HOUSE OF LORDS

Economic Affairs Committee

Corrected oral evidence: UK energy supply and investment

Tuesday 10 May 2022

4.10 pm

Watch the meeting

Members present: Lord Bridges of Headley (The Chair); Viscount Chandos; Lord Fox; Lord Griffiths of Fforestfach; Lord Haskel; Lord King of Lothbury; Baroness Kramer; Lord Livingston of Parkhead; Lord Monks; Baroness Noakes; Lord Rooker; Lord Skidelsky; Lord Stern of Brentford.

Evidence Session No. 18 Heard in Public Questions 221 - 230

Witness

I: Jason Bordoff, Co-founding Dean, Columbia Climate School.

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Examination of witness

Jason Bordoff.

Q221 **The Chair:** Thank you for joining us, Professor Jason Bordoff, in this virtual session of the Economic Affairs Committee. Could you briefly introduce yourself?

Jason Bordoff: It is a pleasure and an honour to be with you. Thanks for the invitation. I am the co-dean of the Columbia Climate School and the director of the Center on Global Energy Policy at Columbia University.

The Chair: My colleagues and I have a large number of questions to ask you, I am sorry to say, but I will start with a scene-setter. You will no doubt have seen that the UK Government published an energy security strategy recently. How credible do you see that overall, and what do you see as its strengths and weaknesses?

Jason Bordoff: Obviously, living across the pond, I comment on your Government's energy security plan with some humility, but I have read it, I have seen it and I am familiar with it. I think there is much to like in it. It includes long-term energy security measures with short-term stopgaps such as immediate support to households and industry on energy bills. It acknowledges the transition away from fossil fuels as the only true long-term energy security strategy, but it also recognises that oil and gas will be needed for the foreseeable future, even on a net zero pathway. It has a robust push for renewables including, importantly, stripping away some of the regulatory hurdles to new development.

The Government's commitment to increase the speed of permitting for wind and solar is important. It supports new nuclear development. I do believe in nuclear power. We need firm zero-carbon baseload dispatchable power as part of a mix that includes a lot of intermittent renewables too, which is good. We heard just a moment ago about the role that low-carbon fuels like hydrogen can play, which are also part of the plan.

There could be even more focus on the appreciation for grid improvements, even more focus on the potential not just for supply but for demand-side policies. That would help to increase energy security and meet people's energy demands affordably. It's worth considering the difficulties that exist at present regarding the practicalities of building nuclear at scale, given how costly and time-intensive it has been in the past. The plan could also include more on extending the lifetime of existing nuclear plants, and it could also go a bit deeper, as some previous government documents have, on the role of hydrogen in supporting energy security in the future. Those are a few reactions that I had to reading it.

The Chair: Excellent. That leads very naturally into our next question from Lord Fox. I will not steal it from him, but I am tempted.

Q222 **Lord Fox:** The energy security plan in this country looks into the long term, but there is a very pressing short-term/near-term problem for consumers, with very high energy bills over the next few winters. Using

your perspective from where you are, what examples of effective policy for addressing the short-term affordability are you seeing around the world, and how do these work? You talked about reducing demand. Which countries are doing that well, and what are they doing to bring down demand and increase energy efficiency at a consumer level?

Jason Bordoff: It is a great question and one that is hard to answer because there are a few answers to it. This is the history of energy crises dating back to the 1970s. There is nothing new about short-term energy crises, energy market crunches or loss of supply, geopolitical or otherwise. When that happens, political leaders look for what can be done immediately, as is appropriate, given the impacts it has on consumers, not to mention on politics.

The answer is that there are usually relatively few things that can be done quickly. There is not a lot of extra supply in the global market today. We have strategic stocks that the US and Europe work together to use. There is diplomacy happening with just a very small number of countries that could put extra supply on the market, such as Saudi Arabia, the UAE, the negotiations happening now about the possibility of an Iran deal, motivated obviously by concerns about its nuclear programme, not just energy, but if that reached a positive conclusion it would lead to more oil supply.

In the near term, there is often not a lot that can be done to deal with an oil crisis, and in this case maybe a gas crisis too. Some things can be done, and the history of energy crises is also such that many of the things that would make one more secure take time to play out. Often we say, "Let's do what we can for the immediate crisis. Here are the things we should be doing. They maybe won't help today, but they will help tomorrow", because, inevitably, if it is not Russia and Ukraine, it will be something else tomorrow that impacts the global hydrocarbon market, with inevitable geopolitical risk, and global trade.

When the immediate crisis passes, we become complacent and we forget to stay the course and do the things that would make us more resilient in the longer term. I really hope that does not happen this time, because things that would reduce demand for oil and gas are important not only for energy security—this crisis is a reminder of that—but of course for the challenge of climate change.

In the short term, the toolbox is limited. Most of the measures to relieve the supply crunch, such as new LNG infrastructure, new drilling and renewables, take at least a few years to play out. It is important to think about the immediate impacts on consumers, particularly the most vulnerable households, low-income consumers. Many European Governments have arranged for funds to be transferred to the most vulnerable groups to offset high energy bills, the UK Government and others have implemented business support programmes to help to offset high prices, which, well designed, can be appropriate.

Then there are energy efficiency measures—either government mandate regulation or just calls on the public, particularly given the horrific images we are seeing from Ukraine and the suffering happening there—to dial down the thermostat a few degrees. When you add up how you get to 150 billion cubic metres, how much can come from LNG, how much can come from switching to other fuels? Some of that will be coal, unfortunately. When you think about what dialling down the thermostat would do, it is not an insignificant number.

Then there is encouraging investment in energy efficiency as quickly as possible, such as tax credits for that. Again, that does not happen incredibly quickly, but as quickly as one can do it is helpful. Then there is making use of gas storage and strategic fuel stockpiles. I mentioned the SPR, but there may be opportunities to do that with natural gas as well. To the extent possible, use the proceeds that can be tied directly to the energy crisis to ease price pressures for people.

I will conclude by mentioning some things to avoid. Policy intervention in energy markets and price controls are risky. They are fraught with unintended consequences. Advanced economies have spent decades laying out a case against fossil fuel subsidies, with good reason, and we want to be cautious about not moving too far in that direction to deal with the immediate crisis. I do not think it is a good idea to subsidise energy across the board. I think it makes sense to target it towards the most vulnerable, and to have some honesty with people and say that, given the pain and suffering that we are seeing in Ukraine, we will all bear a little bit and we want to use government policy to minimise that. But the reality is that there is a limit to what can be done in the very near term.

Lord Fox: On the international aspect, are there any particular countries that we should look at?

Jason Bordoff: Many European countries have done some of the measures I have just talked about, most of them in fact with targeted support for low-income consumers as well as the use of strategic stockpiles. We saw the largest release in history from the US Strategic Petroleum Reserve. That was a good use of the SPR, and it was done in co-ordination with the International Energy Agency and European countries, so I think measures like that make sense.

The Chair: Do you think that a windfall tax on energy companies should be considered to help pay for support for consumers who are struggling to pay bills?

Jason Bordoff: It should be looked at and considered. There are pros and cons, and one should be cognisant that it is a boom and bust industry. It is an industry that lost a lot of money for several years, and then there were certain years in which it made disproportionately more money. One wants to look at it over the course of that, but thinking about how to make sure that when there are large profits made with very high prices today, there may be a role for thinking about how tax policy

can be used to use some of that to offset the pain to low-income and vulnerable households. That could be explored.

Q223 **Viscount Chandos:** Mark Carney told us two weeks ago that he thought that the IEA's position that no new fossil fuel production exploration would be needed to meet demands was no longer true because of the Russian-Ukrainian crisis. Do you see the UK Government's decision to facilitate renewed investment in North Sea oil and gas as justifiable, therefore? In particular, how can that come through in a timescale that would be relevant to the particular pressures now or the pressures in the foreseeable future?

Jason Bordoff: Mark makes an important point, and there are two dimensions to it. One is the immediate Russia crisis and the other was happening even before that.

The International Energy Agency net zero 2050 report found that if we were on track for net zero by 2050, new investment in oil and gas would not be needed, which is not the same as saying that if we stop investing in oil and gas we will get on that pathway. Even before the Russian invasion of Ukraine there were concerns about underinvestment in meeting energy needs and underinvestment in oil and gas. Europe was in the middle of an energy crisis last winter even before the invasion, in part because of reduced Russian gas flows but also because of general tightness in the market.

We have seen levels of investment in oil and gas over the last two years that are at the levels they should be if we were on track for net zero by 2050. The problem is that we are not. Oil and gas use is still rising because we are not doing what we should be doing on technology, climate policy, carbon pricing and all the rest to have oil and gas demand start to fall, as would be the case if you were in a net zero 2050 scenario.

That is a difficult needle to thread. We must make sure that we are investing adequately so that people have secure, affordable energy supplies today. That is also helpful for a clean energy transition. It will be harder, not easier, to have the transition we need if we are in the middle of an energy crisis and people cannot pay their energy bills, as we saw from the yellow vest protests and many other examples around the world.

If you lay on top of that the fact that we are trying to take a very large amount of oil and gas off the global market entirely, and hopefully keep it off, to apply pressure to Russia, given its brutality in Ukraine, that extra supply must come from somewhere. Hopefully some of it can be zero-carbon energy, and hopefully we can reduce demand, but I think Mark is right that it would be difficult to completely replace all of that lost Russian oil and gas supply without some increased investment in oil and gas elsewhere, and the North Sea can be one of those places. Reducing European dependence on gas cannot be achieved with higher LNG imports alone, so all the tools at your disposal to reduce dependence on Russian gas need to be brought to the table to the extent that Europe can

increase indigenous production. It can have near-term energy security benefits as well as economic benefits, and renewables can be part of that, but the North Sea can be as well.

It is important to keep in mind that production is likely to be a small relief but certainly not a silver bullet. As you said, there is a question about how these fields will contribute to the net zero objectives that the UK Government rightly hold. A lot of thought must be given to how to bring that new production in line in a way that does not lock in production and investment for the very long term.

The Chair: I see that you have written about designating certain projects as transition assets. Can you say a bit more about your thinking and what that means?

Jason Bordoff: The idea that I and my co-author Meghan O'Sullivan at Harvard University were thinking through in a recent piece in the *Economist* and elsewhere was the temporal challenge we have whereby Governments like Germany's are building four LNG import terminals and simultaneously asking the private sector to spend billions of dollars to build infrastructure for oil and gas that is needed today, because we must keep the lights and heat on for people, and at the same time pulling forward and making more aggressive targets to decarbonise the electricity system overall.

You are asking people to invest a lot of money today in infrastructure that would normally have a 20 or 30-year payback period, but we are doubling down on our commitment to make those assets stranded sooner than would otherwise be the case. That is what is needed for an energy transition. It is also that people are increasingly recognising that there are energy security benefits to reducing oil and gas dependency.

There is a market failure there, and you need to think about the kind of investments we need in infrastructure for the energy system that we have today, which is still mostly hydrocarbons, but not make a lot of investments today that are inconsistent with where we want to be in the future, hopefully, if we accelerate the pace of transition. That made us think about whether there should be a more explicit conversation whereby certain types of investments are designated as transition assets, which are things we need today but hopefully we do not want to need at a point in the future before they would normally pay back their investors.

Then the question is whether government policy needs to respond to that in some fashion by preferencing projects that have shorter payback periods, or potentially taking steps to lower the cost of capital so that they get paid back in a shorter period, followed maybe by an agreement to retire them sooner than would otherwise be the case, or an option to retire them if we are on track for our climate goals, and certainly a commitment to deal with methane and flaring and to make sure that the production is done as cleanly as possible.

Maybe to the point of the conversation with the last panel, to the extent that you are investing in natural gas supply in particular, you could do it in a way that is transition-ready so that it is ready to handle hydrogen or other low-carbon fuels.

Q224 **Lord Fox:** The Government are looking to reduce the cost of capital for nuclear through the RAB, the regulatory asset base-type approach. How would you reduce the cost of capital for these transition projects? Is this happening anywhere at the moment?

Jason Bordoff: I am not aware that it is happening anywhere, and I guess it is an idea that needs to be developed a bit further. To answer as precisely as possible your question about how this would be done, I mentioned a moment ago that Governments were moving away from fossil fuel subsidies, for good reason. I am loath to suggest that one should move in that direction, but you can imagine different government financing instruments or public private partnerships where there was some agreement about the long-term nature of the assets and an option that would exist in the timeframe for when they might be retired which might allow people to access in a partnership at a lower cost.

Lord Fox: Tax credits, for example?

Jason Bordoff: That would be one option.

Q225 **Baroness Kramer:** Speaking of investments, and potentially transitional investments, what is your view on the UK investing in more gas storage? We have had a lot of evidence on all this, with opinions ranging from, "It's a bit late in the day to be talking about this now", to essentially, "We have gas storage. It's just that it's in Europe and we can access it from there". What are your thoughts on that issue?

Jason Bordoff: Again, I will answer with a dose of humility. My expertise in the UK energy system is not very deep, but my understanding is that the UK has relatively little gas storage compared to many large European gas markets such as Italy, Germany or France. Its gas production is no longer providing the flexibility that it once did, so the UK has significant security of supply from diversified sources, including LNG terminals, and multiple pipeline routes with access to significant volumes of effective storage in the broader region. That diversification provides optionality in a way that is helpful for energy security.

Of course, a lot of UK gas is still supplied from the North Sea. I think the pressure to have domestic storage is materially lower and is different than 20 years ago, when the UK relied a lot on the Rough storage facility for storage. I think the UK should probably invest in additional storage. I do not know the exact numbers, but my understanding is that there is a case for investing in some additional gas storage capacity. It would make sense to ensure that capacity, again, is hydrogen-ready and can be used for other fuels.

Right now, the UK serves as a bridge for LNG toward the continent, so maybe the UK should consider discussing more actively with the EU --

whether it wants to or not -- that the UK is in the middle of a European gas system and has a really important role in that, thinking about the broader continent.

Baroness Kramer: Clearly the market does not have much appetite for building storage, or we would be seeing it in the pipeline. Who in your view should pay for this, or how could it be paid for? Do we have to look at this as an emergency, a little like the strategic surplus that you discussed earlier?

Jason Bordoff: Let me answer in general terms, because I am not sure I know exactly the specifics of the economic incentives for UK gas storage in particular. In broad terms, I think this crisis can be a reminder that in the last energy crisis—there have been several, but the energy crises of the 1970s may be some of the most severe—many of the responses, at least in the US, involved pulling back government's role in the energy system. We had a very complex role with government price controls, an allocation system and import quotas. The Government were micromanaging the energy supply system in the US in a way that made the crisis of 1973 worse, not better. A lot of that got pulled back with some new deregulatory measures, which had many benefits, to let markets work.

I think we are being reminded that there is an important role for government, and I think free markets make all the sense in the world given how energy systems work. They deliver a lot of efficiency and economic benefits, but there are certain externalities that they do not account for—climate pollution being a seminal example, and energy security another. The private sector does not pay for energy security, because no individual firm bears the full social cost that we see when there is a significant energy crisis and the broad economic impacts that that has across society. That is, in the classic sense, a market failure that justifies some additional government intervention in the economy.

There are different ways to achieve energy security. Storage—resilience—is one: you want to have stockpiles standing by, you want to have extra supply in case you need it. That is above what the market would have any incentive to invest in on its own. Optionality is another one: you can imagine building LNG import terminals, but maybe the gas next door is cheaper and you want to import it by pipeline but you do not want to be dependent on that one source, so you want optionality. Few firms will invest in building an LNG import terminal that is not used most of the time and exists for the security benefits of optionality so that you can access the global gas market.

Those are the sorts of investments where I think there is a legitimate argument that government should bear some of the cost, because you are talking about a broader social benefit. The costs are not borne by any individual firm, so there is no economic incentive for the firms to invest in extra storage above what would be economic or extra redundant infrastructure that exists for the purpose of providing more energy security to the system.

Baroness Kramer: Since you understand the market far better than certainly I do, does building strategic stockpiles and all the facilities for them have an impact on wholesale prices of energy? Should we be worried about the timing of it, or is it so marginal that, given overall demand, it just comes out in the wash?

Jason Bordoff: I think you mean not the release but the actual building of the stockpile itself? It is increased demand, and you want to be careful about how you increase demand at a time of crisis. The Biden Administration, in collaboration with the IEA, announced the largest ever SPR release—a million barrels a day for six months, 180 million in total—and there is more on top of that from before that was already scheduled. They announced a few days ago that they will start buying it back, so they sent a signal to the market that demand will go up.

In a sense, you say, "Why are you doing that? You're putting upward pressure on price", but I think they timed it out over an extended period, and it was also a signal to producers in the US to maybe put more rigs to work and get production up, because it takes six to 12 months for that to happen. In the past, we had a backward-dated oil price curve, meaning that the price in the future could have been pulled up a bit so that people had a market incentive to invest today. I think that is part of what the announcement by the Administration said— "We'll release oil today and buy it back in the future"—and it sent that signal to producers.

Certainly in a very tight market you would want to be careful about the timeframe in which you built that up, not just for the cost to the government but for the impact that it would have on the broader market.

Q226 **Lord Rooker:** Do parts of the West, and I say parts of the West, risk swapping fossil fuel dependency on Russia for a raw materials dependency on China? You raised this issue and wrote in 2020 that if China halted deliveries of processed raw materials, western markets would have plenty of time to adapt, but to what extent should western or European Governments be planning for that now, and should they do it collectively or country by country? Should it be an OECD or an EU initiative—I include the UK in that, by the way—or can individual countries cope alone in providing reliable supplies in the avoidance of relying on autocracies that are now shown to be, if they were not before, unreliable suppliers?

Jason Bordoff: It is an important question: do we want to swap fossil fuel dependencies on a handful of countries such as Russia, Saudi Arabia and others for raw material dependency on, say, China, which does not produce most of them but does do the refining and processing of most of the critical minerals? That is a nasty business; it has environmental implications and it takes time to build up a domestic refining and processing industry. There are a lot of externalities associated with it and concerns about how you would do it in an environmentally friendly way. I think yes, but that depends a lot on what Governments do in the meantime.

Low-carbon technologies obviously require lots of metals and various rare earth elements. Deposits of these are finite and geographically concentrated. For many of them there is no lack of supply in the world. There is plenty of lithium out there and many other critical minerals. We will see critical mineral demand expand significantly. That also has the potential to push up prices for clean energy and worsen inflationary pressures if we do not think about how to build the supply chains. At present, I think the European Union's dependency on metal imports is somewhere between 75% and 100%, depending on the metal.

To some extent, the adage in the oil industry is that the best cure for high prices is high prices, and those supply shortages and high prices will incentivise people to develop and explore elsewhere, but there are these security issues. I will say two points about it. One is that in the same way that we just talked a moment ago about optionality and diversity of supply, that is quite important when we think about the supply chain for critical minerals. You probably do not want 80% of your critical mineral supply chain to be refined and processed in one country.

It is also true that critical minerals are different than the daily flow of energy we rely on. They are inputs to a finished good. The closest analogy to oil, if we electrify cars, is not lithium or cobalt but electricity. Electricity is mostly produced domestically, so this is a form of storage. If you had a shortage of critical minerals, you would see the cost of batteries and solar panels go up and long delays in supply chains. That would affect one's ability to buy a new electric car, but it would not affect mobility today and your ability to get around and fill up your gas tank.

The risks are different and probably more severe for fuel, but they are still quite consequential, and the International Energy Agency estimates 10 to 15 years for a new mine to come online. It would be several years of significant disruption. I do not think this should lead to a solution where we shift too dramatically toward economic nationalism and say that everyone has to produce everything they use domestically. There are clearly benefits to global trade but, as is true for energy, we want to think about diversification of supply, and that is partly where security comes from. Maybe strategic stockpiles will play a role in critical minerals too.

I think there is a role for a national security policy, an energy policy, within any one Government to work with industry to make sure that you are not too heavily dependent on any one source, and, to the extent possible, that you are developing your own domestic resources.

If we are to have a successful clean energy transition, we must shift the mindset to understand just how much we have to build. Politicians in the US occasionally announced an infrastructure week. Every week must be infrastructure week. We must build so much stuff, put so much steel in the ground, in order to have a clean energy transition. That is steel, poles and wire for solar and wind, but it is also a lot of mining. We will have to do a lot more mining, which raises environmental concerns and concerns for the indigenous communities where this happens, but we must set out

a policy and work more closely with some of these environmental groups and indigenous peoples' groups to think about a strategy that will allow us to do the mining that we need to do to get the materials that we need for a clean energy transition, but do it responsibly.

Lord Rooker: You made earlier that China, of course, does not produce most of the materials but it processes them. Australia produces 52% of the lithium, and 69% of cobalt is from the Congo—40,000 children are involved in mining, along with 200,000 adults. Now China is processing 65% of the world's cobalt. It will not be easy to simply swap from one to the other, because some countries are producing a massive amount, two-thirds of the world's supply, but it is going to China for processing. In some ways, you could argue that it does not make sense to open lots of other mines. It makes sense, of course, to find somebody else to process the cobalt from the Congo.

Jason Bordoff: It is a lot of Chinese investment, and Chinese firms doing that work in the DRC. Even though it is not being produced in China, China has an important and significant role in its production in the DRC and is then taking it back for refining and processing. You raise a good point. I mentioned a moment ago that most of the lithium, as you said, comes from Australia. Many other parts of the world can produce lithium, less so for cobalt. Just geologically a lot of it is in the DRC.

It is important from a policy standpoint not to think about policy in too static a way and to design policy for unknown shifts and trends that will happen. There are two. One is technology. In my own university, Columbia—I am sure there are many others, including in the UK—we have extraordinary people in electrochemistry who are developing the next generation of battery technologies. My understanding is that there is a lot of optimism about storage capacity that will depend far less on cobalt, so maybe that will alleviate that concern to some extent, and the recycling of critical minerals as we expand the usage of them for clean energy.

We must make a lot of progress on this. That will and should be a very important role that will not eliminate entirely but will potentially reduce the new mining that is needed. We have a lot of work to do to figure out how we recycle the very significant number of batteries that will be part of a clean energy transition and what to do about the critical minerals that could be extracted if we get better at recycling.

Q227 **Lord Stern of Brentford:** For transparency, I should make it clear that we know each other and I had lunch with the other dean of the Columbia Climate School, Alex Halliday, today, who sends his best wishes.

Jason Bordoff: Good to see you.

Lord Stern of Brentford: Good to see you, Jason. I want to push the discussion we were just having a little further into specifics for the UK. We will shortly make public a UK strategy on the resilient supply of critical raw materials. What would you look for, what would you suggest,

in that strategy?

Jason Bordoff: I have a couple of points. One is about bottlenecks in resource extraction. Mineral deposits are highly geographically concentrated and, to the extent possible, it would make sense to support resource extraction in many places, particularly those that are friendly to it. The greatest resilience for supply of imported raw materials will come, as we said, from diversification of supply sources and encouraging competition between them. I think that geopolitical means can be deployed to ensure resilience of such supply sources, including trade deals that satisfy reciprocal needs and benefits of the alignment of political objectives through diplomacy.

There are bottlenecks in processing. We were talking a moment ago about China's significant dominance in that industry. It does not matter where a resource is extracted; if the UK or others are still entirely dependent or mostly dependent on China for resource processing and refining, that is an energy national security concern. One could think about incentivising processing facilities at home and then try to think through how to do that in an environmentally responsible way, which is not easy, setting really high standards for how that is done and looking at joint sustainability and trade stability standards with the EU, the US, Canada and other countries.

Increasing supply chain transparency can be important, as can enforcing international labour laws and disclosure rules to ensure that the practices that bring the materials to market are fair and readily traceable, and the innovation that we talked about a moment ago. The storage of the future may depend less on these critical minerals, or may depend on more abundant critical minerals, and the possibility of significant advancements in our ability to recycle these.

All of that is incredibly important, so there is a very strong argument for government investment in R&D generally, and that is certainly the case when it comes to clean energy materials. Innovation can reduce the material inputs that are needed, reduce the amount of silicon for solar panels, and lots of other things. Funding for innovation is a very important part of any country's clean energy strategy for the material inputs that are needed.

Lord Stern of Brentford: As you said at the beginning, that clearly involves government activity in shaping markets. Market insecurity is a market-level problem rather than an individual problem, but it would involve activity by Governments directly in diversification or encouraging diversification. If I understood correctly, that also means operating at more than the level of one modestly sized country like the UK, operating at levels of Europe and the United States moving together. Is that right?

Jason Bordoff: Absolutely. I think all of that is correct. I am reluctant to try to identify market failures, talking to an economist of your stature, but energy security is, as you said, a clearly defined, readily identifiable market failure that justifies some government role in otherwise broadly

free energy markets. There is also R&D. We know that private firms do not benefit from the full social value of new innovation. That is also market failure that says that there is a well-justified role for government to invest in research and development and to advance new technologies, not just the basic R&D but commercialisation and deployment.

Q228 **Lord Skidelsky:** I am interested in this trend of inquiry. As I understand your evidence, and the evidence we have received from others, there are two trends going on. One is increasing self-sufficiency in energy generation, and the other is what Secretary Yellen called friend-shoring, which is buying from or trading with friendly countries. That is not only a retreat from the hope of liberalising the energy market, which was the European policy, but a retreat from free trade. Do you see a contradiction between saying that countries will only trade with you if you are friendly but that we also expect you to co-operate in tackling global climate change? There is a conflict between emotion and reason.

Jason Bordoff: You are raising a hard and difficult question that has plagued people thinking about energy security for a very long time. Since the Arab oil embargo, at least in the US, the obsession has been with energy independence, and of course nobody really knows exactly what that term means. The US was a net oil exporter last year, so maybe you would define that as independence; 15 years ago, we were importing two-thirds of our oil. Politicians are still deeply concerned about what is happening in Russia and a ban on Russian exports potentially, because we live in a globally integrated market, and if there is a problem in oil markets anywhere in the world you will feel that in pain at the pump when you fill up.

My starting point is that a shift towards liberalised and integrated markets is a good thing, not a bad thing, and it can in part be where security comes from. When you have a disaster like Fukushima in Japan, there is the ability for Japan to go into a global market to find LNG supplies. Prices will go up and you have to pay for it, but markets will work and you can pull supplies into your country. In the US when we had those terrible storms, Katrina and Rita, which took out a lot of the Gulf of Mexico oil production, we benefited from the fact that we could go into a global market and import more supplies when we needed them.

Security of supply has been the story of the European gas market over the last 10 or 15 years—more pipeline reverse flow capabilities and interconnection capabilities, anti-trust regulations saying, "We think that a more integrated and flexible market, including more access to the global LNG market, because we will build some more LNG capability, can help make us more secure". As a matter of economic efficiency and where the resources are located, cutting yourself off from the global market does not necessarily make you more energy secure or allow you to cope with inevitable shocks, but there are limits.

Lord Skidelsky: What is your view in retrospect of the European liberalisation, which included, of course, Russia as a major source of supply? Was that a mistake? Should they have realised that that could

not continue and that it was reducing their energy security?

Jason Bordoff: Let me say two things about it. The initial point I made about being part of an integrated market can provide benefits. It certainly creates risks as well, and we will come to those in a moment, but there is a limit to that, and I think that is what we are learning from the European experience. China, for example, has a policy, roughly, of not getting more than 15% to 20% of its oil from any one source. Oil markets are much more globally traded and integrated than gas markets are. We are learning the limits of the idea that we can buy the cheapest gas, which is pipeline gas from Russia. We have not used it as a weapon very much before, except in some cases in Ukraine, and if there is a problem, we can go to the global LNG market. There is only so much LNG in the global market, and prices have to rise to exorbitant levels if you think about how Europe would cope with a complete loss of Russian gas.

You may want to think about diversification, even if you have optionality that says, "I can buy energy from other places, because I'm connected to a global market". That is optionality, but diversification also means that at any one time you do not want to get an excessive amount—we can debate what that percentage is; 40% certainly would be—of energy from any one source. That is just too big a shock to be able to find security in the global market.

To your question about the liberalisation of the European gas market over the last couple of decades, generally that was the right direction to move in, but there were a number of consequences which I think policymakers also need to think about. Price spikes of the sort we have seen over the last winter, even before Russia invaded Ukraine, are a feature, not a bug, of liberalised markets. Europe benefited from the creation of gas market hubs and reliance on spot prices for a decade, because prices were lower than they would have been in long-term contracts, but when there is a shock to the system, market forces do what market forces do and then you are exposed to those price shocks.

Thinking about how to layer on top of the liberalisation of the market like that, additional levels of government tools that can cope with price shocks, more diversification of supply, more strategic stockpiles, tools such as assistance for some of the lowest income and most vulnerable households in place to deal temporarily with shocks to consumers, should all complement efforts to liberalise markets. On average, over the long run, that probably had benefits, but when a shock hits it can be more severe.

Q229 **Baroness Noakes:** We have seen in Europe that Governments are getting together to be more active in energy markets, obviously in response to the recent shocks to the system, and possibly seeing the attempt to create a buyers' cartel in energy markets. Do you think that the involvement of Governments—or, in the case of the EU, a supranational government—is a good development in energy markets themselves?

Jason Bordoff: It can be, but it has risks, like anything. European Governments and the European Union are engaged, as they should be in current circumstances, in an urgent attempt to ensure and secure adequate energy supplies, particularly in advance of the coming winter—if temperatures are unusually low, there is a real risk there—and to stabilise energy markets. A lot of ideas are being explored. Some would apply more active intervention in the energy market, which can have benefits but can also sometimes be a two-edged sword. The idea of a European gas buyers' cartel certainly fits this model.

It is often said that the only cure for high prices is high prices, as markets signal scarcity, which triggers the development of incremental supply or economic substitutes or curtailment of demand. I think that is true, but in the face of severe threats to security, such as those caused by Russia today, Governments may not feel that they can just stand by and watch market forces work. It is fair to say that some, not all, of the current price crisis is a result of a hands-off approach to energy markets.

There is an important role for energy diplomacy to help facilitate dealing with shocks like this. We have already seen that with diplomats from the US, Europe and elsewhere working with large LNG exporters working with large LNG buyers. It is an interconnected system, so to the extent that in the near term Europe is finding additional supplies of LNG somewhere, they are coming from somewhere else. Those countries will have to figure out what they will do about that, which is why coal prices are so high right now. We need energy diplomacy to co-ordinate if we can at a level beyond, even just the continent to say, "Are there more supplies that would have otherwise gone to Asia that might come to Europe instead? Are there alternative sources that they have there?" That kind of government role, navigating us through a crisis and co-ordinating among the public and private sector, is really important. We need more co-ordination between government and private firms, even state-owned enterprises in some other countries that are large suppliers in a moment of crisis like this.

There is a caution to sound there. I know that when the US became a very large exporter of LNG and a lot of Asian countries signed deals with the US there were questions about whether government intervention might curtail those exports at some point. With US natural gas prices rising, there have been members of Congress who have said that we should cut off gas exports and help US consumers. I think it is important to give assurance that you will not have too much government intervention. If Governments around the world feel like their arms are being twisted to stop buying gas from here and let gas go to there instead, the surety of long-term contracts between private firms or a country and a private firm could be at risk if you do not think carefully about how you do that, and make sure that people do not feel like the sanctity of contracts in the future will be overly exposed to government intervention.

Baroness Noakes: Do you see this as a short-term phenomenon in

response to the recent energy crisis, or do you see the increased government involvement as having had a paradigm shift in the context of energy markets? Is that a helpful development in, for example, the transition to net zero, or is it something that we should be very wary of?

Jason Bordoff: In general, it is a good thing to let market forces work in the global energy system in times of crisis. You want extra co-ordination and you want Governments to work together to figure out how to manage near-term supply needs, because so much is at stake. You are talking about potentially not enough molecules to heat homes and lives could be at risk, so there must be more of a government role for that.

I think your question comes back to what I talked about a moment ago, which was whether this crisis is demonstrating that we may need a little more government involvement in global energy markets, recognising that free markets provide a lot of benefit. We do not want to micromanage it, in the way, as I mentioned a moment ago, the US did during the Arab oil embargo in the 1970s, with price controls and allocation of energy, which was a complex system. However, in at least three dimensions we talked a lot about energy security, so where does energy security come from? It is a classic market failure. I do not think that private firms will have enough incentive to supply all the infrastructure and all the extra storage needed to make a country resilient and secure. Government needs to play a role in that.

We talked a moment ago about whether we need to think differently about building infrastructure today, but maybe that infrastructure would be retired earlier than it normally would because we want to have a clean energy transition. Maybe government needs to think a little differently about a role it might play in the facilitation but also the retirement of that infrastructure.

Finally, the most fundamental market failure we face is that of pollution, particularly greenhouse gas emissions and carbon dioxide. We need government policy to do much more than it is doing today to internalise the cost of carbon emissions and to accelerate the clean energy transition that we are being reminded would be helpful not only from a climate standpoint but from an energy security standpoint.

Q230 **The Chair:** A final question from me, unless anyone else has one. I think you have written this, and it is a point that Lord Chandos touched on: "If energy security and climate ambition come into conflict with one another, it is the climate that will lose out". Is climate losing out now, or what do you think is happening in response to your scenario?

Jason Bordoff: I was quoted in the *Financial Times* not long ago saying that we cannot have an energy transition if we are in the middle of an energy crisis. It sparked a lot of interesting conversation, because I think there were some who said, "That is exactly when you have an energy transition. That is what prompts people to move to clean energy faster and install electric heat pumps, and to get off oil and gas, because we are

being reminded that inevitably it is exposed to the geopolitical risk of these globally traded hydrocarbons".

I think what I am seeing is evidence of the opposite: Governments who are subsidising energy costs, rolling back fuel taxes, all the price signals you would want to encourage conservation and substitutes, dealing with the immediate crisis of the moment and calling on producers to produce more oil and gas as quickly as possible. Whether it is yellow vest protests or something else, my sense, what I believe is the case, is that if people are deeply concerned about whether they can heat their homes, pay their utility bills, affordably fill up their cars with gasoline, it will be more difficult, not less, to put in place the measures that we need to provide a stable and orderly pathway to a clean energy transition.

I have written recently about the geopolitical risks. There are certainly geopolitical risks from dependence on oil and gas, and if we have a transition you might see petrostates collapse and all the rest, but there are geopolitical risks from the energy transition itself, from a shift to globally traded fuels such as hydrogen or critical minerals, which we talked about, and potential trade conflicts with carbon border adjustments.

There is a host of risks like that. I am worried that we are moving along a path where the energy transition will be more disorderly, not less, and more jagged and less smooth. That is economically painful, it is geopolitically painful, and it not only presents economic and geopolitical risks but risks undermining the transition. It is hard to stay the course with the things that you need to do over the longer term to decarbonise if you are having trouble meeting people's need for affordable and secure energy today.

The Chair: Thank you very much indeed. That is a good note to end on. Thank you very much for joining us.

Jason Bordoff: Thank you for the invitation.