

Radu Dudau ep 30

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SPEAKERS

Radu Dudau, Michael LaBelle

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Michael LaBelle 00:01

Making Romania fit for 55 Episode 30 Welcome to the my energy 2050 podcast where we speak to the people building a clean energy system by 2050. This week we speak with Radu Dao. He is the co founder and director of the energy policy group in Romania. He is also professor of international relations, and it has extensive academic and research positions from the United States, Harvard, UK, Oxford, along with continental universities in Germany, Denmark and Romania. This week, we gain an insight into how Romania is tackling the energy transition. As we learn Romania holds high potential to build a strong renewable energy portfolio with a good natural environment in the Danube Delta, and even investors interest. The European Commission wants to push the country towards 40% of renewables in the next few years. In short, Romania holds the potential to shift away from coal and embrace renewables. Before you say this episode is not for me, because well, who really cares about Romania? Hear me out as to why I think Romania is so important to understand how and why it represents other countries struggling to develop their economies, attempting to lift people out of poverty, poverty, and, of course, to build a modern and sustainable energy system. As Radu points out half the population lives in the countryside. And as my week long trip through the country showed me, there's a lot of poverty and differences between the regions. Romania represents both Eastern European EU member states, but also other Balkan countries who hang on to coal and nuclear power. As we discussed, the money from the EU means financing the transition, it won't be much of an issue, but what is is the transparent and professional capacity by governments and stakeholders to properly implement projects. What we came to

understand in this episode is what is happening in Romania, and what the impact of the EU is in the country. This will help to understand broader challenges in both EU Eastern countries and in other energy community countries in the Balkans. As I mentioned, I was in the country for over a week, my partner and I took the van and drove from Budapest to the Black Sea. We camped in the van wherever we ended up at the end of the day or even at night. All I can say is the country is beautiful, and holds an impressive landscape from the views of the Black Sea, with its wind farms, the biting insects, the Danube Delta. The mountains, of course, are tremendous, but saw the rivers without rafting down one and having a very good time, thanks to the extra water being released from reserve facility producing electricity. I have to say the biggest surprise to us and this is why we should all hold up hope that Romania can make the energy transition happen is the roads are outstanding. It was a paradise to drive. We did 3000 kilometers from Budapest to the Black Sea and in Romania, we only came across less than 10 potholes. There are more potholes in my neighborhood in Budapest than what we saw in all of Romania. And here I just want to acknowledge my carbon footprint. But hopefully, by bringing my experiences to you, I can begin to justify just a bit my pension for travel and seek redemption through this podcast. When we were next to the Black Sea and saw a huge wind farm in the Danube Delta. It got me thinking I needed to contact Radu so on our way through Bucharest, we stopped in and he graciously gave this interview. I have two key takeaways first, as Romania's roads indicate miracles can happen, but as Radu points out, is not a question of money to build green energy solutions, but competency and transparent governance. And effective transition requires not just a situation or a site that needs assistance, but effective professional capacity on the ground, with money being well spent. The second is that while we discuss energy policies, and both of our research is around energy, the subject matter has now changed to be about climate change targets. The energy system for me was never an isolated system, but an arena where a multitude of processes and issues collide, and can be analyzed in a constrained manner. That's very academic. In this interview, we delve into energy policies, but they're these are connected to the climate change goals that are necessary to implement. 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.

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Michael LaBelle 04:50

Radu, I want to thank you for sitting down, we're actually meeting in person. Always a pleasure, Mike. Thank you in your office at the energy policy group group. Maybe at the very beginning, now you explain what the EPG does.

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Radu Dudau 05:06

Sure. Thanks for having me in your great podcast in first place. EPG is a an independent Think Tank Association on energy and climate policy based in Bucharest, we've been around for seven years now. We do energy and climate policy, markets, energy markets, regulation, geopolitics technology. So basically, we're following pursuing all aspects of the energy field. But increasingly, from the vantage point of, of its climate impacts. So climate policy has become the pinnacle of economic policy, industrial policy, everything must have fall in line. It's not an option for for us anymore to to just neglect it and not do the right thing.

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Michael LaBelle 06:15

Can I interrupt you there? Because this is what I'm sensing, too is we talked about climate policy. But you're the name of your group is energy policy. Right? Yeah. Do you see the shift of this focus, which was a few years ago and energy, and now it's very tightly connected to climate?

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Radu Dudau 06:32

Exactly. So yeah, that's our historical name. This is how we started focusing on energy policy and the energy field. But increasingly, first of all, you had to acknowledge the the immense importance of climate regulation in the energy field. But then you realize that that this was not just an addition, but was the, as I said, the the pillar, the pinnacle. And, in a way, energy becomes one of the domains, among others, transport buildings, agriculture, what have you, interconnected? Certainly, but but all in all, we have to define paths that that maintain the prosperous lifestyle that we want, but also fulfill the needed cuts in emissions and set us on a netzero

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Michael LaBelle 07:53

trajectory. And then maybe we can put that on a local context, just starting with Romania. And how well yeah, how well is Romania doing this? How well is this transition because there's a lot of in the past, there was a lot of issues with coal mines and coal fired power plants, and privatization. hydro electricity is a main source nuclear power, Russian or Soviet era and nuclear power. And how is Romania making this transition?

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Radu Dudau 08:23

So first of all, congrats for the excellent knowledge of the remaining energy system Mike. Yeah, you're right. We we remain always like to see the the diversity of the energy sectors as a strong point, because it kinds of allows you to to mitigate risks, avoiding put it putting

all the eggs in one basket and so on. Nonetheless, we still have in the country a pretty high dependence on fossil fuel. Natural gas is the most important fuel, if you include it's using industry as all as if as feedstock So, and then, coal still provides for about 20% of electricity in annual average, most of it is low grade lignite

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Radu Dudau 09:25

which is massive emitter and polluter. So, we think that that coal phase out should be an urgent priority, but But apparently, it's still not a political commitment in in our political establishment. On the other hand, a lot of people point to the fact that Romania is among the lowest emitters per capita in Romania in Europe, I'm sorry. Mostly because because we have, we did dismantle our heavy industries, soon after the political shift in in the early 90s. And the economy has been reconstructed on a new foothold based on service services, more high tech and cleaner industries more sustainable overall. Not entirely, of course, there's still a lot of pollution and in the energy sector is still the leading sector to do that. Buildings are also major sector because we reckon almost 50% of primary energy gets consumed in buildings in Romania. It's a sizable pool of buildings in in pretty precarious conditions in terms of energy performance, as we like to put it these days really bad. Yeah, and so they badly need renovation. And this is going to be a major challenges with their heat, considering the heating systems as well, which are inefficient and also mostly based on fossil fuel, with the exception of the countryside that massively uses. wildfire that we call renewable energy, ironically. And also transports have progress was very limited in terms of curbing down emissions in that sector. So you see, there's a lot of work to do. And this will come at a cost because because we have some very carbon intensive regions, especially the coal regions, and with all the the socio economic challenges that the clean transition poses, and other industries as well that incumbents that are you know, connected to the fossil fuels one way or the other. Now, the bottom line is can the energy transition, or the clean economic transition, if you like, in a broader sense, provide for the the economic needs of the more vulnerable social categories for the small businesses? What happens to the miners and all the workers that are going to lose the jobs? And it can we really put in place something credible and viable? Do you have the financial wherewithal for that? These are questions frequently raised in in our country. And we like to say that EPG that, yes, the money is not the fundamental problem right now. Because because we think at EU level there is plentiful funds. It's about the ability of the government and authorities and stakeholders to act access that funds to come up with with convincing smart plans with good regulations and governance structure. It's a matter of competence in administration, and

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Michael LaBelle 14:15

is the is the Romanian state. Both he I would say maybe we can separate the administration level out those that implement the programs, but also politically, so maybe is the administration on how energy policy or how these programs are implemented? Is that becoming more professionalized? And so when there is a program put in place, it's done well, or has that capacity been growing over the years?

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Radu Dudau 14:45

Well, very good, good question. Some progress there is but not to the needed rate and certainly not enough to keep up with the magnitude of changes that are coming from Brussels and from the European institutions to which we are Part I, I should always emphasize because we, I always try to take it in and dispel the notion that these new policies are a matter of imposition or regulations that take the takers always by surprise or, you know, come to undermine our sovereignty and interests, we are an integral part of the EU and participant in all the decision making, and we have to stand by this policy. But leaving that aside, there are a number of very major financial instruments that are dedicated for central Eastern European countries, including Romania. For the energy sector, the most significant one is the modernization fund, in excess of 10 billion euros are available through the modernization fund for the upcoming decade, for projects for clean energy production, you know, high voltage lines, batteries, digitalization energy efficiency. But now, the new proposal, the fit for 55 package actually proposes doubling the size of the modernization fund. So, this is going to be a lot of money. But the way it works is through the central government through the energy ministry, who must come out with procedures to select transparently project to, you know, come up with support schemes. And this is called complicated work. And I'm proud to say that it hasn't been done at all in Romania. So Romania is probably the only member state the beneficiary member state of the modernization fund that hasn't submitted. So it hasn't submitted anything at all. For this year, already, we missed the first committee, it's likely that for the end of the year, the same will happen. So this comes down to two significant costs of inaction. And

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Michael LaBelle 18:17

lightweight, why haven't they submitted anything?

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Radu Dudau 18:21

It's hard to see. But the more obvious and easy answer is that the government hasn't been able to get its act together on this. It's a complicated thing to do. You

have to know your priorities have a vision, you have to basically have a national strategy about how you want to spend the revenue generated from carbon allowances. And to have that align with the priorities of the organization fund regulation. And this hasn't been done

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Michael LaBelle 19:10

at all. As I'm missing the actually goes back to my question, then are they missing the administrative capacity to properly assess and create the policies that are aligned with the demands of very

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Radu Dudau 19:23

much so that's one major factor. It's a matter of capacity. It's also a matter of really being able to assess the situation and setting your own priorities as a government to didn't know how to act about this. Could be other explanations of more speculative ones such as intentionally delaying in order to maybe offer An extended life to the incumbents and so on.

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Michael LaBelle 20:07

That's speculation.

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Radu Dudau 20:08

That's complete speculation, nobody would stand by this. And this is this is unfortunately not the only case there are others as well. The just transition fund we're also so the basically the fund that is destined is meant to support the economic shift in those vulnerable areas that are carbon intensive and that will be heat economically the moment the coal companies and other carbon intensive companies that are major regional players will be shut down. And to do that you have to come up with a plan at regional level that makes sense is coherent is has meaningful climate impact and so on. This again is not in

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Michael LaBelle 21:11

isn't that happening in the in the zoo Valley? The just transition

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Radu Dudau 21:15

Zoo Valley but but even more than the new Valley the challenges go the gorge county so basically the lignite base and zoo is for hardcore hardcore has been just about 10% of the overall coal industry. Okay, nationwide, the main game is about lignite. Okay. And also the hardcore hot coal industry kind of accepted its fate already by now not the same with with lignite industry. And some politicians think they're doing those worker favor in saying, well, we're going to subsidize you and keep you alive as long as possible. Whereas the precise opposite happens. The more you defer, elaborating serious plan to offer those people an alternative. And also use the money that you could access your funds. To do that, the more hard hit, they will be, unfortunately, at the end of the day, when when the market reality will hit the ground.

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Michael LaBelle 22:47

And you mentioned the fit for 55. And maybe we can move a bit more into that area. And this would be because under this new scheme, I've only looked at a little bit, but basically, the price for ETS is definitely going to increase. And in this area of coal would just say general both lignite and hard coal, that that the missions will price for emissions will really increase and so they will have to be shut down. And so you're looking at that the preparation for that shutdown needs to happen now or even in the past should

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Radu Dudau 23:22

have happened already. But But now as we speak will will also be the best decision as opposed to deferring that even for another year because just as you say, Mike, the price of ETS so the cost of carbon emission has already become untenable for the alternate energy complex which is the National lignite company. This is a vertically integrated company that extracts lignite and transports it to their close lignite fired power plants that in turn produce electricity, but also heat for the urban areas, and so on. And then this has been collapsing. And now, it's true that Romania still depends on this energy for food security of supply. So, the government should not just, you know, let them die but also put something viable in place, namely something

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Radu Dudau 24:54

sustainable, renewable, clean, by all means. And, or as as little pollute, polluting as possible. And, again, I haven't been able to see any convincing plan to that purpose and various attempts by by the government to extend loans to, to this company, knowing that there was not going to be paid back ever.

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Michael LaBelle 25:39

But in the area of renewable energy now in Romania, I was just an Danube Delta there, there's huge wind farm there, are there more plans to roll out more wind or more solar in the country or kind of increase?

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Radu Dudau 25:53

Well, the level of interest from investors is huge. It's it's a nice surprise to see that after years of stagnating interest for that we're we're basically seeing, you know, a new wave of interest. And, of course, the one of the reason he is is the very high level of EU enthusiasm and ambition about that and the money that are supposed to come with it and all these instruments and with the targets that all the member states will have to commit to 40% renewable energy sources will be the Romania's national target, which is considerably more than what Bucharest committed to in the latest, relevant strategic document, along with any CP, the National Energy and Climate plan.

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Michael LaBelle 27:08

What was that level?

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Radu Dudau 27:09

That was 30.7%. and, more recently, the energy minister announced just like that 34%. Okay, we're willing to do a 34%. But even for the 34% these days is not what it used to be. So we have to go much higher. Now, we'll see exactly what exactly the target is going to be for Romania, but the direction is clear, and the writing on the wall is clear and investments feel encouraged by that, sorry about the noise. And the region, you mentioned, the dub Raja and then the Danube Delta is the most promising in Romania, for both wind and solar power, you have massive wind farms in that southeastern part of Romania the authorities and by that I mean the government and the TSL trans electrical transport system operator, which is in charge with the high voltage lines, and the National Energy regulator will have to invest much much more in increasing the the grid capacity in that region. Because right now, the main challenge is the congestion there that you don't have enough grid capacity to evacuate potentially, what you can produce their own shore, not to mention that Romania also has a non negligible wind offshore potential that could that could add a couple more gigawatts until 2030. By reckoning easily, but for that, you absolutely have to to bolster your your power grid, especially in that part of the country. It's a it's a region with low local consumption of energy and high power generation. And you have to evacuate that power to the you know, in industry centers of the country. large

cities and cities and so on. And now this has been on the agenda for More than a decade, and I would have liked to see more progress. There's been some progress, but should be much more and much more quickly.

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Michael LaBelle 30:12

But then is there a disconnect between what he was looking at for that just 5050 or 55, but just the overall climate change targets and goals and how each member state reaches that. And the reality here on the ground in Romania, I mean, I'm just looking at the transportation, lot of secondhand third hand, maybe fourth hand cars on the road, when it comes to how people are living here. I mean, it just seems such a stretch to increase energy efficiency and have people move away from biomass or probably even coal for heating. Like there's such a huge thing about electric vehicles being used as a dominant mode of personal transportation. There seems to be this really huge hurdle. How does Romania I mean, this is like maybe too much of a question. But how does Romania meet these kind of these goals or this ambition that the EU is proposing, which you could say would be viable for Germany or for France? But a country like Romania, how can this happen?

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Radu Dudau 31:14

Well, it is a large question. It is. Basically, you've covered with it the the decisive questions or challenges right now. And I'm saying that because you pointed to rule Rural Energy consumption, which is going to be a serious challenge. Still, almost half of Romanian population lives in the countryside. And a lot of the most of them are using biomass of dubious sustainability credentials, like

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Michael LaBelle 32:00

like garbage. I mean, you can smell it when you drive through, or

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Radu Dudau 32:04

some of that, this this shouldn't be. It's I think, I'm confident this is not marginal. Most of the people don't do that. They just have firewood, fingers, they're burning that wood in inefficient stoves and so on. And yeah, raising the energy efficiency of energy consumption, the countryside is a challenge. decarbonizing the heating sector is a major challenge. The transport sector is a major, major challenge, as long as Romania's doors are wide open to second and third hand imports of cars that are discarded in Western Europe. Ironically, the more ambitious, you know, the restrictions and curtailments in

Western Europe offer for internal combustion engine cars, the more those take the way of west of Eastern Europe, and so they do not vanish from the surface of the earth. They just come here and buy here. I'm in Romania, Bulgaria, Southeast Europe, not to mention the entire Western Balkans, because it's just much more affordable now to buy a very good German car secondhand that you wouldn't have afforded otherwise. And you buy it and then bring it here and it's very cheap to register, pay very little pollution, taxes and just use it for another 10 years at least. So yeah, as long as you don't impose restrictions on that and do the incentives such as very high bonuses for electric car purchases. 10,000 euros if you buy an electric car, plus. That voucher for scrapping the car, bought another 1500 euros. So it's a lot of money. But although the market has increased it started from very low base and basis and the infrastructure is still not widespread enough. However, having started with I must say there are low hanging fruits that remain you can reap and it simply makes sense to invest in, in recharging station and creating credible infrastructure to give consumer confidence that it's a right to own a car, although it shouldn't be everything about buying and owning cars, but for the most part that will, this form of behavior will continue and more generally, more importantly, investing in bolstering the power grid for transmission and for distribution. So, that would allow for the needed increased electrification of the economy. More and more sectors should use electricity instead of fossil fuels. industry as it as well, households, if you think about made pumps, cars, digitalization will will make certainly difference. And Romania likes to brag about its it progress, and so on. So we're still in in a point of low hanging fruits, there's still a lot that could be achieved by just doing things that make sense. And that will give you a pretty obvious return on investment. on others, it's trickier. It needs better planning, better integration of local resources. doable, but it depends a lot on best practices on capabilities that both authorities and the companies have to acquire.

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Michael LaBelle 37:18

what's the what's the status, because with the nuclear power in Romania, maybe you don't want to get into all the other different details in the Start by

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Radu Dudau 37:27

stages. You mean, the right now the status quo in terms of Well, what's the future? What's

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Michael LaBelle 37:35

the future look like? Well,

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Radu Dudau 37:38

it's it's See, I'm predictable, I should say, in spite of what some government representatives like to declare, Virginia, we have two nuclear units in China, Nevada, on the way to Bucharest you pass nearby. Yeah. But you might have also noticed the spots where two new nuclear units should be constructed build. And this has been a long standing plan and the current government and authorities are still entertaining, the idea of investing at least 789 billion euros to build two nuclear units of can do type in is a nuclear technology, just same as the other two, which is not particularly efficient to for today's standards, and also

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Michael LaBelle 38:50

is based on Soviet technology. No, no, it's Canadian, Canadian, it's

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Radu Dudau 38:53

Canadian technology. But But, you know, it's the technology of the 70s. It's good and safe technology in terms of nuclear industry. They had a very good safety record so far. In terms of hazards, I mean, what we're seeing though, is is increased unforeseen interruptions, shutdowns and so on. No, no, you know, public health risk or anything like that,

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Michael LaBelle 39:30

because the units are old.

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Radu Dudau 39:34

They are well maintained. So, you know, being obsolete is not the issue here. But but apparently minor things keep keep happening and keeping up and you have the allegedly most reliable source of energy basically Having to withdraw one new nuclear unit, it's an out of an average contribution of 19% of the power mix. one unit means, you know, almost 10% Yeah, so it's huge, you see the dent you see the impact. But coming back to the investment plans, we we at TPG see very little prospect for in economic terms for that to happen, because it's going to be hugely expand expansive. Using money that you can invest, borrow from, probably from the United States, based on the most recent agreement within the strategic partnership, that the US is going to finance the construction, you have to pay back in interest to that, whereas a lot of competing technology, just as low emission is already, you know, in itself more affordable in terms of cost per kilowatt hour per kilowatt hour. So what we like to call lcmv in energy economics,

by but added to this, that most of the EU funds go to these other sources, which will drastically decrease the costs for such investments or rather redistribute them at system level. But it's very, very hard for us to see how building two new nuclear units, the same sort can make economic sense. Presently, not to mention that, as years go by, you know, this will make ever less economic sense.

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Michael LaBelle 42:34

More broadly, maybe we could just shift it to the southeast of Europe. And how do you see these EU policies affecting essentially the energy community countries? And this bigger push now, with these climate change goals? Will they be able to meet these goals? Or how ambitious is it? Because if they're members of the energy community, they have to align with EU goals. But there's no enforcement mechanism either.

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Radu Dudau 43:07

That's exactly right. That Yeah, that's the issue. And this is why while there has been some progress Wow, country after country, open their arms to Chinese investments in soon, more coal power plants, allegedly less polluting. So a mix of political cronies when poor planning and the hope that at the end of the day they are going to be able to sell that power to the EU because they don't have to pay ETS carbon allowances. And indeed, Romania and other countries in Southeast Europe have imported electricity from Serbia, from Ukraine. And now, the game changer is going to be this Seba mechanism, the carbon board and adjustment mechanism which will apply to, to electricity by all means, and

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Michael LaBelle 44:47

MIT Why do you think the commission wants to do that so much? I mean, that's kind of across the board is carbon emissions. Say tax simply and So they want to do this not just an energy but also goods, as well.

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Radu Dudau 45:04

Yeah, I think they will start with the limited range of grids. And from what we know that they're going to start with steel and then some particularly carbon intensive products that will have to be taxed. And

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Michael LaBelle 45:27

do you think that's meant to foster greater production of those goods in the EU, or a cleaner production of energy within the EU, to stimulate the

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Radu Dudau 45:36

world the thinking is, is cleaner. The industry wants protection as well, because if you talk to the industry, they want both the protection of the see bam, and a continuation of free allowances, which is absurd and unjustified. But they are writing in, in needing to see a convincing mechanism because it's really, they're their lives and livelihoods are at stake here. I mean, they're not going to be able to survive, if they will have to keep paying an exorbitant price of the co2 emissions, whereas their direct competition will have to pay nothing and but the bottom line is, see, bam, we'll have to give them confidence that they're really protected. Yes. So that there, there are no loopholes, or that protection is that flimsy and so on. Because if they don't get that confidence, they will fight it tooth and nail and probably tear it down. And so a lot, it's taken in the nitty gritty, you know, the detail and in particular CBM is going to be a major, major administrative hurt, potentially a bureaucratic nightmare bureaucratic nightmare, seen with hostility, not from from companies, but by countries and regions from other parts of the world, who will definitely see that as a protectionist mechanism and WTO must, will have to prove it as well. And then, you know, doing all this the you will have to to prove their kid there credentials and say, Well, no, this is really about about leveling the playing field. And, and in fact, you know, what, if you're a company in, say, Asia, Indonesia, I don't know where and you produce steel or aluminum that you want to sell in Europe, we're going to tax you. Alright. But that money will go back to your government. It's not money for, for the it's money that will take and make sure that it's going to be reinvested in clean technology in your country. So we want to have hurdles, equally high. But it's fundamentally a fair game and you can you can stand to benefit. But of course, it's going to be very tricky because it can potentially be be circumvented, cheated on,

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Michael LaBelle 49:09

is this an attempt by the EU to kind of match China through foreign investment. But do it in such a way that Yeah, its climate related, clean energy related, and then channeling that money back into foreign energy projects like China, you just mentioned financing coal fired power

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Radu Dudau 49:32

in a way, considering that, that the EU has become a pretty small emitter of co2, about 8% of total co2 emissions come from Europe, which is pretty low compared to giants such as China, the United States, North American general and so on. It seems almost pointless. To You know, incur all these huge costs and efforts but the thing is, Europe definitely wants to keep a high tech edge and and, and the an industrial base in Europe, they want Europe wants to be able to produce the industry and infrastructure and facilities installations of the clean transition. And not just important the important from abroad. And to do that you have to give the industry is producing them the comfort that it that it pays investing and being efficient and, and technologically cutting edge and we'll protect you for that. Otherwise, they will just go away with with manifold detrimental effects, there will be carbon leakage, as they call it, that is the carbon that you wanted to tax here simply be admitted elsewhere in a jurisdiction of lower taxation where there are no costs and carbon plus you destroy your own competitiveness and industrial base. It's it's really an existential Yeah, and for that reason, I think the Commission and the other authorities will pay very good attention to how the mechanism is implemented. They will have to, you know, juggle many balls at the same time.

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Michael LaBelle 51:50

And last time we spoke, we had a really good discussion on geopolitics, including Russia, and maybe we could tie it into that just to conclude is how is this perceived or how could this affect gas relations with with Russia having having this border tax basically.

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Radu Dudau 52:14

So Russia will still remain a major source of gas for for the EU and for Southeastern Europe, Romania is unfortunately become increasingly dependent on imports of Russian gas. And on the longer term, certainly the threat to Russian gas establishment is the very fact that natural gas will be less and less incentivized and accepted and used in the EU economy by various means, gas is starting to be curtailed eliminated as as an industry because it is at the end of the day, even if some seed as a transition fuel, it is a fossil fuel. And it simply not worthwhile putting a lot of money in in infrastructure and facilities that are going to probably end up as stranded assets, never able to return the value on investment and because they will not have the needed lifetime for that. So that's risk for Russia, certainly. And they have all sorts of responses to that is whether they are credible or not. It may be too soon to to assess. But you know, we'll export hydrogen to Europe, if you want hydrogen will give you hydrogen, but then that that hydrogen will have to be clean. Well, we'll clean it up before. Just tell us what you want. And we'll prepare for that. So Russia still depends extensively on the European market. And natural gas is a tremendous asset. Still politically effective, not only an economic good for them, and

they'll try to adapt to the new realities of the market for that. Yeah.

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Michael LaBelle 54:50

So Russia still remains and likely will remain the kind of an energy powerhouse or exporter for it for the EU. Regardless have the energy required, are they?

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Radu Dudau 55:03

I think by some measure, yes. But certainly much less than then then this used to be the case 10 years ago or more forever, for several reasons the energy transition itself leads to increase autonomy and self reliance. Because renewable energy sources and resilient systems and so on, simply work on locally produced energy power. But also because because the EU, if they were effective at anything they have been effective at regulating and the natural gas industry, the pipelines were heavily regulated, and a lot of the old style business model of Gazprom has collapsed. And you see still leverage with some governments on the southeastern flank with TurkStream. And then Bulgaria, Serbia and Hungary, yes, which is a staunch collaborator of Russia on energy matters. And also, the Nord Stream 2 saga threatened to really affect the transatlantic relations. And it's still not ended completely. We'll have to see how, how this will end up. But I think this these, this is a game of diminishing relevance. This is my assessment. Of course, not for all purposes. I mean, it can well be that Ukraine, for instance, will really be vulnerable to all this. But for the broader Russia EU relationship, I think the EU is on a much stronger and firmer foothold and then they used to be

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Michael LaBelle 57:54

so times are changing this energy changes not just in our geopolitical assessment of energy relations, but also technological assessments and policy assessment.

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Radu Dudau 58:05

If there's one more element I would like to add on precisely this point is the discussions about the critical materials that you need for these industries like like, you know, nickel and lithium for batteries and rare earths most of which are concentrated in China. And this is a critical issue. And I think many are overly optimistic in Europe as to the ability to supplant them quickly, this might not be the case and this can really, you know, slow down for a while the speed of the energy transition, because the cost will have to increase if you see the steep curves, price curves for all these materials and the mining processing capacities will have to be expanding, widely diversified geographically. And

this this will take time and I think this is a genuine worry, of course research. High Level research will try to come up with with all sorts of substitutions. But I think considering the very narrow frame timeframe that we're having, this is the more serious challenge these days than rushing gas

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Michael LaBelle 59:45

is fine. The materials for the transition Yeah,

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Radu Dudau 59:48

and making sure that you will have enough raw materials for the Clean energy industries, new, clean technologies to keep up this hugely ambitious boom of investments and development.

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Michael LaBelle 1:00:18

Do you think you think this will be? I really want to conclude, but we keep getting more questions. Do you think this will be an uneven development in the EU? In terms of access to in terms of both access to resources, and who benefits from resources? Yeah,

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Radu Dudau 1:00:35

yeah, it's a fair question and good question. Of course, there is also the lingering dissatisfaction and suspicion in in Eastern Europe, say that that very configuration of the technology, technological transition favors the technology and industry hubs of Western US, and that will end up being buyers. And, and this is a genuine concern. Of course, they are funds for research and but but this are seen as you know, cosmetic cosmetic devices. Having said that, it's true that that the governments in the region are increasingly concerned about localizing value chains. And this was not the case that this level of awareness in the previous wave of investment in renewables like 10 years ago, but now, you have much more concerned about that with the local governments. And they say, once you Well, you, we have to create jobs, we have to internalize part of the value chains you have, we have to do it at least at least parts and equipments and, and create skills and then become relevant in this whole edifice. And this, I think, this very sound approach, and you have to put in place a smart industrial strategy to do that. And on the other hand, it's also encouraging that more than in the past major international companies understand this trend and then try to cope with it. Of course, it's not it's not easy for, let's say, a major Danish wind company, or producer wind turbines, say to Danish workers, well, we'll produce stuff in Romania not here anymore. But at the end of the game, there

has to be some sharing. And I think what the market itself cannot provide, then some regulation should because this level of transformation cannot be succeed unless it enjoys a sound level of popular acceptance and

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Michael LaBelle 1:03:26

support. And part of that centralization decision making. But also, yeah, building the public support, which is another question. I'll leave it there. But I just my final, final final question is, what is the energy system you want to see in 2050? Or what is likely?

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Radu Dudau 1:03:46

Yeah, you know, I conditioned myself to basically not see past 2030 other than the very broad trends, so we know it's gonna have to be zero, net zero carbon. Net Zero is really a whole new world. And you'd have to see a lot of carbon sinks. So we'd like to think that we'll live in a world with widespread forests and a lot of green but also, you know, CCS facilities for some economic sectors that hard to abate emissions, like some industries, and you'll need that probably I'm not sure that We'll see. We'll keep seeing we'd farm spinning everywhere. And it's still a possibility that major breakthroughs in the energy Producing technologies can occur, that will change the landscape. I mean, it's hard to be still be a believer in, you know, nuclear fusion for energy purposes. But considering the rate of progress, yes, but what if, I mean, that would be a game changer, shall we see much more efficient solar panels? Well, the coatings of buildings themselves, the paint on buildings, be, in fact, energy generating. And so this is the technology part. And some like to see that and picture ever more futuristic things. Others want to see change communities, people with drastically changed behaviors. more frugal, probably more aware anyway, relying more on smart community organization more local, more local, probably continuing trend towards urbanization and developing urban centers, because apparently, large cities are all you know, better equipped to both adapt and mitigate. And yeah, the way what we eat and what we wear, and how we move from A to B. And then the habits that we'll have, and we'll see how rational people will become if they will like to always make sure that they neutralize the carbon impact episode every trip and so on. Yes. You know, minutiae is lean. I don't know, but it's certain that we'll have to see a mix of both technology changes and behavioral changes, and a complete phase out of fossil fuels by now.

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Michael LaBelle 1:07:28

Okay, great. Ready? Thank you so much. Thanks so much.

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Radu Dudau 1:07:31

Always a pleasure and fascinating discussion from from my angle, too.

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Michael LaBelle 1:07:36

Yeah. I love this. Thank you very much. Thank you. Thank you. Thank you for joining us. For this episode, we produce the my energy 2050 podcast to learn about cutting edge research, and the people building our clean energy system. If you enjoyed this episode, or any episode, please share it. The more we spread our message of the ease of an energy transition, the faster we can make it. You can follow us on LinkedIn where we are the most active on the my energy 2050 web page, or on Twitter and Facebook. I'm your host, Michael LaBelle. Thank you for listening to this week's episode.