the impact of in late of 80s, Poland, actually formally default, not formally, but factually defaulted. We didn't serve our debt, because we didn't set out that we had the problem with getting, you know, sources to finance import, and import became, became, let's say, bottleneck for production, if you know, like, right now, you know, we are waiting for cars, VW cars, which are not provided to us, because some, let's say electronic parts are missing, and they they are done in Korea, but there is a shortage of it, we have to wait. So, small parts may stop all your, your, you know, production that was the case in Poland as well. And in that time, in order to explain very well, you know, the impact of such restriction, the one factor production function was the best one, instead of sophisticated other factors. So, the simple, the very simple model explained the reality and you didn't need such a, you know, a complex complex things to analyze. And as a matter of fact, this complex things, they, they had embedded substitutions, so, they behave in, in reality, much worse than those simple models. So, this is one one of my my lessons I get, then I hit, I run my own companies. So, I was selling forecasts and analysis, then I worked for the National Bank of the World Bank, when and advice, reforms, also, you know, they'll support using economic knowledge to support

M Michael LaBelle 18:14

the 1990s Yes,

A Adam B. CzyÅ¼ewski 18:15

yes to I worked for the one bank from 1995 to 2002. I provide advice, but, you know, educated advice, so, you need tools for it. And in National Bank of Poland, you know, the, the models are used to create policy, yes, it's quite different thing. And, for example, then I learned that it's not enough to I mean, to build a

model and and you know, to have a model by institution, to have a model by institution means that, you know, you have really the model has to be embedded in this institution, which means that the knowledge of institution should be consumed by this model, and it it requires to have a procedure Yes, how to how to create the let's say the forecast. So, you have first to you know, to talk about discuss data then you know, with expert then with this, then because model of the model for inflation forecasting was constructed by let's say National Bank of Poland stopped by a BIOS used by monetary policy council and monetary policy councils quite exam body from National Bank of Poland staff and they in order to you know, use the forecast they have to simply put their okay on the model. So, we discuss with them how the model so we proposed

M Michael LaBelle 19:58

in the 1990s

A Adam B. CzyÅ¼ewski 20:00

It was from 2000 until 2007. Yes,

M Michael LaBelle 20:05

so it's a professional relationship, because the economy in Poland was in a really bad shape after 1990. Yes, even through mid 2000s.

A Adam B. CzyÅ¼ewski 20:14

Yeah, it was in a bad shape. But actually, to our surprise, you know, it really recovered pretty, pretty well. I remember, in this think tank, I ran with my colleagues, to colleagues, we produce a forecast, it was the forecast, which was, which was commissioned by, at the time, you know, they like, you know, European Commission, and they wanted to Kaffir optimistic but realistic scenario of economic development of Poland up to the year 2005, in 1992. And we, we constructed such a scenario and publish it in 1993, and Poland, in 1990, at 17%, fall of GDP, in 1991, it was like seven and a half in 1992, was minus one. So, you know, in three years was a very deep recession. And we came out with the conclusion that Polish economic can grow, on average by four and a half percentage point or two year 2025. On average, yes. And that was something which was very difficult to, to convince, you know, this to convey this this message. But, I mean, it was not a forecast, but it was optimistic by realistic scenario. So, we construct it that way. But at the end of the day, in 2005, when there were research about the, you know, which refer to the policy, economic history of transition, it find out that we actually did it. Wow. Yes, we're

M Michael LaBelle 22:18

projection was right. Yes. Yeah. In terms of GDP, because

A Adam B. CzyÅ¼ewski 22:21

there were other parts of projections, which were, you know, not not very, very, let's say, accurate, I mean,

exchange rate, because, you know, we underestimated the, the transition to convertible currency. And, you know, the, the fact that our, our currency become convertible that we will join, let's say, OACD, that we will, you know, make our currency,

M Michael LaBelle 22:55

did you Yeah. forecasted as weaker? Or actually, we

A Adam B. CzyÅ¼ewski 22:59

thought that we would, yes, because we felt that we would simply keep it controlled. So, which means that, too strong currency will spoil the economy. But, as a matter of fact, it wasn't the case. Yeah, you know, precision was, when you look at the economic history data, you will see that we had a strong opposition at the same time, very strong current account. Yes. Balance.

M Michael LaBelle 23:27

Excellent. Okay, I won't get into this, I'll just say is, I think the last time I was in Warsaw was three years ago, and just walking around Warsaw, it's tremendous. The changes, and I've been coming here since 98. I think. And, yeah, I mean, we can look right out your window, right? And look at the huge buildings, I just, maybe maybe stepping back as the economist and just say, maybe, as a poll yourself living here, how, what have the changes you've seen in the past 20 years or 30 years?

A Adam B. CzyÅ¼ewski 23:59

I mean, there are big changes. And and, and I think that, you know, if I were to simply to go through the process, once again, I think that I will do the one on the one thing better, which means that we rely our, our, let's say, economic transition, too much on the convergence, or too little on, let's say innovations. Of course, you know, if you focus on conversions, you simply create the conditions for capital inflows, direct investment, inflows, etc. And you grow fast because you import technology. And there is a short period when you, you know, make profits from this. It's but once you put effort in developing your own technologies, then it becomes more risky, you know, it takes time is more expensive. But at the end of the day, it simply is the only way you can really grow

M Michael LaBelle 25:21

more domestic innovation,

A Adam B. CzyÅ¼ewski 25:23

if you want to be, you know, developed country, like we aspire to be, and in many aspects we we already are, we have to have, you know, our own products. So we have to develop our own technologies, which we will create our own value chains not to be at the end of the value chain, but create a, you know, center of the value chain, and you can't import this, you have to create it, and we simply put too little attention to

this process. So, we felt that, because if you open the economy for competition, any areas, of course, the quick wins will simply overwrite, you know, this long efforts, which are not certain what they will bring, and it takes time. So, that's something we now have to really accelerate and end, frankly, speaking, in this company, we are doing these things I and part of my job is was just to, in the company to create, let's say, because in order to make such things happen, you have really to, to do a kind of internal lobbying for it. So to bring the knowledge to so cases, you know, to, to really just to it's like internal education, we have to learn all self a lot. And, you know, just pass this all this knowledge further. And, and now we in PKN, Orlen, in our strategy, because we declared that we become Net Zero, emitter by 2050. And it's not possible if you don't have your own, you know, technologists in some areas, because if we want to be a leader in the region, so leader has to provide something which other would follow. Yeah. So and we have to, to develop our own technologies, and we already have the vehicles to to do it,

M Michael LaBelle 27:56

maybe we should refactor and move away from Polish economic development. I love it. But and and yeah, exactly this 2050 strategy to climate beat climate up an oil and gas company, let me like frame it like this, an oil and gas company says they're gonna be climate or Climate Neutral by 2050. So what does that actually mean?

A Adam B. CzyÅ¼ewski 28:17

What does that actually mean? I mean, climate neutrality, exactly, it means that by 2050, we as a company, we should provide our we should first you know, produce things and services, you know, by zero emission, so, we have to cut all emissions from production. This is a very easy part compared to to the other, but we also have to make sure that our providers are zero emitting. So it's so called scope. These are the scopes, one, two, and three. One is, you know, you restrict or reduce your own emissions, you reduce emissions from your providers, which you can simply select providers, but if you take it globally, then everybody has to do it. And third, which is more tricky, difficult path, we have to provide our customers with goods and services, which are zero emission products and service. And we are fueling transport and transport right now, you know, runs almost exclusively on gasoline, diesel, which are fossil fuels. So, in order to decarbonize fossil fuels, you know, to decarbonize fuels in transport, we have to move away from fossil fuels as far as we can to zero emission fuels. And though fossil fuels which we which will be needed for the economy, and we will be provided we have to offset those emissions just to become

M Michael LaBelle 30:13

Mo, what kind of offsets do you have in mind? Or that how will you offset those emissions? I mean, and I know it's early, so yes,

A Adam B. CzyÅ¼ewski 30:23

it's at least so our strategy, because we publish, we declared a year ago that we more than a year ago that we become Net Zero me terrorists by 2050. And we publish our strategy, when we show in details, how we want to do it by 2030 Because that we can show you know, technology by by technology, but after 2030 You know, there is a kind of technology uncertainty, and which does not mean that we will wait until the you know, this uncertainty disappears, because it always will be you know, if you look at the technology 10 years ahead, you always have uncertainty, but in order to you know, we have to invest today in uncertain

technologies, and to have a kind of a portfolio of you know, those technologies because we don't know, at the end of the day, which technology will you know, dominate or will you know, will be prevailing in the market or you know, profitable. So, we change the concept from of the company from fuel company to multi energy company, because we have to keep our leg steel in fossil fuels in order to squeeze value out of it, but to invest you know, the money in technology of the future. So, in future fuels, which we see in longer term, you know, hydrogen, yes, as a fuel, but this is a fuel for transportation may be not for all means of transportation, but certainly, you know, we will begin with city transport, with railroad, you know, because this is something which, which, which, which can can be simply introduced, it provides you a kind of a scale, then we So, but we also invest in, let's say, biofuels, yes, biofuels, as I mean, to lower carbon emission from fossil fuels, because you when we mix it, well, then then it provides provides a lower emission fuel and all the way approach to this was to mix products, let's say, you know, the diesel ways, biodiesel is COVID. And, and gasoline with you know, alcohol, ethanol, yes, or no, but the most clever thing is to, to mix the crude oil with, you know, with, let's say, used cooked oil, etc, and put it through a refinery, okay. It's, it's called, it's a, it's called, I forgot the name of, of it, but it's has a special special name for this process, but actually, you know, you you then you produce a ALL Fuels you produce, they, they, you know, are composed of, of a

M Michael LaBelle 33:54

renewable, like a higher content and, and fossil, so, you can like get a higher bio content,

A Adam B. CzyÅ¼ewski 34:03

yes, because you get a stable fuel, you know, out of it, because when you do it properly, actually, you know, there's we're on such test, you can do 100% You know, fuels like gasoline and diesel by refining, let's say, used cooking oil, yes, yes. And then if you put this through the refinery, because these are hydrocarbons, you get you know, gasoline and they this gasoline and diesel fuel will have the same properties like parcel, but they will be in all cycle zero,

M Michael LaBelle 34:47

rather than adding at the end. Yes, yeah. Because if you

A Adam B. CzyÅ¼ewski 34:51

add it, then you get in stable fuels because they absorb water, etc. And engineers doesn't like it. Okay, so this is This is one way and this is way because some, some people say, okay, transport will be electric at the end of the day. And and therefore, you know, it's a waste of time to go through, let's say biofuels, but actually, first, not all transport will be electric and biofuels are now considered as the sustainable fuel for air. Air quality. Yes. Not not for the but for planes. Oh,

M Michael LaBelle 35:35

yeah. Right. Yes, yes. Yes. Oh, yeah. But this is like an example then of this is an example of technology in the investment that you have to make now, or you did a few years ago, that requires the 10 year timeframe that you're taught actually, actually,

A Adam B. CzyÅ¼ewski 35:51

we you know, with biofuels, we are quite advanced. And we even have, you know, a bio refinery in Slovenia, when we produce you know, biodiesel and other components. I mean, and this biofuels, they are also ways to the Arbonne ice petrochemical products, because many of petrochemical products you can produce from bio components from a hydrocarbons, which are made off of biofuels. And as we look for the future, so, the technologies we really see that they will have value in the future is to go from let's say, city waste, which are not recyclable. So, those situates which simply right now, what you do is it they are usually burn, you know, in in special installation produce electricity, yeah. So, then you have a emission of co2, but if you use a technology like is called pyrolysis, which means that you burn in a very high temperature, then you separate you know, this, you get an output, two streams, one stream is, is hydrogen, and second is co2, and they are pure streams, and you this co2 is captured already, because, you know, it's like, you can reverse it again, to production, you can use hydrogen, and instead of ashes, which are polluting, you get a solid, you know, substance you can use in, let's say, construction, oh, as, you know, like a stone or, like a building construction, Mafia is quite promising technology. And we are now working with European Commission in the special teams on taxonomy, just to thread this hydrogen Yes, from this process, the same way or just to give this hydrogen obtained from this pyrolysis of waste assay. Hydrogen, which is comes from electrolysis, because process a pure hydrogen second, you know, it's a poorly received a blue book, because it's made ways it solves a problem of waste, and, you know, pollution. And it's economically, you know, let's say efficient, yeah. Whereas, if you take electrolyzers, you need a lot of water to this process. And I'm not an engineer, but when I listened to the, you know, the debates, people point out that, that, you know, this hydrogen from electrolysis requires quite a lot of water, which may be a problem in some regions. There are technologies when you can produce hydrogen from salted water, but it's not so advanced, it is not more expensive.

M Michael LaBelle 39:24

So so when you talk about the carbon, we'll get back to this climate neutral by 2050. It is really looking at these types of technologies at each stage of the process.

A Adam B. CzyÅ¼ewski 39:35

Yeah. I mean, with hydrogen, the problem is that in Europe, actually, there is a lot of you know, hydrogen production, but this is, let's say, intermediate us, we are the fourth producer of hydrogen in Europe, but we do it for our own purposes. We need it for for just processing of crude because he If you have hydrocarbons, these chains and you crack them, they in order to have them, you know, this crack chains shorter, stable, you have to fill these gaps with hydrogen, no and Okay. And then you know, this hydrogen simply seals know this links, missing links and then then you get new substances. So we need need this, we also produce how the hydrogen acid byproduct, and this hydrogen is, has a better position in your taxonomy because, as a byproduct, you know, it's not treated as a hydrogen, which emits something. But this is not what European Union actually union actually prefers the prefer this pure hydrogen from Green, electricity, and water. And we want also to include or to get the same status for hydrogen, which is made from waste, because it's pure and the co2 is captured already. And, you know, if you are able to return this year to not too much value, but just to the production again, for example, in the form of, let's say, synthetic fuel or whatever, as an input to petrochemical products, then, you know, you have really no clean hydrogen.

M Michael LaBelle 41:35

Okay, so first, I have a simple question, and then it's more complex. But so what color is this hydrogen, if there's pink hydrogen for nuclear power, green hydrogen from renewables, blue hydrogen, what color is this hydrogen,

A Adam B. CzyÅ¼ewski 41:51

I mean, we actually green hydrogen is, according to EU green hydrogen is from water and green electricity, because it is, according to EU and it's a no side effects, you know, when you have bad hydrogen from nuclear power. So nuclear power creates, when you generate nuclear power, at the end of the day, you have nuclear waste, which you don't know what to do is. So therefore, this is not treated as a green. But we want this bio of hydrogen, which is not green, according to EU taxonomy, right? Now, we want to, to classify this as a green, because its production doesn't have, you know, side effect for environment, actually, it improves conditions of environment, because it solved the problem of, of, you know, let's say city waste, but also you can do it from from, let's say, organic waste from, you know, agriculture.

M Michael LaBelle 42:56

Right? And can you invest in that too? And then my other question is more, I would say, controversial than I would say, what label does this type of hydrogen have, but it's the role of petro chemical and petrochemical plants and petrochemicals because, obviously, the world needs plastic, I'll keep it simple plastic and everything that comes from a petrochemical plant, which you know, more than me. And so that that comes from oil that comes from gas. And so even beyond 2050, we'll be using oil and gas in the petrochemical process, I'm guessing, and and what is the future of petrochemical plant, I guess, in 2050, or even in 2040?

A Adam B. CzyÅ¼ewski 43:38

I think that, you know, here, there's a big gap between what let's say, IPCC thinks in its report, and what the industry thinks, and I think that you know, it's

A Adam B. CzyÅ¼ewski 44:00

we publish a report on petrochemical because we invest in petrochemical a lot, we see a future in it, and I just explained why and why I think that, you know, this approach of, you know, let's say green, I don't want to call it lobby, but those who want to green, the economic etc. It's not quite feasible, you know, World Needs materials people needs much less we consume too much we have so called you know, this overconsumption and in order to 55% of emission comes from energy, but 45 from material material consumption. So, in order to be sustainable, one has to really think in terms of reducing the the The volume of materials we use to consume, and it can be done in many ways. Of course, you know, recycling circular economy is, with all this stuff around is designing, etc using repairing, reducing, but we also have to change our habits. But anyway, regardless of that, we need to produce this material out of something. And there is plenty of studies which show that simply plastic is very good, I think, to do it. And that's out of question. You know, they, what is bad is plastic is that is, I mean, it's a victim of its own success is too good and too cheap, you know, and some people, it's overconsumption of plastic. So, plastic should be

more expensive, you know, and, and, you know, we should use it less, we should generate plastic, which is recycled ball, we should generate plastic, which simply, so, less variants of plastic, but aku song on such a purpose is features like, you know, easy to recycle chemically, or, you know, whatever, but just to return it again, and lower and lower the, so if we replace, let's say, packaging materials with plastic, we actually have benefits because plastic on average is four times lighter. So you we use four times less plastic to serve the purpose. Yes, and, and the emission from plastic and alternative, or let's say not emission, but this environmental, you know, footprint is

M Michael LaBelle 47:08

compared to last Yeah, yes, it's so light. And,

A Adam B. CzyÅ¼ewski 47:13

of course, we have a civilization which grew up on on plastic, like, you know, you have a computer so they have this isolation mafia, you know, we need it, we need this stuff, and we can do it either from oil and gas or from, let's say, biome component, but if you take into account, you know, the possible possible applications of these bio components in let's say, transport fuels, in other things, etc. So, I talked today to my colleagues about, you know, the components, decarbonisation of transport, and I asked, you know, why not to use, you know, biofuels for decarbonizing transport, because if you produce biofuels, which means they they are biofuels is zero emission in full cycle. So, if you're worried to the you know, car engine, you know, you have emissions, but this this is in full cycle, you know, you don't add to the global emissions, and the answer was, we have you know, we are short in supply of bio components. And if we would like to change, I mean, the humanity needs more materials, we will restrict, you know, this use of materials by you know, this circular economy, but anyway, we will need them and what are alternative it looks like this is the supply of bio components, this organic things will be you know, not enough to satisfy this needs, but on the other hand, we can, we know that we can simply produce plastic from oil and gas in sustainable manner, actually, when you look at transport an oil and you take 100% off of, let's say, emissions from oil applied in transport from you know, the, the well to the wheels, so, it's like 12% of emissions are in upstream 80% in factory in refining 80% is in a combustion engine. Yes, but From refining you know, the fuel may go not as fuel to transport but as a feedstock to petrochemical okay yes, and then we you know the emission from productions are manageable, because we have tools and let's say and the technologies to curb those emissions, the extraction of oil, you know, if you do it in a lower let's say quantities because we are talking about using oil in petrochemical industry and in scenarios, which are zero emission globally, you know, the consumption of oil will shrink by 70% compared I mean to what we will have now, so, there will be much less oil which can be extracted from places which are let's say safer, easier to access etc, etc. So, it can be simply simply done and there are technologies like which European Commission simply was very was promoting those technologies years ago like carbon capture and now there is a then there was a period of simply lack of interest, now, they come back because we can't go directly I mean fully from molecules to electrons, we need to know this molecules and in what to do with the excess of emissions, we have to simply capture it and there are technologies of direct emission capture from

M Michael LaBelle 52:01

me says that storing it capturing the emissions the co2 emissions or just throwing

A Adam B. CzyÅ¼ewski 52:07

I think that we will use it because you know, the co2 is is quite unnecessary material for for production, for example, for petrochemical production, because when you capture co2 And you have hydrogen you can combine it and make synthetic hydro carbons Yes, like synthetic fuels, which go to the to the production. So, so, I think that there is a future in oil as a you know, resource for you know, production of, of materials, various materials, because petrochemicals and chemistry provide you with a variety of different applications and it's also can be simply recycled. So, therefore, for example, in countries which live on oil, that I mean, they of course, you know, the promoted also. So, they they are talking about circular carbon economy, and I think it you know, it makes sense globally because, of course, in European Union you can imagine the world without it, but, we are emitting as a region only 7% of global emissions, we are the richest nations Yes, and we have to think about solutions for you know, countries like Africa like Asia, when we will have increasing population there and in there, I mean, developed countries lower income, and we should provide them with a solution they can afford, yeah, because I can hardly imagine right now, for example, you know, electrification of Africa, may be long term of course, some say the world will be digital FM thing which is digital will be electric. So, Electric City is the future and this direct you know, energy from sun this is something which really, you know, talks to the to me as a as a solution, but the way to every country, every region has go its own way, you know, the way which is adjusted to two incomes to affordability because it's very, very important thing, because at the end of the day, the pace of transition will be or will be decided by the pace of the month transition. So, the base we will change our behavior, of course, industry has to provide solutions. But, you know, we have to accept those solutions we have to afford

M Michael LaBelle 55:09

them. But my question then is, is it almost in one sense, our world today is divided between developed and developing countries, and for some that may not be appropriate even to frame it like that. But I would, I would just say an easy way to frame it is developed in developing countries, but then are we going to continue kind of a two track world where we have some countries that are completely decarbonized, and other countries that are part of this circular carbon economy that rely on carbon, carbon fuels to power their economies, because they can't afford a fully that will say, zero emissions or zero fossil fuels economy, yes,

A Adam B. CzyÅ¼ewski 55:52

I think that that, you know, if the world is polarized, you know, and will be will be polarized as is right now, it would be very difficult to achieve, you know, zero emission by 2050, because it requires cooperation and cooperation in many fields, but Cooperation means that, you know, you try to decarbonize places, or technologies, which are the most polluting, so, for example, you know, put a lot of resources not to decarbonize Europe, which already does well, but you know, to decarbonize India, China, even Poland, you know, when we have you know, this coal mining, and so, and now, governments are not very, very likely to invest, you know, money outside of, you know, the borders, yeah. Because, you know, the arguments that creates jobs, you know, in other in other places, but on the other hand, when you look at the, the, this is a condition, which has to be fulfilled, because otherwise we we wouldn't do it, we want to achieve, you know, we have to lower consumption per capita. And what does it mean lower, if you make a simple simulation that we just take constant consumption per capita of everything, you know, just like it is you dismantle consumption into, you know, pieces, commodities, etc, and keep it constant, and then you multiply it by number of the population, then we end up with, let's say, 1.7, or two planets. So in order to be sustainable, we have to lower consumption, and we can't lower consumption in Africa, because this consumption is low,

there already and I'm talking about material consumption services, you know, where, you know, this is this type, which you don't have to end on little, but this material consumption should be lower. So, we have to really in developed countries, we have to restrict our material consumption, adjust you know, to really to the level which uses really quite minimum materials necessary in order to create room for you know, increasing consumption in now developing countries, which means that pair let's say, if you compare this consumption per capita as per per capita, it should, you know, it will convert not diverge, but this is this is how the world should look like in 2015 in order to be zero emission world, but I'm not sure whether we are going in this direction, because we are talking about technologies about you know, electric cars, etc, etc. And we are not talking about this social aspect of transition, that in order to really we have to to create efficient economy of resources or you know, just to to use resources in an economically efficient way globally. We should simply equalize many things and you know, apply solutions to the problem, I mean, solutions to the places where our problems and not just you know, to polish you know, just to finish something, which already is well done, you know, just to have it Much better, even if you become carbon neutral by 2050, which I think it's, you know, quite achievable. You know, this only 7%. And the point is whether our choices

A Adam B. CzyÅ¼ewski 1:00:15

if our choices here, technological, etc, how they will affect the rest of the world, for example, Europe will stop producing a internal combustion engine. Is it good for the world or not? If you know, this technology is not developed, but most of the technologies is European. And right now, the reduction of emissions from transportation is done basically, by efficiency of car engines. This is the leading factor, not not electric cars, because the electric cars, you know, the there's 1% globally, yes, yeah. 99%. This? Yes, it's still small, it will change. But But of course, they but

M Michael LaBelle 1:01:05

it almost goes it's kind of I think, maybe back to our earlier discussion was, is there it and actually, to the Soviet times, if I make this a new idea I'm thinking through, but basically, it's a planned economy or restrictions within the economy, that I'm not saying that in France or in the United States, they're going to completely restrict what people consume and by and things like this, but But it goes to this natural resources, and how much are we extracting, and we have tremendous shortages, like in magnesium and cobalt, in all these, not just rare earth minerals, but but minerals that are being used for steelmaking, aluminum making, and there's not enough in the EU, for example, now, and now there's a looming shortage in November, because this stuff comes from China, and then China is a managed economy. And and they're shortages there. And so are we entering a maybe this is too big, but I'll throw it out to you kind of reflecting back, especially on your knowledge of the planned economy under a under a communist system. Are we entering a period of much more planned economic growth or government intervention in different sectors of the economy?

A Adam B. CzyÅ¼ewski 1:02:21

I mean, this is a tricky question, because this bothered me a lot. Actually, you know, when, when we look at the leader of you know, this change European Commission, you know, and it looks like, I think that somewhere, you know, it's that the temptation to plan everything is to say, this technology is good, this is bad. And me as an economist, I always whenever I can, I advocate for being technology neutral, which means that you know, let business and people decide what to do. Why because if you, if you do this, that way, you will have a wider spectrum of technologies, you will, some of them will fail. And you may say that

this is let's say, you know, these are lost resources, but they are lost resources only provided that alternative, which means that they provided that governments really they know what will succeed, but they don't know, they simply they simply think well, we have scarce resources, we have we are short of time. So we have to run faster, and in order to run faster, we should you know, take off our backs, you know, technologies which look not promising right now, you know, let's focus on something which is promising. And this is like you know, you you go to Himalaya and you have a Moulton and you want to climb this mountain and you just work on the paths how to go there and after you know preparation everything you you began and you go and there are wanes, weather is not good and you're tired and you stop for a while, but the sponsor of this excursion say you know you should go fast because you know you are losing time you are late, but you know so we propose go different way and just leave your all your you know, this equipment here and go because then you know, it will be faster and then you have financial sector who says also you go but you also don't need jackets, you know that he will run even faster. So we try to run very fast but We put all our eggs into one basket now. So we limit solutions we want to explore to those who are now seem, who now seems as the most promising. Whereas in the future, it's not like this, you know? And we should explore different things, because we don't know how technology will develop. Yeah, yeah.

M Michael LaBelle 1:05:29

Okay, I'm running out of time. This is for sure. Unfortunate. So I just want to maybe go to the gas market since this you're working for an oil and gas company and just look at the the global end this ties into what we're talking about now, and even a post COVID the world and the high price of oil right now. And maybe this is a typical question you always get, but but what's going on in the oil market overall in the world, and why is the price so high? And do you expect a lower price? And maybe you could bring in our earlier discussion we had about investments?

A Adam B. CzyÅ¼ewski 1:06:07

Yeah, I mean, what happens now on the gas market, I'm it's a effect of, we have a huge price increases right now, they are moderated by by Russians who say that they will deliver more gas, but, you know, the, the one can say that the reason for such a high prices, it's in the structure of gas market, which is that only 13% of this let's say gas deliveries are market govern you know, so, this is LNG market 16% of gas deliveries, this is an import pipe pipe import. So, and this is a price of this is linked to oil in this long term contracts stealing to oil 71% of gas is consumed domestically. So, this is we are talking about the gas market, but you know, only part of these gas devices really market and Europe rely very much on LNG market and for and simply the result was that many of many countries including Poland, you know, they they decided to go away from you know, longer term contract links to Russia, etc etc. And this process worked quite well and the liquid LNG market was quite liquid you could buy the mark and actually you know, prices in the market was low enough to lower prices in long term contract, but COVID calls you know, the decline in demand and this the decline of the month caused by let's say, non economic factor, this pandemic plus you know, restriction, social distancing etc, etc, and it lasted for more than one year. So, supply of energy also shrank and starting this year, from February to June, in oil market, for example, which are follow very closely, we had increasing demand, which was equal to five year increase in normal times, seven, almost 7 million barrels a day. Yeah, saw on gas market was similar thing, but the oil market is more liquid gas market is not a sweet liquid. So, you know, when when there was a quick you know, growth in demand, there was growth in demand for for gas and it was not so easy to increase gas supplies by you know, this pipe gas. So, everybody reached to the LNG market, it become you know, too short and, and on the top of that was that also the direction of gas flows the change because more gas LNG from us went to Asia, where prices are higher than in Europe and this increase in gas prices, first you know, calls

that there was a gas coal to gas switch, which prompt you know, prices of coal up because in energy sector, you know, call replace gas, but then, in the same sector, energy sector, oil replace gas and We right now, we are talking about 500,000 barrels of additional oil necessary for power sector which was not envisaged before. Wow. And therefore prices

M Michael LaBelle 1:10:13

go. And this is for generators. Yes, this is this is like a generator example in China where there Yes, sure, yeah, yeah. Yeah. Yeah. And then okay, so that we have that impact on prices more immediately. And then what has been, maybe we could talk in the context of the EU, but even the United States, this longer term shift in investments by the oil and gas companies.

A Adam B. CzyÅ¼ewski 1:10:40

Yeah, with I mean, this is, because when you look at the investment in upstream, so last 10 years, investing in oil and gas upstream, they declined by 1/5, that by by half, and the the, the use of our consumption of oil and gas didn't increase. I mean, they didn't decline that that went up. So you have less investments with higher consumption. And normally for fifth, fourth, or fifth of investments in apps in goes to, to, to maintain the basis for production. So to keep production flat, only 1/5 to increase it. So we certainly observe or see a kind of lack of sentiment in investing in oil and gas, which the end of the day transfer itself into lower possibility of this sector to increase suddenly, you know, output. And gas was treated as us by by European Commission, and by investor as well all over the world also asset, let's say, fuel, which is not very welcome. Yes. So, but actually, globally, we don't have a good support for intermittent energy and investment in when the and photovoltaics. So they really accelerate, and they have more and more of this energy. Whereas, you know, we don't have a similar increase in capacity of gas. I'm not talking about consumption of gas or producing energy, but you have to have a capacity because if this remittance analogy becomes a baseload, you know, because it's not stable, it needs a support, and we should invest in in gas capacities, for example, as insurance as security for the system, we, we can use, I mean, even if energy is generated, for let's say, 90% of the air from, from renewables. So in 10% of the year, you need to have a support if this support is too short. So you can have 10% of this energy, you have to have full 100% of needed energy. And that's gives you a capacity, and we should invest in this capacity. And now the European Commission agreed actually, will Lika frontline said that gas also you said, you know, is transitory fuel, but we need investment in gas because otherwise we don't have enough backup for for renewable energy and also on the table is price setting in the energy market, because now it's a merit price, which means the most expensive source of energy which is needed sets the price and the other you know, they have a premium to this, but if you have in the UK or in in other countries, there are days where you have 100% energy from the oil, not not only from wind and solar, and then energy prices zero and nobody earns on it even wind and solar. So, the mechanism should go from you know, this incremental price setting to average price setting which means that you know, energy from energy from wind and and solar, actually you have capital expenditure, you have amortization of capital, you know, you have some costs of maintenance, but these are predictable, they are fixed. They don't need to change. Yes, and So, the energy should not jump actually, the more energy we have from renewables the cheaper and that should be on the mark yes. But you know, the actually the price is set by gas, which on the mechanics I explained, yeah, which simply the market is too short to supply, you know, this high increases in demand,

M Michael LaBelle 1:15:24

and then if you make an average price, then you could actually get more investment to renewables because they're actually cheaper. Yeah, yeah.

A Adam B. CzyÅ¼ewski 1:15:31

And you know, average price there should be capacity mechanics for you know, investment in, in, in gas in gas assets, energy assets. And of course, you know, if you really use gas to generate generate electricity should be simply this part included in cost of energy, but then we won't have such a variation of prices or variability, like in the case when the price of electricity is is solidly said by gas

M Michael LaBelle 1:16:04

right now, okay. So, the market Okay, that's a whole nother topic, how to price the market and invest in it and maybe that brings us or not to my final question, which is what is the energy system you would like to see or you think we will see in 2050

A Adam B. CzyÅ¼ewski 1:16:23

I mean, this is I mean energy system, but we are talking about power generation on Linode

M Michael LaBelle 1:16:34

it I mean, this is a general question, I

A Adam B. CzyÅ¼ewski 1:16:39

think that at the end of the day, as I said that, everything shows that we are going toward you know, the world where electricity will dominate, and everything which can be elected will be electric, and the electricity will be greener and greener, we would need you know, as support gas that probably you know, nuclear because it is necessary hydrogen, which we can produce from the excess of energy, but in in areas where we cannot reduce know, this, or it's not economically viable, we should globally develop a system of let's say, a capturing you know, and of co2 and this includes natural system like you know, forestation, so, let's say that but also installation of you know, direct eye or capturing from air or you know, and this co2 Capture is important and significant, let's say raw material for many, many other other products. But I think that the key and we are not talking about it very often is that you know, the, in order to have a sustainable energy, we should restrict our use of material for consumption, because at the end of the day, whatever we produce is for consumption. So, we should change our, you know, consumption patterns just to use less less material, then there will be less energy needed. Yeah, this includes also in the building space we occupy, you know, transport we use, yes, yes, this is

M Michael LaBelle 1:18:42

gifts we buy for people, everything. Okay, Adam, thank you so much for making the time to meet with me. I really appreciate it. Thank you.

A Adam B. CzyÅ¼ewski 1:18:50

Thank you very much.

M Michael LaBelle 1:18:51

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