THE BROOKINGS INSTITUTION

BELFER CENTER FOR SCIENCE AND INTERNATIONAL AFFAIRS

EUROPE'S ENERGY TRANSITION IN A GEOPOLITICAL STORM

MONDAY, APRIL 28, 2025

INTRODUCTIONS

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O'SULLIVAN: Fantastic. OK. It is great to see a full room on a very beautiful day. Samantha and Constanze and I were wondering, who's going to come sit in IAB at this particularly beautiful day? But it is a very timely topic that we're speaking about. And I'm pleased to see so many of you in the room, especially happy to see many of my students. For those of you that I don't know, I'm Meghan O'Sullivan. I'm the director of the Belfer Center for Science and International Affairs. And I couldn't be happier than to host some colleagues of mine from the Brookings Institution, which actually is a place that I began my career at in Washington, D.C., so it's always a pleasure to do- I left to go into government, so I'll get a chance to introduce them in a moment.

But the Brooking Institution has been working with the Francisco Manuel dos Santos Foundation from Portugal, and they've been working on a series of papers related to Europe and energy security and really managing the whole energy trilemma. And obviously the energy trilema is something that was important to Europe into other countries around the world, well before the Russian invasion of Ukraine, as countries and Europe in particular, talked about grappling with these three goals of having affordable energy, secure energy, and sustainable energy. And of course, that remains true today, although the geopolitical circumstances around securing energy has changed dramatically. But while we think about the security and the sustainability and affordability, the trilemma, in the context of Europe, it's also a challenge that the United States is considering. And that other parts of the world, the developing world considers, and each place and every country puts a different weight on those three, and it's a real opportunity to think about how Europe in particular is trying to balance these three goals and how the geopolitical environment is influencing its ability to do exactly that. This conversation, as I said in my class just an hour or two ago, was going to be timely no matter what, but it's particularly timely today in light of the large blackout, the energy, the electricity blackout happening, or I think it's actually been restored primarily, I don't know, but we'll get an update maybe in a moment, in Spain and Portugal. So that will bring us to the moment discussing how these issues are considered and what something like what happened today, what it could mean for the pursuit of the goals encompassed in the trilemma.

I'd like to thank Constanze Stelzenmuller, who is, as I said, here from the Brookings Institution, where she's the director of the Center for the United States and Europe, someone with a deep track record in working on primarily security and politics, but now thrilled that she's working on energy as well as it relates to Europe and to Germany in particular. Also very happy to welcome Samantha Gross from the Brookings Institution, where Samantha runs the program on energy security and climate at the Brooking Institution and does a fantastic job as well. I'd like to, I'm looking for Ted Reinart, who is from Brookings as well, Ted has been instrumental in putting this all together, along with our team from the Belfer Center, our ops team, which has put together so much of, oh, we're over here. Put together so much of this opportunity to work together. And in particular, thanks to Charlie Landau, who has been the person who's been the ligaments to this entire event. So thank you, Charlie. I'd also like to thank our friends at the Francisco Manuel dos Santos Foundation. And I usually don't read, but I am going to read, and you'll discover why in a moment -- but I'm very honored to have you here and really welcome you to Harvard. And I'm thrilled that we could be the beneficiaries of such a great collaboration that you have had with the Brookings Institution. So we have Gonçalo Saraiva Matias who's the chairman of the foundation. Teresa Mourao-Ferreira - where's Teresa? Back there? Thank you for being here. João Tiago Gaspar Welcome and Maria Gomes da Silva Maria over there. Okay. Thank you all for joining us and for making the trip to Harvard. I'd like to hand it over to Gonçalo to say a few words before we get our conversation under way. Welcome.

SARAIVA MATIAS: Well, thank you very much, and good afternoon. It's a pleasure to be here. I'd like to start by thanking Meghan O'Sullivan and the Belfer Center for having us and all the team. We feel very welcome here. And as you said, this is a very timely moment for this discussion. It would be anyways, but it is very timely in Portugal today and in Spain and some areas of France. As all of you may know, we are facing a massive outage of electricity, which caused significant damages and disturbances. So right now in Lisbon, and this is slowly coming back, but right now, in Lisbon, there are no traffic lights, no ATM machines, supermarkets are closed, schools are closed. Universities are closed. Fridges are not working. So food is going to be out. So this is really, really problematic and that happened overnight, so nobody expected, nobody knows the origin of this. So this, I've been accused of causing this as a marketing for this conference, so I promise I didn't, I promise I didn't. But it's actually an excellent case study for us to understand what can happen to a whole region of the world that is developed with all the services up and running and going on, and from one day to the other, everything is out. I haven't been able to talk to my family since this morning. I have no idea where they are and if they are OK. So I'm just hopeful, and I'm sure they are okay. But I don't know. And this is really disruptive. So of course, I hope. I can have some insights from your conversation on what can be done, what can't be done to avoid future events like this, but this is really problematic and concerning. So I'm very thankful to the Brookings Institution, to Constanze, to Samantha, and to Ted for this project. So the foundation is partnering with the Brookings Institution on a project on energy safety and transition. So both geostrategic aspects and also technical and economic aspects of the energy transition. We have three policy papers already out, and I believe they will be discussed here today. And we have more three or four policy papers coming, and this is the first major conference in this project. We'll have two more, one in Washington D.C. And another in Lisbon next year. So this is very exciting, and you may wonder why is a Portuguese foundation involved in a project like this. And of course the idea is, and I think the facts prove us right, is that these issues concern everybody. They know no borders, and these are really global problems that we need to face together. And if we don't face them together someday, as Portugal did this morning, we'll wake up one day and find out that. There's no electricity, and we can't speak to each other, and we cannot keep our lives running in a normal way. So that's why, that's the answer. I think the facts are proving us right. That's the the answer, that why we need to work together to do real and significant and robust research together, and hopefully find ways to resolve these problems and to have a safer future for everybody. So thank you so much, and looking forward to the discussion.

O'SULLIVAN: And I'd also like to make sure that everyone in the room... Better? Okay, I would like everyone to know that we are live-streaming this, so this is an on-the-record discussion and there's the camera right there in case anybody wants to conceal oneself. Okay, so I'd like to start again by welcoming you and let's start with the news. It's always a good place to start. So we've heard from Gonçalo the situation as it stands in Portugal and Spain. I don't know if either of you have the ability to give us any more of a sense of what happened. But barring that, which I think is still relatively unknown, let's think for a moment about what the implications of a crisis like this are for Europe as a whole and for its efforts to try to balance energy security with climate goals, particularly given that I think in Spain and Portugal, much of the electricity is, of course, renewable energy. And so how does that play into this, and how will this play into the politics of this moment? And so let's start there. There's a lot more to be said.

STELZENMÜLLER: I'm going to leave the actual mechanics to you.

GROSS: Do you want me to start?

STELZENMÜLLER: Yeah, please.

GROSS: I'm happy to start. So I think one of the things, so we don't know what caused this yet. I could throw some ideas out there, but I don't want to publicly for sure, because we don't know yet. But I tell you the one thing that I really have learned today, and that is that energy security comes in a lot of different flavors, and it means a lot different things to different people. We tend to think, and when we put this project together, we were thinking of energy security in a geostrategic way, thinking of things that affect energy security like Russia's invasion of Ukraine and the changes that have happened in energy markets in both directions since that time. Whereas energy security also means keeping the lights on and that also has some technical aspects. And you talked about implications from this. One of the things that I'm going to be watching and wondering and biting my fingernails a little bit is how this plays out politically. Because I think a lot of different groups are going to want to project onto this crisis their own views of the world, of the changes in the electricity system, and where this is all going. I think you'll see some people fault renewables for this because this happened just after noon in Spain. And as you all probably know, Spain is sunny. And so the grid was running on over 60% solar at that point, which meant it didn't have a lot of spinning reserves to help support the grid.

STELZENMÜLLER: I think you have to explain what spinning reserves are.

GROSS: Okay, briefly, ever so briefly. I promised I wouldn't be technical. But what it means is when you have thermal power plants, they run by turning a turbine. And that turning turbine has inertia in it, just physical movement inertia. And the inertia of those things spinning is available to you to help keep the grid up. So the more spinning things you have, the more support the grid has. And what happened at this particular moment, because there's a ton of solar and other renewables. Is it didn't have a lot of spinning reserves. If I were a betting woman, and I am, this is going to come up as a complaint. But there are going to be a lot other things come up, and it's going to depend on what the actual cause of this was. But I think you're going to see some anti-renewable sentiment come out of this for that very reason.

STELZENMÜLLER: But it was the worst possible time for this to happen.

GROSS: It was the worst possible time of day that it was happening because the Spanish-Portuguese grid was overwhelmingly running on solar because it was high noon. So it's going to be a really interesting political question. And I think everybody is going to project their own thoughts onto this. And we'll see what the actual cause is and then how the cause plays out in politics, which I turn to ConstanzeÜ.

O'SULLIVAN: I'd be interested in your view on politics, but also just on this one of the ways in which Europe has tried to make itself more energy secure over the years, actually, not just in the last couple of years, but really since 2009, since the crisis with Ukraine, is to be more integrated, to have the electricity grids be more integrated and all of that. So, is there a lesson, maybe that's a Samantha question. And also just the the the reality that a successful energy transition is going to be one where we electrify absolutely as much of our economy as we can. So what Gonçalo was talking about in terms of you know everything - there you are - you know everything sort of stopping this will just be amplified in a net-zero world, and so do you think that will be part of the pullback, or part of

the reaction as well, a little bit of a more question about the wisdom of electrifying everything?

GROSS: Well, I mean, I think I'll say something on that quickly. Electrifying everything that you can is the way to decarbonize the economy full stop. And so what I think this is going to shed light on is we're going to have to figure out how to do that in a way where you continue to have a reliable grid. And so we're gonna have to think about ways to get a reliable grid when we have more renewables, when we have fewer spinning things that help us support the grid. We're relying more on electrons from the sun instead. And there are ways to do that, but I think that's gonna, my guess is that's going to be a big lesson learned from this.

STELZENMÜLLER: Well, I mean, this does raise a number of really, really tricky questions, right? The one, I think it's becoming clear that the transition from fossil to renewables is neither as quick nor as clean as we thought it would be. And that under circumstances where relationships of interdependence that we banked our prosperity or social stability and our growth and our security on have suddenly turned against us, and hostile in some cases. The energy trend is becoming more and more trilematic by the day, right? We are still not uncoupled from Russian fossil fuels. The EU Commission has just announced that it tends to publish a plan in early May to decouple fully by 2027, right. That's two more years to go. We, the supplies from the North Sea and from Norway are going to peter out within our lifetime. And everything else, Qatar, the Gulf, is politically charged. And now the lifeline of European LNG supply during the Russian invasion, the U.S., which previously, remember, didn't want to sell us U.S. LNG. Now that lifeline has become politically charged as well. That's a major headache under the current conditions. And then, of course, you have the question of grid resilience and redundancy, which has, I think, the EU Commission has, as far as I know, tried for years to find and to design a European approach to this and has, I think, again and again hit national interests, national reservations, national boundaries, and the classic case being the competition between the Iberian Peninsula and France over renewables versus nuclear power. And France refusing for a very long time to let Iberian renewable energy be piped through or be let through through France. There are I think all of these questions are going to be asked in the next days and weeks in Europe.

O'SULLIVAN: And can I ask you, Constanze, if you think that there's going to be concern about cyber and other security issues? I mean, I think there already is, but maybe it's going to be heightened by this. Could you say a little bit about that set of issues? And then even as we get into energy security and then defense being kind of adjacent to it, national security being adjacent to, and at what point does the desire to put more resources into the defense budget come at the expense of putting resources into advancing the energy transition?

STELZENMÜLLER: I think we're probably already there. The part of the issue here, of course, is that these grids and connectors are owned by private companies, which have zero interest in having the nation states or the EU come down on them and regulate them, much less declare them to be critical national infrastructure, but which is something that is increasingly happening. The entire, I think, 8,000 kilometers of Norwegian pipelines, which are run by the company Equinor, used to be Statoil, have now been declared national security infrastructure by the Norwegian government. And Equinor has basically just been sucked into the system. It's entirely possible that we will have to rethink our energy supply connectivity in that way. And not least, because as you say, cyber attacks are another risk factor here. And just by way of reminder, what was the American pipeline, the Constitution

pipeline a couple years ago that came under attack? Yeah. Right? It's happened here as well. So that is something again, where I think you are going to see a very tense relationship between governments and companies. And I think we're in the end. I think the giant sucking sound here comes from governments saying, you don't have a choice. You become part of the national security structure.

O'SULLIVAN: I think there's definitely the case to be made that the energy transition brings with it much more government intervention in the economy. In part because the imperative of a faster timeline suggests that the market itself won't be sufficient to get the economy there, so we have more industrial policy and other factors.

STELZENMÜLLER: And not just that. As we don't even know yet what the, you know, the cost to Portuguese and Spanish GDP today of this outage has been, but it's likely to be very large, right? And so the possibility of catastrophic outcomes, right, which then have massive political consequences, I think is something that governments also will need to factor in, and that companies and business will just have to follow suit.

GROSS: I would add that the complexity of a grid that runs with more intermittent renewables on it is higher, plus you're talking about electrifying as much of the economy as you can. It becomes more and more important that the engineering miracle that is the grid is incredibly reliable while it's becoming more complex. I don't think government's gonna be willing to leave that alone.

O'SULLIVAN: Is there a way to get the private sector more involved in upgrading the viability of the grid?

GROSS: I think they're certainly, well, they're certainly trying. They're running into various issues. Some of that is NIMBYism for not being able to build infrastructure that they need. Some of it I think is more of a public and common good problem, that it's difficult for any one entity to pay for certain upgrades. You see that a lot with new capacity coming on the grid. And so there's a lot of different ways where it is challenging. I think, they certainly have, they are certainly motivated to provide a reliable product. But if they're willing to spend all the money to make that product as reliable as it needs to be, I think is another question.

O'SULLIVAN: Let's move from this and go to what has happened in the aftermath of the Russian invasion of Ukraine. And so you have many of my students here, and in our class we have some debates where we argue different propositions. And one of them had to do, we're almost done, we have one more class left, but had to with, did the Russian Invasion of Ukraine hasten the energy transition in Europe, or did it slow it?

GROSS: That is a fascinating question, and I think you can really make good arguments either way, which is probably why it was a lot of fun in your class. The argument for hastening the energy transition is that it shows that fossil fuel supplies can be unreliable. They can get caught up in geostrategic stuff. And I've argued many times that the entire fossil fuel industry is becoming somewhat balkanized or scattered based on sanctions and who's trading with who at what time, and it's gonna get worse with the Trump administration. So that's an argument for hastening the transition. However, trying to do it right now in a hurry is a very expensive and difficult way to do it, which may make it, in terms, more difficult. The other thing is we're talking about a real competitiveness issue, and so having to do fast and right now is a more expensive way to go about it and

may actually put the brakes on it a little bit. So I think net-net it has hastened it, but maybe not always in the ways you might think.

O'SULLIVAN: Can you go into a little bit more detail on that? So what are the ways in which Europe has expedited or its goals and is there a disconnect between the new goals and the actions or are the actions aligned with the new goals?

GROSS: Well, it's a tricky question because if you think about, let's think about natural gas, which I think is where the rubber meets the road in terms of Russian supply to Europe. Russia cut off much of Europe's pipeline gas supply and it was 40% continent-wide, but although it differs by different geographies. Europe had a major "oh crap" moment, what are we going to do now? Because they were thinking that they could have Russian gas all the way until they weren't using natural gas anymore. And all of a sudden, they had to build a lot of new infrastructure, things like LNG import terminals to get the natural gas they still needed to run their economy. Whereas I think they were hoping to ride it out on their existing infrastructure until they got to a point where they didn't need it anymore. And so that's an argument that it might have slowed down the transition because now you have this shiny new infrastructure that you might want to use.

STELZENMÜLLER: But it was worse than that in Germany. Because, I mean, the Germans, faced with the invasion, decided to race out of Russian gas supplies because they were a major importer of Russian fossil fuel energy, decided that they would, and did, decouple from coal by August '22, from oil by the end of the year, and that gas would take them a year or so longer. And then, yeah, and then gas, of course, being the most significant of the three. And then the Russians were the ones who cut off the gas in early September, and the Germans had to scramble to substitute, to save, right, and to source LNG from elsewhere without having the terminals, right? Which they had to build in record time. And the result of this was that actually we had, and that's the sort of dirty secret of that decoupling, conscious decoupling for those of you who remember that phrase, was that they had to reopen coal and German coal fields in order to get the energy supplies. And nuclear, well the nuclear, yes, well they had keep three, the three remaining nuclear power plants that we had which were, I mean it is highly controversial whether they could have been kept online. The people I trust say they couldn't have been because they were well beyond their due date for closure and because we had not invested in the maintenance expertise and training nuclear engineers for more than a decade. But the other nasty secondary effect of all this, the Germans hoovering up LNG where they could find it, was of course that this drove up prices for neighboring countries, right, and which was not something that the German government in its race to supply itself and to supply especially its chemical industry had considered. So there was a fairly massive political fallout of this as well.

GROSS: And the little-known corollary to that is they weren't just hoovering up LNG that was intended for the rest of Europe. They were hoovering up LNG that was attended to go to the developing world. When the developing couldn't afford LNG, it went back to coal. But to add a little bit of the flip side of that argument is, if you think about the competition for building generation, you suddenly have renewables competing with more expensive natural gas, which brings more renewables into the money. And so that in some ways helps. And so there's a real push-pull, and so I can see why the debate in your class was probably interesting, because I can find both sides of that argument to argue. And I think in different geographies with different base energy systems that play out differently.

STELZENMÜLLER: Let me just add one thing. The one thing that we can probably agree on, right, is that we really, really, under the current circumstances, can't articulate a political argument for taking more Russian gas, right? That is, right now, until Russia changes its, you know, imperialist foreign policy and its increasingly totalitarian domestic conditions, is not going to happen. The dilemma comes in now with U.S.-Russian conversations about energy collaboration and about opening Nord Stream 2.

O'SULLIVAN: You've been itching to talk about this, I can tell. You've walked us up to that point twice.

STELZENMÜLLER: I'm just saying it's an issue.

O'SULLIVAN: So we'll go there. I do want to come back to the politics of it. So I see what people had to do to meet energy needs in the short term. But then how has the politics changed, or not changed, in terms of the support for the energy transition? And I'll come back that. But let's stick on this question. And maybe a little background. And I don't know if everyone's following it, but. I think I've been involved in a number of conversations of Americans about, will Europe ever be happy to take Russian gas again? I think it's an interesting question, and particularly if this is something that actually Donald Trump and Vladimir Putin could concoct, say they open Nord Stream, how can that be done without the Europeans?

STELZENMÜLLER: Indeed. Well, I have many thoughts on this, some of them unprintable, or not for use in a family environment. And those of you who know that I write a monthly column in the Financial Times know that I have devoted some column space to all of this. I mean, I think my before last column was about this when the FT first had a story about Matthias Warnig, also known as a former Stasi operative and one of the closest friends of Vladimir Putin, being behind at least one of these efforts, the other one being Stephen Lynch, the entrepreneur in Miami, to reopen this. And also, when I first read this in the FT, I thought, well, this makes sense of the election support for the German AFD before our February 23 elections because really the only conditions under which I can see a conversation, at least a political conversation about this even happening, is one where the AFD is in government, right? So again, I'm putting that out there. I have no knowledge, and I can perfectly well imagine the people who did from the Trump administration try to support the AFD politically, I think would have happily supported it for cultural and ideological reasons and even without the pipeline question in the background. But Samantha and I have been throwing this back and forth. Samantha talks to the German business community and is occasionally in Berlin and hears people speculating about how it would maybe be quite useful to have Russian gas again. My my foreign and security policy tribe's position is over our collective dead bodies

GROSS: I come back and tell, I go to Berlin and other places in Europe, I come back, I tell Constanze what I hear, people worried about European competitiveness, they want the less expensive gas, they want the supply, because Europe did get through the gas crisis, but one of the the factors that got them through it was demand destruction. Yeah. Stuff just shut down and they're very concerned about that. But yeah, these two worlds, the security world and the energy world are kind of at odds on this and it's fascinating to watch.

O'SULLIVAN: Interesting, so I'm just gonna read a quote --

STELZENMÜLLER: Well, would you tell us about your efforts or your conversations about this?

O'SULLIVAN: Yeah, they're not efforts. I would say they break down in a very similar way. So people who are more energy focused, more economically minded, don't make the case for using Russian gas or returning to dependencies of the levels that we've seen in the past, but do say, well, there's some case to use certain amounts of Russian gas that to have a more diversified import structure, but that one shouldn't rule it out on competitiveness grounds. And then, you know, the national security group that you and I inhabit. I think you're the first person I saw after JD Vance's speech in Munich. We were both in Munich and you were, your head was exploding.

STELZENMÜLLER: Yes, I can say it was. I was in the overflow of the overflow of the over flow, and I think I wasn't the only one whose head was exploding. But you didn't see me at home sitting in front of my iPad and reading the FT story about Matthias Warnig trying to stitch together a deal to open Nord Stream 2. That was when you could have really seen my head explode.

O'SULLIVAN: Well, I mean, it's interesting. So you're articulating a political and security view, which I think is commonly held, but maybe not universally held in Europe. I mean there are parts of this, as we all know up here, there are part of Europe, there are countries that are still heavily dependent, not only on Russian gas, but also Russian oil. And so I'm interested in this idea that there's going to be a new plan to completely wean off of Russian gas. And with that plant, I haven't seen it, I guess it's not out yet, but what does it look like in the sense, is it weaning off Russian gas and using more natural gas? Is it using more nuclear? Is it using more renewables?

STELZENMÜLLER: We don't know, I just read today that Ursula von der Leyen had announced that the Commission will in early May be presenting this plan and I'm very eager to know of its components. But I will say this in all fairness, that it is easy to point a finger at smaller, perhaps more Russia friendly countries in Europe who import more Russian energy, but let's also keep in mind that the Baltic states, who one can under no way shape or form describe as Russia-friendly, imported 100% of their fossil fuel energy from Russia, because they had no choice, right? And it's also true to say that in Germany, pretty much every sort of centrist political group or party has a, and I say this because it's always the Social Democrats who get hammered for being pro-Russian, which is not true because there are Social Democrats who are definitely not that. And there are milieus, shall we say, in all the centrist parties, in the conservatives, in the liberals, and certainly in the Bavarian CSU, right? Whose governments would have annual pilgrimages to Moscow with very large business delegations. And it is well known that a number of very senior oligarchs have villas around Bavarian lakes. So in other words, the political story here is a little more complicated. But in all fairness, again, if there is one party that has remained fairly immune against all that, it's the Greens. The Greens have been solid on this, and I'm not a party member. I'm a not a member of any party, but they got hammered a lot in the last election for being unreliable and other things and it's I think only fair to say that on this point and on national security generally they are they're very firm. Look the, on your larger question of what what such a plan would entail, I mean if we if we had to conceptualize this on a whiteboard, right I think you --

O'SULLIVAN: Maybe we should put out some numbers, is Europe still 19% of its gas from, most of it LNG?

GROSS: Roughly. Yeah, I was going to say the dirty little secret is that pipeline gas has largely been cut off.

STELZENMÜLLER: Ah, exactly.

GROSS: But LNG has gone up.

STELZENMÜLLER: Yeah, exactly, and it gets re-imported by our other rooms.

O'SULLIVAN: It gets moved around.

STELZENMÜLLER: I mean, and we haven't even touched the question yet of supplying Ukraine, right, which is still on course to become --

O'SULLIVAN: Or uranium and dependence on that.

STELZENMÜLLER: Absolutely, but basically, if you wanted to provide supply security and resilience and redundancy, you would need sort of a Europe-wide system, right? With where the member states of the European Union and perhaps a couple more, right, who cooperate closely with the EU, such as Switzerland or Norway, to come to a sort of treaty-based agreement, right, on managing energy security, right. I think that under the current circumstance, that is becoming much more imaginable than it was previously. And I think today's events might play a role in that. And given, given how the negotiations with Russia are going right now, which is, we keep hearing of peace plans and the bombardments go on, and then Lavrov gives an interview saying, no, no, our maximalist demands remain. I really don't see how anybody right now can make the case that this is a great idea.

O'SULLIVAN: Well, I'm going to, when we turn to questions, I will invite somebody to make the counter case, just for the fun of it so people can think about that. On coming back to this point about the politics, I don't know which person to go on, in terms of how has this deindustrialization and increased energy prices, how has it changed the politics of the energy transition in Europe? And to what extent, we've seen not as many changes in governments as we thought, but definitely like an increased political strength of the right, to what extent is that attributable to some of what has happened over the last two years in terms of the economy? And I'm gonna read a quote from the Draghi report. "Low industrial dynamism, low innovation, low investment, and low productivity growth." How much of that do people attribute to the energy situation in Europe?

GROSS: I turn that to the European, actually. You're going to have a better feel for that than I will.

STELZENMÜLLER: I'm not sure that I do actually, but let me sort of try and tackle this from another angle. I'm not sure, I'm more suspicious of monocausal explanations, and I don't think that this can be quantified or that we can even sort of make a reliable guess at a percentage of causality here. What I will say is that... One of the more interesting and unexpected aspects of the Russian invasion is that the Europeans, and especially since the beginning of the second Trump administration, I think are moving to the realization that for better or for worse, and whether they like it or not, we're moving into a war economy mode. Because, and not just because there is a war in Ukraine, but because there is so much hybrid activity across the European space, especially in Germany, and especially in the run-up to the German elections. That is something that has

become very tangible. I think Shashank Joshi in The Economist recently did an assessment of sort of, or a comparison of Europe-wide national security assessments about the likelihood of Russia actually intervening militarily in in in NATO Europe. I'm personally somewhat skeptical of that or rather think the chances are quite high that we can prevent that, but there were all the the the dates that people are citing are sort of 28, 29, 27 which is astounding. Until Liberation Day, in other words, the day that Trump imposed his tariffs, I would have said the answer to the Draghi report, right, was the financial bazooka that the EU and Germany unleashed since the beginning of the year to fund European defense spending, right? That I – you could make a plausible case until April 2nd that that would have not just the result – a political signaling result and solidarity – a solidarity message internally and to Ukraine, but also could have an impact on competitiveness. The attack on trade and the currency order simultaneously, and then even after the suspensions, the speculations about removing the chairman of the Fed or blowing up the Fed itself, that, I think, creates a condition where the impact of that, you know, massive fiscal package could just be completely dispersed. In other words, I think this could all get a lot worse very quickly if we don't resolve these larger issues. And I'm not quite sure at this point whether the Trump administration is amenable to a resolution in a way that calms down the markets, not after what we saw in mid-April.

GROSS: I have a point, I mean, European energy prices are high. I feel a little bit guilty when I go over there.

O'SULLIVAN: Can you give us some numbers so people can get an appreciation?

GROSS: Yeah, I mean European gas prices are several times, natural gas prices, are several times the price that you see here. So when I go over to Europe and I'm dealing with the natural gas price that we have here and then those prices flow into power prices which are also a lot higher in Europe than they are here. We're sort of fat, dumb, and happy here in terms of energy in the U.S., and I say that with love. But whereas when you go to Europe, they're clearly dealing with this, and it's clearly a competitiveness issue. It's not the only competitiveness issue, but from a political point of view, you know, there aren't single causes to things, but it also matters, okay, how do people attribute the cause? It's almost more important politically than what the cause actually is. And I think in many places in Europe, there has been some success in saying, these high prices are Russia's fault. And so that, I think, has been somewhat helpful. But the problem is then, what do you turn around and do about it? Because you're dealing with this, with an area where you're going to have structurally higher energy prices, certainly than we do here in the United States. Back to fat, dumb, and happy. But there's also this issue that, at least traditionally, we've also had sort of more business dynamism here in the United States, more of an entrepreneurial culture, more of everything from venture capital to private equity, to the way that you can take a company from an idea to a lab, to a factory. The US has been a really good place to do that. I'm actually, this is the other side of, I think the points Constanze is making, is I'm a little worried that we're wasting that here in the United States and then we're taking many steps to cut off that dynamism. And so I hope we don't fall back to meet Europe in many ways, but I'm concerned about many things.

STELZENMÜLLER: Megan, I didn't answer your question about the political right.

O'SULLIVAN: Sure, and then I'm going to ask one more question about China, and then I'll open it up.

STELZENMÜLLER: Very quickly. In some ways, again, there are countervailing forces operating here. The, the Russian invasion and the Trump administration's disdain for, hostility towards Europe have actually created a move towards centrism. I mean, we've seen it most, obviously, in Canada, right? But it was, the Keir Starmer government in the UK was in a very bad place until Elon Musk started supporting Nigel Farage. Then again, there are council elections today in the UK in which Reform UK might come roaring back, right? And the same thing in Germany. The AFD was not helped at all by the U.S. campaigning on their behalf. It was helped, however, by Friedrich Merz, the incoming chancellor, pursuing AFD-lite immigration policies and people in that kind of situation go vote for the original, right. So, in other words, we don't know yet what the answer to that question is, but I can tell you one thing, right? And that is that political stability in Germany is the prize, right. Aleksander Dugin, the Russian ideologue and Putin's house philosopher, recently published a biography of Donald Trump. And a friend of mine, a German TV commentator in Russia said she and her TV team went to his book presentation, and Dugin was happily saying, everything is going our way, the Americans are now on our side, and one government after the other in Europe is going to fall, but the Germans will be key. So, you got it from the horse's mouth.

O'SULLIVAN: All right, while it is very tempting to continue to talk about Donald Trump, let's turn to China and about just the relationship between Europe and China when it comes to energy, very different than the US-China relationship when it come to energy in terms of being very, very focused on the renewable piece. And could you tell us, maybe Samantha, I'll direct this to you, tell us how that relationship is developing and how critical it is to Europe's energy future and what that might mean in terms of where Europe positions itself vis-a-vis China if it finds itself under pressure given the U.S.-China deteriorating relationship.

GROSS: I think this is one of the more interesting geopolitical, geostrategic things that's happening right now. Because something that you see here in the United States, back to sort of the energy abundance, which isn't just a political term, it's true. But we can largely be energy independent if we stick to fossil fuels. When we start to become dependent on China, I'm not saying sticking to fossil fields is a good idea, but we sort of have the ability to support ourselves in terms of energy. And so I think we have this feeling like we can be picky, that we can work to find new sources, that don't have to take everything from China, that, you know, we're working to counter China in these economic areas where China has worked very hard to be dominant. Things like everything from certain critical minerals, and especially the refining of those minerals, electric car batteries and other kinds of advanced batteries, solar panels, et cetera. And so the United States, I think we feel politically like we have options. And so we are much more oppositional to China because we feel like we have options and because we feel like we can manage our own energy future. Whereas Europe is in the position of being resource light, certainly for its population. And in terms of resources that it actually wants, like gas and the equipment for renewables. And so I think Europe feels like it's a little bit in a pickle and doesn't have the ability to alienate China in the way that the U.S. is willing to do. Because Europe is more politically willing to undertake the transition and to do it faster. I'm not sure they're going to be able to do it as fast as they say they're gonna do. They have serious climate goals and they're need a lot of equipment. If they want to do them quickly. That's going to rely on a lot of stuff from China. And so Europe, I don't think, has the freedom to be as oppositional to China as the United States does. Because they understand that they need Chinese stuff more than we do because of their energy situation. And they're more serious about the energy transition, frankly, than we are. And so they're just in a different spot. I don't think that explains everything, but I think it explains something.

STELZENMÜLLER: Here's where the dilemna comes in. There has actually been a great deal of convergence between European policy, the European policy tribes writ large, and the more hawkish American position, not least because there has been some fairly overt Chinese interference in the European space as well. And European intelligence services, including the German BND, feature chapters on this in their annual reports, right? If you want to read those, you've got it there. And presumably that's just the non-classified part. The Chinese are of course now engaging in something of a wooing operation vis-a-vis the Europeans. And one indicator of that has been the announcement that they would be unilaterally lifting sanctions against some of the more publicly known China critics in the European Parliament, two of whom are German. And the European external action services to that was, you can do that, but we're not lifting our European sanctions because of the treatment of the Uyghurs. So, and the other thing that has really changed the mood, despite the fact that parts of business would really, really like to do deals with China, especially parts of the German chemical industry, is of course the fact that China supports Russia's invasion of Ukraine. That is, and Ukraine at this point, I think, is a non-negotiable for the Europeans. That is the one thing that has really changed since 2014, that Ukraine is now considered a European country.

GROSS: A very quick point. It's another interesting split that reminds me a little of the Nord Stream split where the government and security folks have a very clear idea of things whereas the business community often views things quite differently. I think they're somewhat in parallel.

STELZENMÜLLER: That said, it was the German Federation of Industry, the BDI, that was one of the first in Europe to come up with a report that said, we really need -- this is what, 10 years ago -- we need to be really careful here because the relationships, the dependency relationships that we have with the Chinese are not just capable of being weaponized, they are being weaponized.

O'SULLIVAN: Great, let's turn to some questions in the audience. Rachel has a microphone over there. Yes, and please introduce yourself.

AUDIENCE QUESTION: Thank you very much. My name is Carlo Giannone and I'm a Master of Science here at the Kennedy School in Public Policy. Italian and and so European. My question is the following. When the invasion in Ukraine started, the U.S. put a lot of pressure on Europe to reduce the reliance on gas in order to weaken the opponent. At the same time, let's say it's quite widespread the news that Russia was selling this gas at a lower price to India. And then India was reselling to United States. Now it comes the news that the U.S. says, you know what, maybe Europeans should trade with Russia again after three years of [inaudible] and let's say more or less recession in Europe. My question is, if you consider the energy policy of Europe too dependent on what is decided in the trans-Atlantic relationship and if you still consider a good idea the fact that we cut totally the gas from Russia or if you consider it more a geopolitical error driven by the idea that we would have defeated Russia quickly.

O'SULLIVAN: And if you could pass the microphone to your right. Please go ahead. We'll take one at a time, but I just wanted to preposition. Oh, could you just, I'm going to ask Samantha and Constanze to respond if they would like.

GROSS: It's an interesting question. I mean, one of the things that I think is most interesting about the way that the West has responded to the Russian aggression is that

we have also used energy as a geopolitical tool, in putting a cap on Russian oil prices, cutting them off from insurance markets and Western tankers, et cetera. And that has had really interesting effects. Some of them good. We're working to ,to reduce Russian revenues while keeping Russian oil on the market so we don't destroy markets and have very high oil prices. But it's had some really interesting effects. And one of those effects is that Russian oil goes to India, gets refined, and then gets sold other places. It's not oil laundering because it's completely legal, and this is actually how they intended for the system to work, because they wanted that oil to be sold to the Indians at a discount to reduce Russian revenues. But it does raise a lot of questions about the effectiveness of these policies and whether because we're adding in a lot of inefficiencies in the system, we're also forcing that oil onto ships that are truly buckets of bolts that are poorly insured. I'm waiting for something to go wrong there. Is that better or worse than the alternative of not sanctioning it and having Europeans or others go back to buying it? It's a really open question and I guess it depends on which you're more concerned about. The inefficiencies and the bucket of bolts poorly insured on the water full of Russian crude or the fact that we are having some effect on Russian revenues and that's a difficult question to ask but I think it's a very valid one. How effective these strategies have been because we can't sort of treat Russia like Iran and say we're not buying your oil. Because they're too big of a producer and it would be too hard on the global economy. And so we're sort of fiddling around the edges trying to find ways to reduce their revenues and harm them without harming us. And that's very difficult to do.

STELZENMÜLLER: If I may, very simply, you seem to be implying that Europe had very little agency in this decision. I think that is wrong.

GROSS: I agree with you.

STELZENMÜLLER: I think people like us were very close to these conversations. To think that we have no agency, no interests, no decision-making latitude of our own is simply incorrect. Right.

GROSS: Deeply involved.

STELZENMÜLLER: And I think that under current conditions, right, there is an overwhelming European national security interest in not recreating dependency from Russia on anything. I mean, I am, you know, I'm personally completely agnostic on nuclear power. At this point, my position is, whatever other power sources we can get, we should get, right? As long as it's not from Russia, right. And we may have to make ourselves slightly less dependent on American energy imports, if things continue like this. But if that takes nuclear, I'm willing to contemplate that.

O'SULLIVAN: I'd like some consistency. I find it frustrating with people who will... No Russian gas, no nuclear power, no U.S. LNG. It's a null set.

STELZENMÜLLER: Yeah, that's not gonna work.

GROSS: You gotta run your economy on something.

O'SULLIVAN: Exactly. No, I agree. I could get into a big debate with you about the price cap, but I'm not gonna do that in the interest of time.

GROSS: Oh, I could get in a big debate with myself.

O'SULLIVAN: Please.

AUDIENCE QUESTION: No, it's working. So Bruno Reis, I'm based at Georgetown as a flat professor, but I'm also a consultant with the project and the foundation. But it's not a prearranged question, so it's a complete surprise. I was wondering --

STELZENMÜLLER: Why do you say that? The more suspicious the better.

AUDIENCE QUESTION: But one is actually a follow-up of what you were saying. So have you found some concern in Europe about excessive dependence on the U.S., and namely in terms of imports of natural gas from the U.S.? And the second one, which was the one I actually had thought about, maybe also Meghan can answer that partially, you see any work in terms of Europe or the U.S. in terms of access to all these critical resources, which are also necessary for energy transition. Is there any serious work there? We hear things from the European Commission and so on. But actual work, actual agreements, and do you think enough has been done? It's going in the right direction or not?

STELZENMÜLLER: Well, let me talk about the U.S. aspect of this. I think it's a little too early for this. I haven't heard or read anybody discussing that. But look, let just put this out there. For Nord Stream 2 to be opened, right, and I don't think the three destroyed pipelines, right? It's two plus two. Well, it's three more than two, two each. I've heard from industry people that these pipelines are now so corroded that it would take billions to repair them. So we are literally talking about the one that would carry 55 BCM, which is not nothing. But it does go onshore in Germany. And there would have to be European buyers for this. And I just don't really see the political conditions under which this happens. So it is interesting to me that there would be Russian-American conversations that don't really involve the European side on this. So, yeah, if that's even happening, that raises questions about the reliability of the American side. I am sorry to say it, because this was a lifeline before. And I think all Europeans are profoundly grateful for this. And this is actually what Ursula von der Leyen said when she opened last week at the London Energy Conference. So again, if we want to reduce dependencies, plural, then that brings us back to other energy sources. So that's easy.

O'SULLIVAN: Let's take a few, we have about ten minutes left. I'm looking around. Geraldine?

AUDIENCE QUESTION: Thank you very much. I'm Geraldine Arias from Nicaragua, a student of Professor Sullivan. My question is, you drew a very specific line on whatever it takes for other power sources or energy sources, but not from Russian oil. And I'm interested to hear whether there are elements that you would find to make a similar statement vis-a-vis no critical minerals from China, and where does that, does that distinction or hardline come from a moral dilemma or moral values or standpoint? And has that been made to say, well, China is OK, but Russia not because of Ukraine primarily? Thank you.

GROSS: Yeah, I'm happy to take that one. One of the big challenges with that question is that China dominates many really important minerals for the energy transition. And in many cases, they have mines or own mines elsewhere in the world for various critical components. But where they really dominate is in the refining of these minerals, taking them from whatever comes out of the ground and turning them into a useful

product. They really dominate that. And for a couple different reasons. One of them is they have strategic five-year plans and they have made this a priority. Another one is that often these are pretty dirty businesses and we don't necessarily always want to do those here and we have in many ways stepped away from some of these industries on purpose for environmental reasons. And so even if for moral reasons we wanted to step away it would be extremely hard to do. And you see a lot of emphasis on finding sources of critical minerals. So this country has this minerals, Trump is trying to get minerals out of Ukraine, et cetera, et cetera.

STELZENMÜLLER: Lithium in Serbia.

GROSS: Exactly. But one of the challenges with this is, in the environment we have today, they would be selling into a Chinese monopsony, in many cases. Even if we mined these minerals, we would be selling them to Chinese refiners. And so we have to work on both of those, not just one, and it also just takes time. I saw a study recently, and it was talking about copper, which is kind of an old school mineral but incredibly important if you want to electrify everything. And it was roughly 10, 11 years from discovering a commercial deposit to mining it. And that's, I mean, 10,11 years in terms of the energy transition is a very long time. And so we're in many ways stuck with this for a while, although that doesn't mean we should resign ourselves to staying stuck with it. But if we were to say no Chinese minerals for moral or geopolitical reasons, big parts of the energy transition come to a screeching halt.

STELZENMÜLLER: This isn't just a moral reasoning, right? I mean, yes, you can make a moral reason around being outraged at the invasion of Ukraine and the depredation that continued there daily or perpetrated there by the Russians, but you can make a solid national interest case without reference to any moral argument whatsoever, against, for de-risking from Russia and from China. The problem is that with China, it's more complicated, right, because we are more interdependent. And because environmental regulations in the EU make it so difficult to access our critical mineral deposits, which we do have, right? The Norwegians, the Swedes, the Norwegians have been exploiting --

GROSS: Greenland.

STELZENMÜLLER: Greenland's not so clear to me, actually. I think it's seabed, more than on land. I mean, I did, you and I have had this conversation as well about how interesting Greenland actually is. My personal contention is that the interest in Greenland and Canada is about maritime spaces, exclusive economic zones, and seabed mining, and seabed devices and other assets. Which then, you know, makes things very interesting for Iceland, Norway, Ireland, and Portugal, right? Frankly, the Americans have had every right to do pretty much whatever they want in Greenland from a very complacent Denmark for decades, and I think if there was realistic mining to be done in Denmark, we would be doing it, or you would be doing it.

O'SULLIVAN: I agree with everything you said, Samantha, though I would say the last couple of years, three years, should give us all humility to think that what seems economically impossible has been somewhat forced upon the world twice in three years. People would have given the same exact response, even though the numbers are not the same, the dependencies are not same, about disentangling Russian gas from the European economy. And up until a few weeks ago, people would have said it's unimaginable that the U.S. and China would decouple because it would just be too painful,

the economic linkages are just too great, and yet we see leaders continuously making decisions that run counter to the argument that, you know, economic dependencies would just make it impossible. So I'm now-

GROSS: You need a good crisis.

O'SULLIVAN: Well, I think we're going to learn some, we have some. Do you have your hand up? Chris. And I'll come here. I'll try to-

AUDIENCE QUESTION: Great, thank you, good afternoon. Chris Coles, I'm also a student of Professor O'Sullivan's. My question is on nuclear. And I will ask for sort of a prognostication. Do you anticipate, given all the challenges to get there, that 10 years from now we'll be seeing more nuclear power coming online in Europe? And also, what are your views that this may just lead to another form of dependency, particularly with respect to uranium supplies from Russia? How do you get around that? You know, what are all the steps, you mentioned training up engineers, sort of all the things that need to happen in terms of just technical, regulatory, all the infrastructure that needs to be there to make that happen.

O'SULLIVAN: Could I take just three questions, and then we'll let you both have some final comments. Right here.

AUDIENCE QUESTION: Hi, my name is Christian, MPP students from HKS. I have a question about great stability. Consider given to the vulnerability that's exposed in the recently Spain and the Portugal great crisis. So what technology do you think Europe should prioritize to strengthen the great stability also align with the political feasibility. Thank you.

O'SULLIVAN: Thank you, and then I'll take this last question over here.

AUDIENCE QUESTION: Given all these dependencies and vulnerabilities with China, Russia, the U.S., I'm curious. I know the German government is invested in a green hydrogen project in Namibia. Where does Africa figure into this as a possible alternative in terms of providing energy security for Europe?

O'SULLIVAN: Great, thank you. Three good questions and anything else you want to, any note you want to end on.

GROSS: I'm going to start with these two questions. The question on grid stability, storage definitely helps. Battery storage can help provide a lot of services to the grid. And if you're going to run on these high percentages of variable renewables, it really helps to have. The other thing that I really think that we should focus on, and this goes to some of Constanze's points, is interconnectedness. Just by sort of the law of large numbers, if you look at a lot of, a larger system of variable things actually has less variability than a smaller system of variables things. And so just by this mathematical theorem, you have less variability if you're running your grid over a much larger geographic area. I mean, sub-colloquially, if it's not sunny or windy here, it's probably sunny and windy over there. And so that's another way to help keep the grid balanced. And so this combination of geographic averaging and storage to get you over the rough spots, I think would be incredibly helpful and would help take over some of the role of spinning things that I talked about earlier. So those are the two things that I would focus on that sort of we know how to do.

And then your question about Africa is a great one. And I think I'm gonna focus on your hydrogen project just because I can bring out some fun points that way. Hydrogen is a really interesting product. It is a non-fossil, non-carbonaceous fuel that walks and talks much like a fossil fuel. It's a gas. You can store it, you can burn it, you can do a lot of things that natural gas can do. The problem with hydrogen is you have to produce it from something, and it takes a ton of energy. Whether you do it with green electricity, breaking water molecules, or whether you break natural gas molecules. Actually takes less energy to break a natural gas molecule than it does water. You just have to then figure out what to do with the carbon that comes off. But either way, this is a really energy intensive process. Then if you're gonna take green hydrogen from let's say Namibia and you're going to get it to Europe, what you're likely to do is then turn that hydrogen into something else to make it easier to ship. This hydrogen is a lot harder to liquefy than natural gasses. You need special metallurgy, like that's not gonna work. So then you're doing another transformation, then you turn it into, let's say, green ammonia. You take the green ammonia to Europe. In order to get the hydrogen back, you do another transformation. So every time you do one of these things, it costs a lot of energy. And so hydrogen is very good what it's good for, and it's good at a lot things that you can't electrify directically. But the flip side of this is it takes a ton of energy to make and use hydrogen. And the more you move it around, the more energy it uses. And so I am a little bit skeptical of projects that anticipate making a lot of green hydrogen and moving at very large distances because of all these losses. I think you'll see some of it, and I think it's gonna be important. But people are asking me a few years ago, is hydrogen the fuel of the future? And I'm like, ooh, back it up, back up. So I think you may see some of this and it may prove worthwhile, but it's going to be very energy and in turn cost expensive, and so you're only going to use it when you really, really need it. And I think in some cases what you might also see, and this could be good for Africa, is instead of making green hydrogen and ship it around, you're going to make that green hydrogen and use it in Africa, because it's a much more efficient thing than it is to ship it to Europe, to the fuel industry there. And so if projects like that could fuel development in Africa, I start feeling a little better, because it's both a good development thing and also good from an energy perspective. Sort of not using any more energy than you absolutely have to.

O'SULLIVAN: Great. Constanze, last word.

STELZENMÜLLER: Yeah, I am, you know, my knowledge of this is even more thin than of other grid issues, but I will just say we are building connectors to Tunisia and to Egypt, right? There is, I think, a fair amount of interest in Southern Europe-Northern Africa connections. Let me make two larger points, and the last one will be about the nuclear issue. You know, living in democracies in peacetime is kind of like having a healthy body. You don't think about your internal organs ever, right? Your internal organs, you are ignorant of what goes on inside your body. Whereas in times of disruption, political crises and war, you start becoming conscious of the machine room, of how your state, your society, and your economy functions. And I think we're all waking up to the importance of critical infrastructure as part of the health of our democracies, right? That is, I think, important because it turns us, again, from consumers of stability and safety into something more like citizens, right. We have a stake in this, and I think that is being brought home to us by crises like this one in Portugal and Spain. On nuclear, everything I have been given to understand about returning to nuclear is that it would be costly and it is not something that you can do with a snap, right? It requires a thoughtful, planned process. But there is an aspect here that one might want to consider in prognosticating, which is that now for the first time, since really the Cold War, there is now a serious debate about nuclear proliferation in Europe, and I don't mean civil, I mean military. The French have offered

their nuclear deterrent to the Europeans. The Poles would like a nuclear deterrant of their own. For any of you who know Tom Lehrer, right, the song What's Next, right? It ends up, what happens when Alabama gets the bomb? And I think he mentions Luxembourg. But there is, for the first time in my country, Germany, a serious conversation about nuclear proliferation. I personally think that in strategic terms, it's a distraction, right? But in an era where the use of nuclear threats is, I think, highly likely to create proliferation incentives in Asia, in Japan and in South Korea, it's not impossible that that also spreads in Europe. And that will then fuel the debate about civil nuclear power, right? So this is nothing for the short term, but I think in the medium to long term, it's going to be a very serious conversation. And it's gonna be part of the fuel mix.

O'SULLIVAN: Great, well, we are at time. I want to thank you, Constanze, you, Samantha, and the foundation as well, and everyone who stayed indoors for this conversation. It's been great. We've touched on so many themes that have been our focus over the last semester. Please join me in thanking our friends from the Brookings Institution.

STELZENMÜLLER: Let me, as one of the guests, say two things. I'm really sorry we weren't able to find a good man for this panel. I know it's an egregious failure, but next time we'll do it differently. I want to thank you for hosting us. This is great. And I also want to say Goncalo just went out, I think, to give an interview about the crisis in Portugal. But FFMS have been really been the perfect partners. It's been lovely to work with him. I recommend them. This has been great. So thank you.